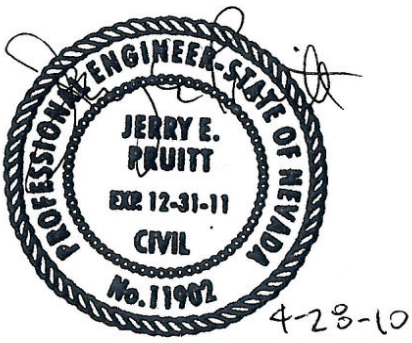
NORTHEAST C-1 DETENTION BASIN
LETTER OF MAP REVISION
(LOMR)

504-424

April 2010



Prepared for:

City of Henderson
Public Works Department
240 Water Street
Henderson, Nevada 89015
Phone: (702) 565-2140
Fax: (702) 565-5687

Clark County
Department of Development Services
500 S. Grand Central Parkway
Las Vegas, Nevada 89155
Phone: (702) 455-3000
Fax: (702) 388-5810

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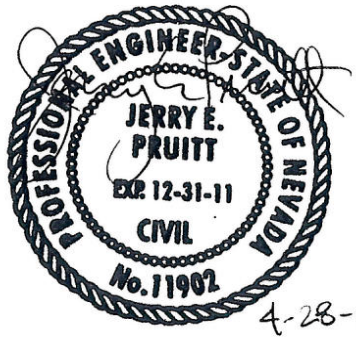

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500 S. Grand Central Parkway
Las Vegas, Nevada 89155
Phone: (702) 455-3000
Fax: (702) 388-5810

Prepared by:

G. C. Wallace, Inc.
1555 S. Rainbow Blvd.
Las Vegas, Nevada 89146
Phone: (702) 804-2000
Fax: (702) 804-2297

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS

G. C. WALLACE, INC.

Writer's Contact Information:
(702) 804-2000

504-424

April 28, 2010

National LOMR Manager
FEMA National Service Provider
3601 Eisenhower Avenue
Alexandria, Virginia 22304

Re: LOMR for the Northeast C-1 Detention Basin in the City of Henderson, Nevada

Dear LOMR Manager:

G. C. Wallace, Inc. (GCW) has been contracted by the City of Henderson, Nevada, to prepare a Letter of Map Revision (LOMR) for the Northeast C-1 Detention Basin, located within the City of Henderson, Nevada. The Conditional Letter of Map Revision (CLOMR) for Northeast C-1 Detention Basin (Case No. 08-09-0093R) was approved on May 16, 2008. The purpose of this LOMR is to revise existing Community Panels 32003C 2620 E and 2615 E to reflect the construction of the drainage improvements described in the CLOMR.

The project site is located in portions of Sections 10, 14, and 15; Township 22 South; Range 63 East. A vicinity map and location map showing the location of the project are included as Figure 1 and Figure 2.

This request for a LOMR is based on the record drawings consisting of the installation of an upper berm, a concrete-lined collection channel, the Northeast C-1 detention basin, and an outfall storm drain facility. The following information supporting this LOMR request is enclosed:

- FEMA MT-2 Form 1, including community acknowledgement of the map revision request
- Figure 1 - Vicinity Map
- Figure 2 - Location Map
- Figure 3 - Effective FIRM
- Figure 4 - Proposed FIRM Revisions
- Figure 5 - Annotated FIRM
- Certified record drawings
- CLOMR approval letters to City of Henderson and Clark County, Nevada
- Electronic file of Proposed FIRM revisions

Additionally, the following information will be sent to the FEMA Fee Charge System Administrator:

- A check in the amount of $5,000.00, payable to the National Flood Insurance Program, for review and processing fees.
- Payment Information Form (81-107).

ADDITIONAL REQUESTS FOR INFORMATION IN CLOMR APPROVAL LETTER

A comment on page 3 of the CLOMR approval letter requests that a hydraulic analysis for the Drake Channel be submitted to show the flow quantity that would weir over the right overbank of the channel. A work map is also requested to indicate the boundary delineation of the Special Flood Hazard Area (SFHA) that would result from the weir flow. A HEC-RAS analysis for the Drake Channel was submitted with the response to comments on the Northeast C-1 Detention Basin CLOMR, dated January 29, 2008. The 100-year flow (893 cfs at the confluence with the C-1 Channel) used in the Drake Channel HEC-RAS model was referenced from the City of Henderson's 2005-2006 Local Drainage Master Plan Project. This flow rate is conservative and is based on future curve numbers with existing storm drain facilities in place. Furthermore, this flow rate is also higher than the flow rate (482 cfs at the confluence with the C-1 Channel, CP55) calculated in the *Pre-Design Report for the Northeast C-1 Detention Basin* (April 14, 2005, G.C. Wallace, Inc). The flow in the Drake Channel is reduced as a result of the collector channel proposed with the Northeast C-1 Detention Basin improvements, which intercepts flow from the east and conveys it north to the detention basin. The HEC-RAS model for the Drake Channel extends east from the confluence with the C-1 Channel to the collector channel. The results of the analysis shows that the Henderson Drainage Master Plan flows are contained within the Drake Channel, including at the Racetrack Road culverts, flows do not overtop Racetrack Road. The Zone A SFHA floodplain, located west of the Northeast C-1 Detention Basin collector channel that crosses the Drake Channel approximately 2000 feet east of Magic Way, can be removed based on the results of the previously submitted Drake Channel hydraulic analysis. Additional analysis for the Drake Channel does not appear necessary.

A second comment on page 3 of the CLOMR approval letter requests coordination of the Northeast C-1 Detention Basin LOMR and the Heritage Park Outfall LOMR (CLOMR Case No. 08-09-0009R). If the Northeast C-1 Detention Basin LOMR is submitted prior to the Heritage Park Outfall LOMR, the submitted hydraulic analysis must tie in to the currently effective information. If the Northeast C-1 Detention Basin LOMR is submitted following the Heritage Park Outfall LOMR, the hydraulic analysis must tie in to the Heritage Park Outfall post-project hydraulic conditions. At a meeting on April 5, 2010 with representatives from the City of Henderson, the Clark County Regional Flood Control District and the consultant, VTN Consulting, for the Heritage Park Outfall, it was discussed that since both projects are substantially complete, the currently effective Zone A SFHA floodplain does not exist. It was agreed that the best course of action would be to submit both LOMRs concurrently to clarify the Zone A SFHA boundary at the confluence of the Drake Channel and the C-1 Channel. The Heritage Park LOMR proposes the removal of the Zone A SFHA floodplain to the south of the Drake Channel (at the confluence with the C-1 Channel) and the Northeast C-1 Detention Basin LOMR proposes removal of the Zone A SFHA floodplain, located west of the Northeast C-1 Detention Basin collector channel that crosses the Drake Channel approximately 2000 feet east of Magic Way.

FLOOD-CONTROL IMPROVEMENTS

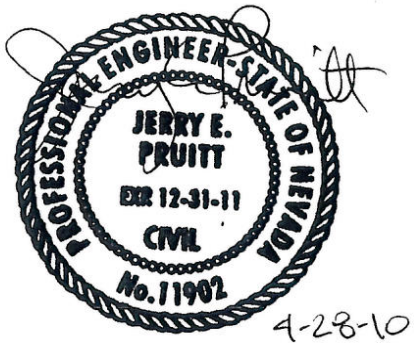
Please note that the technical calculations used to support the approved CLOMR have not changed; therefore, is not resubmitted with this LOMR. Figures 1-5 were taken from the CLOMR, the titles revised to "Northeast C-1 Detention Basin LOMR". Figures 4 and 5 were further updated with this LOMR to reflect the effective Shaded Zone X and Zone X flood zones that were not included on the

previously submitted figures. A site investigation confirmed that the flood-control structures were built in substantial conformance with the design drawings titled "Northeast C-1 Detention Basin"; therefore, FEMA MT-2 Forms 2 and 3 is not resubmitted with this LOMR. Based on field observations, I certify that the detention basin and other flood-control structures have been constructed according to the intent of the record drawings.

If you have any questions or need additional information, please contact us at (702) 804-2000.

Cordially,

G. C. WALLACE, INC.



Jerry E. Pruitt, PE
Senior Vice President
Flood Control Division

MM/mm

Enclosures

c: Lance Olsen, COH
Albert Jankowiak, COH
Layne Weber, CC
Kevin Eubanks, CCRFCD
Calvin L. Black, GCW

504-424

Federal Emergency Management Agency

Washington, D.C. 20472

MAY 16 2008

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:
Case No.: 08-09-0093R

The Honorable Rory Reid
Chair, Clark County Board
of Commissioners
500 South Grand Central Parkway
Las Vegas, NV 89106

Community: Clark County, NV
Community No.: 320003

104

Dear Mr. Reid:

This responds to a request that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) comment on the effects that a proposed project would have on the effective Flood Insurance Rate Map (FIRM) for Clark County, Nevada and Incorporated Areas (the effective FIRM for your community), in accordance with Part 65 of the National Flood Insurance Program (NFIP) regulations. In a letter dated October 16, 2007, Mr. William E. Hunter III, P.E., G.C. Wallace, Inc., requested that FEMA evaluate the effects along Unnamed Tributary 1 to C-1 Channel (Tributary 1), from just upstream of C-1 Channel to approximately 5,000 feet upstream of Drake Channel, and Unnamed Tributary 2 to C-1 Channel (Tributary 2), from just upstream to approximately 5,800 feet upstream of the confluence with Tributary 1, that updated topography, a proposed channel, the proposed Northeast C-1 Detention Basin, a proposed reinforced box culvert (RCB), and a proposed berm would have on the flood hazard information shown on the effective FIRM.

All data required to complete our review of this request for a Conditional Letter of Map Revision (CLOMR) were submitted with letters from Mr. Hunter.

Because this revision request also affects the City of Henderson a separate CLOMR for that community was issued on the same date as this CLOMR.

We reviewed the submitted data and the data used to prepare the effective FIRM for your community and determined that the proposed project meets the minimum floodplain management criteria of the NFIP. The submitted existing conditions HEC-RAS hydraulic computer models, dated September 14, 2007, and January 29, 2008, based on updated topographic information, were used as the base conditions model in our review of the proposed conditions model for this CLOMR request. We believe that, if the proposed project is constructed as shown on the plans entitled "Northeast C-1 Detention Basin," and as described in the report entitled "Northeast C-1 Detention Basin Conditional Letter of Map Revision (CLOMR)," both prepared by G.C. Wallace, Inc., dated October 2007, and the data listed below are received, a revision to the FIRM would be warranted.

As a result of the proposed project, the base (1-percent-annual-chance) flood along Tributary 1, from just upstream of C-1 Channel to approximately 3,400 feet upstream of Drake Channel, will be intercepted and diverted into the proposed channel located approximately 10,200 feet upstream of Magic Way to approximately 2,200 feet upstream, the proposed Northeast C-1 Detention Basin located at the outlet of the proposed channel to approximately 1,800 feet upstream of Magic Way, and the proposed RCB located at the outlet of the detention basin to just upstream of C-1 Channel. The proposed channel, detention basin,

and RCB will contain the base flood along Tributary 1. The proposed confluence of Tributary 2 with Tributary 1 will be located approximately 3,600 feet downstream of the existing confluence. The effective Special Flood Hazard Area (SFHA), the area that would be inundated by the base flood, designated Zone A, with no Base Flood Elevations (BFEs) determined, along the effective flow path of Tributary 1 will be removed and the area will be redesignated as Zone X (shaded), an area subject to alluvial fan flooding outside of the SFHA, from just upstream of the C-1 Channel to approximately 3,400 feet upstream of Drake Channel.

Also, a proposed berm will be located along Tributary 2 approximately 3,400 upstream of the existing confluence with Tributary 1. As a result of the proposed berm, the SFHA along Tributary 2 will be redirected toward the proposed confluence with Tributary 1 for a length of 6,300 feet. The maximum SFHA width, approximately 600 feet, will occur approximately 3,000 feet upstream of the proposed confluence with Tributary 1. The SFHA along Tributary 2 will be designated Zone A. The effective SFHA (Zone A) along Tributary 2 will be redesignated Zone X (shaded), an area of base flooding with average flood depths of less than 1 foot, from just upstream to approximately 3,400 feet upstream of the existing confluence with Tributary 1.

The above-referenced changes that will occur in your community include those along a portion of the redirected flow along Tributary 2 from approximately 6,500 feet upstream to approximately 8,700 feet upstream of the proposed confluence with Tributary 1.

In addition, as a result of the updated topographic information and proposed project, the width of the SFHA will increase in some areas and decrease in other areas compared to the effective SFHA width along Tributary 2 from approximately 3,400 feet upstream to approximately 5,800 feet upstream of the existing confluence with Tributary 1. The maximum increase in SFHA width, approximately 300 feet, will occur approximately 5,000 feet upstream of the existing confluence with Tributary 1. The maximum decrease in SFHA width, approximately 200 feet, will occur 5,500 feet upstream of the existing confluence with Tributary 1.

Upon completion of the project, your community may submit the data listed below and request that we make a final determination on revising the effective FIRM.

- Detailed application and certification forms must be used for requesting final revisions to the maps. Therefore, when the map revision request for the area covered by this letter is submitted, Form 1, entitled "Overview & Concurrence Form," must be included. (A copy of this form is enclosed.)

- The detailed application and certification forms listed below may be required if as-built conditions differ from the preliminary plans. If required, please submit new forms (copies of which are enclosed) or annotated copies of the previously submitted forms showing the revised information.

  Form 2, entitled "Riverine Hydrology & Hydraulics Form"

  Form 3, entitled "Riverine Structures Form"

  Hydraulic analyses, for as-built conditions, of the base flood, together with a topographic work map showing the revised floodplain boundaries, must be submitted with Form 2.

- Effective October 1, 2007, FEMA revised the fee schedule for reviewing and processing requests for conditional and final modifications to published flood information and maps. In accordance with this schedule, the current fee for this map revision request is $4,800 and must be received before we can begin processing the request. Please note, however, that the fee schedule is subject to change, and requesters are required to submit the fee in effect at the time of the submittal. Payment of this fee shall be made in the form of a check or money order, made payable in U.S. funds to the National Flood Insurance Program, or by credit card (Visa or MasterCard only). The payment, along with the revision application, must be forwarded to the following address:

  FEMA National Service Provider
  3601 Eisenhower Avenue
  Alexandria, VA 22304-6425

- As-built plans, certified by a registered professional engineer, of all proposed project elements

- Community acknowledgment of the map revision request

- Our detailed analysis of the HEC-RAS hydraulic computer model for Drake Channel, submitted for Case No. 03-09-0270P, revealed that the base flood would not be contained in the channel at various locations from approximately 400 feet upstream of its confluence with C-1 Channel to its confluence with the East C-1 Levee. Furthermore, it appears from the submitted information that the culvert under Race Track Road does not have the capacity to convey the base flood. We are concerned that a portion of the base flood would overtop the right overbank of Drake Channel and flood areas north of Drake Channel. Please submit a hydraulic analysis showing how much flow would weir over the right overbank of the Drake Channel, together with a topographic work map, certified by a registered professional engineer, that shows the boundary delineations of the SFHA that would result from the weir flow.

- A request for a CLOMR for the Heritage Park Outfall (Case No. 08-09-0009R) was issued on February 29, 2008. Upon completion of the project for which this CLOMR is issued, please comply with one of the following alternative conditions:

  - If the Letter of Map Revision (LOMR) request for the project for which this CLOMR is issued is submitted before the LOMR that follows Case No. 08-09-0009R is issued, then the revised base flood WSELs and SFHA boundary delineations must take into consideration the currently effective information. Therefore, please submit a hydraulic analysis and topographic work map, certified by a registered professional engineer, to analyze the effect of the base flood on Drake Channel from its confluence with C-1 Channel to its confluence with the East C-1 Levee, to delineate the SFHA along the flooding source.

  - If the LOMR that follows Case No. 08-09-0009R is issued before completion of the project for which this CLOMR is issued, the submitted hydraulic analysis must tie into the Drake Channel post-project conditions hydraulic analysis for the LOMR that follows Case No. 08-09-0009R.

After receiving appropriate documentation to show that the project has been completed, FEMA will initiate a revision to the FIRM.

The basis of this CLOMR is, in whole or in part, a channel-modification/culvert project. NFIP regulations, as cited in Paragraph 60.3(b)(7), require that communities assure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management regulations. Consequently, the ultimate responsibility for maintenance of the modified channel and culvert rests with your community.

This CLOMR is based on minimum floodplain management criteria established under the NFIP. Your community is responsible for approving all floodplain development and for ensuring all necessary permits required by Federal or State law have been received. State, county, and community officials, based on knowledge of local conditions and in the interest of safety, may set higher standards for construction in the SFHA. If the State, county, or community has adopted more restrictive or comprehensive floodplain management criteria, these criteria take precedence over the minimum NFIP criteria.

If you have any questions regarding floodplain management regulations for your community or the NFIP in general, please contact the Consultation Coordination Officer (CCO) for your community. Information on the CCO for your community may be obtained by calling the Director, Mitigation Division of FEMA in Oakland, California, at (510) 627-7175. If you have any questions regarding this CLOMR, please call our Map Assistance Center, toll free, at 1-877-FEMA MAP (1-877-336-2627).

Sincerely,

Craig S. Kennedy, CFM, Program Specialist
Engineering Management Branch
Mitigation Directorate

For: William R. Blanton Jr., CFM, Chief
Engineering Management Branch
Mitigation Directorate

Enclosures

cc: The Honorable James B. Gibson
Mayor, City of Henderson

Mr. Curt Chandler, P.E., CFM
Land Development Manager
Department of Public Works
City of Henderson

Mr. W. Layne Weber, P.E., CFM
Principal Engineer
Civil Engineering Division
Department of Development Services
Clark County

Mr. Kevin Eubanks, P.E., CFM
Assistant General Manager
Clark County Regional Flood Control District

Mr. Lance Olson, P.E.
Department of Public Works
City of Henderson

Mr. William E. Hunter, III, P.E.
Vice President
Flood Control Division
G.C. Wallace, Inc.

U.S. Department of Homeland Security
500 C Street, SW
Washington, DC 20472

FEMA

U.S. Department of Homeland Security
Washington, D.C. 20472

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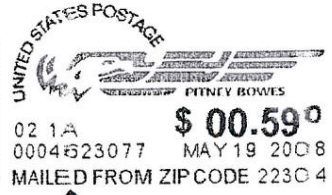
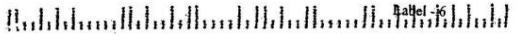
FEMA



RECEIVED
MAY 23 2008
G.C. WALLACE

Mr. William E. Hunter III, P.E.
Vice President
Flood Control Division
G.C. Wallace, Inc.
1555 South Rainbow Boulevard
Las Vegas, NV 89015

8914682903 C068



Federal Emergency Management Agency

Washington, D.C. 20472

MAY 16 2008

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

IN REPLY REFER TO:
Case No.: 08-09-0093R

The Honorable James B. Gibson
Mayor, City of Henderson
240 South Water Street
Henderson, NV 89015

Community: City of Henderson, NV
Community No.: 320005

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Dear Mayor Gibson:

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All data required to complete our review of this request for a Conditional Letter of Map Revision (CLOMR) were submitted with letters from Mr. Hunter.

Because this revision request also affects Clark County, a separate CLOMR for that community was issued on the same date as this CLOMR.

We reviewed the submitted data and the data used to prepare the effective FIRM for your community and determined that the proposed project meets the minimum floodplain management criteria of the NFIP. The submitted existing conditions HEC-RAS hydraulic computer models, dated September 14, 2007, and January 29, 2008, based on updated topographic information, were used as the base conditions model in our review of the proposed conditions model for this CLOMR request. We believe that, if the proposed project is constructed as shown on the plans entitled "Northeast C-1 Detention Basin," and as described in the report entitled "Northeast C-1 Detention Basin Conditional Letter of Map Revision (CLOMR)," both prepared by G.C. Wallace, Inc., dated October 2007, and the data listed below are received, a revision to the FIRM would be warranted.

As a result of the proposed project, the base (1-percent-annual-chance) flood along Tributary 1, from just upstream of C-1 Channel to approximately 3,400 feet upstream of Drake Channel, will be intercepted and diverted into the proposed channel located approximately 10,200 feet upstream of Magic Way to approximately 2,200 feet upstream, the proposed Northeast C-1 Detention Basin located at the outlet of the proposed channel to approximately 1,800 feet upstream of Magic Way, and the proposed RCB located at the outlet of the detention basin to just upstream of C-1 Channel. The proposed channel, detention basin, and RCB will contain the base flood along Tributary 1. The proposed confluence of Tributary 2 with

Tributary 1 will be located approximately 3,600 feet downstream of the existing confluence. The effective Special Flood Hazard Area (SFHA), the area that would be inundated by the base flood, designated Zone A, with no Base Flood Elevations (BFEs) determined, along the effective flow path of Tributary 1 will be removed and the area will be redesignated as Zone X (shaded), an area subject to alluvial fan flooding outside of the SFHA, from just upstream of the C-1 Channel to approximately 3,400 feet upstream of Drake Channel.

The above-referenced changes that occur in your community include those along Tributary 1 from just upstream of C-1 Channel to approximately 10,200 feet upstream of Magic Way, and those along Tributary 2 from just upstream to approximately 2,500 feet upstream of the proposed confluence with Tributary 1 and from approximately 6,200 feet upstream to 6,500 feet upstream of the proposed confluence with Tributary 1.

In addition, as a result of the updated topographic information and proposed project, the width of the SFHA will decrease compared to the effective SFHA width along Tributary 1 from approximately 3,400 feet upstream to approximately 5,000 feet upstream of Drake Channel. The maximum decrease in SFHA width, approximately 200 feet, will occur approximately 4,200 feet upstream of Drake Channel. Also, the width of the SFHA will decrease compared to the effective SFHA width along Tributary 2 from approximately 3,300 feet upstream to approximately 3,400 feet upstream of the existing confluence with Tributary 1. The maximum decrease in SFHA width, approximately 100 feet, will occur approximately 3,300 feet upstream of the existing confluence with Tributary 1.

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After receiving appropriate documentation to show that the project has been completed, FEMA will initiate a revision to the FIRM.

The basis of this CLOMR is, in whole or in part, a channel-modification/culvert project. NFIP regulations, as cited in Paragraph 60.3(b)(7), require that communities assure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management regulations. Consequently, the ultimate responsibility for maintenance of the modified channel and culvert rests with your community.

This CLOMR is based on minimum floodplain management criteria established under the NFIP. Your community is responsible for approving all floodplain development and for ensuring all necessary permits required by Federal or State law have been received. State, county, and community officials, based on

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Sincerely,

Craig S. Kennedy, CFM, Program Specialist
Engineering Management Branch
Mitigation Directorate

For: William R. Blanton Jr., CFM, Chief
Engineering Management Branch
Mitigation Directorate

Enclosures

cc: The Honorable Rory Reid
Chair, Clark County
Board of Commissioners

Mr. Curt Chandler, P.E., CFM
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Department of Public Works
City of Henderson

Mr. William E. Hunter, III, P.E.
Vice President
Flood Control Division
G.C. Wallace, Inc.

APPENDIX

TABLE OF CONTENTS

1. **FEMA FORMS**
   - MT-2 Form 1: Overview & Concurrence Form (City of Henderson)
   - MT-2 Form 1: Overview & Concurrence Form (Clark County)

2. **FIGURES**
   - Figure 1: Vicinity Map
   - Figure 2: Location Map
   - Figure 3: Effective FIRM
   - Figure 4: Proposed FIRM Revisions
   - Figure 5: Annotated FIRM

3. **DESIGN DRAWINGS**
   - Northeast C1 Detention Basin

4. **ELECTRONIC FILES**
   - Figure 4: Proposed FIRM Revisions
   - Figure 5: Annotated FIRM

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

OVERVIEW & CONCURRENCE FORM

O.M.B No. 1660-0016
Expires: 12/31/2010

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, U.S. Department of Homeland Security, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (1660-0016). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

A. REQUESTED RESPONSE FROM DHS-FEMA

This request is for a (check one):

☐ CLOMR: A letter from DHS-FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60, 65 & 72).

☒ LOMR: A letter from DHS-FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See 44 CFR Ch. 1, Parts 60, 65 & 72)

B. OVERVIEW

1. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Ex: 480301 480287	City of Katy Harris County	TX TX	480301 48201C	0005D 0220G	02/08/83 09/28/90
320005	City of Henderson, Clark County, Nevada	NV	32003C	2620E	11/6/03
320005	City of Henderson, Clark County, Nevada	NV	32003C	2615E	1/16/04

2. a. Flooding Source: Unnamed Wash

b. Types of Flooding: ☒ Riverine ☐ Coastal ☐ Shallow Flooding (e.g., Zones AO and AH)
☐ Alluvial fan ☐ Lakes ☐ Other (Attach Description)

3. Project Name/Identifier: Northeast C1 Detention Basin

4. FEMA zone designations affected: A (choices: A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)

5. Basis for Request and Type of Revision:

a. The basis for this revision request is (check all that apply)

☒ Physical Change ☐ Improved Methodology/Data ☐ Regulatory Floodway Revision ☐ Base Map Changes
☐ Coastal Analysis ☐ Hydraulic Analysis ☐ Hydrologic Analysis ☐ Corrections
☐ Weir-Dam Changes ☐ Levee Certification ☐ Alluvial Fan Analysis ☐ Natural Changes
☐ New Topographic Data ☐ Other (Attach Description)

Note: A photograph and narrative description of the area of concern is not required, but is very helpful during review.

b. The area of revision encompasses the following structures (check all that apply)

Structures: ☒ Channelization ☒ Levee/Floodwall ☐ Bridge/Culvert
☒ Dam ☐ Fill ☒ Other (Attach Description) Storm Drain

C. REVIEW FEE

Has the review fee for the appropriate request category been included? ☒ Yes Fee amount: $5,000

☐ No, Attach Explanation

Please see the DHS-FEMA Web site at http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm **for Fee Amounts and Exemptions.**

D. SIGNATURE

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: Jerry Pruitt	Company: G.C. Wallace Companies	
Mailing Address: 1555 South Rainbow Boulevard Las Vegas, NV 89146	Daytime Telephone No.: (702) 804-200	Fax No.: (702) 804-2299
	E-Mail Address: jpruitt@gcwallace.com	
Signature of Requester (required): Jerry Pruitt	Date: 4-14-10	

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirement that no fill be placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.

Community Official's Name and Title: Albert Jankowiak	Community Name: City of Henderson	
Mailing Address: 240 Water Street P.O. Box 95050 Henderson, NV 89009-5050	Daytime Telephone No.: (702) 267-3024	Fax No.: (702) 267-3002
	E-Mail Address: AlbertJankowiak@cityofhenderson.com	
Community Official's Signature (required): Albert J. Jankowiak	Date: 4-15-2010	

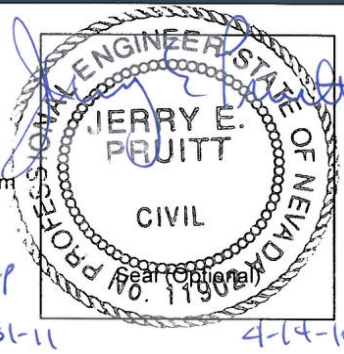
CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms Instructions. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: Jerry Pruitt	License No.:	Expiration Date:
Company Name: G.C. Wallace Companies	Telephone No.: (702) 804-200	Fax No.: (702) 804-2299
Signature: Jerry Pruitt		Date: 4-14-10

Ensure the forms that are appropriate to your revision request are included in your submittal.

Form Name and (Number)	Required if ...
☐ Riverine Hydrology and Hydraulics Form (Form 2)	New or revised discharges or water-surface elevations
☐ Riverine Structures Form (Form 3)	Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam
☐ Coastal Analysis Form (Form 4)	New or revised coastal elevations
☐ Coastal Structures Form (Form 5)	Addition/revision of coastal structure
☐ Alluvial Fan Flooding Form (Form 6)	Flood control measures on alluvial fans



Exp 12-31-11

4-14-10

U.S. DEPARTMENT OF HOMELAND SECURITY - FEDERAL EMERGENCY MANAGEMENT AGENCY

OVERVIEW & CONCURRENCE FORM

O.M.B No. 1660-0016
Expires: 12/31/2010

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2. a. Flooding Source: Unnamed Wash

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☐ Alluvial fan ☐ Lakes ☐ Other (Attach Description)

3. Project Name/Identifier: Northeast C1 Detention Basin

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☐ Weir-Dam Changes ☐ Levee Certification ☐ Alluvial Fan Analysis ☐ Natural Changes
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☒ Dam ☐ Fill ☒ Other (Attach Description) Storm Drain

C. REVIEW FEE

Has the review fee for the appropriate request category been included? ☒ Yes Fee amount: $5,000

☐ No, Attach Explanation

Please see the DHS-FEMA Web site at http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm **for Fee Amounts and Exemptions.**

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All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: Jerry Pruitt	Company: G.C. Wallace Companies	
Mailing Address: 1555 South Rainbow Boulevard Las Vegas, NV 89146	Daytime Telephone No.: (702) 804-200	Fax No.: (702) 804-2299
	E-Mail Address: jpruitt@gcwallace.com	
Signature of Requester (required): Jerry Pruitt	Date: 4-14-10	

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Community Official's Name and Title: Layne Weber, PE, CFM	Community Name: Clark County, Nevada	
Mailing Address: 500 S. Grand Central Parkway Las Vegas, NV 89155	Daytime Telephone No.: (702) 455-4856	Fax No.: (702) 380-7250
	E-Mail Address: wlweber@co.clark.nv.us	
Community Official's Signature (required): W Layne Weber	Date: 23 April 2010	

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information data, hydrologic and hydraulic analysis, and any other supporting information as per NFIP regulations paragraph 65.2(b) and as described in the MT-2 Forms Instructions. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: Jerry Pruitt	License No.:	Expiration Date:
Company Name: G.C. Wallace Companies	Telephone No.: (702) 804-200	Fax No.: (702) 804-2299
Signature: Jerry Pruitt		Date: 4-14-10

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☐ Riverine Structures Form (Form 3)	Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam
☐ Coastal Analysis Form (Form 4)	New or revised coastal elevations
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☐ Alluvial Fan Flooding Form (Form 6)	Flood control measures on alluvial fans

PROFESSIONAL ENGINEER-STATE OF NEVADA
JERRY E. PRUITT
CIVIL
No. 11902
Seal (Optional)
Exp 12-31-11
4-14-10

FEDERAL EMERGENCY MANAGEMENT AGENCY

PAYMENT INFORMATION FORM

Community Name: 320005 - City of Henderson, Clark County, Nevada

Project Identifier: Northeast C1 Detention Basin

THIS FORM MUST BE MAILED, ALONG WITH THE APPROPRIATE FEE, TO THE ADDRESS BELOW OR FAXED TO THE FAX NUMBER BELOW.

Type of Request:

☐ MT-1 application
☒ MT-2 application

FEMA
Fee Charge System Administrator
6730 Santa Barbara Court
Elkridge, MD 21075

☐ EDR application

FEMA Project Library
847 South Pickett St.
Alexandria, VA 22304
FAX (703) 212-4090

Request No.: _____ (if known)

Amount: 5,000

☐ INITIAL FEE* ☐ FINAL FEE ☐ FEE BALANCE** ☐ MASTER CARD ☐ VISA ☒ CHECK ☐ MONEY ORDER

*Note: Check only for EDR and/or Alluvial Fan requests (as appropriate).

**Note: Check only if submitting a corrected fee for an ongoing request.

COMPLETE THIS SECTION ONLY IF PAYING BY CREDIT CARD

CARD NUMBER

				—				—				—			
1	2	3	4		5	6	7	8	9	10	11	12	13	14	15	16

EXP. DATE

		—	
Month			Year

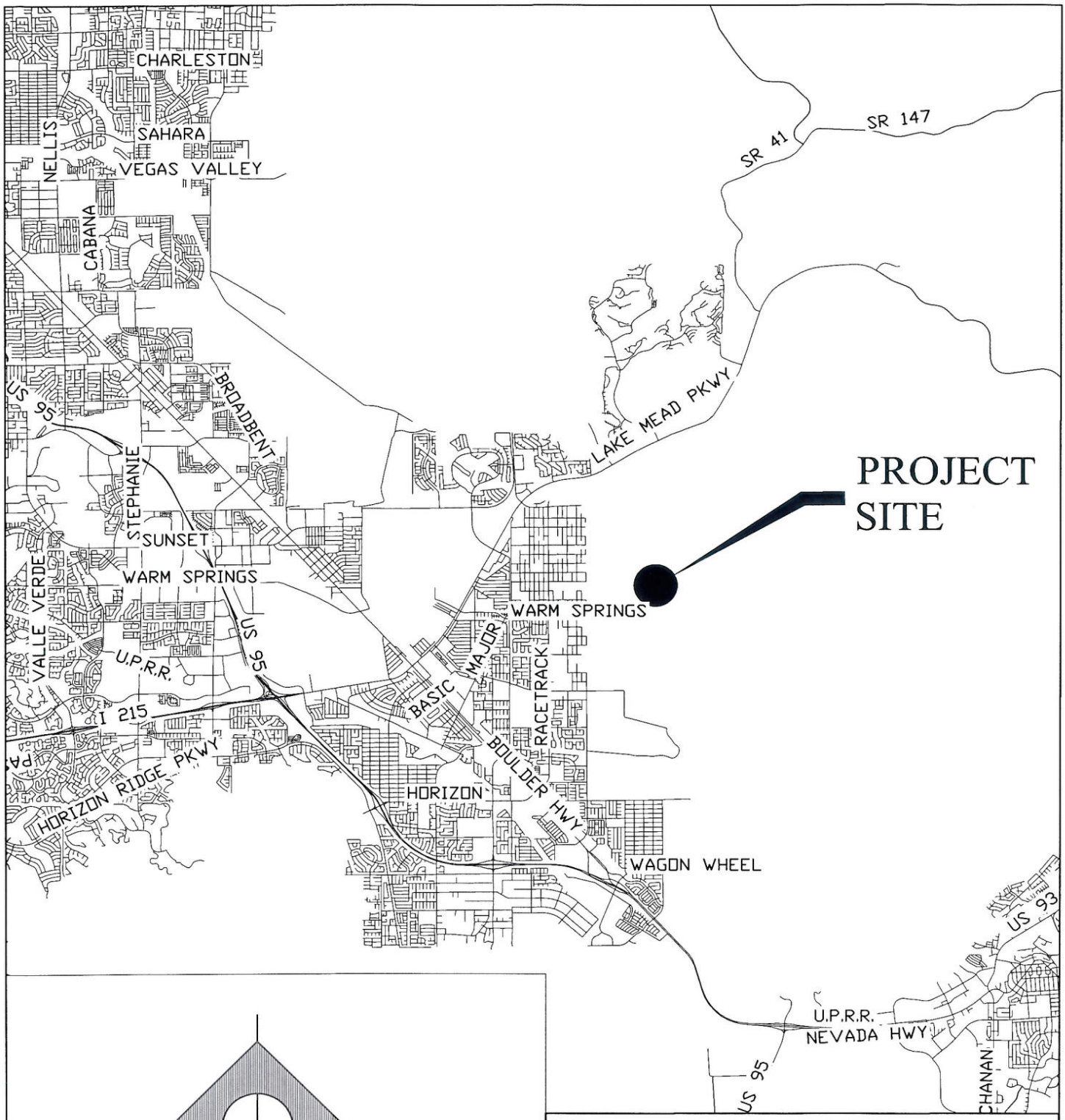
_____ _____

Date Signature

NAME *(AS IT APPEARS ON CARD)*: _____
(please print or type)

ADDRESS: _____
(for your credit card receipt-please print or type) _____

DAYTIME PHONE: _____



NORTHEAST C-1
DETENTION BASIN LOMR

FIGURE 1

VICINITY MAP

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

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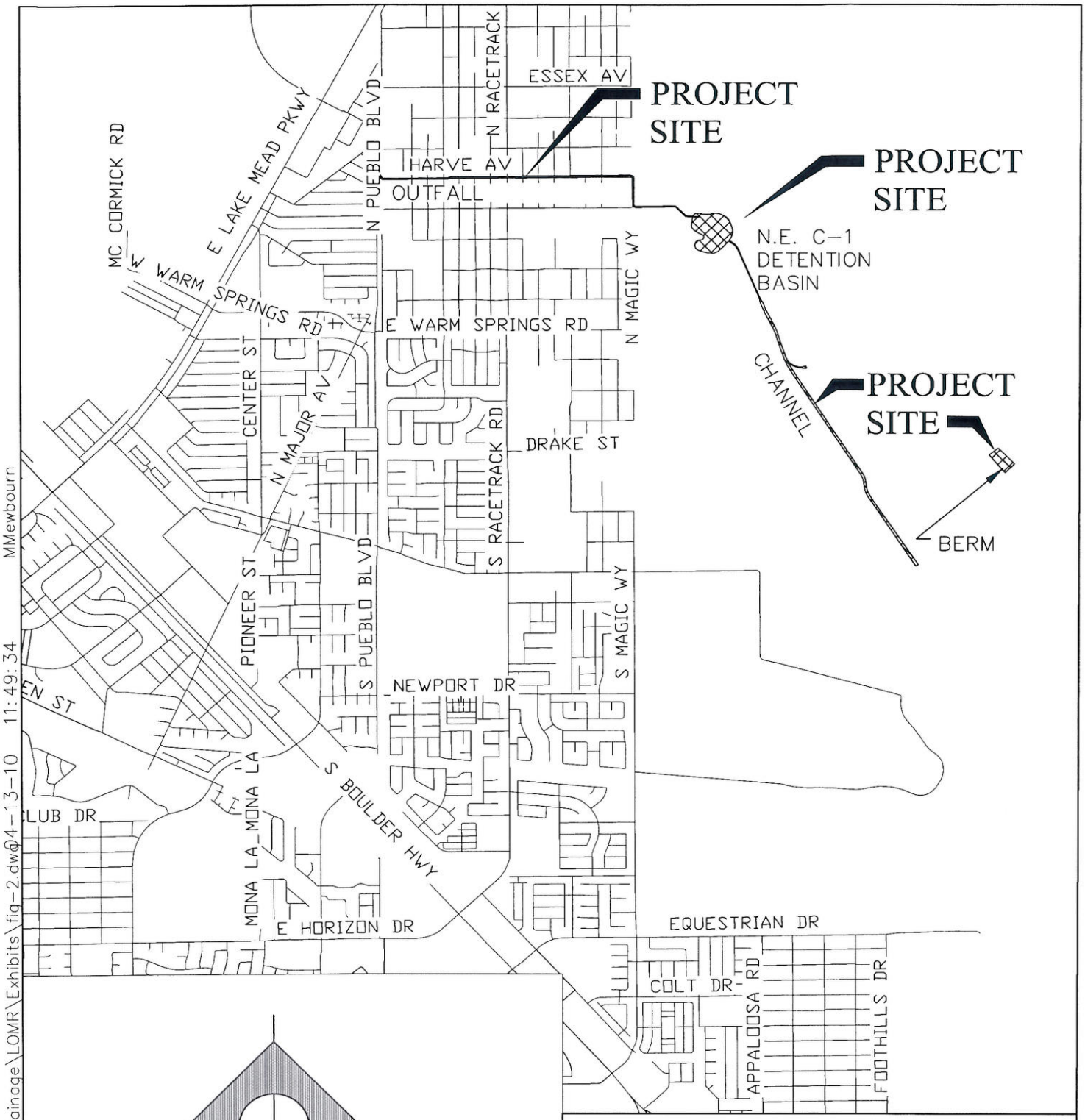

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NORTHEAST C-1
DETENTION BASIN LOMR

FIGURE 2

LOCATION MAP

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

F:\Projects\500\504-4\24\Drainage\LOMR\Exhibits\fig-03.dwg gcw1117.dwg,061215.jov
04-13-10 12:24:59
Marjorie Mewbourn

PROJECT SITE

PROJECT SITE

PROJECT SITE

PROJECT SITE

N.E. C-1 DETENTION BASIN

REVISED AREA (CASE # 03-09-0270P)

NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCAT
WITHIN TOWNSHIP 22 SOUTH, RANGE 63 1/2 EAST
AND TOWNSHIP 22 SOUTH, RANGE 64 EAST.

NOTE: THIS AREA SUBJECT TO ALLUVIAL FAN FLOODING.

NOTE: THIS AREA SUBJECT TO ALLUVIAL FAN FLOODING.

CITY OF HENDERSON
320005

CITY OF HENDERSON
CLARK COUNTY

BERM

CHANNEL

Drake Channel

East C-1 Detention Basin

1% ANNUAL CHANCE FLOOD DISCHARGE CONTAINED IN CHANNEL

C-1 Channel

ZONE A

ZONE X

REVISED AREA

PANEL 2620E

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY,
NEVADA
AND INCORPORATED AREAS

PANEL 2620 OF 4090
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CLARK COUNTY, UNINCORPORATED AREAS	320033	2620	E
HENDERSON, CITY OF	320035	2620	E
BOULDER CITY, CITY OF	320004	2620	E

REVISED TO REFLECT LOMR DATED NOV 06 2003

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
32003C2620E

MAP REVISED:
SEPTEMBER 27, 2002

Federal Emergency Management Agency

PANEL 2615E

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY,
NEVADA
AND INCORPORATED AREAS

PANEL 2615 OF 4090
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HENDERSON, CITY OF	320005	2615	E
CLARK COUNTY, UNINCORPORATED AREAS	320033	2615	E

REVISED TO REFLECT LOMR DATED JAN 16 2004

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
32003C2615E

MAP REVISED:
SEPTEMBER 27, 2002

Federal Emergency Management Agency

GRAPHIC SCALE

1500 0 750 1500

(IN FEET)

1 inch = 1500 ft.

NORTH

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN LOMR

FIGURE 3
EFFECTIVE FIRM MAP

SHEET
FIG 3
OF 0 SHTS

HAVRE

ITHACA

1% ANNUAL CHANCE FLOOD DISCHARGE CONTAINED IN STORM DRAIN

ZONE A

NE C-1 DETENTION BASIN

1% ANNUAL CHANCE FLOOD DISCHARGE CONTAINED IN CHANNEL

ZONE A

SFHA ZONE A TO BE REMOVED

WARM SPRINGS

PUBLIC

NOTE: THIS AREA SUBJECT TO ALLUVIAL FAN FLOODING.

1% ANNUAL CHANCE FLOOD DISCHARGE CONTAINED IN CHANNEL

SFHA ZONE A TO BE REMOVED

REDESIGNATED AS SHADED ZONE X

ZONE A

DRAKE CHANNEL

DRAKE

SFHA ZONE A TO BE REMOVED

REDESIGNATED AS ZONE X

CITY OF HENDERSON

CLARK COUNTY

ZONE A

SFHA ZONE A TO BE REMOVED

MAGIC WY

ZONE A

BURKHOLDER BLVD

PRICETRACK RD

LEVEE

ZONE A

NOTE: THIS AREA SUBJECT TO ALLUVIAL FAN FLOODING.

ZONE A

EAST C-1 DETENTION BASIN

GRAPHIC SCALE

1500 0 750 1500

(IN FEET)

1 inch = 1500 ft.

NORTH

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN LOMR

FIGURE 4
PROPOSED F.I.R.M REVISIONS

SHEET

FIG-4

SHT OF 0 SHTS

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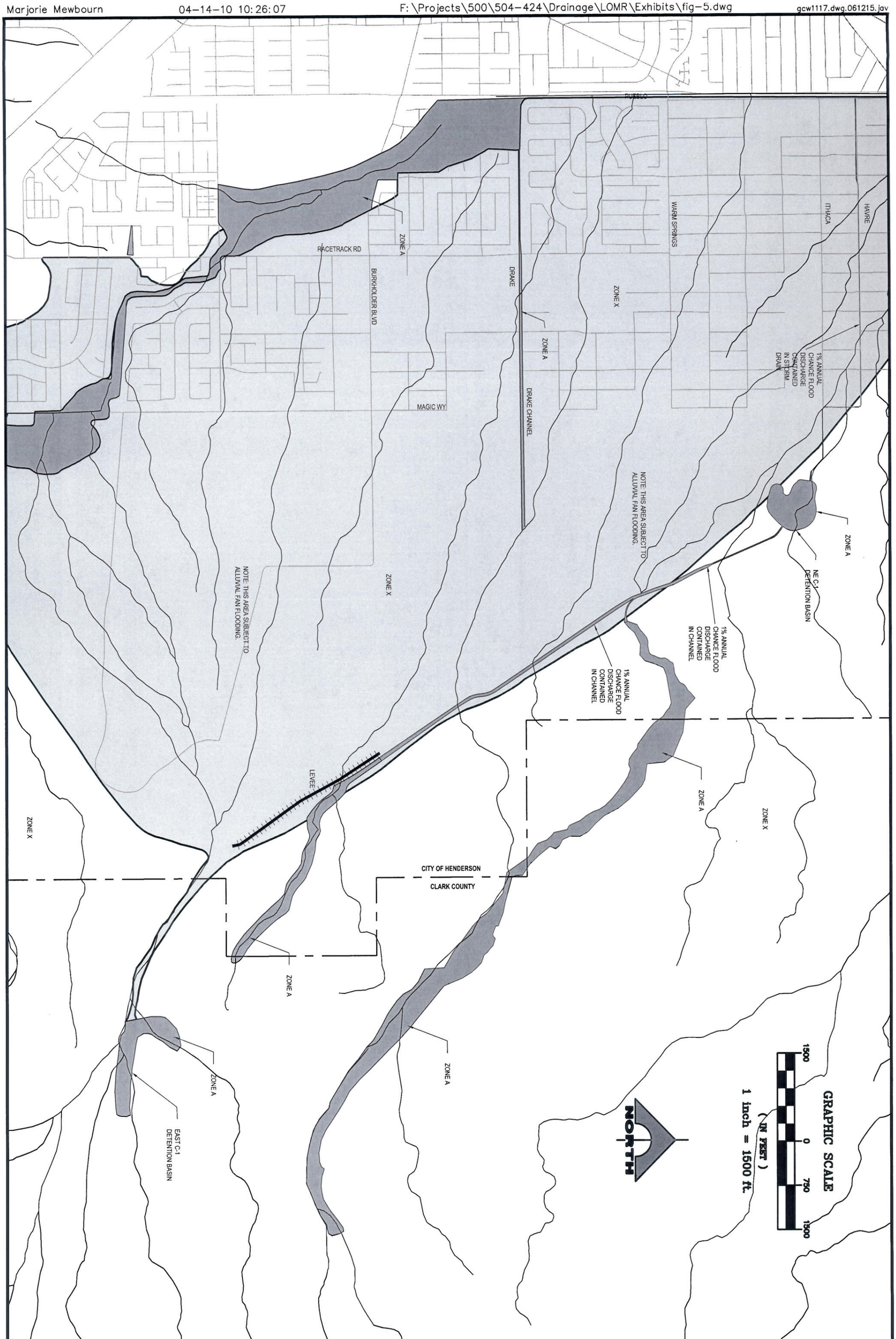


CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN LOMR

FIGURE 5
ANNOTATED F.I.R.M MAP

SHEET FIG-5 SHTOF 0 SHTS

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

NORTHEAST C-1 DETENTION BASIN

CONTRACT NO. 131-08-FC-015-004

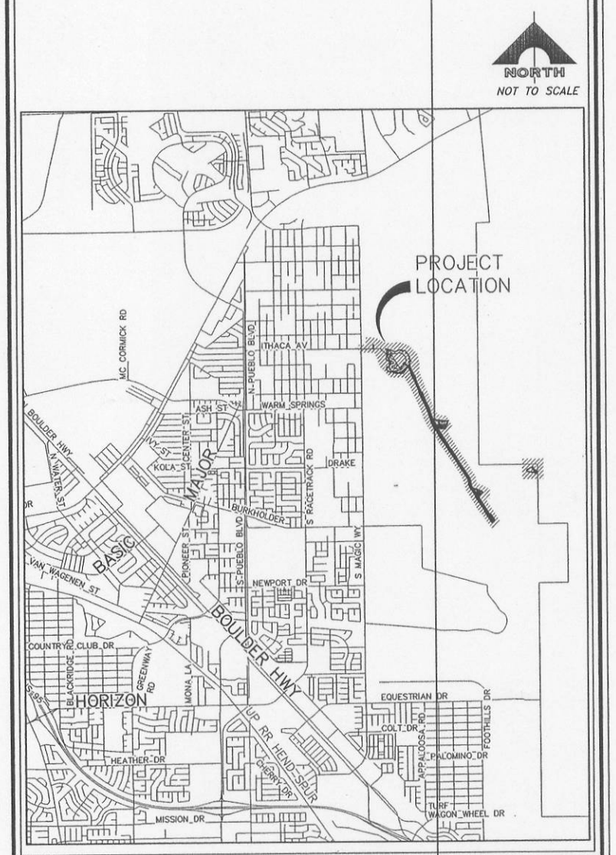
VOLUME 1

PWP-CL-2008-225

FUNDED BY:

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

LOCATION MAP



REVISIONS

No.	DESCRIPTION	BY	DATE	APPROVAL

CITY OF HENDERSON

CLARK COUNTY, NEVADA

DEPARTMENT OF PUBLIC WORKS

MAYOR
JAMES B. GIBSON

CITY COUNCIL
ANDY A. HAFEN
JACK K. CLARK
STEVEN D. KIRK
GERRI SCHRODER

CITY MANAGER
MARY KAY PECK

DIRECTOR OF PUBLIC WORKS
ROBERT MURNANE

THE AFFIXED EMBARQ APPROVAL DOES NOT ASSUME OR GUARANTEE LIABILITY FOR KNOWN OR UNKNOWN CONFLICTS WITH EXISTING OR PROPOSED IMPROVEMENTS. RESOLUTION OF ANY CONFLICT WILL BE ACCOMPLISHED PURSUANT TO LOCAL ORDINANCES, NEVADA REVISED STATUTES AND/OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

NEVADA POWER COMPANY ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. NEVADA POWER COMPANY RESERVES THE RIGHT TO ADDRESS ANY EXISTING OR FUTURE CONFLICTS ONCE THE FINAL DESIGN IS COMPLETED. THE NEW SERVICE AND THE RESOLUTION OF ANY CONFLICTS WILL BE ACCOMPLISHED PURSUANT TO THE NEVADA PUBLIC UTILITY COMMISSION'S RULES AND REGULATIONS.

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8853 3/10/08

INDEX OF SHEETS

No.	DESCRIPTION
G-1	COVER SHEET, LOCATION MAP, & INDEX OF SHEETS
G-2	KEY MAP
G-3	GENERAL & CONSTRUCTION NOTES, LEGEND & ABBREVIATIONS, BENCHMARK, BASIS OF BEARINGS
G-4	SURVEY CONTROL PLAN 1
G-5	SURVEY CONTROL PLAN 2
G-6	HORIZONTAL CONTROL PLAN 1
G-7	HORIZONTAL CONTROL PLAN 2
G-8	WATERSHED BOUNDARY MAP
G-9	CAPACITY CURVES & HYDROLOGIC INFORMATION
C-1	DETENTION BASIN GRADING PLAN – NORTH HALF
C-2	DETENTION BASIN GRADING PLAN – SOUTH HALF
C-3	BERM GRADING PLAN
C-4	GRADING ENLARGEMENT
C-5	GRADING ENLARGEMENT
C-6	CHANNEL PLAN & PROFILE STA. 10+00.00 TO 23+00.00
C-7	CHANNEL PLAN & PROFILE STA. 23+00.00 TO 36+00.00
C-8	CHANNEL PLAN & PROFILE STA. 36+00.00 TO 49+00.00
C-9	CHANNEL PLAN & PROFILE STA. 49+00.00 TO 62+00.00
C-10	CHANNEL PLAN & PROFILE STA. 62+00.00 TO 75+00.00
C-11	CHANNEL PLAN & PROFILE STA. 75+00.00 TO 88+00.00
C-12	CHANNEL PLAN & PROFILE STA. 88+00.00 TO 93+00.00
C-13	OUTFALL PLAN & PROFILE STA. 12+00.00 TO 24+50.00
C-14	DETENTION BASIN CROSS SECTION PLAN VIEW
C-15	DETENTION BASIN CROSS SECTIONS
C-16	ACCESS ROAD PROFILE STA 8+46.96 TO STA 29+73.05
C-17	DETENTION BASIN BERM CROSS SECTIONS
C-18	DETENTION BASIN ENLARGED RIPRAP AREAS, SECTIONS AND DETAILS
C-18A	DETENTION BASIN ENLARGED RCC STEPPED AREAS, SECTIONS AND DETAILS
C-19	ACCESS ROAD AND OUTFALL STRUCTURE ENLARGEMENT
C-20	COLLECTION CHANNEL PROFILES
C-21	CHANNEL AND BERM SECTIONS
C-22	FLOOD CONTROL DISTRICT MONITORING STATION & DETAILS
C-23	FLOOD CONTROL DISTRICT MONITORING STATION & DETAILS
C-24	INFLOW STRUCTURE DETAILS
C-25	FENCING DETAILS
C-26	COLLECTION CHANNEL TRANSITIONAL SECTIONS AND DEPTH GAUGE DETAIL
C-27	COLLECTION CHANNEL BERM SECTION AND LOW FLOW PROFILES
C-28	SNWA BLOW OFF PLAN AND PROFILE
C-29	12" DIP BLOW OFF PLAN AND PROFILE
C-30	MISCELLANEOUS DETAILS
C-31	STOCKPILE
S-1	CHANNEL NOTES AND TYPICAL DETAILS
S-2	CHANNEL TYPICAL PLANS AND SECTIONS
S-3	RECTANGULAR CHANNEL ACCESS RAMP DETAILS AND STEP DETAIL
S-4	TRAPEZOIDAL CHANNEL ACCESS RAMP DETAILS AND PIPE INLET DETAILS
S-5	CHANNEL TRANSITION TRAPEZOIDAL TO RECTANGULAR AND CUT-OFF WALL DETAILS
S-6	CHANNEL TRANSITION RECTANGULAR TO TRAPEZOIDAL
S-7	CHANNEL TRANSITION RECTANGULAR TO TRAPEZOIDAL
S-8	BOX-BRIDGE STRUCTURE AND DEBRIS BASIN
S-9	INFLOW STRUCTURE DETAILS
S-10	OUTLET STRUCTURE DETAILS
S-11	NORTH AND SOUTH COLLECTION CHANNEL TRANSITIONS

APPROVAL

TITLE	APPROVED	DATE
DIRECTOR OF PUBLIC WORKS		8/11/08
FLOOD CONTROL COORDINATOR	Stephen Classmeo	8/6/08
ENGINEERING SERVICES MANAGER	Donna Dawson	8/11/08
SURVEY	Robert A Campbell	8/6/08
RIGHT OF WAY	Robert A Campbell	8/6/08
NEW DEVELOPMENT	Shawn V. Salazar P.E.	8/11/08
CITY TRAFFIC ENGINEER	Mark Goodart for JT	8/11/08

AGENCY APPROVAL

AGENCY	NO SERVICE	REVIEWED BY	DATE
NEVADA POWER CO. – DISTRIBUTION			3/10/08
NEVADA POWER CO. – TRANSMISSION		Lisa Hayes	3/10/08
EMBARQ			3-11-08
SOUTHWEST GAS CORP.			3/10/08
COX COMMUNICATION LAS VEGAS, INC.		T Bethstein	3/11/08
SOUTHERN NEVADA WATER AUTHORITY		Valerie A Schauble	4/1/08

SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

APPROVAL

for

GALE Wm. FRASER, II. P.E.
CHIEF ENGINEER/GENERAL MANAGER
CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

NORTHEAST C-1 DETENTION BASIN
CONTRACT NO. 131-08-FC-015-004
VOLUME 1
PWP-CL-2008-225

PROJECT No. 504.424

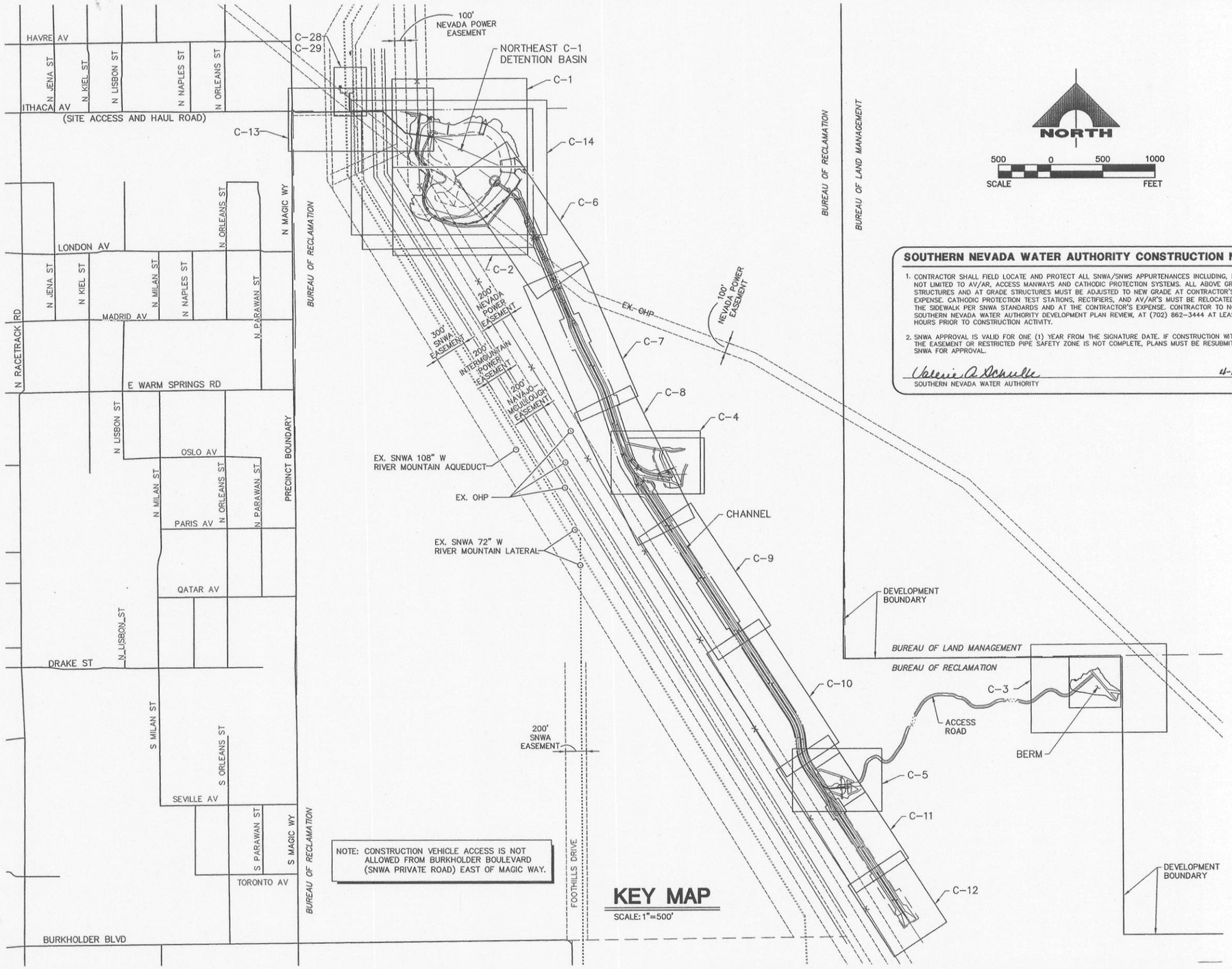
DATE : MARCH 07, 2008

DRAWING No.
G-1

SHEET No. 1

07380

F:\504-424\dwg\Hydro\improv\NEDB_G02.dwg 03-26-08 11:08:17 RBlanchard



SOUTHERN NEVADA WATER AUTHORITY CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL SNWA/SNWS APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS AND CATHODIC PROTECTION SYSTEMS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. CATHODIC PROTECTION TEST STATIONS, RECTIFIERS, AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER SNWA STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY SOUTHERN NEVADA WATER AUTHORITY DEVELOPMENT PLAN REVIEW, AT (702) 862-3444 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
2. SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

Valerie A Schulte — 4-1-08
SOUTHERN NEVADA WATER AUTHORITY — DATE

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
KEY MAP

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA — WILLIAM E. HUNTER III — Exp. 06/30/2009 — CIVIL — No. 8833 — 7/24/08

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1" = 500'
VERT: NONE
FIELD BOOK

DRAWING NO. G-2
SHT. OF

07380

LEGEND & ABBREVIATIONS

LEGEND

(00.0) / INV	EXIST. ELEVATION
00.0 / INV	PROPOSED ELEVATION
(2356.1)	EXIST. SPOT ELEVATION
	PROPERTY OR RIGHT-OF-WAY LINE
	CENTERLINE
	GRADE BREAK
	HYDRAULIC GRADE LINE (HGL)
	EASEMENT
-T-	EXISTING TELEPHONE CABLE
	EXISTING POWER POLES
-SS-	EXISTING SANITARY SEWER LINE
-SS-	PROPOSED SANITARY SEWER LINE
-W-	EXISTING WATER LINE
-W-	PROPOSED WATER LINE
-G-	EXISTING GAS LINE
-UGE-	EXISTING UNDERGROUND POWER
-OHP-	EXISTING OVERHEAD POWER
-SD-	EXISTING STORM DRAIN
CHANNEL/BOX	PROPOSED RECTANGULAR CHANNEL/BOX
	PROPOSED TRAPEZOIDAL CHANNEL
-SD-	PROPOSED STORM DRAIN
	PROPOSED BLOCK AND CHAIN FENCE
	PROPOSED POST AND CABLE FENCE
	PROPOSED DRAINAGE SWALE
1875	EXISTING CONTOUR

LEGEND

	SAWCUT LINE
	EXISTING MANHOLE
	PROPOSED MANHOLE
	EXISTING FIRE HYDRANT
	EXISTING VALVE
	PROPOSED VALVE
	PROPOSED DROP INLET
00	COORDINATE KEYNOTE
	TEMPORARY CONSTRUCTION EASEMENT
	EXISTING RAILROAD TRACKS
	FLOW DIRECTION
	PROPOSED SCARP
	BUREAU OF RECLAMATION BOUNDARY
	RIPRAP
	TYPE II
	PORTLAND CEMENT CONCRETE (PCC)
	ROLLER COMPACTED CONCRETE (RCC)
	CHANNEL IDENTIFIER AND WARNING SIGNS ON PROPOSED CHAIN-LINK FENCE, SEE 3/C-25 AND 4/C-25
	WARNING SIGN ON POST, SEE 8/C-25

ABBREVIATIONS

AA = ALDYL-A PIPE
AC = ASPHALTIC CONCRETE
ACP = ASBESTOS CEMENT PIPE
ALCAP = ALUMINUM CAP
ASSY = ASSEMBLY
AVAR = AIR VACUUM AIR RELIEF (VALVE)
AWWA = AMERICAN WATER WORKS ASSOCIATION
BC = BACK OF CURB
BCR = BEGIN CURB RETURN
BM = BENCHMARK
BW = BACK OF WALK
CATV = CABLE TELEVISION
CCWRD = CLARK COUNTY WATER RECLAMATION DISTRICT
CL/C = CENTERLINE
CLSM = CONTROLLED LOW STRENGTH MATERIAL
CML&C = CONCRETE MORTAR LINED AND COATED
CMP = CORRUGATED METAL PIPE
CMU = CONCRETE MASONARY UNIT
COH = CITY OF HENDERSON
CONC. = CONCRETE
D = DEPTH
DI = DROP INLET
DIP = DUCTILE IRON PIPE
DR = DRIVE OR DRAIN
EA. = EACH
EFF = EFFLUENT
EGL = ENERGY GRADE LINE
ELEV./ EL = ELEVATION
EP = EDGE OF PAVEMENT
ERW = EFFLUENT REUSE WATER
EXIST./ EX = EXISTING
FF = FINISH FLOOR
FG = FINISH GRADE
FL = FLOW LINE
FO = FIBER OPTIC CABLE
FS = FINISH SURFACE
FUT = FUTURE
G = GAS
GALV. = GALVANIZED

ABBREVIATIONS (CONTINUED)

GB = GRADE BREAK
GIS = GEOGRAPHIC INFORMATION SYSTEM
HERCP = HORIZONTAL ELLIPTICAL REINFORCED CONCRETE PIPE
HGL = HYDRAULIC GRADE LINE
HP = HIGH POINT
HPG = HIGH PRESSURE GAS
HSS = HOLLOW STRUCTURAL SECTIONS
I.D. = INSIDE DIAMETER
INV = INVERT
L = LENGTH
L / LT = LEFT OF
LF = LINEAR FEET
LP = LOW POINT
LVVWD = LAS VEGAS VALLEY WATER DISTRICT
NAVD = NORTH AMERICAN VERTICAL DATUM
NDOT = NEVADA DEPARTMENT OF TRANSPORTATION
NG = NATURAL GRADE
NO. = NUMBER
NPC = NEVADA POWER COMPANY
OCS = ORIGIN OF CONICAL SURFACE
OHP = OVERHEAD POWER
OPP. = OPPOSITE
O.R. = OFFICIAL RECORDS
PBS = PLANTMIX BITUMINOUS SURFACE
PLS = PROFESSIONAL LAND SURVEYOR
PPCBR = PORTABLE PRECAST BARRIER RAIL
PC = POINT OF CURVE
PCC = POINT OF COMPOUND CURVE
PRC = POINT REVERSE CURVE
PROP = PROPOSED
PT = POINT OF TANGENT
PVC = POLYVINYL CHLORIDE PIPE
Q_{100} = 100 YEAR ULTIMATE CONDITION DESIGN FLOW
(R) = RADIAL
R / RT = RIGHT OF
RCB = REINFORCED CONCRETE BOX
RCC = ROLLER COMPACTED CONCRETE
RCP = REINFORCED CONCRETE PIPE

ABBREVIATIONS (CONTINUED)

RGRCP = RUBBER GASKET REINFORCED CONCRETE PIPE
RR = RAILROAD
R/W = RIGHT-OF-WAY
SD = STORM DRAIN
SDMH = STORM DRAIN MANHOLE
SIM = SIMILAR
SNWA = SOUTHERN NEVADA WATER AUTHORITY
SS = SANITARY SEWER
SSMH = SANITARY SEWER MANHOLE
STA = STATION
STD.DWG.NO. = STANDARD DRAWING NUMBER
STL = STEEL
SW = SIDEWALK
SWG = SOUTHWEST GAS CORPORATION
T&B = TOP AND BOTTOM
TC = TOP OF BACK OF CURB
TEL = TELEPHONE
T/THK = THICK
TMH = TOP OF MANHOLE
TOE = TOE OF CHANNEL
TOP = TOP OF CHANNEL
TRANS = TRANSITION
TW = TOP OF WALL
UDACS = UNIFORM DESIGN AND CONSTRUCTION STANDARDS
USD = CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS
USGLO = UNITED STATES GENERAL LAND OFFICE
UNO = UNLESS NOTED OTHERWISE
U.S. = UNITED STATES
VAR. = VARIES
V.C. = VERTICAL CURVE
VCP = VITRIFIED CLAY PIPE
W = WATER
W/ = WITH
WP = WORKING POINT
WWF = WELDED WIRE FABRIC

CONSTRUCTION NOTES

1. CONSTRUCT ROLLER COMPACTED CONCRETE PAVEMENT. WIDTH VARIES, (SIMILAR TO 8/C-21)
2. NOT USED.
3. CONSTRUCT TYPE II AGGREGATE BASE. (SIMILAR TO 7/C-21)
4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
5. CONSTRUCT PORTLAND CEMENT CONCRETE SPILLWAY WEIR. (SEE DETAIL 4/S-10)
6. CONSTRUCT 15' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 7/C-21)
7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
8. CONSTRUCT 24' WIDE TYPE II ACCESS ROAD. (SIMILAR TO 7/C-21)
9. CONSTRUCT RIPRAP PER PLAN.
10. CONSTRUCT CONCRETE CHANNEL.
11. INSTALL CONDUIT AND PULL BOX. (SEE DETAIL 3/C-27)
12. INSTALL POST AND CABLE RAILING. (SEE DETAIL 5/C-25)
13. INSTALL CHAIN-LINK FENCE. (SEE DETAIL 1/C-25)
14. INSTALL OUTLET PIPE. (SEE C-13)
15. CONSTRUCT OUTLET STRUCTURE. (SEE DETAIL 1/S-10)
16. CONSTRUCT MONITORING STATION. (SEE DETAIL 1/C-27)
17. CONSTRUCT INFLOW STRUCTURE.(SEE DETAIL 1/C-24 & 1/S-9)
18. INSTALL BLOCK AND CHAIN GATE (WIDTH PER PLAN, SEE DETAIL 7/C-25)
19. INSTALL BLOCK AND CHAIN FENCE. (SEE DETAIL 7/C-25)
20. INSTALL 16' CHAIN-LINK GATE WITH SIGNS. (SEE DETAILS 2/C-25, 3/C-25 & 4/C-25)
21. CONSTRUCT DEPTH GAUGE. (SEE DETAIL 6/C-26)
22. INSTALL CHANNEL ACCESS STEPS. (SEE DETAIL 4/S-3)
23. CONSTRUCT RCC STEPS PER PLAN. SEE SHEET C-18A
24. INSTALL CHANNEL IDENTIFIER AND WARNING SIGNS ON CHAIN-LINK FENCE, (SEE DETAILS 3/C-25 & 4/C-25)
25. INSTALL SIGN POST AND WARNING SIGN. (SEE DETAIL 4/C-25 & 8/C-25)
26. CONSTRUCT SEDIMENT GAUGE. (SEE DETAIL 5/C-27)
27. INSTALL 100 LF OF 1'x3' CLSM CUT-OFF WALL IN NEVADA POWER EASEMENT. (SEE DETAIL 6/C-27)
28. INSTALL 16' CHAIN-LINK GATE. (SEE DETAILS 2/C-25 & 5/C-27)
29. INSTALL EXPANSION JOINT BETWEEN ROLLER COMPACTED CONCRETE AND REINFORCED CONCRETE, TYPICAL. (SIMILAR TO DETAIL 4/S-1)
30. INSTALL 16' CHAIN-LINK GATE WITH SIGNS. (SEE DETAILS 2/C-25, 3/C-25, 4/C-25 & 5/C-27)
31. INSTALL SIGN POST AND WARNING SIGN. (SEE DETAILS 8/C-25 & 7/C-27)

STANDARD GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS FOR THIS PROJECT SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, OFF-SITE IMPROVEMENTS", CLARK COUNTY AREA, NEVADA LATEST EDITION, AND THE "UNIFORM DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, OFF-SITE IMPROVEMENTS", CLARK COUNTY AREA, NEVADA LATEST EDITION, UNLESS OTHERWISE SPECIFIED BY NOTE ON THE PLANS AND/OR SPECIAL PROVISIONS.
2. 48 HOURS PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL CONTACT:

LOS ANGELES DEPARTMENT OF WATER AND POWER	PHONE	1-213-367-0557
NEVADA POWER COMPANY	PHONE	1-800-227-2600
SOUTHERN NEVADA WATER AUTHORITY	PHONE	862-3444

3. LOCATIONS OF UNDERGROUND UTILITIES SHOWN ON THE DRAWINGS WERE OBTAINED FROM INFORMATION RECEIVED FROM THE APPLICABLE UTILITY COMPANIES NEITHER THE OWNER NOR ENGINEER ASSUMES ANY RESPONSIBILITY FOR UTILITIES OR STRUCTURES NOT SHOWN, OR FOR UTILITIES OR STRUCTURES NOT SHOWN AT ACTUAL LOCATIONS ON THE DRAWINGS. EXISTING SERVICE LATERALS ARE NOT SHOWN ON THESE DRAWINGS. CONTRACTOR TO VERIFY THE EXACT LOCATION OF UTILITIES PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR'S RESPONSIBILITY REGARDING UTILITIES SHALL BE AS REQUIRED UNDER SECTION 107.17 OF THE UNIFORM STANDARD SPECIFICATIONS FOR CLARK COUNTY AREA, NEVADA AND AS PROVIDED IN THE SPECIFICATIONS.
4. THE NEVADA POWER COMPANY SHALL BE RESPONSIBLE FOR THE RELOCATION OF UNDERGROUND OR OVERHEAD POWER LINES THAT INTERFERE WITH THE REQUIRED IMPROVEMENTS AS SHOWN ON THE PLANS.
5. REMOVAL OR RELOCATION'S OF POWER POLES, TELEPHONE POLES, JOINTLY-OWNED POLES, AND APPURTENANCES WHICH INTERFERE INTERFERE WITH IMPROVEMENTS REQUIRED TO BE CONSTRUCTED UNDER THIS CONTRACT, SHALL BE THE RESPONSIBILITY OF THE RESPECTIVE UTILITY COMPANY. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH THE UTILITY COMPANIES FAR ENOUGH IN ADVANCE AS TO NOT IMPACT THE SCHEDULE.
6. THE PLANS DO NOT SHOW ALL SEWER LATERALS, SEWER FORCE MAINS AND WATER SERVICE LATERALS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REPAIRS OR RELOCATION'S OF LATERALS BROKEN OR IN CONFLICT WITH THE PROPOSED CHANNEL, STORM DRAIN OR ROADWAY CONSTRUCTION. IF SEWER OR WATER LINES WITHIN THE PUBLIC UTILITY EASEMENTS REQUIRE REPAIRS, ALL SUCH REPAIRS WILL BE DONE IN ACCORDANCE WITH PUBLIC WORKS DEPARTMENT STANDARDS.
7. UNLESS OTHERWISE SHOWN ON THE CONTRACT DRAWINGS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OR RELOCATION OF ALL WATER SERVICES AND METERS WHICH INTERFERE WITH IMPROVEMENTS SHOWN ON THE CONTRACT DRAWINGS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERTICAL ADJUSTMENT OF ALL EXISTING SANITARY, WATER AND STORM SEWER MANHOLES TO THE FINAL FINISH GRADES IN ACCORDANCE WITH SECTIONS 609 AND 630 OF THE "STANDARD SPECIFICATIONS".
9. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITION BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND OF INGRESS AND EGRESS TO SAID CONSTRUCTION. EXTENT OF TRANSITIONS TO BE DETERMINED BY THE CITY ENGINEER.
10. THE CONTRACTOR SHALL DETERMINE THE LOCATION AND DEPTH OF SUSPECTED UTILITY INTERFERENCES, AND SHALL FURNISH INFORMATION ON THE SAME TO THE ENGINEER, NOT LESS THAN TEN (10) DAY PRIOR TO THE ANTICIPATED IMPACT OF THESE SUSPECTED INTERFERENCE'S ON HIS WORK. IF CONFLICTS EXIST, THE CONTRACTOR WILL IMMEDIATELY CONTACT THE ENGINEER AND PROVIDE THE ENGINEER WITH ALL THE NECESSARY DATA SUCH AS ELEVATIONS, HORIZONTAL LOCATIONS, ETC., AND PROVIDE THE ENGINEER WITH SKETCHES INDICATING THE PROPOSED IMPROVEMENT AND THE UTILITY CONFLICT. THE ENGINEER WILL EXAMINE AND REVIEW ALL THE DATA AND SKETCHES PROVIDED, AND WILL PROVIDE THE CONTRACTOR WITH AN ALTERNATIVE DESIGN WITHIN FIVE (5) DAYS AFTER RECEIPT OF DATA AND SKETCHES.
11. BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNS FOR THE CONSTRUCTION ZONE. ALL CONSTRUCTION SIGNING, BARRICADING, AND TRAFFIC SHALL CONFORM TO THE "NEVADA TRAFFIC CONTROL MANUAL" – CURRENT EDITION AND TO THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" – CURRENT EDITION AND BE APPROVED BY THE CITY OF HENDERSON BEFORE CONSTRUCTION BEGINS.
12. WORK IN PUBLIC STREETS, ONCE BEGUN, SHALL BE PROSECUTED TO COMPLETION WITHOUT DELAY SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.
13. THE CONTRACTOR SHALL TAKE REASONABLE MEASURES TO PROTECT EXISTING IMPROVEMENTS FROM DAMAGE AND ALL SUCH IMPROVEMENTS DAMAGED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED OR RECONSTRUCTED TO THE ENGINEER'S SATISFACTION AT THE EXPENSE OF THE CONTRACTOR.
14. PROTECTION AND REPLACEMENT OF SURVEY MONUMENTS OR PROPERTY STAKES NOT DELINEATED ON THE CONTRACT DRAWINGS SHALL BE THE CONTRACTOR'S RESPONSIBILITY. REPLACEMENT OF SURVEY MONUMENTS OR PROPERTY STAKES SHALL BE DONE TO THE COH SURVEY SECTION'S SATISFACTION.
15. THE CONTRACTOR SHALL TAKE ALL NECESSARY AND PROPER PRECAUTIONS TO PROTECT ADJACENT PROPERTIES FROM ANY AND ALL DAMAGE THAT MAY OCCUR FROM STORM WATER RUNOFF AND/OR DEPOSITION OF DEBRIS RESULTING FROM ANY AND ALL WORK IN CONNECTION WITH PROJECT CONSTRUCTION.
16. ALL LENGTH OF STORM DRAIN AND SEWER PIPE IS MEASURED HORIZONTALLY FROM CENTER OF MANHOLE TO CENTER OF MANHOLE, UNLESS OTHERWISE NOTED.
17. THE CONTRACTOR SHOULD CONTACT THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION (NDEP) TO OBTAIN A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT PRIOR TO CONSTRUCTION. ALL CONSTRUCTION PROJECTS ONE ACRE OR LARGER MUST APPLY FOR THE PERMIT THROUGH THE NDEP. ALL QUESTIONS REGARDING THE NPDES PERMIT REQUIREMENTS SHOULD BE DIRECTED TO THE NDEP (775) 687-9429.

BASIS OF BEARINGS

NORTH 00°27'36""EAST BETWEEN CLARK COUNTY G.L.S. MONUMENT 884 AND CLARK COUNTY G.L.S. MONUMENT 848. SAID BEARING IS BASED UPON THE NORTH AMERICAN DATUM OF 1983/94 PUBLISHED VALUES AS SHOWN BY THE CLARK COUNTY DEPARTMENT OF PUBIC WORKS SURVEY TITLED, LAS VEGAS VALLEY GEODETIC CONTROL NETWORK, RECORDED IN FILE 88, PAGE 53 OF SURVEYS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

PROJECT BENCHMARK

BENCH MARK: COH BM# 324

2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS 1919.389 U.S. SURVEY FEET

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

GENERAL & CONSTRUCTION NOTES, LEGEND AND ABBREVIATIONS, BENCHMARK, BASIS OF BEARINGS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8833 4/9/08

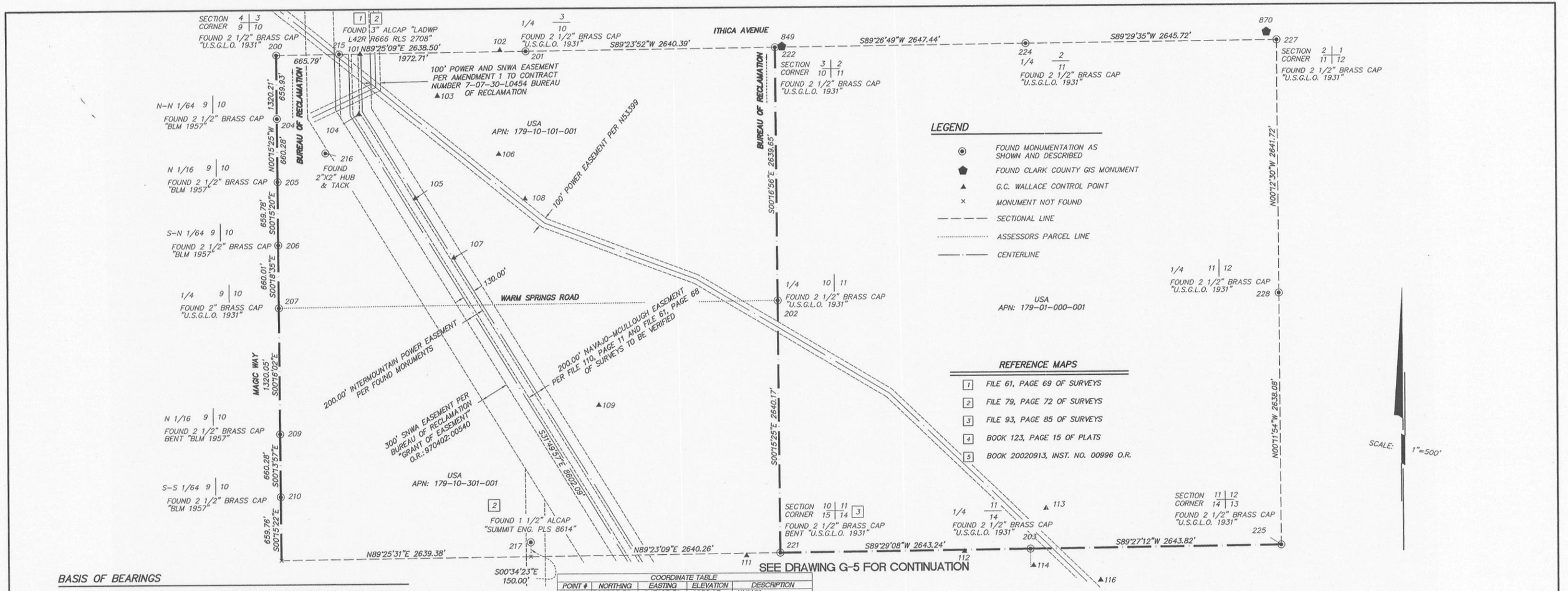
PROJECT No: 504.424 DRAWN BY: DVJ
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD - LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. G-3
SHT. OF

07380



BASIS OF BEARINGS

NORTH 00°27'36""EAST BETWEEN CLARK COUNTY G.I.S. MONUMENT 884 AND CLARK COUNTY G.I.S. MONUMENT 848. SAID BEARING IS BASED UPON THE NORTH AMERICAN DATUM OF 1983/94 STATE PLANE COORDINATE PUBLISHED VALUES AS SHOWN BY THE CLARK COUNTY DEPARTMENT OF PUBIC WORKS SURVEY TITLED, LAS VEGAS VALLEY GEODETIC CONTROL NETWORK, RECORDED IN FILE 88, PAGE 53 OF SURVEYS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

849 PROJECT COORDINATES: NORTHING: 726880.59 EASTING: 856678.30 ELEVATION: 2199.27
STATE PLAVE COORDINATES: NORTHING: 8145119.521 EASTING: 259517.654
CONVERGENCE: 0°23'19.859" COMB. FACTOR: 0.999842854

870 PROJECT COORDINATES: NORTHING: 727005.22 EASTING: 856678.30 ELEVATION: 2360.62
STATE PLAVE COORDINATES: NORTHING: 8145157.519 EASTING: 261076.010
CONVERGENCE: 0°23'56.526" COMB. FACTOR: 0.999837449

SURVEYOR'S CERTIFICATE

I, DANNY E. HILL, A PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF NEVADA, CERTIFY THAT THIS MAP IS AN ACCURATE REPRESENTATION OF THE LANDS SURVEYED UNDER MY DIRECT SUPERVISION AT THE INSTANCE OF THE CITY OF HENDERSON, ALL MONUMENTS FOUND OR SET ARE CORRECTLY SHOWN, OCCUPY THE POSITIONS INDICATED AND ARE SUFFICIENT TO ENABLE THE RETRACEMENT OF THE SURVEY. THE LANDS SURVEYED LIE WITHIN SECTIONS 10, 11, 14, AND 15, ALL IN TOWNSHIP 22 SOUTH, RANGE 63 EAST, M.D.M., CLARK COUNTY, STATE OF NEVADA.

DANNY E. HILL
PROFESSIONAL LAND SURVEYOR
NEVADA LICENSE NO. 9389

COORDINATE TABLE

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
101	726823.72	847103.71	1959.17	HVI1101
102	726855.83	848581.66	2063.32	HVI1102
103	726381.89	847918.62	1995.14	HVI1103
104	726199.19	847085.98	1974.88	HVI1104
105	725319.48	847680.28	2007.87	HVI1105
106	725772.17	848563.57	2021.32	HVI1106
107	724696.16	848083.50	2033.28	HVI1107
108	725308.41	848838.73	2057.55	HVI1108
109	723146.10	849607.76	2108.54	HVI1109
110	721061.15	850328.18	2153.40	HVI1110
111	721563.40	851161.71	2224.23	HVI1111
112	721594.57	853465.96	2308.03	HVI1112
113	722038.27	854328.63	2323.47	HVI1113
114	721441.36	854193.72	2317.71	HVI1114
115	720711.44	854003.40	2389.77	HVI1115
116	721284.09	854900.84	2341.55	HVI1116
200	726817.71	846214.19	1942.38	SC4-3/9-10
201	726844.46	848852.55	2111.07	1/4 S3/10
202	724232.59	851505.80	2184.15	1/4S10-S11
203	721616.18	854160.77	2314.73	1/4S11/S14
204	726157.79	846217.15	1956.25	N-N1/64 S9-10
205	725497.52	846220.11	1966.26	N1/16 S9-10
206	724837.74	846223.05	1981.08	S-N 1/64 S9-10
207	724177.74	846226.62	1993.79	1/4 S9-10
209	722857.71	846232.77	2008.26	BASE OF PIPE
210	722197.44	846235.45	2017.49	SS1/6459-S10
215	726824.46	846879.94	1960.09	3"ALCAP
216	725793.14	846728.89	1973.64	HUB&TACK
217	721714.14	848876.03	2100.23	1.5ALCAP
221	721592.45	851517.64	2270.78	BASE OF PIPE
222	726872.21	851492.79	2185.50	S 3-2/10-11
224	726897.76	854140.11	2320.04	1/4 S2/11
225	721641.40	856804.47	2705.70	S11-12/S14-13
227	726921.17	856785.72	2345.30	SC2-1/11-12
228	724279.47	856795.33	2590.28	1/4 S11-12

SOUTHERN NEVADA WATER AUTHORITY CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL SNWA/SNWS APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS AND CATHODIC PROTECTION SYSTEMS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. CATHODIC PROTECTION TEST STATIONS, RECTIFIERS, AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER SNWA STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY SOUTHERN NEVADA WATER AUTHORITY DEVELOPMENT PLAN REVIEW, AT (702) 862-3444 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
2. SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

Valerie A Schmitt — 4/1/08
SOUTHERN NEVADA WATER AUTHORITY — DATE

GRAPHIC SCALE
500 0 250 500 1000 2000
(IN FEET)
1 inch = 500 ft.

BENCHMARK:

COH BM# 324 2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS
1919.389 U.S. SURVEY FEET

NOTE:

THIS FIELD SURVEY WAS PERFORMED TO ESTABLISH ALL INTERSECTIONS AND OTHER CONTROL POINTS FOR THE PROJECT IN ACCORDANCE WITH APPLICABLE STATE STATUTES AND LOCAL ORDINANCES.

SURVEY REFERENCE

FILE , PAGE OF SURVEYS

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

SURVEY CONTROL PLAN 1

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL LAND SURVEYOR — STATE OF NEVADA — DANNY E. HILL EXP.06/30/09 — NO. 9389 — 3.27.08

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: KFO CHECKED BY: DEH
APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

L
DRAWING NO. G-4
SHT. 4 OF MANY

07380

SCALE: 1"=500'

GRAPHIC SCALE

500 0 250 500 1000 2000

(IN FEET)
1 inch = 500 ft.

SEE DRAWING G-4 FOR CONTINUATION

COORDINATE TABLE				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
110	721061.15	850328.18	2153.40	HV1110
111	721563.40	851161.71	2224.23	HV1111
112	721594.57	853465.96	2308.03	HV1112
113	722038.27	854328.63	2323.47	HV1113
114	721441.36	854193.72	2317.71	HV1114
115	720711.44	854003.40	2389.77	HV1115
116	721284.09	854900.84	2341.55	HV1116
211	721437.68	846238.62	2026.21	1.5"ALCAP
212	720877.99	846240.48	2032.40	NN1/64S16-S15
213	720218.31	846243.54	2041.00	N1/16 S16-15
214	721119.11	849574.94	2132.12	HUB&TACK
217	721714.14	848876.03	2100.23	1.5ALCAP
218	718952.77	851529.97	2227.66	1/4 S15-14
219	718882.33	851530.29	2228.78	3"ALCAP
221	721592.45	851517.64	2270.78	BASE OF PIPE
225	721641.40	856804.47	2705.70	S11-12/S14-13
226	719006.88	856816.07	2449.33	1/4 S14-13
229	716367.55	856826.38	2502.94	S14-13/23-24
230	716340.59	854185.82	2401.46	1/4 S14/S23
231	718897.97	846249.29	2055.42	1/4S15/S16
232	718925.07	848889.15	2141.88	REBAR
233	716285.20	848901.53	2160.26	1/4 S15/S22
234	716312.84	851542.13	2261.83	HEX BOLT

SOUTHERN NEVADA WATER AUTHORITY CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL SNWA/SNWS APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS AND CATHODIC PROTECTION SYSTEMS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. CATHODIC PROTECTION TEST STATIONS, RECTIFIERS, AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER SNWA STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY SOUTHERN NEVADA WATER AUTHORITY DEVELOPMENT PLAN REVIEW, AT (702) 862-3444 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
2. SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

Valerie A. Schmidt — 4/10/08
SOUTHERN NEVADA WATER AUTHORITY — DATE

LEGEND

- FOUND MONUMENTATION AS SHOWN AND DESCRIBED
- FOUND CLARK COUNTY GIS MONUMENT
- G.C. WALLACE CONTROL POINT
- MONUMENT NOT FOUND
- SECTIONAL LINE
- ASSESSORS PARCEL LINE
- CENTERLINE

REFERENCE MAPS

1. FILE 61, PAGE 69 OF SURVEYS
2. FILE 79, PAGE 72 OF SURVEYS
3. FILE 93, PAGE 85 OF SURVEYS
4. BOOK 123, PAGE 15 OF PLATS
5. BOOK 20020913, INST. NO. 00996 O.R.

SURVEY REFERENCE

FILE , PAGE OF SURVEYS

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
SURVEY CONTROL PLAN 2

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL LAND SURVEYOR STATE OF NEVADA — DANNY E. HILL EXP.06/30/09 NO.9389 — 3-27-08

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: KFO CHECKED BY: DEH
APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

L
DRAWING NO. G-5
SHT. 5 OF MANY

07380

NORTH

300 0 300 600
SCALE FEET

SECTION CORNER 3 | 2 / 10 | 11 FOUND 2 1/2" BRASS CAP "U.S.G.L.O. 1931"

BUREAU OF LAND MANAGEMENT
BUREAU OF RECLAMATION

APPROXIMATE LOCATION OF 100' NPCO EASEMENT

DEVELOPMENT BOUNDARY

BERM

RIGHT-OF-WAY LINE

495.00'

493.00'

SECTION CORNER 10 | 11 / 15 | 14 FOUND 2 1/2" BRASS CAP "U.S.G.L.O. 1931"

24' RIGHT-OF-WAY

505' RIGHT-OF-WAY GRANT FOR CITY OF HENDERSON DETENTION BASIN

DEBRIS BASIN SOUTH

DEBRIS BASIN NORTH

DETENTION BASIN SEE SHEET G-7

1320.02'

1650.03'

STOCKPILE AREA (SEE SHEET C31)

200' NEVADA POWER EASEMENT

200' INTERMOUNTAIN POWER EASEMENT

200' NAVAJO MCCULLOUGH EASEMENT

EX.OHP

EX. SNWA 72" W RIVER MOUNTAIN LATERAL

EX. SNWA 108" W RIVER MOUNTAIN AQUEDUCT

300' SNWA EASEMENT

LIMIT OF CONSTRUCTION

EXISTING SNWA STATIC MITIGATION (CRC) FIBER OPTIC

SECTION CORNER 9 | 10 / 15 | 16 FOUND 2 1/2" BRASS CAP "U.S.G.L.O. 1931"

COORDINATE TABLE			
No.	NORTHING	EASTING	DESCRIPTION
222	726872.2150	851492.7990	SEC. COR. 3/2/10/11
201	726844.4627	848852.5590	1/4 S3/10
200	726817.7190	846214.1922	SEC. COR. 4/3/9/10
1004	726262.4686	848009.3187	CL-CHANNEL C1
204	726157.7939	846217.1515	N-N1/64 S9-10
1006	726144.5922	848170.8896	CL-CHANNEL C1
1007	726030.9351	848326.6770	CL-CHANNEL C1
1008	725906.4752	848425.7254	CL-CHANNEL C1
205	725497.5241	846220.1123	N1/16 S9-10
1010	724626.5830	848972.7164	CL-CHANNEL C1
1011	724563.2117	849002.4644	CL-CHANNEL C1
1012	724237.7550	849169.3849	CL-CHANNEL C1
1013	724082.7765	849233.0931	CL-CHANNEL C1
1014	723592.1957	849411.2272	CL-INFLOW
1015	723532.6578	849406.9730	CL-CHANNEL C1
1016	723409.6273	849465.3030	CL-CHANNEL C1
1017	723355.2834	850002.2100	CL-INFLOW
1018	723347.8382	849755.5115	CL-INFLOW
203	721616.1810	854160.7740	1/4S11/S14
220	721593.1080	851517.8070	SEC. COR. 10/11/15/14
1021	721049.5727	851009.1844	CL-CHANNEL C1
1022	720800.5350	851090.1525	CL-CHANNEL C1
1023	720551.4973	851171.1205	CL-CHANNEL C1
1024	720403.2690	851285.6225	CL-INFLOW
1025	720380.0948	851669.3394	CL-OUTFALL
1026	720358.2895	851376.7386	CL-INFLOW
218	718952.7750	851529.9720	1/4 S15-14
1028	718888.5835	852258.9521	CL-CHANNEL C1
1211	721434.8206	853898.6323	24' ROW CL
1443	720418.8744	851646.2423	24' ROW CL

CURVE TABLE				
CURVE	DELTA	RADIUS	LENGTH	TANGENT
C1	30°44'47"	300.00	160.99	82.48
C2	4°00'43"	1000.00	70.02	35.02
C3	9°36'43"	1000.00	167.76	84.08
C4	15°39'04"	500.00	136.58	68.72
C5	30°21'43"	500.00	264.96	135.67
C6	30°21'43"	500.00	264.96	135.67
C7	74°11'17"	350.00	453.19	264.65
C8	61°04'13"	100.00	106.59	58.99

LINE TABLE		
LINE	LENGTH	BEARING
L1	392.84	S53°53'13"E
L2	1391.88	S23°08'26"E
L3	365.77	S27°09'09"E
L4	576.94	S17°32'26"E
L5	2820.18	S33°11'30"E
L6	1987.12	S33°11'30"E
L7	246.81	S88°16'17"W
L8	293.41	S85°44'17"W

NOTE: CONSTRUCTION ACCESS SHALL BE CONFINED TO RIGHT-OF-WAY LIMITS AS SHOWN

BASIS OF BEARINGS

NORTH 00°27'36"EAST BETWEEN CLARK COUNTY G.I.S. MONUMENT 884 AND CLARK COUNTY G.I.S. MONUMENT 848. SAID BEARING IS BASED UPON THE NORTH AMERICAN DATUM OF 1983/94 PUBLISHED VALUES AS SHOWN BY THE CLARK COUNTY DEPARTMENT OF PUBIC WORKS SURVEY TITLED, LAS VEGAS VALLEY GEODETIC CONTROL NETWORK, RECORDED IN FILE 88, PAGE 53 OF SURVEYS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

PROJECT BENCHMARK

BENCH MARK: COH BM# 324

2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS 1919.389 U.S. SURVEY FEET

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

HORIZONTAL CONTROL PLAN 1

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8833 4/3/08

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1"=300'
VERT: NONE
FIELD BOOK

DRAWING NO. G-6
SHT. OF

07380

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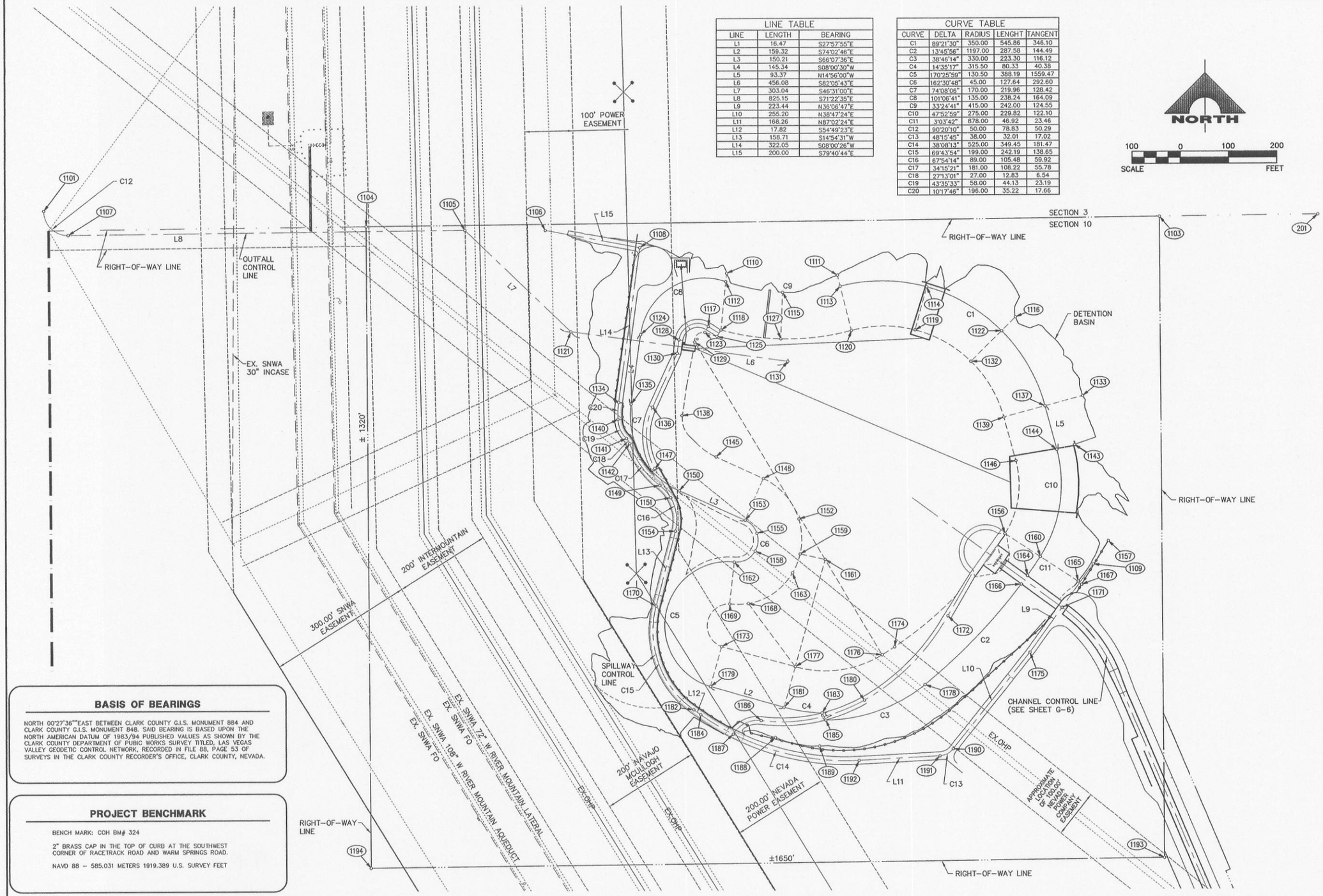

LINE TABLE		
LINE	LENGTH	BEARING
L1	16.47	S27°57'55"E
L2	159.32	S74°02'46"E
L3	150.21	S66°07'36"E
L4	145.34	S08°00'30"W
L5	93.37	N14°56'00"W
L6	456.08	S82°05'43"E
L7	303.04	S46°31'00"E
L8	825.15	S71°22'35"E
L9	223.44	N36°06'47"E
L10	255.20	N38°47'24"E
L11	168.26	N87°02'24"E
L12	17.82	S54°49'23"E
L13	158.71	S14°54'31"W
L14	322.05	S08°00'26"W
L15	200.00	S79°40'44"E

CURVE TABLE				
CURVE	DELTA	RADIUS	LENGHT	TANGENT
C1	89°21'30"	350.00	545.86	346.10
C2	13°45'56"	1197.00	287.58	144.49
C3	38°46'14"	330.00	223.30	116.12
C4	14°35'17"	315.50	80.33	40.38
C5	170°25'59"	130.50	388.19	1559.47
C6	162°30'48"	45.00	127.64	292.60
C7	74°08'06"	170.00	219.96	128.42
C8	101°06'41"	135.00	238.24	164.09
C9	33°24'41"	415.00	242.00	124.55
C10	47°52'59"	275.00	229.82	122.10
C11	3°03'42"	878.00	46.92	23.46
C12	90°20'10"	50.00	78.83	50.29
C13	48°15'45"	38.00	32.01	17.02
C14	38°08'13"	525.00	349.45	181.47
C15	69°43'54"	199.00	242.19	138.65
C16	67°54'14"	89.00	105.48	59.92
C17	34°15'21"	181.00	108.22	55.78
C18	27°13'01"	27.00	12.83	6.54
C19	43°35'33"	58.00	44.13	23.19
C20	10°17'46"	196.00	35.22	17.66

BASIS OF BEARINGS

NORTH 00°27'36""EAST BETWEEN CLARK COUNTY G.I.S. MONUMENT 884 AND CLARK COUNTY G.I.S. MONUMENT 848. SAID BEARING IS BASED UPON THE NORTH AMERICAN DATUM OF 1983/94 PUBLISHED VALUES AS SHOWN BY THE CLARK COUNTY DEPARTMENT OF PUBIC WORKS SURVEY TITLED, LAS VEGAS VALLEY GEODETIC CONTROL NETWORK, RECORDED IN FILE 88, PAGE 53 OF SURVEYS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

PROJECT BENCHMARK

BENCH MARK: COH BM# 324

2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS 1919.389 U.S. SURVEY FEET

COORDINATE TABLE			
No.	NORTHING	EASTING	DESCRIPTION
1101	726857.9131	846204.0273	CL-OUTFALL
201	726844.4627	848852.5590	1/4 S3/10
1103	726841.1334	848524.1105	BOUNDARY
1104	726824.4088	846874.1689	BOUNDARY
1105	726816.4747	847079.6433	CL-OUTFALL
1106	726815.9847	847246.7231	ACCESS ROAD-CL
1107	726808.1281	846254.5326	CL-OUTFALL
1108	726780.1314	847443.4868	ACCESS ROAD-CL
1109	726125.1286	848384.1243	ACCESS ROAD-CL
1110	726727.0675	847624.2564	TOP
1111	726723.0071	847855.0999	TOP
1112	726710.3009	847622.5210	1985/PRC
1113	726700.2512	847860.8968	1985/PRC
1114	726698.3624	848040.7978	1985
1115	726687.7762	847740.9711	1985
1116	726635.9601	848224.8799	TOP
1117	726618.3703	847585.9613	ACCESS ROAD-CL
1118	726611.0067	847612.2433	TOE
1119	726609.8730	848016.2665	TOE
1120	726609.3473	847884.0535	TOE
1121	726607.9380	847299.5242	CL-OUTFALL
1122	726607.3549	848195.9931	1985
1123	726606.1675	847578.5701	TOE
1124	726601.5557	847444.6191	1985/PC
1125	726597.5419	847603.6005	TOE
1126	726597.5419	847603.6005	EG
1127	726591.8813	847736.9282	TOE
1128	726590.3219	847524.5591	ACCESS ROAD-CL
1129	726585.8007	847557.1214	TOE
1130	726562.4313	847520.6816	ACCESS ROAD-CL
1131	726545.2146	847751.2658	CL-OUTFALL
1132	726544.0105	848132.0250	TOE
1133	726472.0580	848363.4007	TOP
1134	726461.2235	847398.6259	ACCESS ROAD-CL/PC
1135	726457.6372	847424.3715	1985/PT
1136	726451.3230	847469.2523	ACCESS ROAD-CL
1137	726451.2754	848285.4757	1985/PT
1138	726433.8499	847530.2718	TOE
1139	726428.4335	848199.8293	TOE
1140	726426.0931	847396.8714	ACCESS ROAD-CL/PCC
1141	726386.7712	847414.4487	ACCESS ROAD-CL
1142	726376.0286	847421.2328	ACCESS ROAD-CL/PRC
1143	726370.9011	848346.4564	TOP
1144	726361.0611	848309.5358	1985/PC
1145	726348.1210	847600.9004	TOE
1146	726338.4171	848224.6276	TOE
1147	726324.6902	847473.2100	ACCESS ROAD-CL
1148	726303.3992	847599.1963	TOE
1149	726289.5522	847483.5843	ACCESS ROAD-CL/PRC
1150	726278.4984	847523.9119	1985/PC
1151	726264.3112	847506.2570	ACCESS ROAD-CL
1152	726220.0908	847773.2737	TOE
1153	726217.7060	847661.2699	1985/PT
1154	726195.5380	847515.8980	ACCESS ROAD-CL/PT
1155	726190.8246	847685.7357	1985
1156	726187.9889	848201.4094	TOE
1157	726172.9314	848415.7526	FENCE
1158	726154.0937	847682.0505	1985
1159	726147.8724	847775.5090	TOE/GB
1160	726140.6276	848274.5514	1985/PCC
1161	726136.5882	847827.6155	GB
1162	726131.8354	847638.0519	1985/PRC
1163	726109.4618	847759.5278	TOE
1164	726101.9614	848247.9864	1985
1165	726089.7620	848352.9985	TOP
1166	726084.3302	848234.8259	1985
1167	726083.3628	848359.9944	FENCE
1168	726046.8153	847667.3152	TOE/GB
1169	726045.9586	847628.4392	TOE
1170	726042.1724	847475.0658	ACCESS ROAD-CL/PC
1171	726036.3026	848319.3199	ACCESS ROAD-CL
1172	726020.1594	848082.4503	ACCESS ROAD-CL
1173	725958.5746	847611.0792	TOE
1174	725957.0046	847971.6198	TOE
1175	725944.6228	848252.4336	ACCESS ROAD-CL
1176	725940.5942	847945.5074	TOE/GB
1177	725916.5891	847764.6321	TOE/GB
1178	725879.0791	848034.3811	1985/PCC
1179	725876.6718	847587.6654	1985/PC
1180	725847.3053	847908.4151	ACCESS ROAD-CL
1181	725832.8819	847740.8444	1985
1182	725828.3157	847552.7225	ACCESS ROAD-CL/PT
1183	725820.8196	847820.0441	1985
1184	725818.0480	847567.2905	ACCESS ROAD-CL/PC
1185	725806.2749	847827.7663	1985
1186	725805.8325	847693.1355	ACCESS ROAD-CL
1187	725777.6657	847634.8195	ACCESS ROAD-CL
1188	725770.0988	847722.7400	TOP
1189	725752.4231	847814.6035	TOP
1190	725745.7047	848092.5571	ACCESS ROAD-CL/PT
1191	725731.5607	848064.8921	ACCESS ROAD-CL/PC
1192	725722.8716	847896.8554	ACCESS ROAD-CL/PT
1193	725521.1256	848530.0297	BOUNDARY
1194	725504.4010	846880.0881	BOUNDARY

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

HORIZONTAL CONTROL PLAN 2

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8835 4/3/08

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1" = 100'
VERT: NONE
FIELD BOOK

DRAWING NO. G-7
SHT. OF

07380

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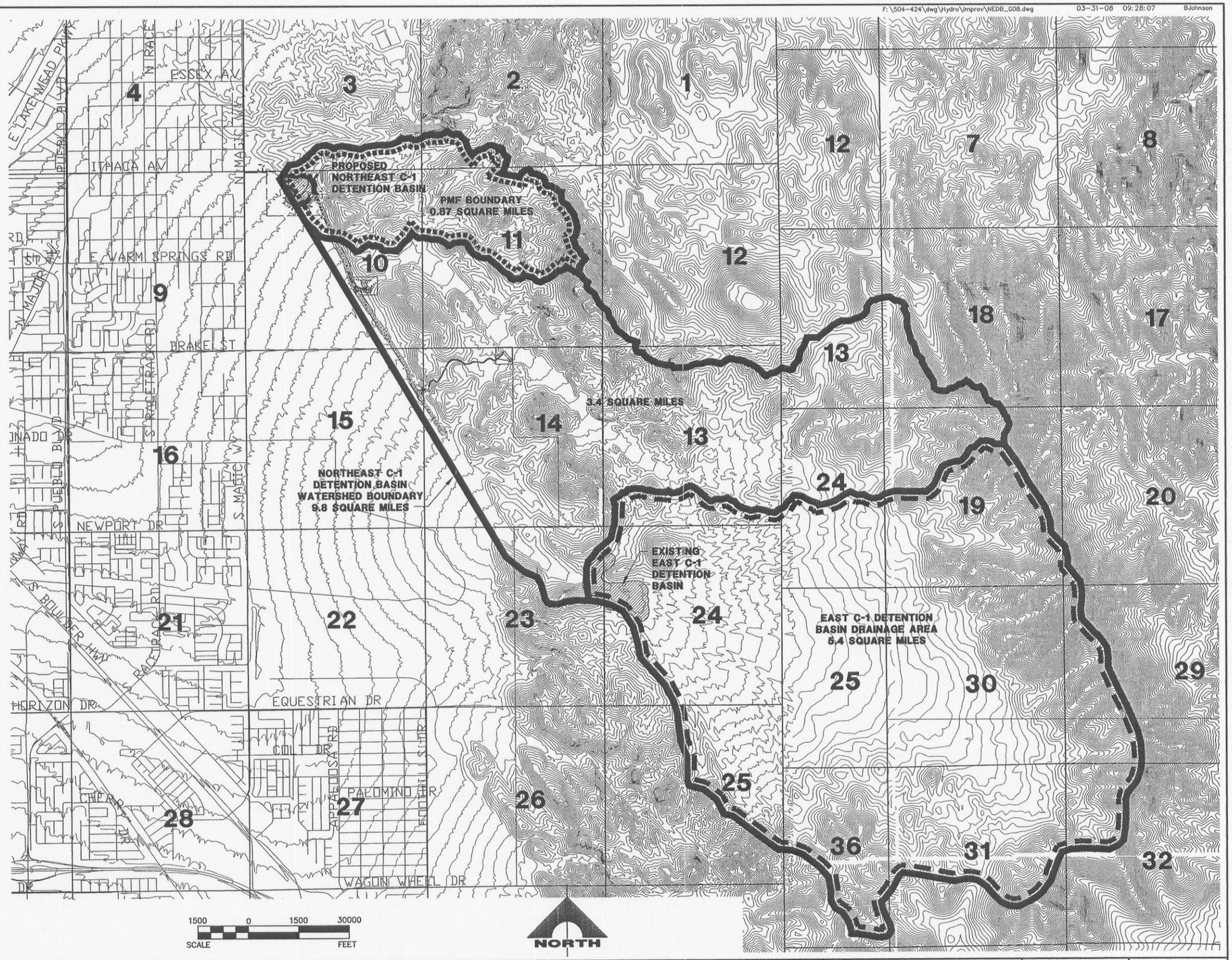
DETENTION BASIN CHARACTERISTICS

100-YEAR SUMMARY	
DESIGN CHARACTERISTIC	DESIGN PARAMETER
TRIBUTARY AREA	9.80 sq mi
PEAK INFLOW	2,211 cfs
PEAK OUTFLOW	204 cfs
ORIFICE DIAMETER	36 inches
OUTLET PIPE DIAMETER	72 inches
INVERT ELEVATION AT OUTLET	1952.00 ft
PEAK STAGE ELEVATION	1984.11 ft
OVERFLOW SPILLWAY ELEVATION	1986.00 ft
MAXIMUM WATER DEPTH AT PEAK STAGE	33.61 ft
CLEAR WATER PEAK STORAGE	321 ac ft
PEAK STORAGE WITH SEDIMENT	353 ac ft
TIME TO DRAIN	62.7 hrs

PMF SUMMARY	
DESIGN CHARACTERISTIC	DESIGN PARAMETER
TRIBUTARY AREA	9.80 sq mi
PEAK FLOW	11,660 cfs
SPILLWAY LENGTH	403 ft
SPILLWAY CREST ELEVATION	1986.00 ft
PEAK STAGE ELEVATION	1989.91 ft
PEAK CLEAR WATER STORAGE AT SPILLING CREST	408.4 ac ft
DISCHARGE COEFFICIENT	2.63
PMF PEAK STORAGE	412 ac ft
TOP OF EMBANKMENT	1991.00 ft



REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
WATERSHED BOUNDARY MAP

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM HUNTER III Exp. 06/30/2009 CIVIL No. 8833 4/4/08

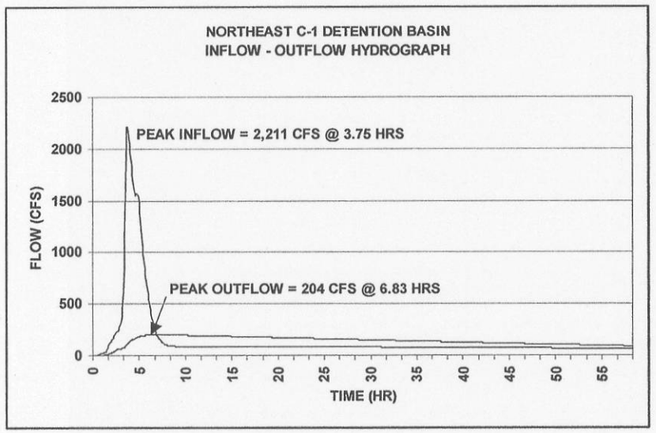
PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

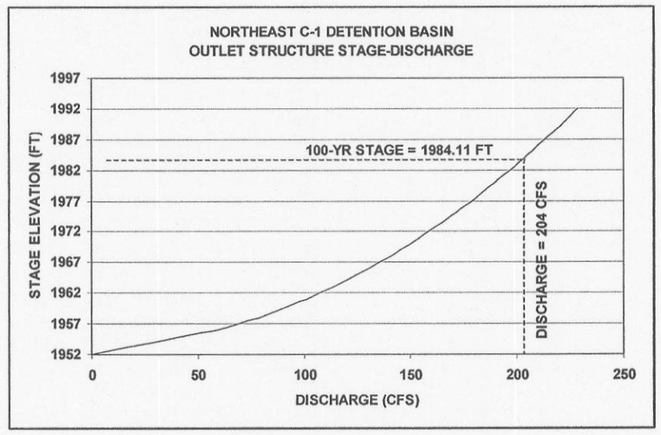
G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

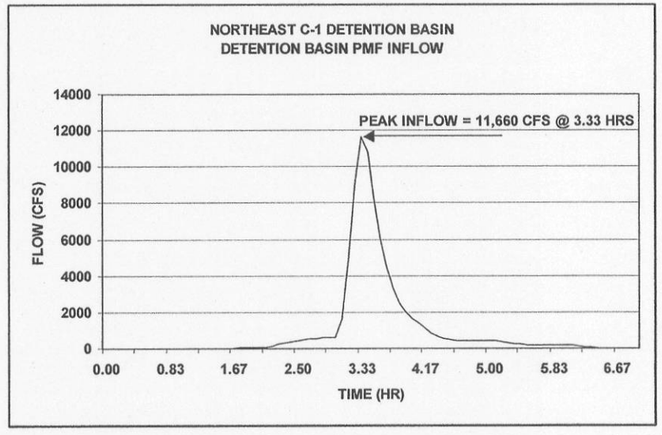
SCALE
HORIZ: 1" = 1500'
VERT: NONE
FIELD BOOK

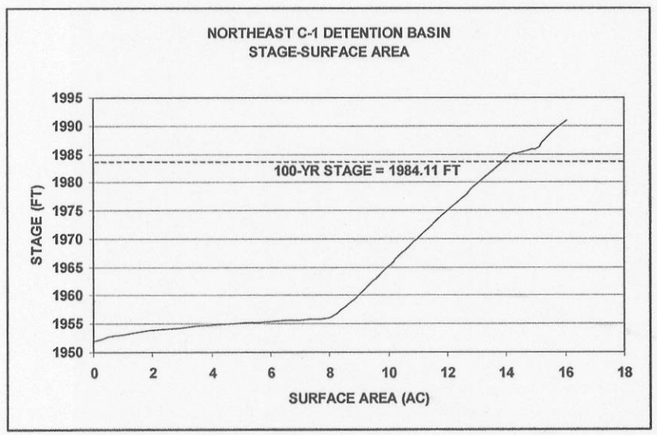
DRAWING NO. G-8
SHT. OF

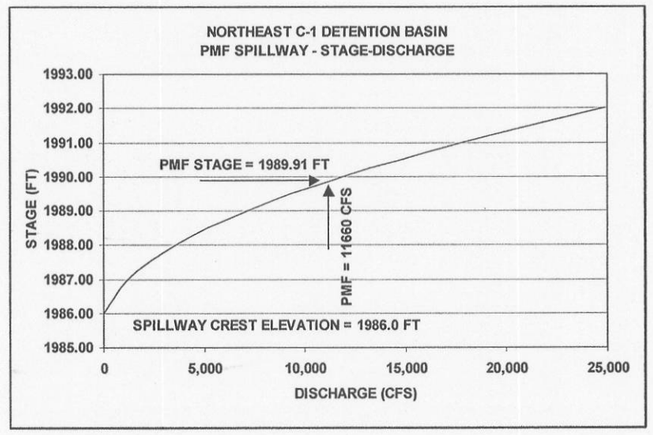
07380

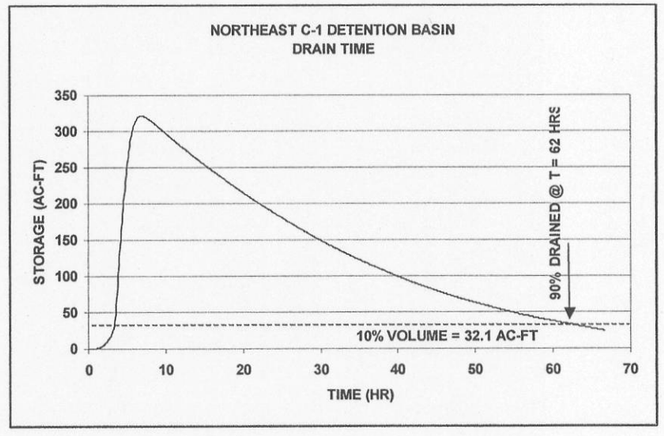


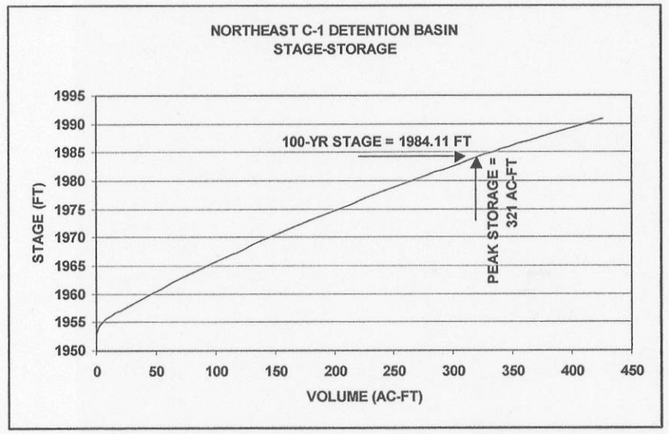












NOTE: GRAPHS REFLECT CLEAR WATER CONDITIONS

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

CAPACITY CURVES & HYDROLOGIC INFORMATION

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER — WILLIAM E. HUNTER III — Exp. 09/30/2009 — CIVIL — No. 8833 — STATE OF NEVADA — 4/3/08

PROJECT No: 504-424 DRAWN BY: DVJ
DESIGNED BY: CHECKED BY:
APPROVED BY:

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
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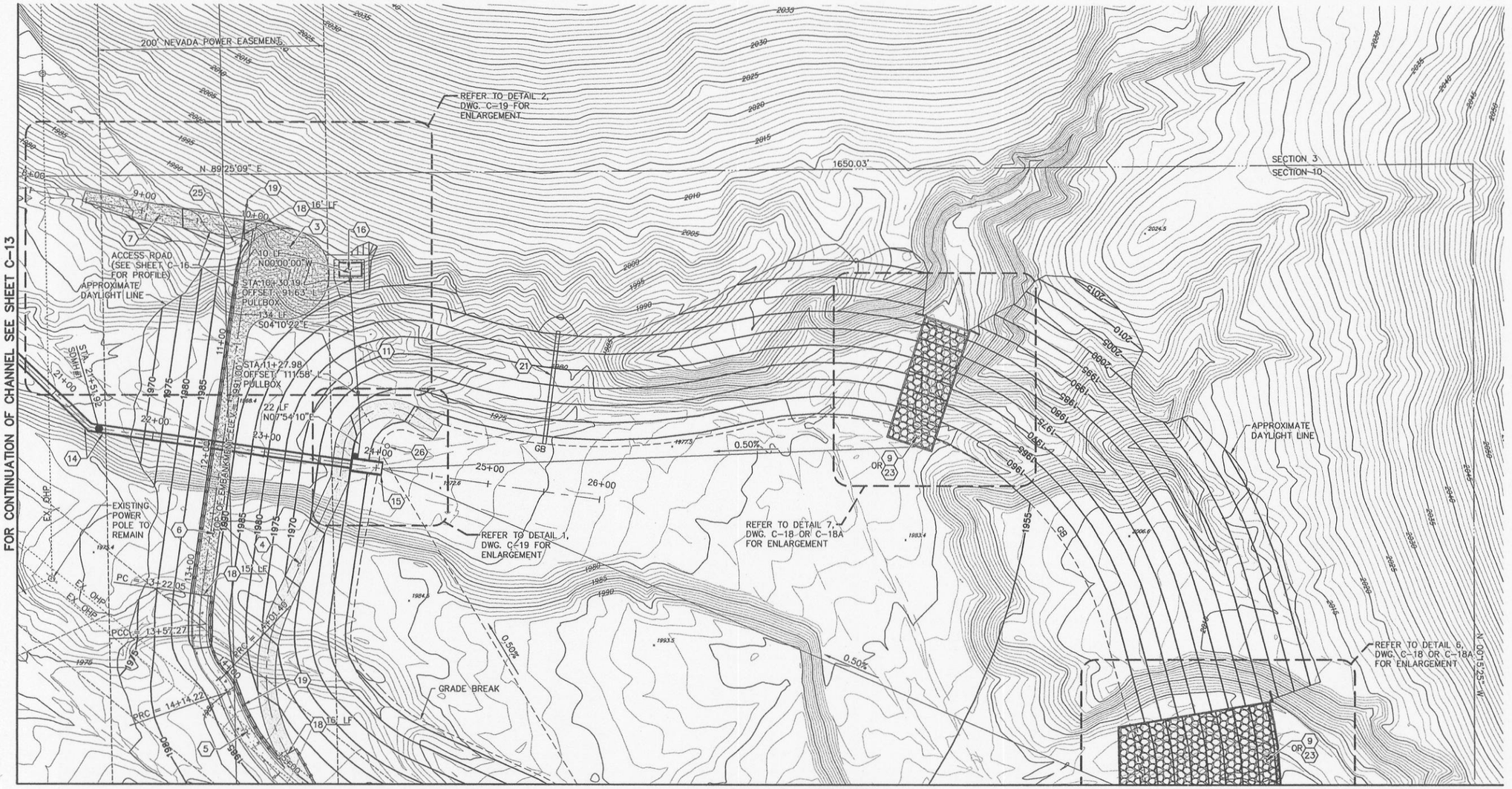
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. G-9
SHT. OF

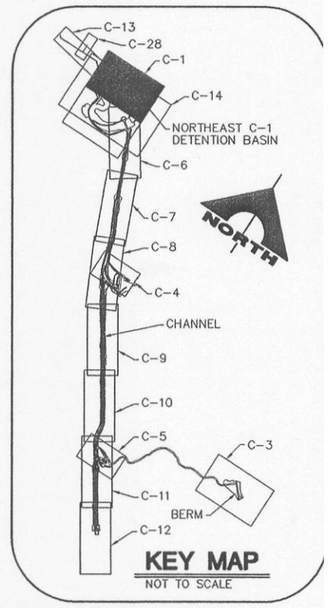
07380



MATCH LINE – SEE SHEET C-2

CONSTRUCTION NOTES

3. CONSTRUCT TYPE II AGGREGATE BASE. (SIMILAR TO 7/C-21)
4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
5. CONSTRUCT PORTLAND CEMENT CONCRETE SPILLWAY WEIR. (SEE DETAIL 4/S-10)
6. CONSTRUCT 15' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 7/C-21)
7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
9. CONSTRUCT RIPRAP PER PLAN. SEE SHEET C-
11. INSTALL CONDUIT AND PULL BOX. (SEE DETAIL 3/C-22)
14. INSTALL OUTLET PIPE. (SEE C-13)
15. CONSTRUCT OUTLET STRUCTURE. (SEE DETAIL 1/S-10)
16. CONSTRUCT MONITORING STATION. (SEE DETAIL 1/C-22)
18. INSTALL BLOCK AND CHAIN GATE (WIDTH PER PLAN, SEE DETAIL 7/C-25)
19. INSTALL BLOCK AND CHAIN FENCE. (SEE DETAIL 7/C-25)
21. CONSTRUCT DEPTH GAUGE. (SEE DETAIL 6/C-26)
23. CONSTRUCT RCC STEPS PER PLAN. SEE SHEET C-18A
25. INSTALL SIGN POST AND WARNING SIGN. (SEE DETAIL 8/C-25)
26. CONSTRUCT SEDIMENT GAUGE. (SEE DETAIL 5/C-2



DISCLAIMER NOTE

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Call before you Dig.
1-800-227-2600
UNDERGROUND SERVICE (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

BASIS OF BEARINGS

NORTH 00°27'36""EAST BETWEEN CLARK COUNTY G.I.S. MONUMENT 884 AND CLARK COUNTY G.I.S. MONUMENT 848. SAID BEARING IS BASED UPON THE NORTH AMERICAN DATUM OF 1983/94 PUBLISHED VALUES AS SHOWN BY THE CLARK COUNTY DEPARTMENT OF PUBIC WORKS SURVEY TITLED, LAS VEGAS VALLEY GEODETIC CONTROL NETWORK, RECORDED IN FILE 88, PAGE 53 OF SURVEYS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

PROJECT BENCHMARK

BENCH MARK: COH BM# 324

2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS 1919.389 U.S. SURVEY FEET

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

DETENTION BASIN GRADING PLAN

NORTH HALF

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM E. HUNTER III
Exp. 06/30/2009
CIVIL
No. 8833
4/9/08

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1" = 50'
VERT: NONE
FIELD BOOK

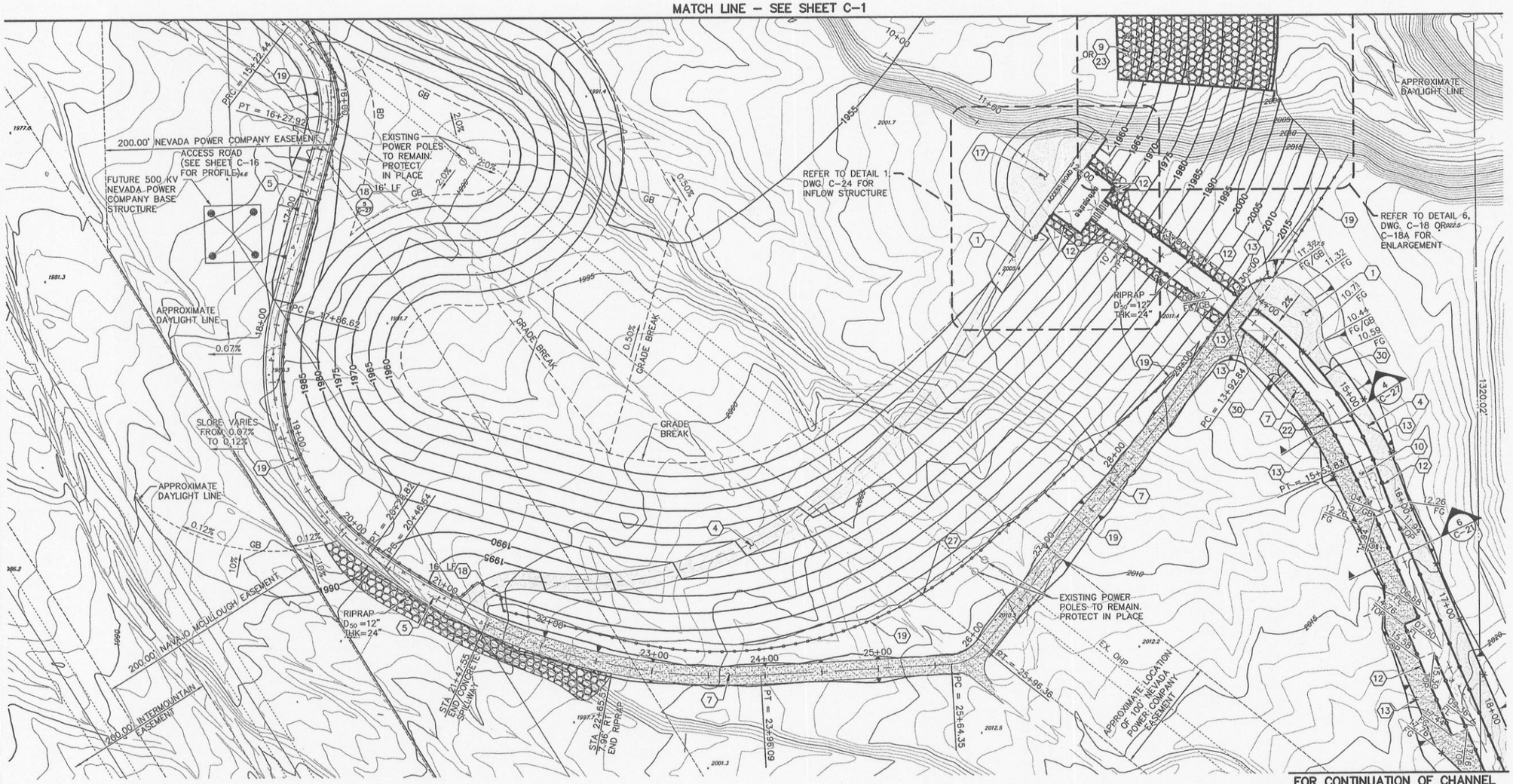
DRAWING NO. C-1
SHT. OF

0738

NORTH

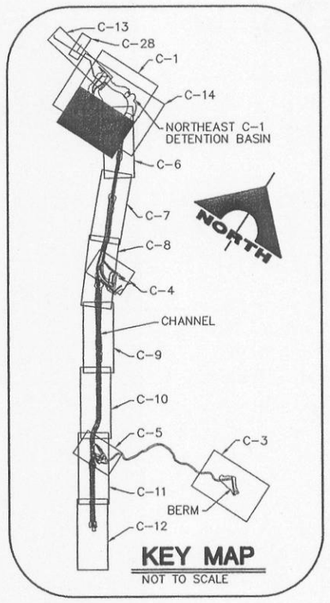
SCALE 50 0 50 100 FEET

MATCH LINE – SEE SHEET C-1



CONSTRUCTION NOTES

1. CONSTRUCT ROLLER COMPACTED CONCRETE PAVEMENT. WIDTH VARIES, (SIMILAR TO 8/C-21)
4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
5. CONSTRUCT PORTLAND CEMENT CONCRETE SPILLWAY WEIR. (SEE DETAIL 4/S-10)
7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-23)
9. CONSTRUCT RIPRAP PER PLAN. SEE SHEET C-18.
10. CONSTRUCT CONCRETE CHANNEL.
12. INSTALL POST AND CABLE RAILING. (SEE DETAIL 5/C-25)
13. INSTALL CHAIN-LINK FENCE. (SEE DETAIL 1/C-25)
17. CONSTRUCT INFLOW STRUCTURE.(SEE DETAIL 1/C-24 & 1/S-9)
18. INSTALL BLOCK AND CHAIN GATE. (WIDTH PER PLAN, SEE DETAIL 7/C-25)
19. INSTALL BLOCK AND CHAIN FENCE. (SEE DETAIL 7/C-25)
22. INSTALL CHANNEL ACCESS STEPS. (SEE DETAIL 4/S-3)
23. CONSTRUCT RCC STEPS PER PLAN. SEE SHEET C-18A
27. INSTALL 100 LF OF 1'x3' CLSM CUT-OFF WALL IN NEVADA POWER EASEMENT. (SEE DETAIL 6/C-27)
30. INSTALL 16' CHAIN-LINK GATE WITH SIGNS. (SEE DETAILS 2/C-25, 3/C-25, 4/C-25 & 5/C-27)



KEY MAP
NOT TO SCALE

DISCLAIMER NOTE

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Avoid cutting underground utility lines. It's costly. Call before you Dig. 1-800-227-2600 UNDERGROUND SERVICE (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD 1-702-227-2929

NOTE:

U-LOCKS WILL BE INSTALLED WITH ALL GATES AT THE NEVADA POWER EASEMENT ACCESS. THE CONTRACTOR SHALL COORDINATE WITH NEVADA POWER, MARK ELINGBOE AT 252-4808, FOR ACCESS TO THE NEVADA POWER EASEMENT.

BASIS OF BEARINGS

NORTH 00°27'36"EAST BETWEEN CLARK COUNTY G.I.S. MONUMENT 884 AND CLARK COUNTY G.I.S. MONUMENT 848. SAID BEARING IS BASED UPON THE NORTH AMERICAN DATUM OF 1983/94 PUBLISHED VALUES AS SHOWN BY THE CLARK COUNTY DEPARTMENT OF PUBIC WORKS SURVEY TITLED, LAS VEGAS VALLEY GEODETIC CONTROL NETWORK, RECORDED IN FILE 88, PAGE 53 OF SURVEYS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

PROJECT BENCHMARK

BENCH MARK: COH BM# 324

2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS 1919.389 U.S. SURVEY FEET

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

DETENTION BASIN GRADING PLAN

SOUTH HALF

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8833 4/9/08

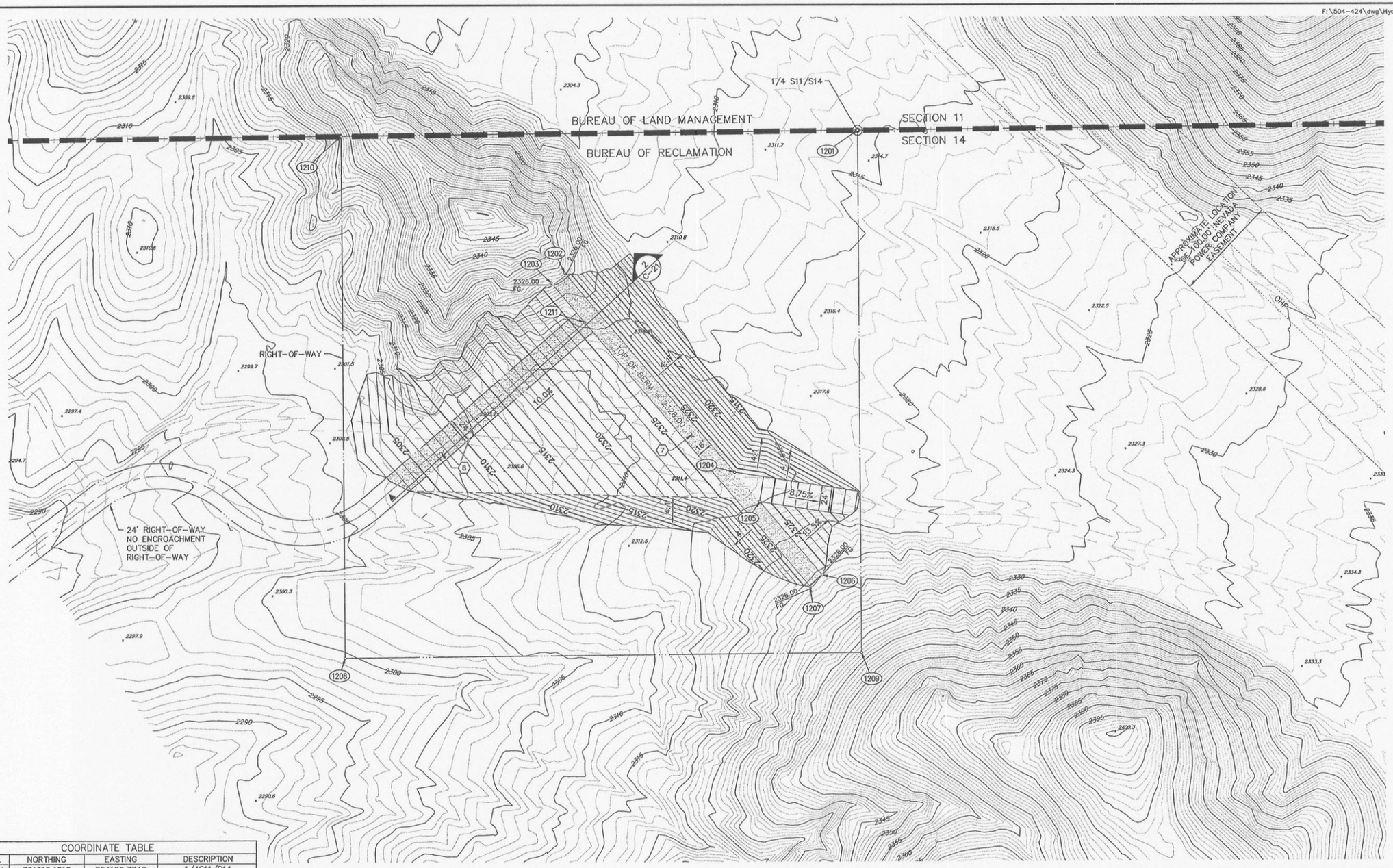
PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1" = 50'
VERT: NONE
FIELD BOOK

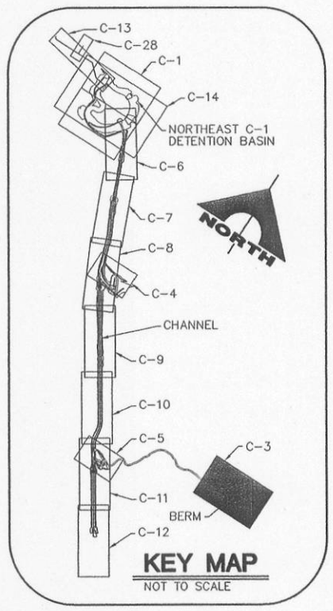
DRAWING NO. C-2
SHT. OF

07380



CONSTRUCTION NOTES

7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
8. CONSTRUCT 24' WIDE TYPE II ACCESS ROAD. (SIMILAR TO 7/C-21)



KEY MAP
NOT TO SCALE

COORDINATE TABLE			
No.	NORTHING	EASTING	DESCRIPTION
1201	721616.1810	854160.7740	1/4S11/S14
1202	721481.3942	853879.7410	BERM
1203	721472.0959	853866.6376	BERM
1204	721292.2135	854041.9261	BERM
1205	721264.1993	854065.9428	BERM
1206	721194.5816	854125.6262	BERM
1207	721183.5312	854114.0248	BERM
1208	721116.7388	853668.1402	BOUNDARY
1209	721121.1822	854163.1247	BOUNDARY
1210	721611.7376	853665.7895	BOUNDARY
1211	721434.8206	853898.6323	24' ROW CL

BASIS OF BEARINGS

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PROJECT BENCHMARK

BENCH MARK: COH BM# 324

2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS 1919.389 U.S. SURVEY FEET

DISCLAIMER NOTE

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1-702-227-2929

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
BERM GRADING PLAN

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8833 4/3/08

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

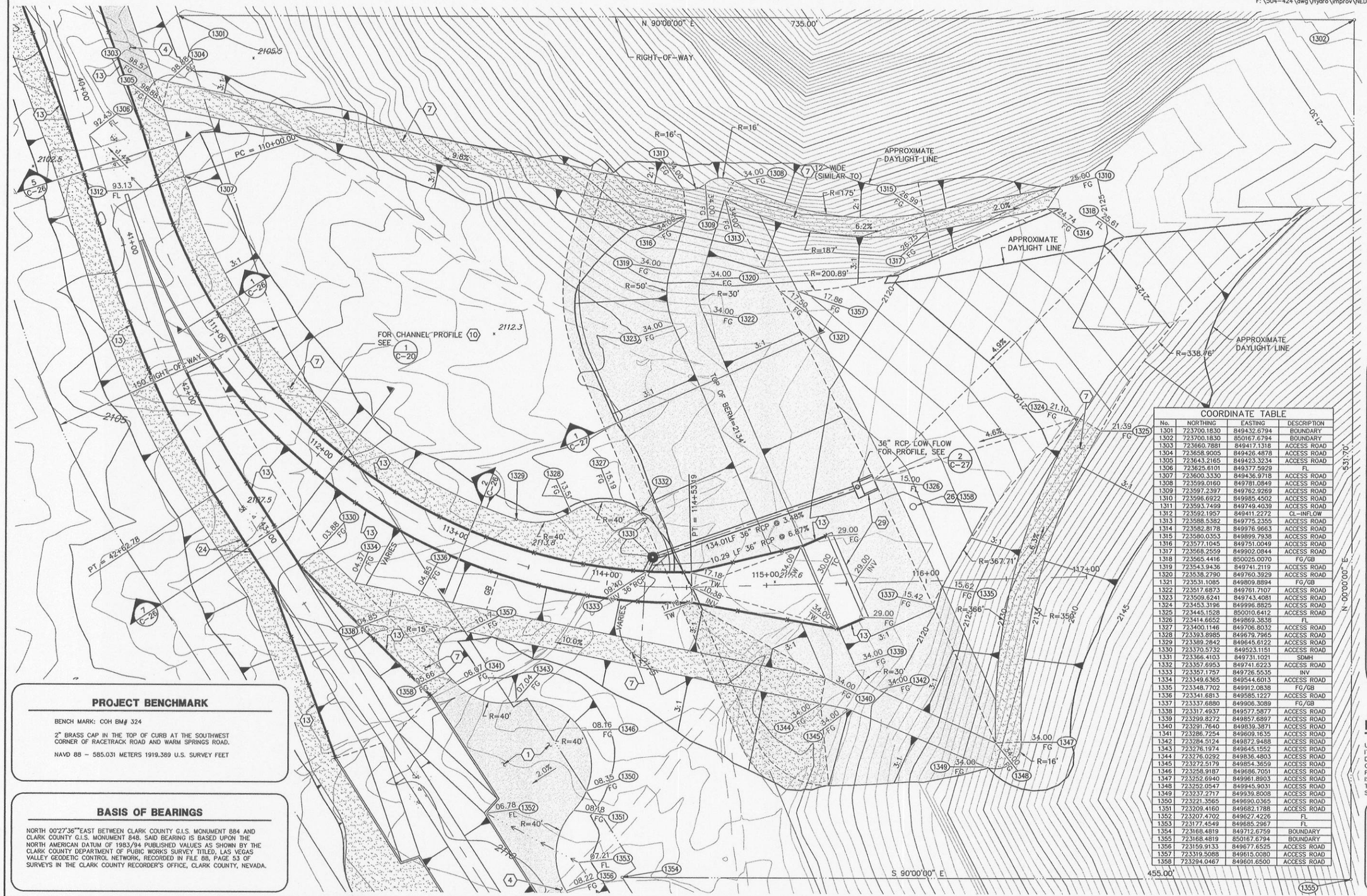
G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1"=50'
VERT: NONE
FIELD BOOK

DRAWING NO. C-3
SHT. OF

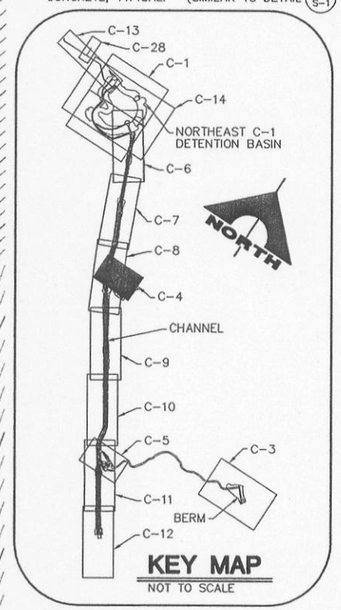
07380

F:\504-424\dwg\Hydro\improv\NEDB_C04.dwg 04-07-08 11:09:44 BJohnson



CONSTRUCTION NOTES

1. CONSTRUCT ROLLER COMPACTED CONCRETE PAVEMENT. WIDTH VARIES, (SIMILAR TO 8/C-21)
4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
10. CONSTRUCT CONCRETE CHANNEL.
13. INSTALL CHAIN-LINK FENCE. (SEE DETAIL 1/C-25)
24. INSTALL CHANNEL IDENTIFIER AND WARNING SIGNS ON CHAIN-LINK FENCE, (SEE DETAILS 3/C-25 & 4/C-25)
26. CONSTRUCT SEDIMENT GAUGE. (SEE DETAIL 5/C-27)
29. INSTALL EXPANSION JOINT BETWEEN ROLLER COMPACTED CONCRETE AND REINFORCED CONCRETE, TYPICAL. (SIMILAR TO DETAIL 4/S-1)



KEY MAP
NOT TO SCALE

COORDINATE TABLE			
No.	NORTHING	EASTING	DESCRIPTION
1301	723700.1830	849432.6794	BOUNDARY
1302	723700.1830	850167.6794	BOUNDARY
1303	723660.7881	849417.1318	ACCESS ROAD
1304	723658.9005	849426.4878	ACCESS ROAD
1305	723643.2165	849423.3234	ACCESS ROAD
1306	723625.6101	849377.5929	FL
1307	723600.3330	849436.9718	ACCESS ROAD
1308	723599.0160	849781.0849	ACCESS ROAD
1309	723597.2397	849762.9269	ACCESS ROAD
1310	723596.6922	849985.4502	ACCESS ROAD
1311	723593.7499	849749.4039	ACCESS ROAD
1312	723592.1957	849411.2272	CL-INFLOW
1313	723588.5382	849775.2355	ACCESS ROAD
1314	723582.8178	849976.9663	ACCESS ROAD
1315	723580.0353	849899.7938	ACCESS ROAD
1316	723577.1045	849751.0049	ACCESS ROAD
1317	723568.2559	849902.0844	ACCESS ROAD
1318	723565.4416	850025.0070	FG/GB
1319	723543.9436	849741.2119	ACCESS ROAD
1320	723538.2790	849760.3929	ACCESS ROAD
1321	723531.1085	849809.8894	FG/GB
1322	723517.6873	849761.7107	ACCESS ROAD
1323	723509.6241	849743.4081	ACCESS ROAD
1324	723453.3196	849996.8825	ACCESS ROAD
1325	723445.1528	850010.6412	ACCESS ROAD
1326	723414.6652	849869.3838	FL
1327	723400.1146	849706.8032	ACCESS ROAD
1328	723393.8985	849679.7965	ACCESS ROAD
1329	723389.2842	849645.6122	ACCESS ROAD
1330	723370.5732	849523.1151	ACCESS ROAD
1331	723366.4103	849731.1021	SDMH
1332	723357.6953	849741.6223	ACCESS ROAD
1333	723357.1757	849726.5535	INV
1334	723349.6365	849544.6013	ACCESS ROAD
1335	723348.7702	849912.0838	FG/GB
1336	723341.6813	849585.1227	ACCESS ROAD
1337	723337.6880	849906.3089	FG/GB
1338	723317.4937	849577.5877	ACCESS ROAD
1339	723299.8272	849857.6897	ACCESS ROAD
1340	723291.7640	849839.3871	ACCESS ROAD
1341	723286.7254	849609.1635	ACCESS ROAD
1342	723284.5124	849872.9488	ACCESS ROAD
1343	723276.1974	849645.1552	ACCESS ROAD
1344	723276.0292	849836.4803	ACCESS ROAD
1345	723272.5179	849854.3659	ACCESS ROAD
1346	723258.9187	849686.7051	ACCESS ROAD
1347	723252.6940	849961.8903	ACCESS ROAD
1348	723252.0547	849945.9031	ACCESS ROAD
1349	723237.2717	849939.8008	ACCESS ROAD
1350	723221.3565	849690.0365	ACCESS ROAD
1351	723209.4160	849682.1788	ACCESS ROAD
1352	723207.4702	849627.4226	FL
1353	723177.4549	849685.2967	FL
1354	723168.4819	849712.6759	BOUNDARY
1355	723168.4819	850167.6794	BOUNDARY
1356	723159.9133	849677.6525	ACCESS ROAD
1357	723319.5088	849615.0080	ACCESS ROAD
1358	723294.0467	849601.6500	ACCESS ROAD

PROJECT BENCHMARK

BENCH MARK: COH BM# 324

2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS 1919.389 U.S. SURVEY FEET

BASIS OF BEARINGS

NORTH 00°27'36"E EAST BETWEEN CLARK COUNTY G.I.S. MONUMENT 884 AND CLARK COUNTY G.I.S. MONUMENT 848. SAID BEARING IS BASED UPON THE NORTH AMERICAN DATUM OF 1983/94 PUBLISHED VALUES AS SHOWN BY THE CLARK COUNTY DEPARTMENT OF PUBIC WORKS SURVEY TITLED, LAS VEGAS VALLEY GEODETIC CONTROL NETWORK, RECORDED IN FILE 88, PAGE 53 OF SURVEYS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

DISCLAIMER NOTE

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Avoid cutting underground utility lines. It's costly.
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1-800-227-2600
UNDERGROUND SERVICE (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.
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1-702-227-2929

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
GRADING ENLARGEMENT

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8835 4/9/08

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

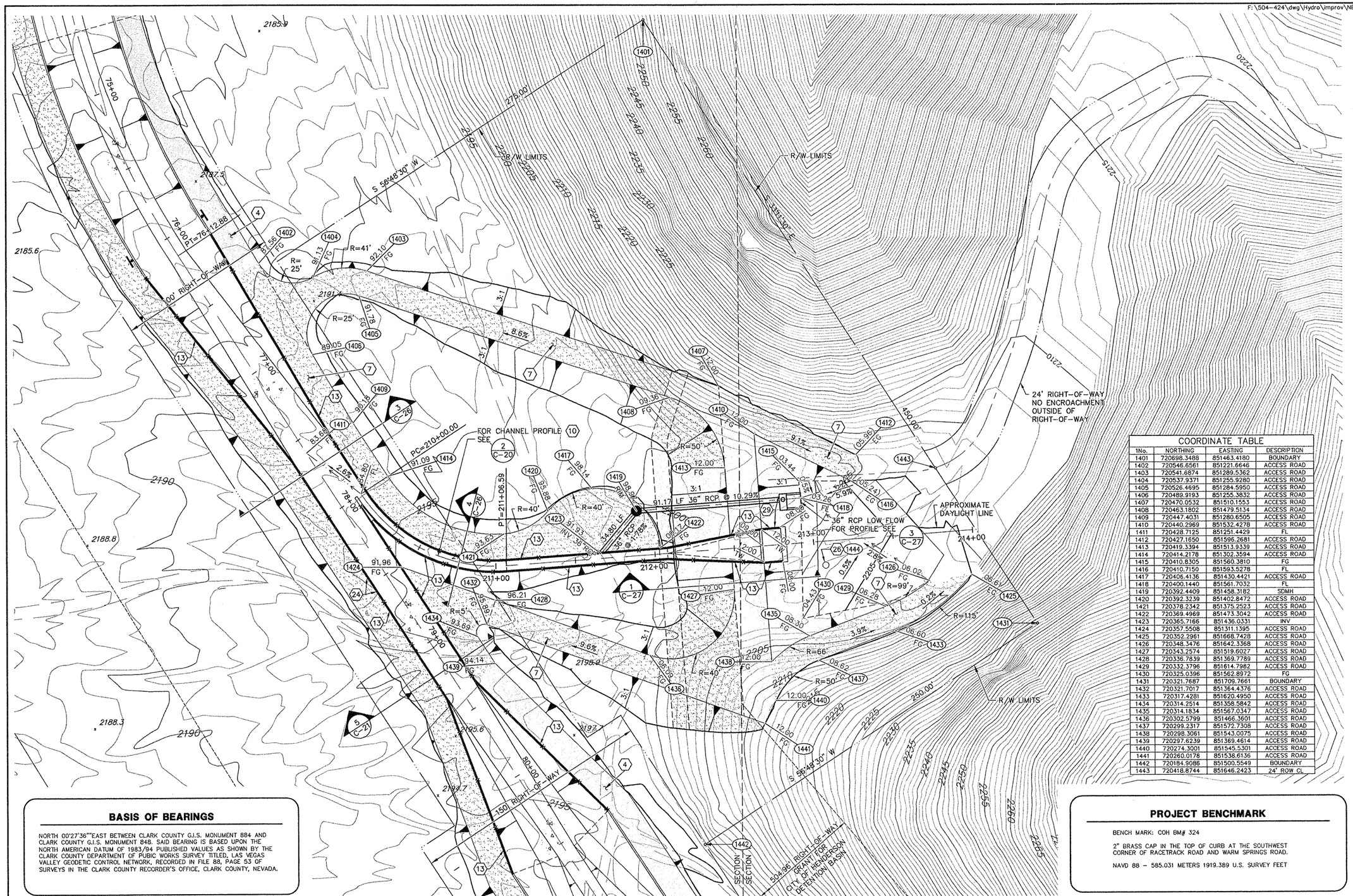
G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1" = 30'
VERT: NONE
FIELD BOOK

DRAWING NO. C-4
SHT. OF

07380

F:\504-424\dwg\Hydro\improv\NEDB_C05.dwg 04-07-08 11:10:09 BJohnson



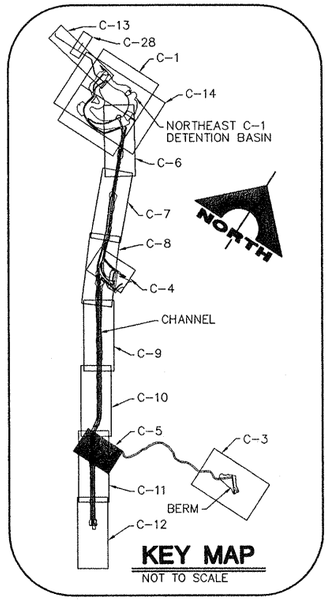
CONSTRUCTION NOTES

4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
10. CONSTRUCT CONCRETE CHANNEL.
13. INSTALL CHAIN-LINK FENCE. (SEE DETAIL 1/C-25)
24. INSTALL CHANNEL IDENTIFIER AND WARNING SIGNS ON CHAIN-LINK FENCE, (SEE DETAILS 3/C-25 & 4/C-25)
26. CONSTRUCT SEDIMENT GAUGE. (SEE DETAIL 5/C-22)
29. INSTALL EXPANSION JOINT BETWEEN ROLLER COMPACTED CONCRETE AND REINFORCED CONCRETE, TYPICAL. (SIMILAR TO DETAIL 4/S-1)

NORTH

30 0 30 60
SCALE FEET

COORDINATE TABLE			
1No.	NORTHING	EASTING	DESCRIPTION
1401	720698.3488	851463.4180	BOUNDARY
1402	720546.6561	851221.6646	ACCESS ROAD
1403	720541.6874	851289.5362	ACCESS ROAD
1404	720537.9371	851255.9280	ACCESS ROAD
1405	720526.4695	851284.5950	ACCESS ROAD
1406	720489.9193	851255.3832	ACCESS ROAD
1407	720470.0532	851510.1553	ACCESS ROAD
1408	720463.1802	851479.5134	ACCESS ROAD
1409	720447.4031	851280.6505	ACCESS ROAD
1410	720440.2969	851532.4278	ACCESS ROAD
1411	720428.7125	851251.4429	FL
1412	720427.1650	851596.2681	ACCESS ROAD
1413	720419.3394	851513.9339	ACCESS ROAD
1414	720414.2178	851302.3594	ACCESS ROAD
1415	720410.8305	851560.3810	FG
1416	720410.7150	851593.5278	FL
1417	720406.4136	851430.4421	ACCESS ROAD
1418	720400.1440	851561.7032	FL
1419	720392.4409	851458.3182	SDMH
1420	720392.3239	851402.8472	ACCESS ROAD
1421	720378.2342	851375.2523	ACCESS ROAD
1422	720369.4969	851473.3042	ACCESS ROAD
1423	720365.7166	851436.0331	INV
1424	720357.5508	851311.1395	ACCESS ROAD
1425	720352.2961	851668.7428	ACCESS ROAD
1426	720348.3476	851642.3368	ACCESS ROAD
1427	720343.2574	851519.6027	ACCESS ROAD
1428	720336.7839	851369.7789	ACCESS ROAD
1429	720332.3796	851614.7982	ACCESS ROAD
1430	720325.0396	851562.8972	FG
1431	720321.7687	851709.7661	BOUNDARY
1432	720321.7017	851364.4376	ACCESS ROAD
1433	720317.4281	851620.4950	ACCESS ROAD
1434	720314.2514	851358.5842	ACCESS ROAD
1435	720314.1834	851567.0347	ACCESS ROAD
1436	720302.5799	851466.3601	ACCESS ROAD
1437	720299.2317	851572.7308	ACCESS ROAD
1438	720298.3061	851543.0075	ACCESS ROAD
1439	720297.6239	851369.4614	ACCESS ROAD
1440	720274.3001	851545.5301	ACCESS ROAD
1441	720260.0178	851538.6136	ACCESS ROAD
1442	720184.9086	851500.5549	BOUNDARY
1443	720418.8744	851646.2423	24' ROW CL



KEY MAP
NOT TO SCALE

DISCLAIMER NOTE

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BASIS OF BEARINGS

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PROJECT BENCHMARK

BENCH MARK: COH BM# 324

2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS 1919.389 U.S. SURVEY FEET

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
GRADING ENLARGEMENT

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8833 4/9/08

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

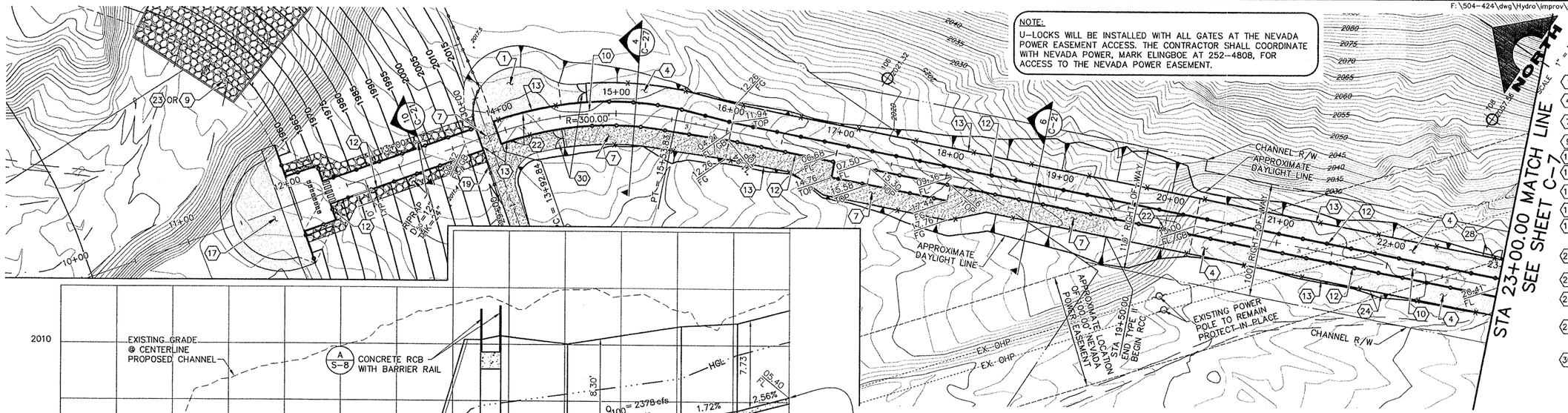
G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1"=30'
VERT: NONE
FIELD BOOK

DRAWING NO. C-5
SHT. OF

07380

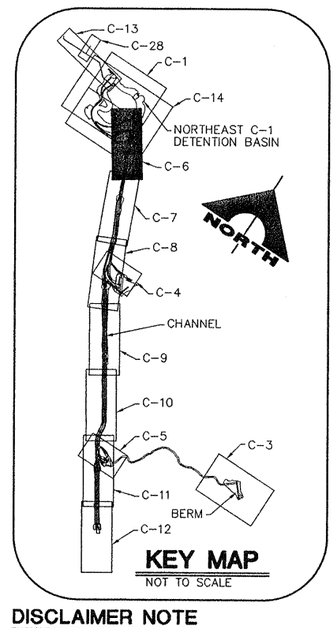
NOTE:
U-LOCKS WILL BE INSTALLED WITH ALL GATES AT THE NEVADA POWER EASEMENT ACCESS. THE CONTRACTOR SHALL COORDINATE WITH NEVADA POWER, MARK ELINGBOE AT 252-4808, FOR ACCESS TO THE NEVADA POWER EASEMENT.



50 0 50 100
SCALE FEET

CONSTRUCTION NOTES

1. CONSTRUCT ROLLER COMPACTED CONCRETE PAVEMENT. WIDTH VARIES, (SIMILAR TO 8/C-21)
4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
9. CONSTRUCT RIPRAP PER PLAN. SEE SHEET C-18.
10. CONSTRUCT CONCRETE CHANNEL.
12. INSTALL POST AND CABLE RAILING. (SEE DETAIL 5/C-25)
13. INSTALL CHAIN-LINK FENCE. (SEE DETAIL 1/C-25)
17. CONSTRUCT INFLOW STRUCTURE.(SEE DETAIL 1/C-24, 1/S-9)
19. INSTALL BLOCK AND CHAIN FENCE. (SEE DETAIL 7/C-25)
22. INSTALL CHANNEL ACCESS STEPS. (SEE DETAIL 4/S-3)
23. CONSTRUCT RCC STEPS PER PLAN. SEE SHEET C-18A
24. INSTALL CHANNEL IDENTIFIER AND WARNING SIGNS ON CHAIN-LINK FENCE, (SEE DETAILS 3/C-25 & 4/C-25)
28. INSTALL 16' CHAIN-LINK GATE. (SEE DETAILS 2/C-25 & 5/C-27)
30. INSTALL 16' CHAIN-LINK GATE WITH SIGNS. (SEE DETAILS 2/C-25, 3/C-25, 4/C-25 & 5/C-27)



KEY MAP
NOT TO SCALE

DISCLAIMER NOTE

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REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
CHANNEL PLAN & PROFILE
STA. 10+00.00 TO STA. 23+00.00
CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8833 STATE OF NEVADA PROFESSIONAL ENGINEER 4/9/08

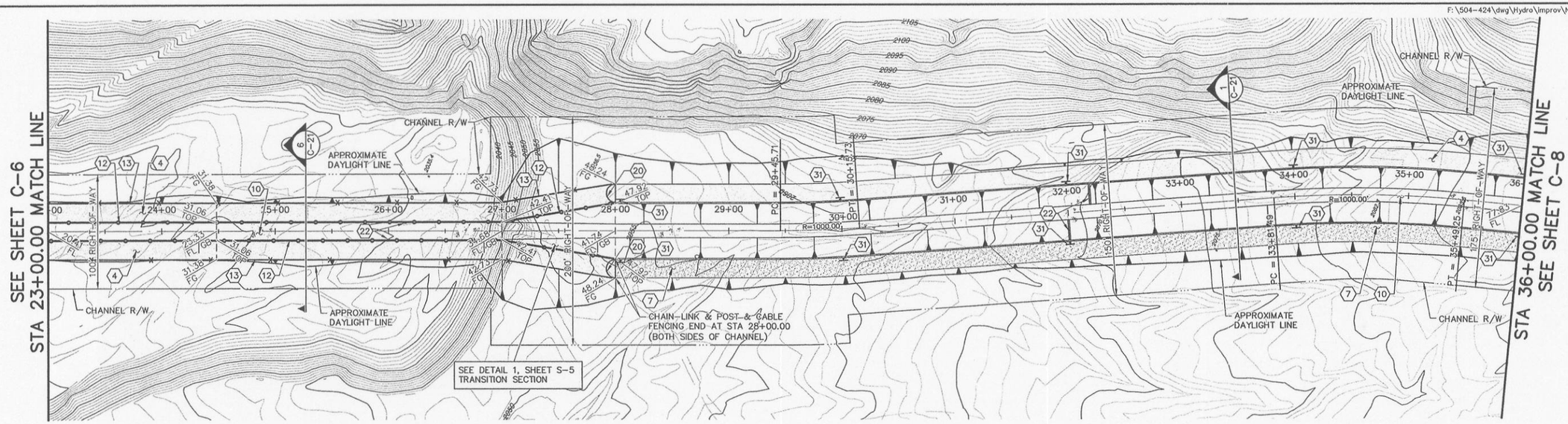
PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

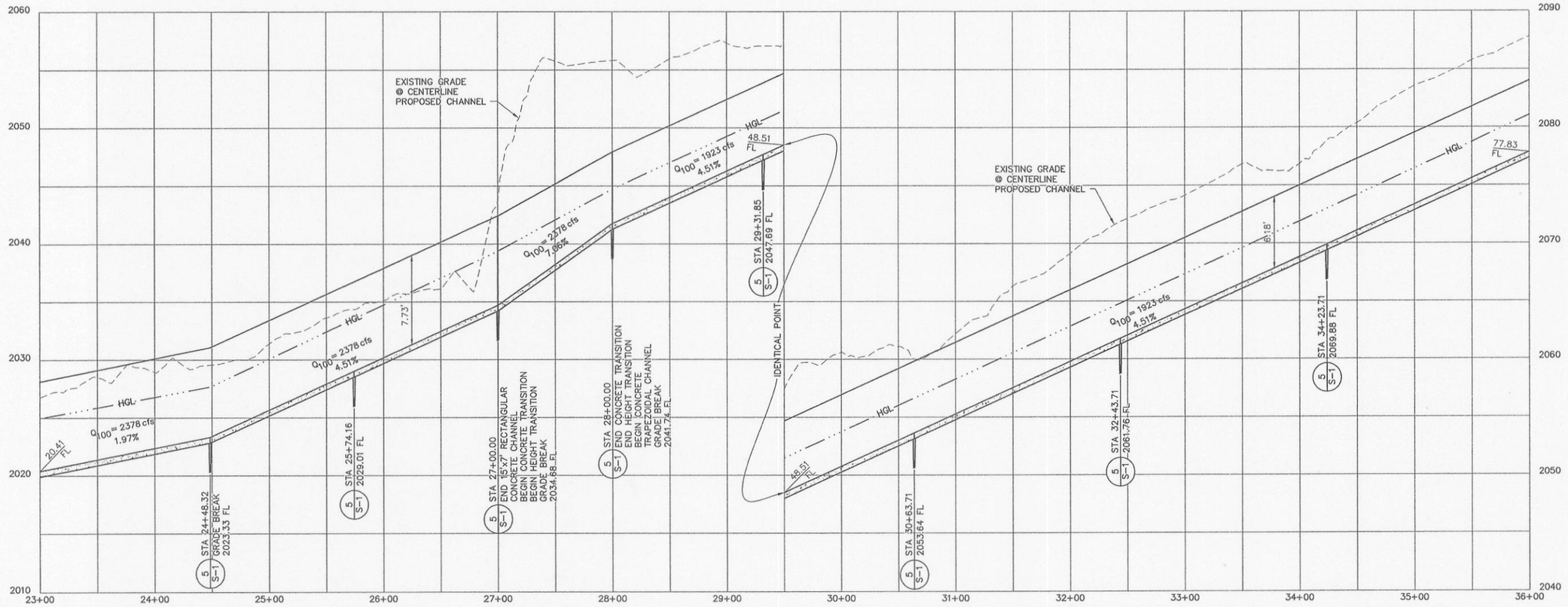
G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

DRAWING NO. C-6
SHT. OF

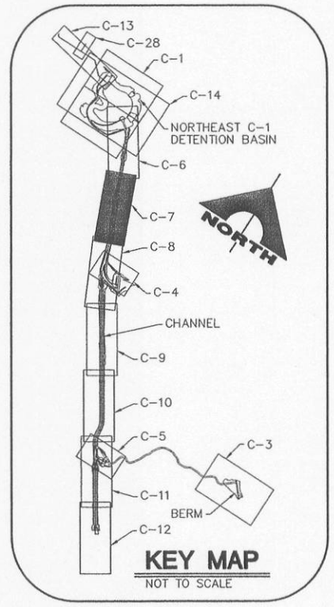
07380





CONSTRUCTION NOTES

- (4) CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-27)
- (7) CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-27)
- (10) CONSTRUCT CONCRETE CHANNEL.
- (12) INSTALL POST AND CABLE RAILING. (SEE DETAIL 5/C-25)
- (13) INSTALL CHAIN-LINK FENCE. (SEE DETAIL 1/C-25)
- (20) INSTALL 16' CHAIN-LINK GATE WITH SIGNS. (SEE DETAILS 2/C-25, 3/C-25 & 4/C-25)
- (22) INSTALL CHANNEL ACCESS STEPS. (SEE DETAIL 4/S-3)
- (31) INSTALL SIGN POST AND WARNING SIGN. (SEE DETAILS 8/C-25 & 7/C-27)



KEY MAP
NOT TO SCALE

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REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

CHANNEL PLAN & PROFILE

STA. 23+00.00 TO STA. 36+00.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER — WILLIAM E. HUNTER III — Exp. 06/30/2009 — CIVIL — No. 8833 — STATE OF NEVADA — 4/3/08

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
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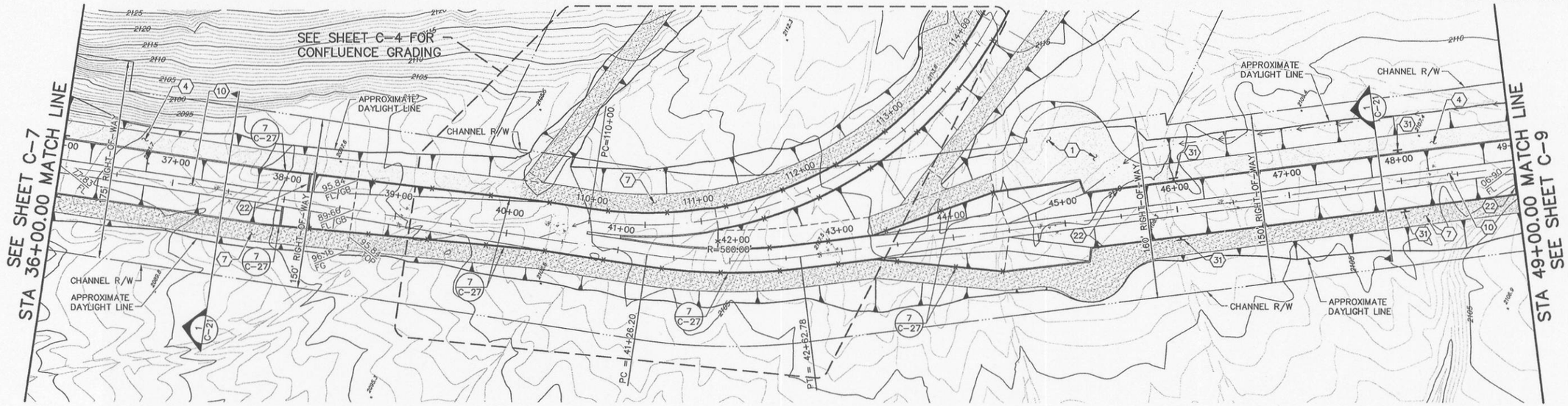
SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

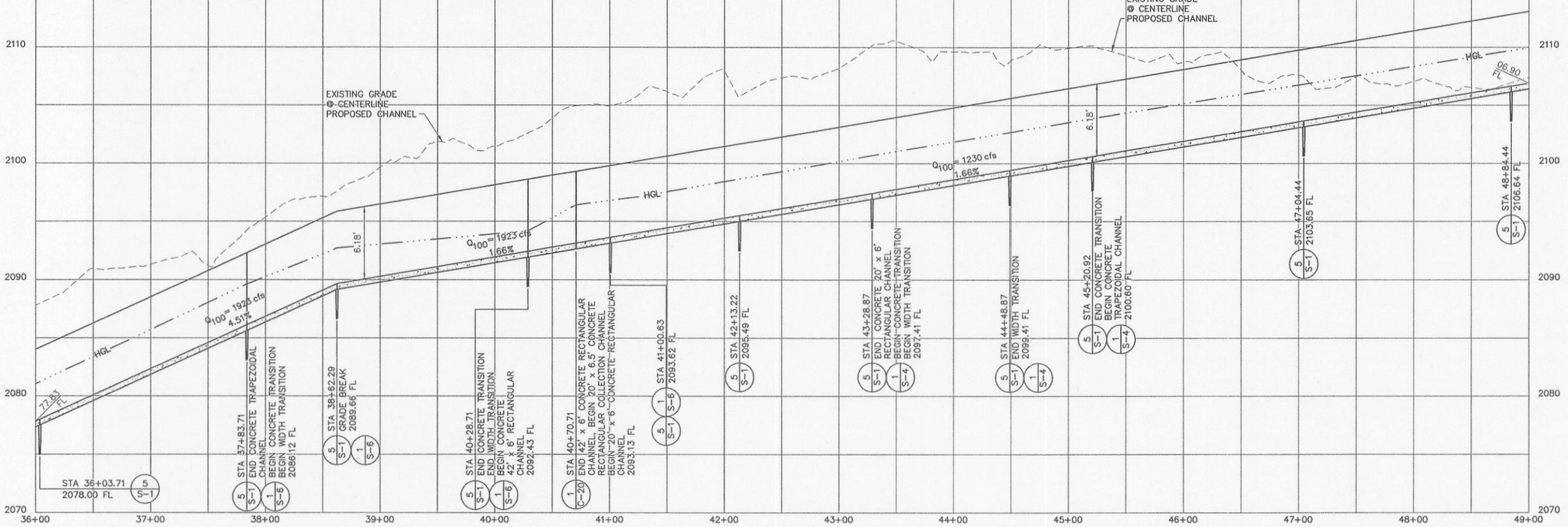
DRAWING NO. C-7
SHT. OF

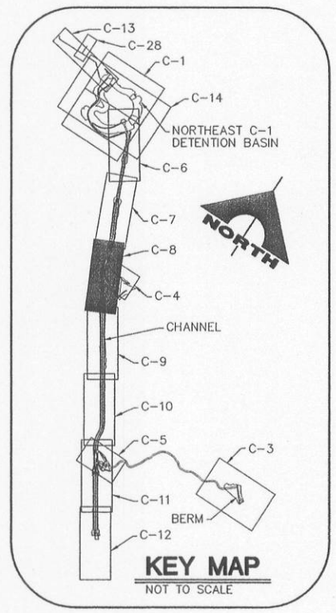
07380



CONSTRUCTION NOTES

1. CONSTRUCT ROLLER COMPACTED CONCRETE PAVEMENT. WIDTH VARIES, (SIMILAR TO 8/C-21)
4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
10. CONSTRUCT CONCRETE CHANNEL.
22. INSTALL CHANNEL ACCESS STEPS. (SEE DETAIL 4/S-3)
31. INSTALL SIGN POST AND WARNING SIGN. (SEE DETAILS 8/C-25 & 7/C-27)





KEY MAP
NOT TO SCALE

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REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

CHANNEL PLAN & PROFILE

STA. 36+00.00 TO STA. 49+00.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

WILLIAM E. HUNTER III
Exp. 06/30/2009
CIVIL
No. 8833
STATE OF NEVADA
PROFESSIONAL ENGINEER
4/3/08

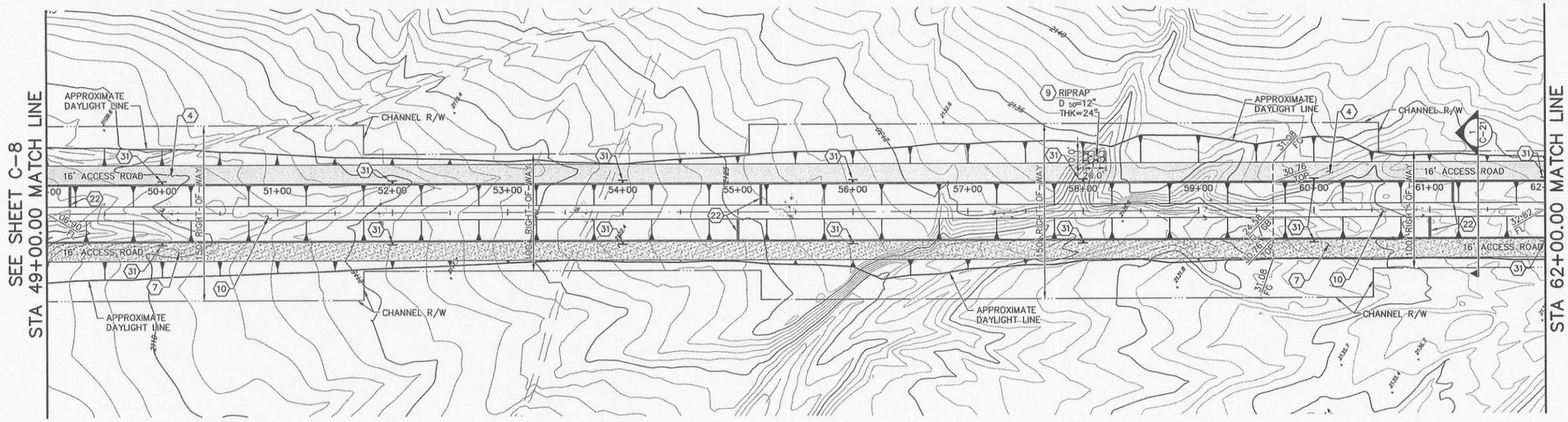
G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

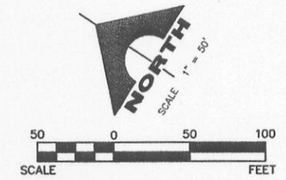
PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

DRAWING NO. C-8
SHT. OF

07380





CONSTRUCTION NOTES

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7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
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9. CONSTRUCT RIPRAP PER PLAN.
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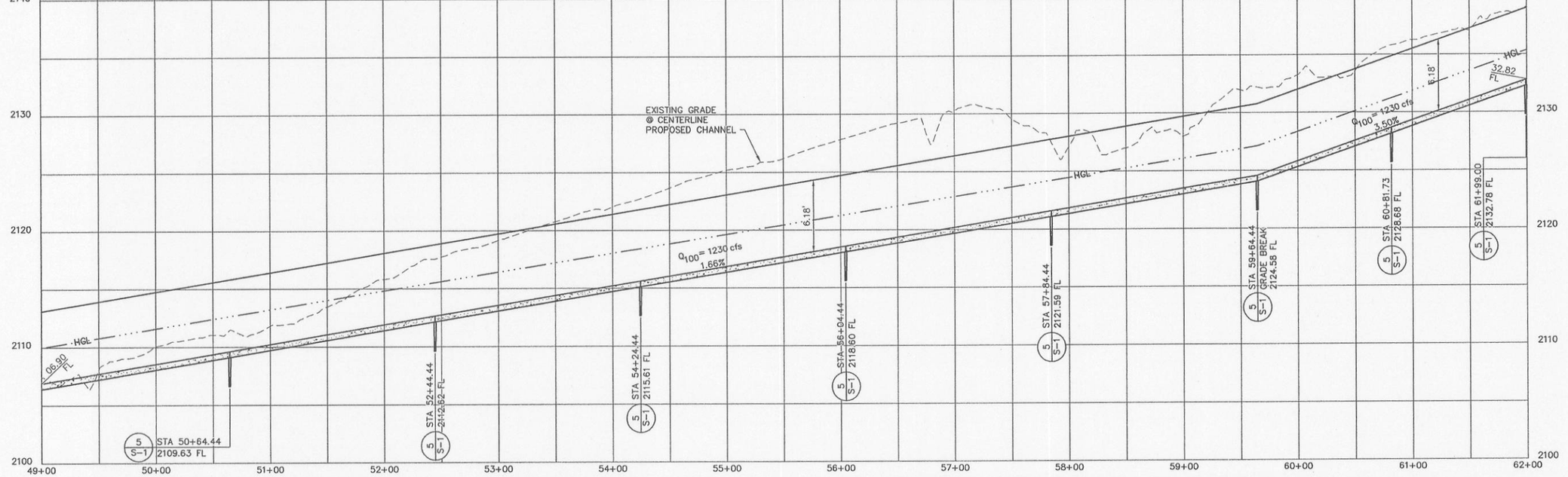

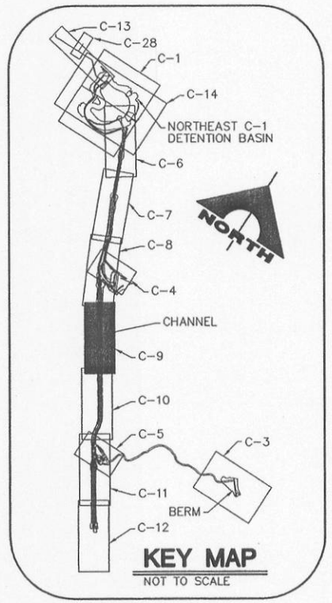

KEY MAP
NOT TO SCALE

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REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

CHANNEL PLAN & PROFILE

STA. 49+00.00 TO STA. 62+00.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8853
4/9/08

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

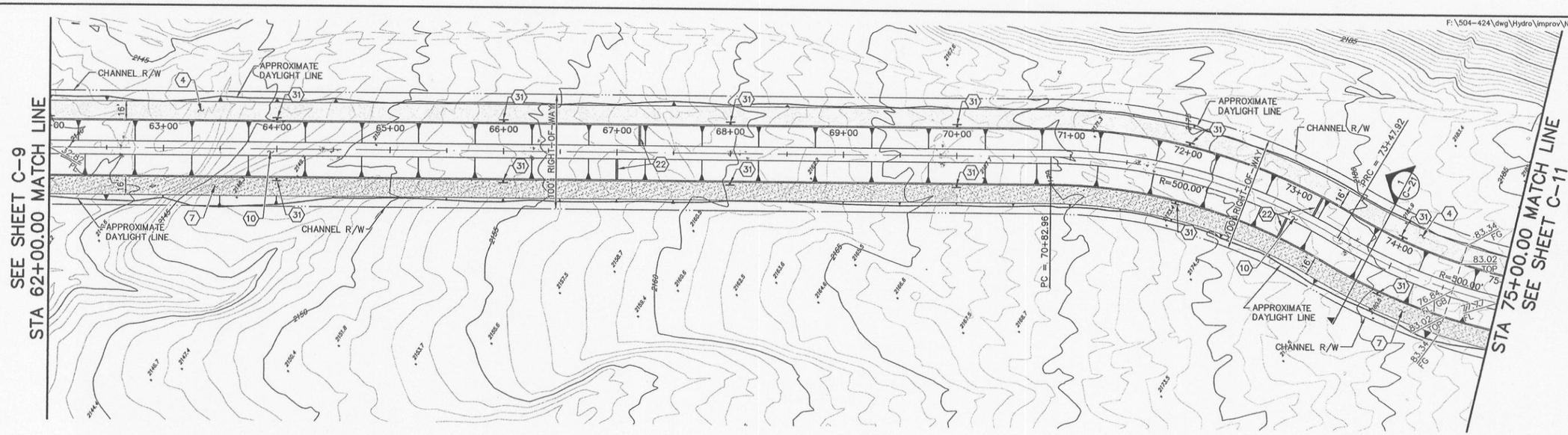
PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

DRAWING NO. C-9
SHT. OF

07380

F:\504-424\dwg\Hydro\improv\NEDB_C10.dwg 03-28-08 18:07:38 BJohnson



NORTH
SCALE 1" = 50'

50 0 50 100
SCALE FEET

CONSTRUCTION NOTES

4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
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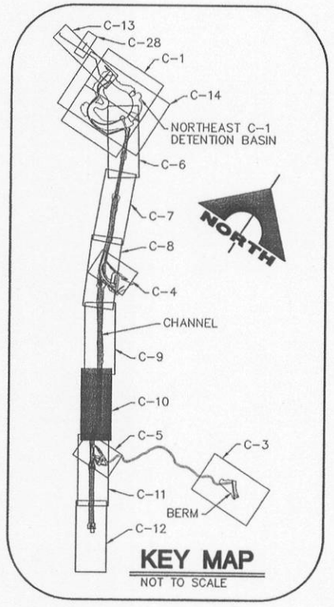

KEY MAP
NOT TO SCALE

DISCLAIMER NOTE

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REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

CHANNEL PLAN & PROFILE

STA. 62+00.00 TO 75+00.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM E. HUNTER III
Exp. 06/30/2009
CIVIL
No. 8833
4/3/08

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

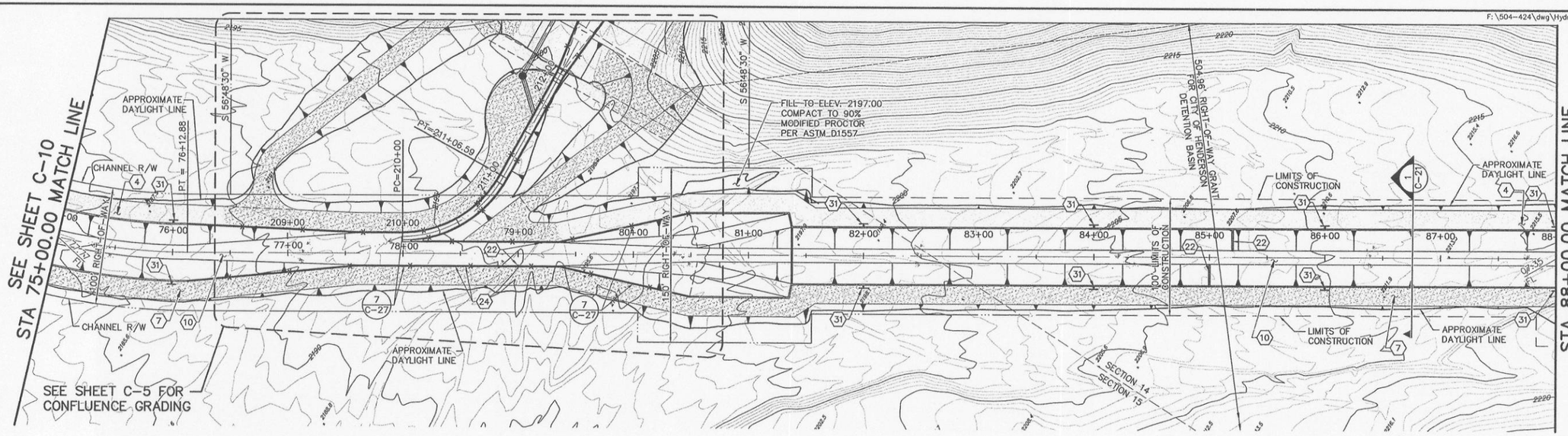
G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

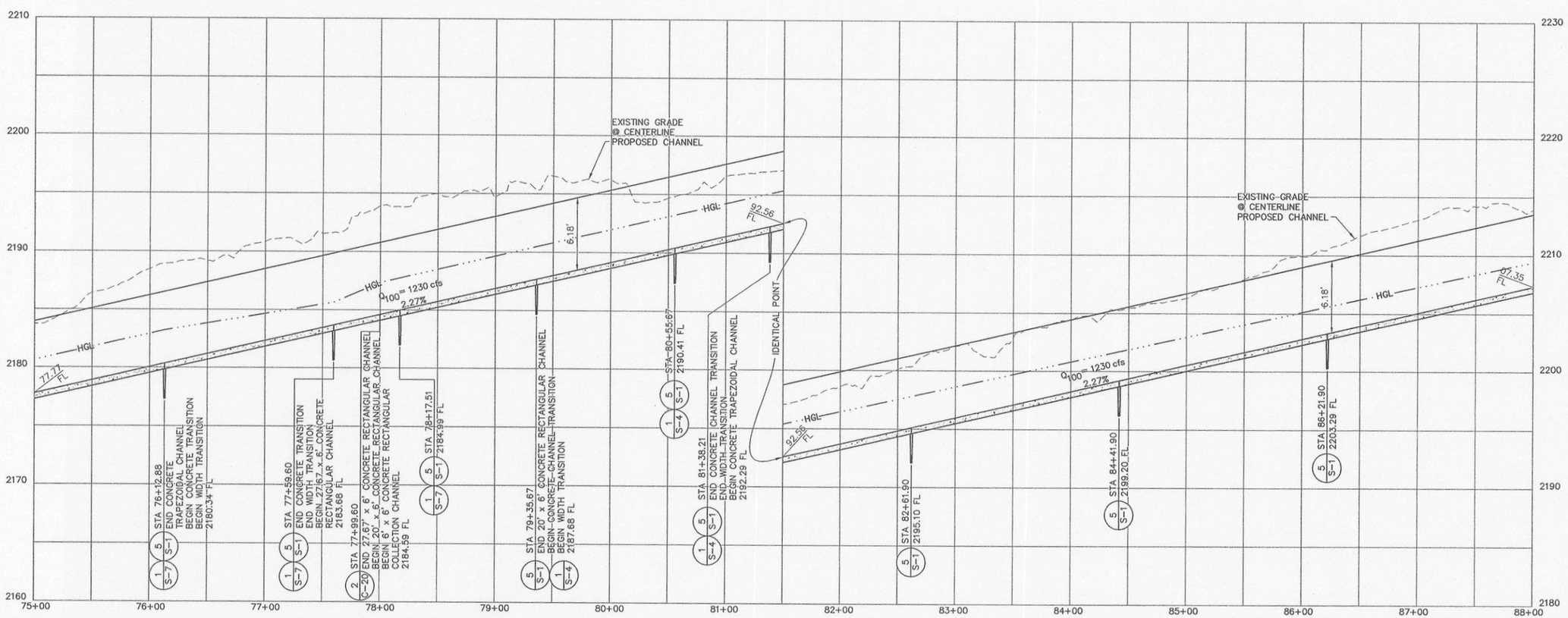
SCALE	
HORIZ:	1" = 50'
VERT:	1" = 5'
FIELD BOOK	

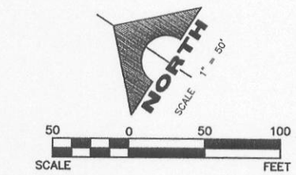
DRAWING NO. C-10
SHT. OF

07380

F:\504-424\dwg\Hydro\improv\NEDB_C11.dwg 03-28-08 18:07:49 BJohnson

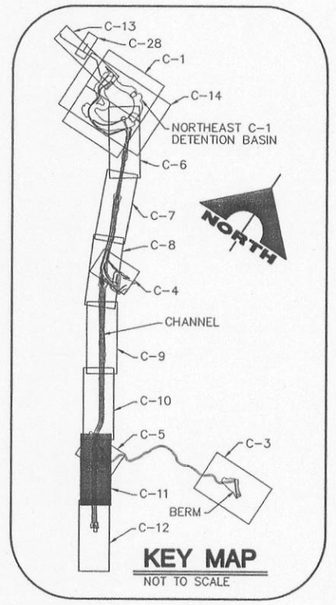






CONSTRUCTION NOTES

4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
10. CONSTRUCT CONCRETE CHANNEL.
22. INSTALL CHANNEL ACCESS STEPS. (SEE DETAIL 4/S-3)
24. INSTALL CHANNEL IDENTIFIER AND WARNING SIGNS ON CHAIN-LINK FENCE, (SEE DETAILS 3/C-25 & 4/C-25)
31. INSTALL SIGN POST AND WARNING SIGN. (SEE DETAILS 8/C-25 & 7/C-27)



KEY MAP

NOT TO SCALE

DISCLAIMER NOTE

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1-800-227-2600
UNDERGROUND SERVICE (USA)

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CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

CHANNEL PLAN & PROFILE

STA. 75+00.00 TO STA. 88+00.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8833 4/3/08

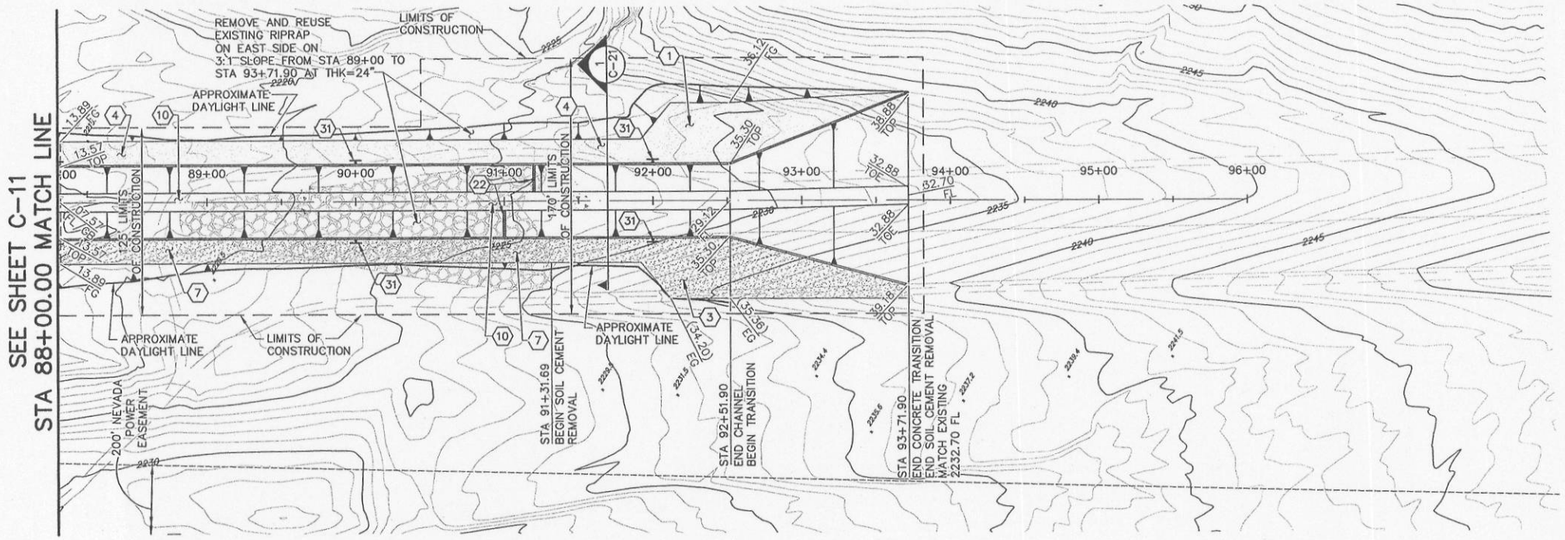
PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

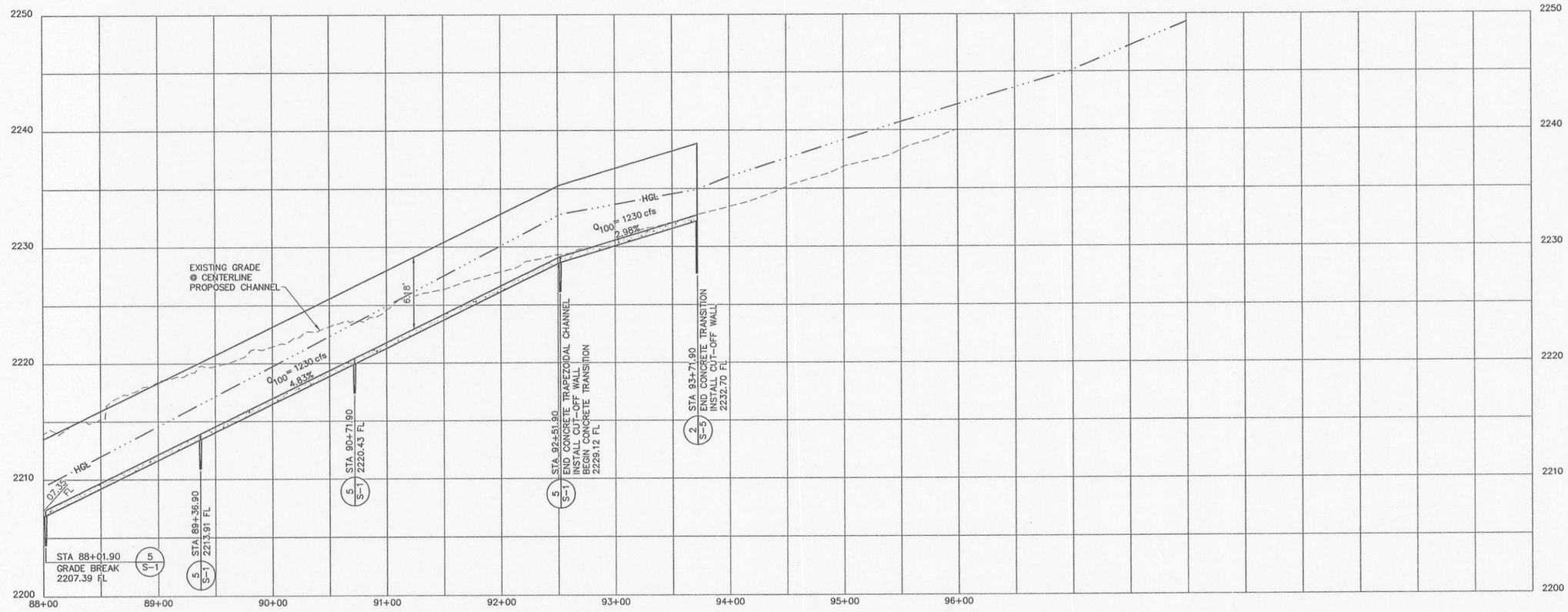
G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

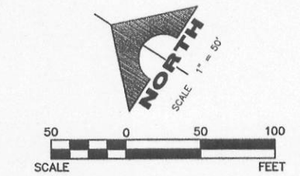
SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

DRAWING NO. C-11
SHT. OF

07380

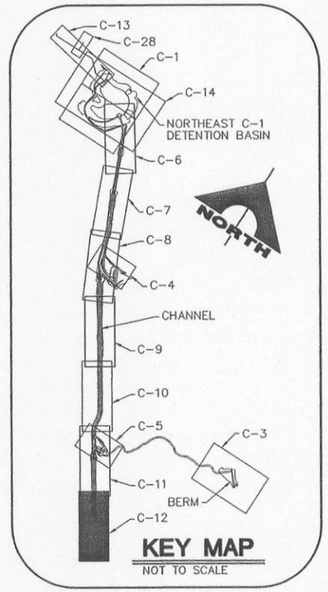






CONSTRUCTION NOTES

1. CONSTRUCT ROLLER COMPACTED CONCRETE PAVEMENT. WIDTH VARIES, (SIMILAR TO 8/C-21)
3. CONSTRUCT TYPE II AGGREGATE BASE.
4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
10. CONSTRUCT CONCRETE CHANNEL.
22. INSTALL CHANNEL ACCESS STEPS. (SEE DETAIL 4/S-3)
31. INSTALL SIGN POST AND WARNING SIGN. (SEE DETAILS 8/C-25 & 7/C-27)



DISCLAIMER NOTE

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REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

CHANNEL PLAN & PROFILE

STA. 88+00.00 TO STA. 93+00.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA — WILLIAM E. HUNTER III — No. 8853 — Exp. 06/30/2009 — CIVIL — 3/08

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY:

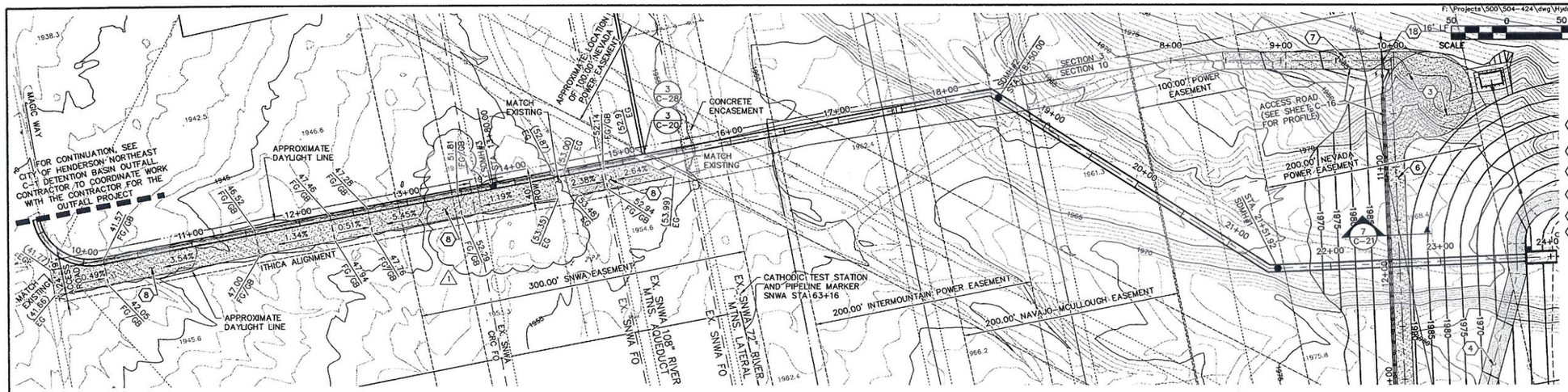
G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

DRAWING NO. C-12
SHT. OF

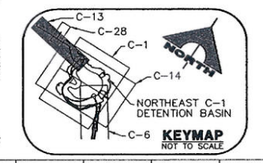
07380

F:\Projects\500\504-424\dwg\Hydro\improv\NEDB_C13.dwg 05-20-09 15:03:46 BJohnson

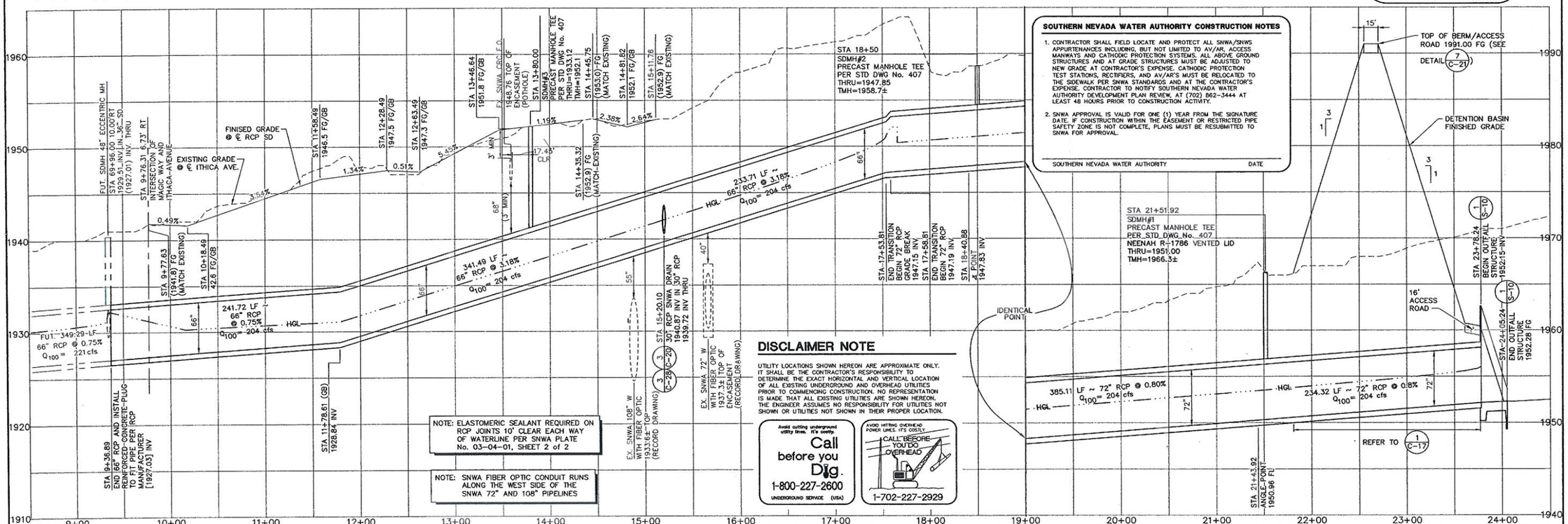


CONSTRUCTION NOTES

3. CONSTRUCT TYPE II AGGREGATE BASE. (SIMILAR TO 7/C-21)
4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
6. CONSTRUCT 15' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 7/C-21)
7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
8. CONSTRUCT 24' WIDE TYPE II ACCESS ROAD.
18. INSTALL BLOCK AND CHAIN GATE (WIDTH PER PLAN. SEE DETAIL 7/C-25)



KEYMAP NOT TO SCALE



NOTE: ELASTOMERIC SEALANT REQUIRED ON RCP JOINTS 10' CLEAR EACH WAY OF WATERLINE PER SNWA PLATE No. 03-04-01, SHEET 2 of 2

NOTE: SNWA FIBER OPTIC CONDUIT RUNS ALONG THE WEST SIDE OF THE SNWA 72" AND 108" PIPELINES

DISCLAIMER NOTE

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SOUTHERN NEVADA WATER AUTHORITY CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL SNWA/SNWS APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS AND CATHODIC PROTECTION SYSTEMS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. CATHODIC PROTECTION TEST STATIONS, RECTIFIERS, AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER SNWA STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY SOUTHERN NEVADA WATER AUTHORITY DEVELOPMENT PLAN REVIEW, AT (702) 862-3444 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
2. SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

SOUTHERN NEVADA WATER AUTHORITY DATE

REV. NO.	DATE	DESCRIPTION	APPROVED
1	05/20/09	REVISE GRADE TAGS AND SLOPES TO MATCH PROFILE	

NORTHEAST C-1 DETENTION BASIN

OUTFALL PLAN & PROFILE

STA. 9+00.00 TO STA. 24+50.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

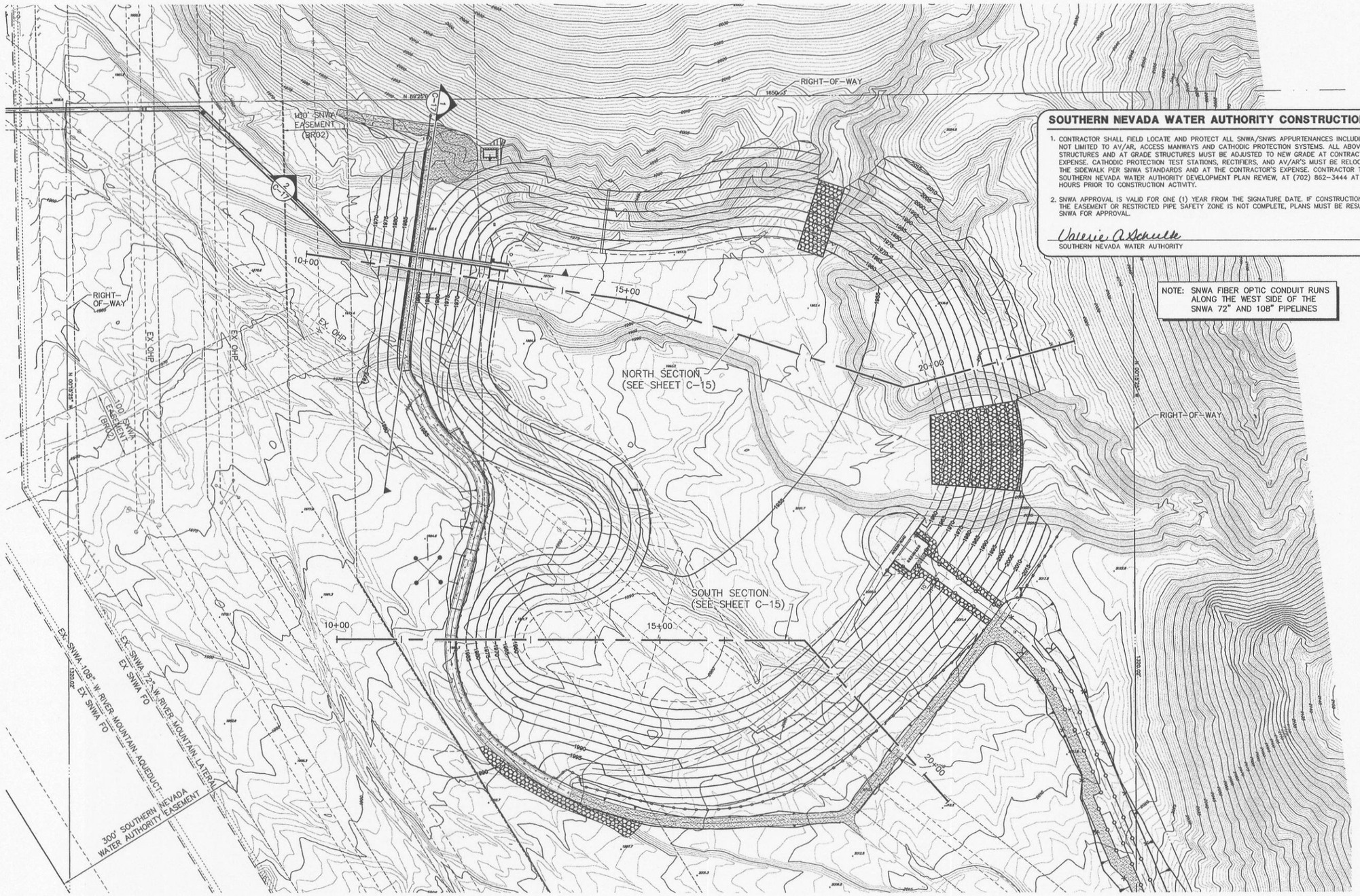
PROFESSIONAL ENGINEER'S SEAL — JERRY E. PRUITT — Exp. 12/31/2009 — CIVIL — No. 11907 — STATE OF NEVADA — 5-20-09

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

DRAWING NO. C-13
SHT. OF



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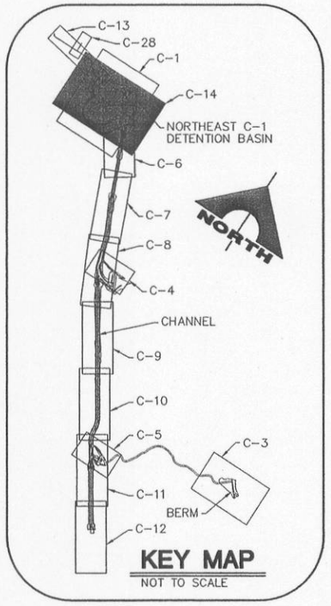
Valerie A Schmidt — 4/1/08
SOUTHERN NEVADA WATER AUTHORITY — DATE

NOTE: SNWA FIBER OPTIC CONDUIT RUNS ALONG THE WEST SIDE OF THE SNWA 72" AND 108" PIPELINES

NORTH

80 0 80 160
SCALE FEET



KEY MAP
NOT TO SCALE

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UNDERGROUND SERVICE (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

DETENTION BASIN CROSS SECTION
PLAN VIEW

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM E. HUNTER III
Exp. 06/30/2009
CIVIL
No. 8833
4/4/08

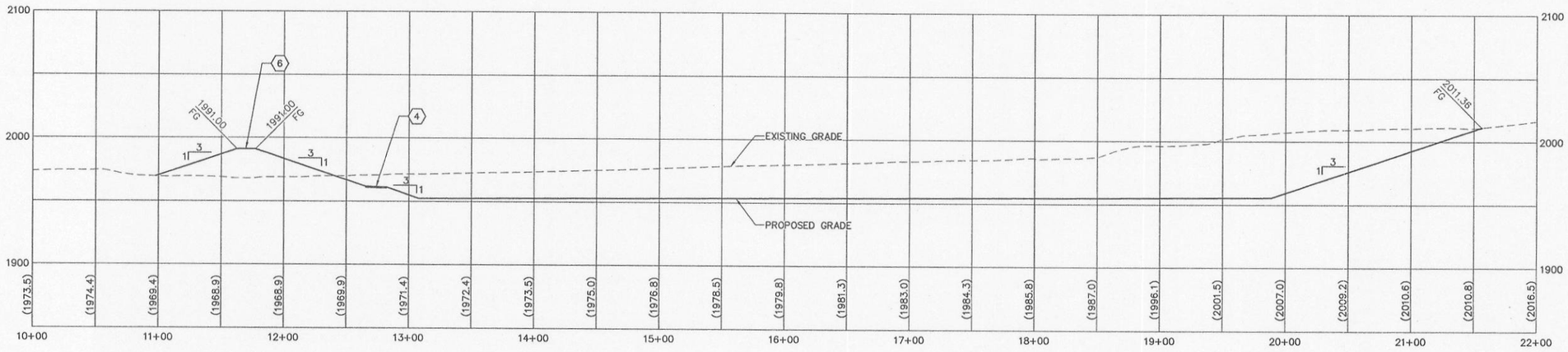
PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1" = 80'
VERT: NONE
FIELD BOOK

DRAWING NO. C-14
SHT. OF

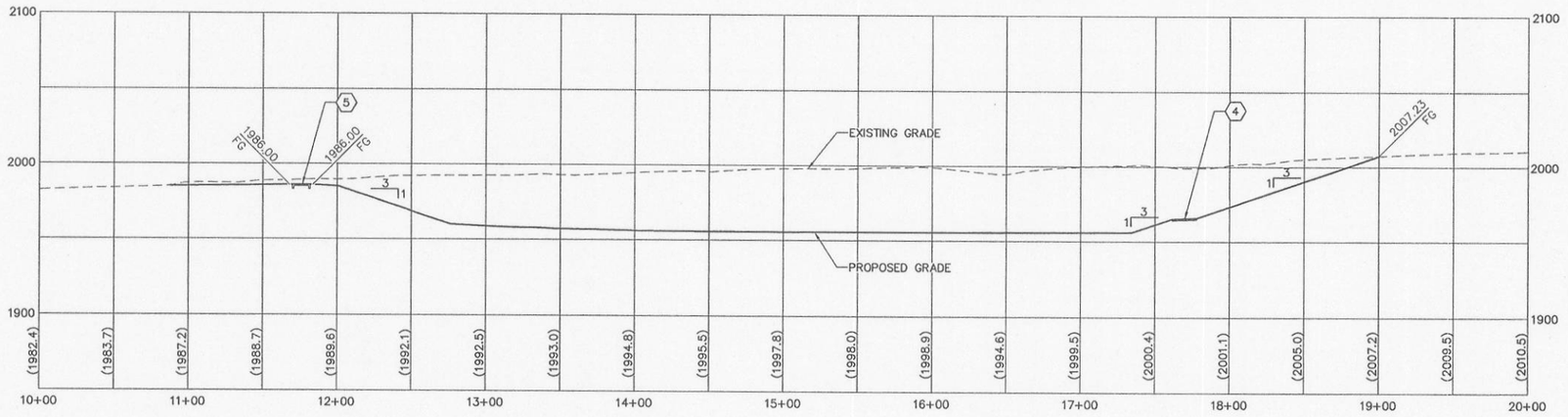
07380



NORTH SECTION
SCALE: HORIZ./VERT. 1" = 50'

CONSTRUCTION NOTES

4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
5. CONSTRUCT PORTLAND CEMENT CONCRETE ACCESS ROAD. (SEE DETAIL 4/S-10)
6. CONSTRUCT 15' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 7/C-21)



SOUTH SECTION
SCALE: HORIZ./VERT. 1" = 50'

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
DETENTION BASIN CROSS SECTIONS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8833 STATE OF NEVADA PROFESSIONAL ENGINEER 4/3/08

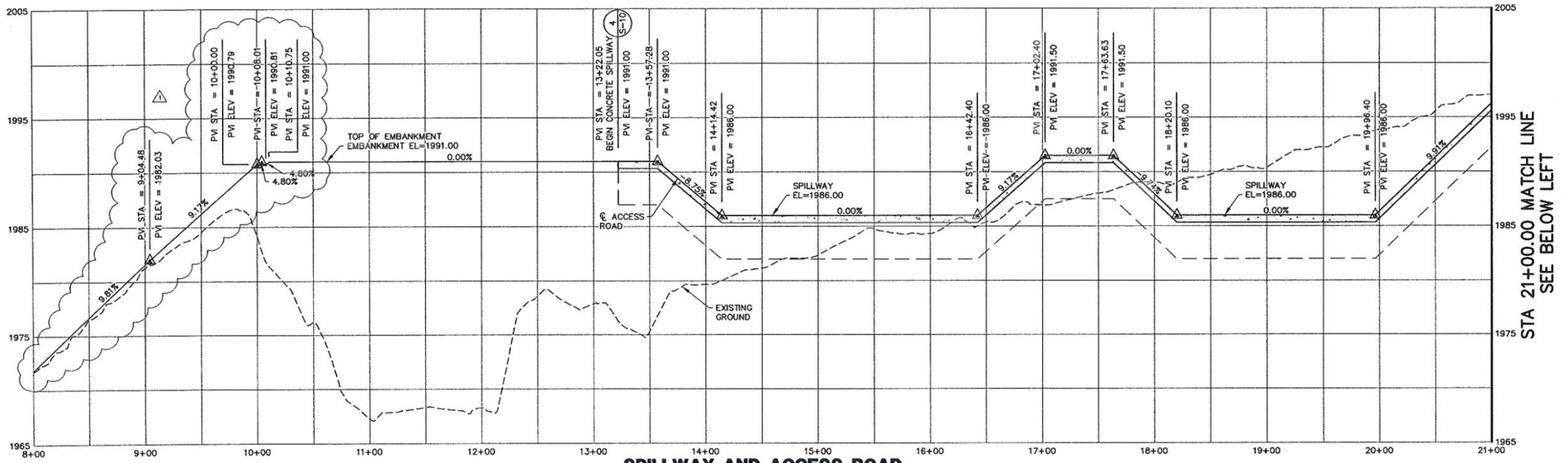
PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1" = 50'
VERT: 1" = 50'
FIELD BOOK

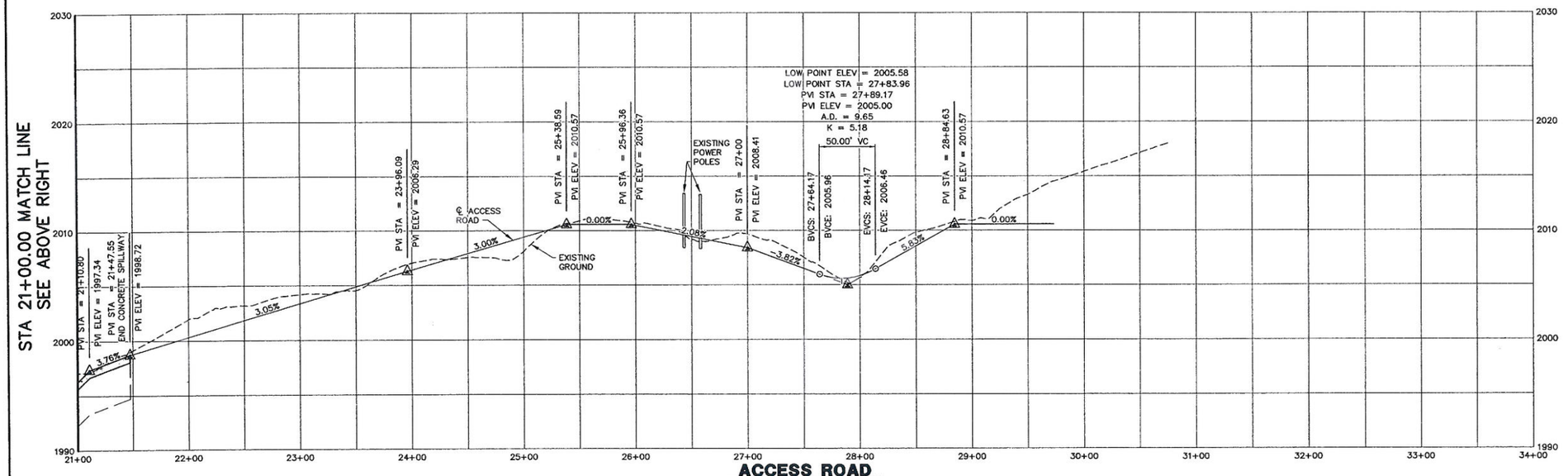
DRAWING NO. C-15
SHT. OF

07380



SPILLWAY AND ACCESS ROAD

SCALE: 1"=50' HORIZ./1"=5' VERT.



ACCESS ROAD

SCALE: 1"=50' HORIZ./1"=5' VERT.

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CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

REV. NO.	DATE	DESCRIPTION	APPROVED
1	05/20/09	REVISE PROFILE TO MATCH OUTFALL ACCESS ROAD	

NORTHEAST C-1 DETENTION BASIN

ACCESS ROAD PROFILE

STA 8+46.96 TO STA 29+73.05

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

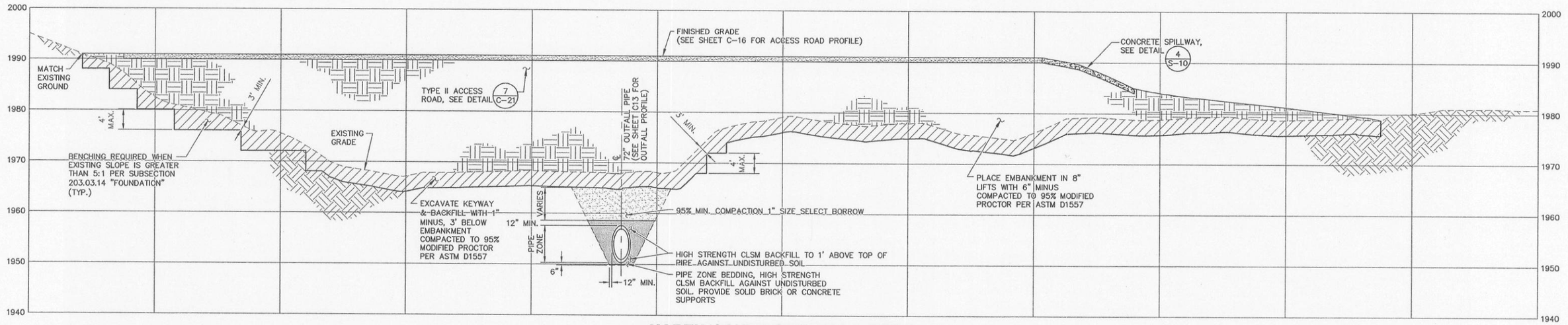
PROFESSIONAL ENGINEER — JERRY E. PRUITT — Exp. 12/31/2009 — CIVIL — No. 11902 — STATE OF NEVADA

PROJECT No: 504-424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

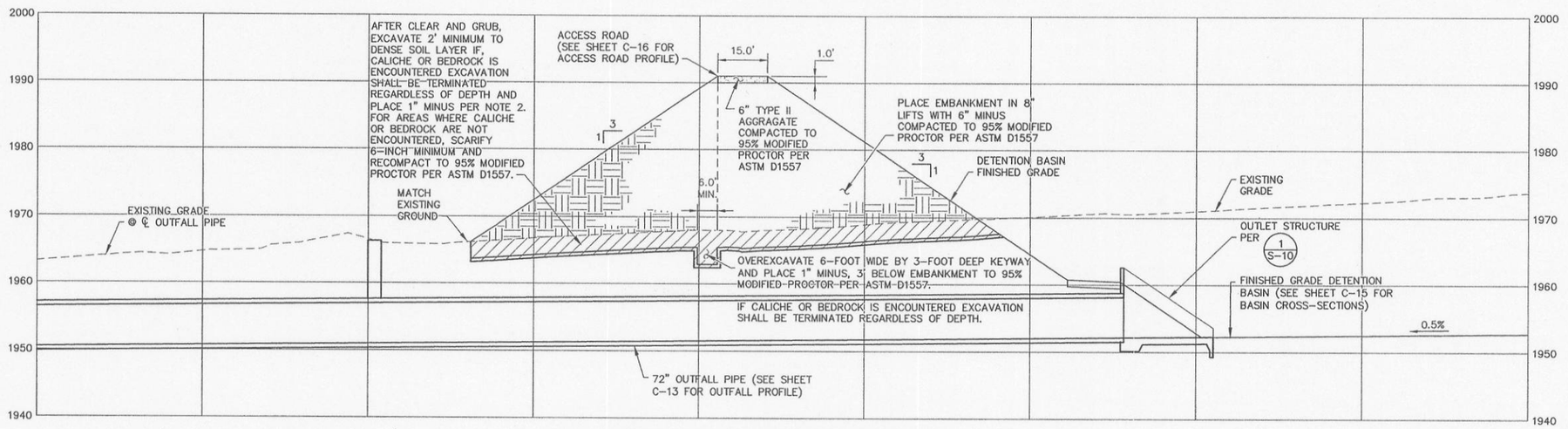
SCALE
HORIZ: 1"=50'
VERT: 1"=5'
FIELD BOOK

DRAWING NO. C-16
SHT. OF



NORTH/SOUTH SECTION @ BERM (1 / C-17)

SCALE: HORIZ. 1" = 20'
VERT. 1" = 10'



EAST/WEST SECTION @ BERM (2 / C-17)

SCALE: HORIZ. 1" = 20'
VERT. 1" = 10'

NOTE 1
FLOODING AND JETTING NOT PERMITTED

NOTE 2
IF CEMENTED MATERIALS ARE ENCOUNTERED WITHIN THE FOOTPRINT OF THE BERM THEN 16 INCHES OF 1" SIZE SELECT BORROW SHALL BE PLACED OVER THE CEMENTED MATERIAL PER SUB SECTION 203.03.15

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

DETENTION BASIN BERM SECTIONS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8833 4/3/08

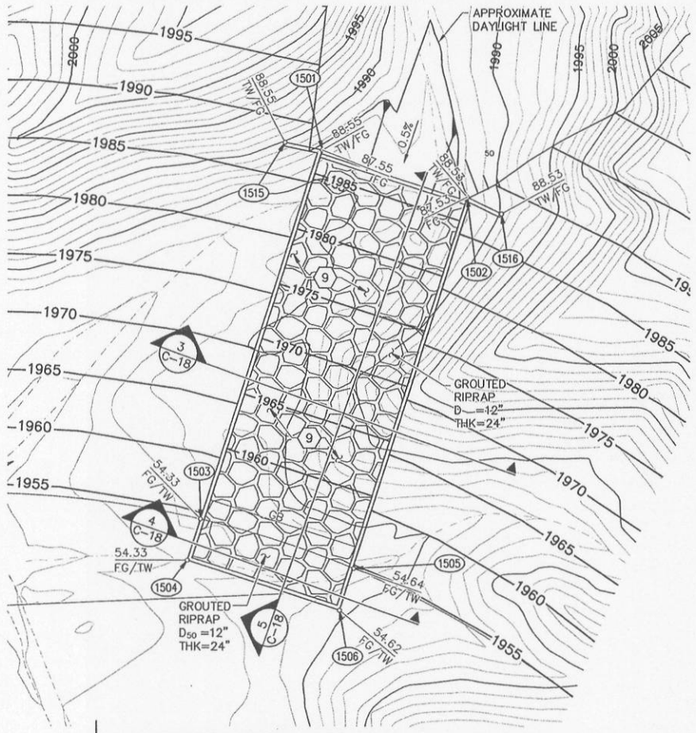
PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1" = 20'
VERT: 1" = 10'
FIELD BOOK

DRAWING NO. C-17
SHT. OF

07380



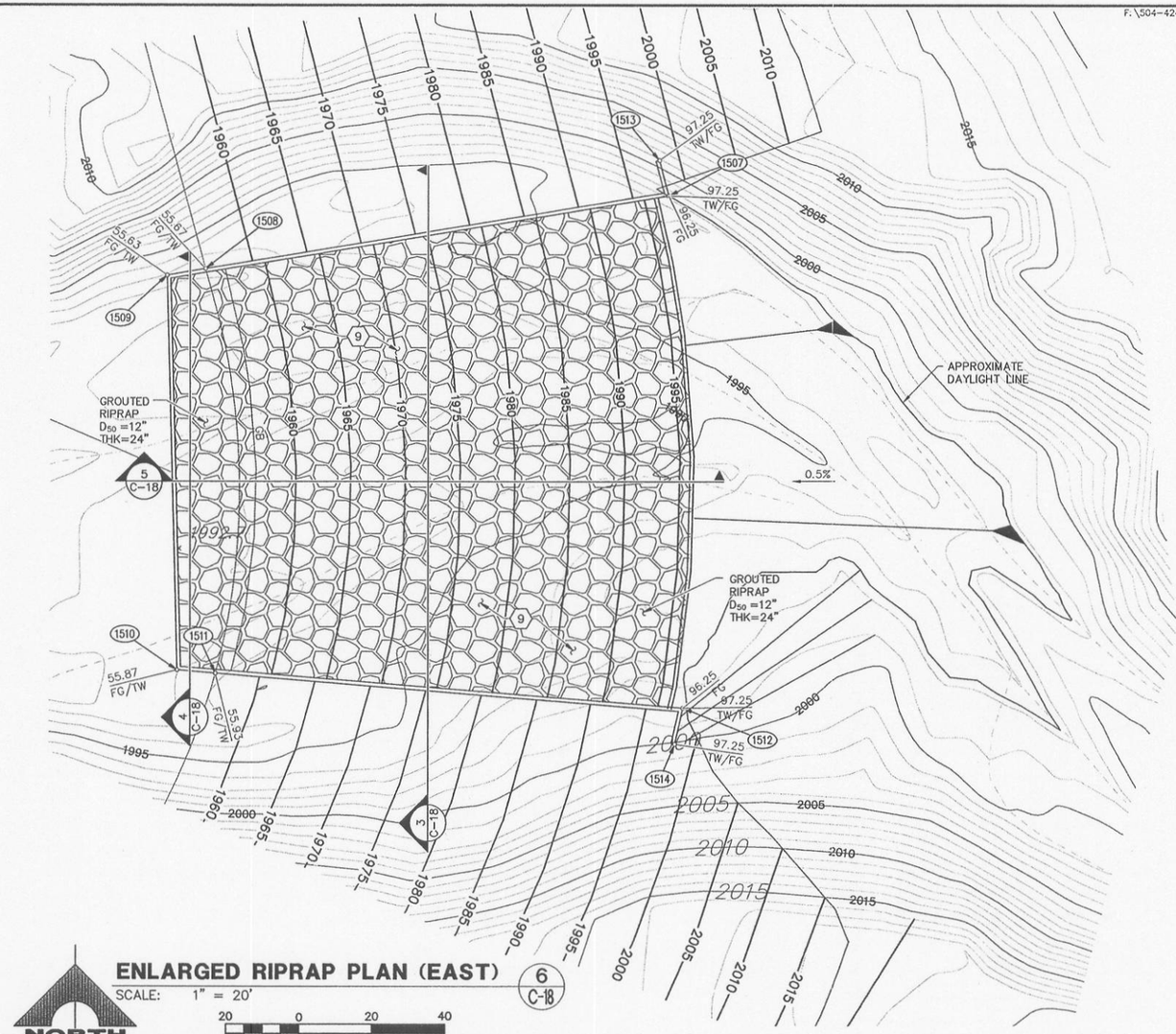
ENLARGED RIPRAP PLAN (NORTH) 7 C-18

SCALE: 1" = 20'

NORTH

20 0 20 40
SCALE FEET

COORDINATE TABLE			
No.	NORTHING	EASTING	DESCRIPTION
1501	726,707.4059	848,041.3939	CUT-OFF WALL
1502	726,695.1730	848,079.4774	CUT-OFF WALL
1503	726,611.5371	848,009.5493	CUT-OFF WALL
1504	726,600.7250	848,006.0763	CUT-OFF WALL
1505	726,598.6070	848,049.7651	CUT-OFF WALL
1506	726,587.8804	848,046.0640	CUT-OFF WALL
1507	726,368.5770	848,348.5849	CUT-OFF WALL
1508	726,348.7563	848,221.7066	CUT-OFF WALL
1509	726,347.0276	848,211.2466	CUT-OFF WALL
1512	726,229.9609	848,352.5103	RIPRAP WALL
1513	726,378.2393	848,346.0080	CUT-OFF WALL
1514	726,220.2127	848,350.2805	CUT-OFF WALL
1515	726,709.4235	848,031.5996	CUTOFF WALL
1516	726,690.8853	848,088.5116	CUTOFF WALL



ENLARGED RIPRAP PLAN (EAST) 6 C-18

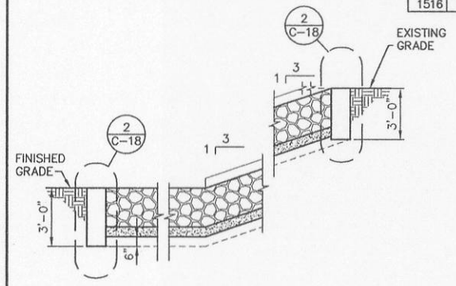
SCALE: 1" = 20'

NORTH

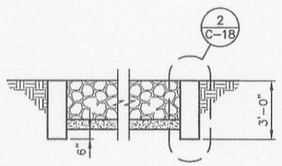
20 0 20 40
SCALE FEET

CONSTRUCTION NOTES

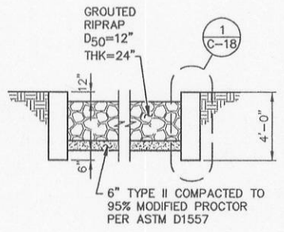
(9) CONSTRUCT RIPRAP PER PLAN.



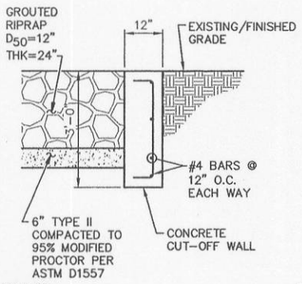
SECTION 5 C-18
NOT TO SCALE



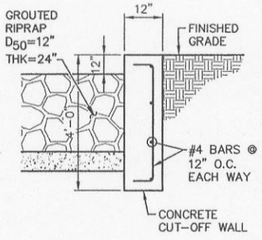
SECTION 4 C-18
NOT TO SCALE



SECTION 3 C-18
NOT TO SCALE



DETAIL 2 C-18
NOT TO SCALE



DETAIL 1 C-18
NOT TO SCALE

DISCLAIMER NOTE

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1-702-227-2929

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

DETENTION BASIN

ENLARGED RIPRAP AREAS, SECTIONS AND DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8833 3/08

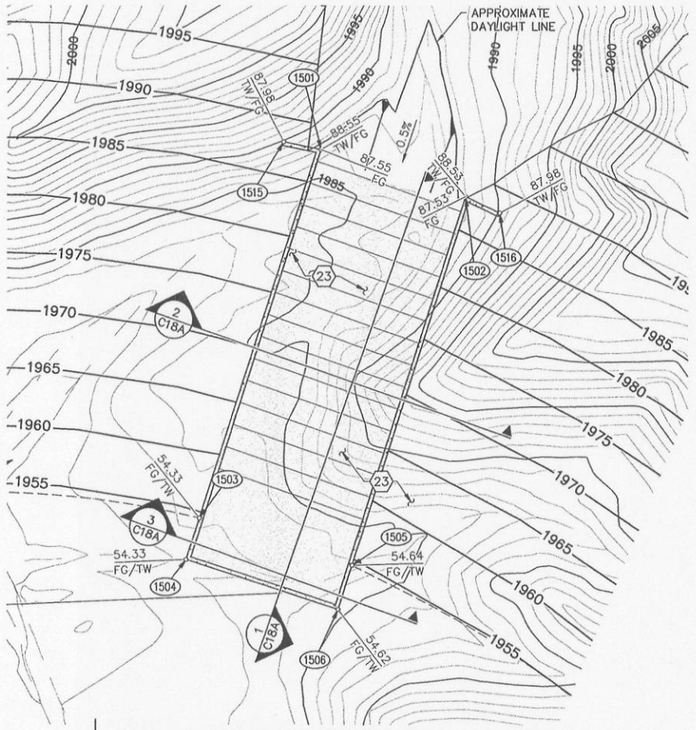
PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1" = 20'
VERT: NONE
FIELD BOOK

DRAWING NO. C-18
SHT. OF

07380



ENLARGED RCC STEP PLAN (NORTH) 7 C18A

SCALE: 1" = 20'

NORTH

20 0 20 40
SCALE FEET

COORDINATE TABLE			
No.	NORTHING	EASTING	DESCRIPTION
1501	726,707.4059	848,041.3939	CUT-OFF WALL
1502	726,695.1730	848,079.4774	CUT-OFF WALL
1503	726,611.5371	848,009.5493	CUT-OFF WALL
1504	726,600.7250	848,006.0763	CUT-OFF WALL
1505	726,598.6070	848,049.7651	CUT-OFF WALL
1506	726,587.8804	848,046.0640	CUT-OFF WALL
1507	726,368.5770	848,348.5849	CUT-OFF WALL
1508	726,348.7563	848,221.7066	CUT-OFF WALL
1509	726,347.0276	848,211.2466	CUT-OFF WALL
1512	726,229.9609	848,352.5103	RIPRAP WALL
1513	726,378.2393	848,346.0080	CUT-OFF WALL
1514	726,220.2127	848,350.2805	CUT-OFF WALL
1515	726,709.4235	848,031.5996	CUTOFF WALL
1516	726,690.8853	848,088.5116	CUTOFF WALL

ENLARGED RCC STEP PLAN (EAST) 6 C18A

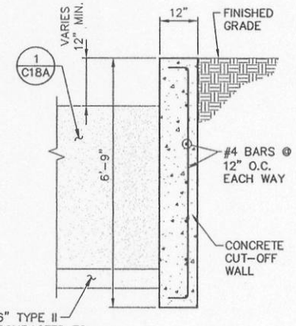
SCALE: 1" = 20'

NORTH

20 0 20 40
SCALE FEET

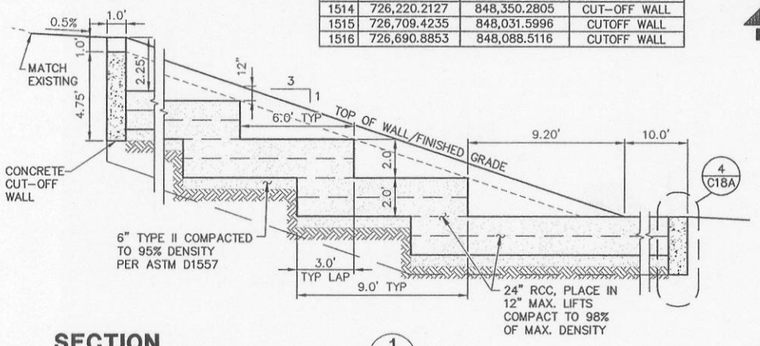
CONSTRUCTION NOTES

(23) CONSTRUCT RCC STEPS PER PLAN.



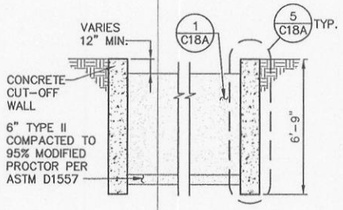
DETAIL 5 C18A

NOT TO SCALE



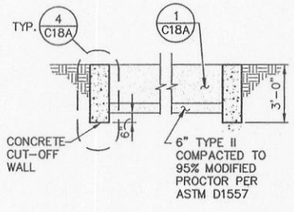
SECTION 1 C18A

NOT TO SCALE



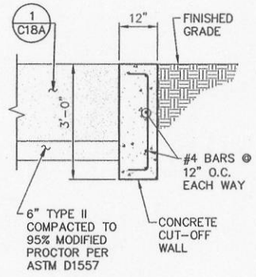
SECTION 2 C18A

NOT TO SCALE



DETAIL 3 C18A

NOT TO SCALE



DETAIL 4 C18A

NOT TO SCALE

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REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

DETENTION BASIN

ENLARGED RCC STEPPED AREAS, SECTIONS AND DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

WILLIAM E HUNTER III
Exp. 06/30/2009
CIVIL
No. 8833
STATE OF NEVADA
PROFESSIONAL ENGINEER
4/3/08

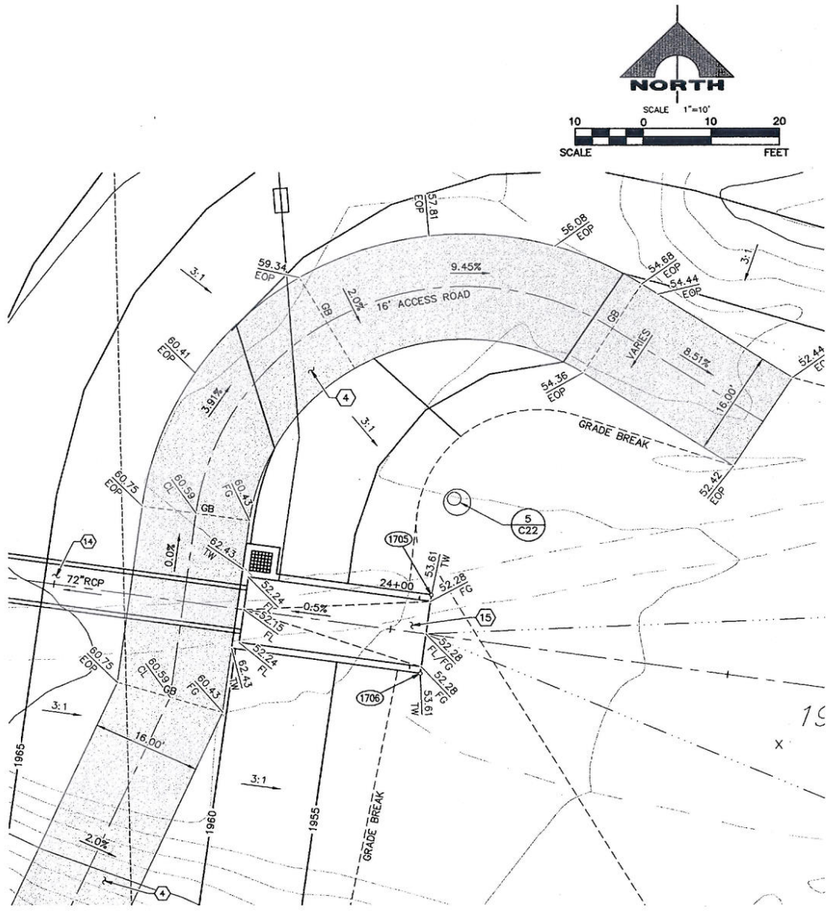
G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

SCALE
HORIZ: 1" = 20'
VERT: NONE
FIELD BOOK

DRAWING NO. C18A
SHT. OF

07380



CONSTRUCTION NOTES

3. CONSTRUCT TYPE II AGGREGATE BASE. (SIMILAR TO 2/C-21)
4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
6. CONSTRUCT 15' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 7/C-21)
7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
14. INSTALL OUTLET PIPE. (SEE C-13)
15. CONSTRUCT OUTLET STRUCTURE. (SEE DETAIL 1/S-10)
16. CONSTRUCT MONITORING STATION. (SEE DETAIL 1/C-22)
18. INSTALL BLOCK AND CHAIN GATE (WIDTH PER PLAN, SEE DETAIL 7/C-25)
19. INSTALL BLOCK AND CHAIN FENCE. (SEE DETAIL 7/C-25)
25. INSTALL SIGN POST AND WARNING SIGN. (SEE DETAIL 4/C-25 8/C-25)

COORDINATE TABLE			
No.	NORTHING	EASTING	DESCRIPTION
1701	726753.1380	847519.9419	MONITORING STATION
1702	726753.1380	847540.6006	MONITORING STATION
1703	726742.5008	847471.5172	CENTER
1704	726683.9887	847458.2381	CENTER
1705	726577.9041	847559.1750	OUTFALL STRUCTURE
1706	726566.0180	847557.5251	OUTFALL STRUCTURE

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ACCESS ROAD 2/C-19
SCALE: 1" = 20'

OUTFALL STRUCTURE 1/C-19
SCALE: 1" = 10'

REV. NO.	DATE	DESCRIPTION	APPROVED
1	05/20/09	REVISE GRADE TAGS AND SLOPES TO MATCH PROFILE	

NORTHEAST C-1 DETENTION BASIN
ACCESS ROAD AND OUTFALL STRUCTURE ENLARGEMENT
CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

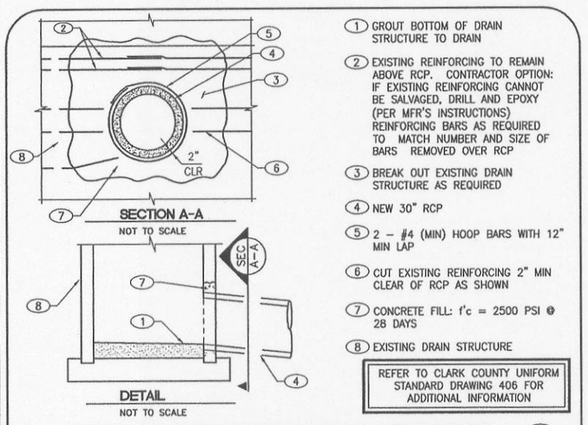
PROFESSIONAL ENGINEER STATE OF NEVADA JERRY E. PRUITT No. 11907 Exp. 12/31/2009 CIVIL 5-20-09

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD - LAS VEGAS, NV 89146
T: 702.804.2000 - F: 702.804.2299 - GCWALLACE.COM

SCALE
HORIZ: AS SHOWN
VERT: NONE
FIELD BOOK

DRAWING NO. C-19
SHT. OF



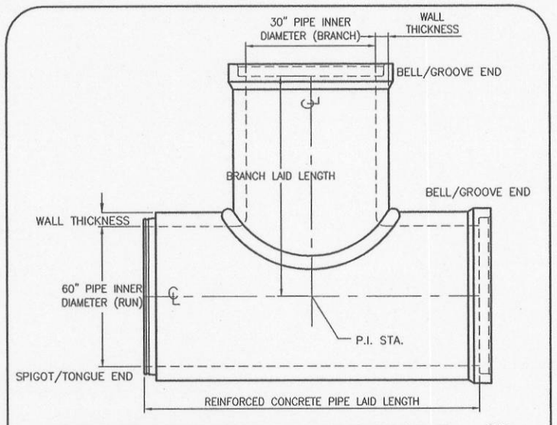
1. GROUT BOTTOM OF DRAIN STRUCTURE TO DRAIN
2. EXISTING REINFORCING TO REMAIN ABOVE RCP. CONTRACTOR OPTION: IF EXISTING REINFORCING CANNOT BE SALVAGED, DRILL AND EPOXY (PER MFR'S INSTRUCTIONS) REINFORCING BARS AS REQUIRED TO MATCH NUMBER AND SIZE OF BARS REMOVED OVER RCP
3. BREAK OUT EXISTING DRAIN STRUCTURE AS REQUIRED
4. NEW 30" RCP
5. 2 – #4 (MIN) HOOP BARS WITH 12" MIN LAP
6. CUT EXISTING REINFORCING 2" MIN CLEAR OF RCP AS SHOWN
7. CONCRETE FILL: f'c = 2500 PSI @ 28 DAYS
8. EXISTING DRAIN STRUCTURE

REFER TO CLARK COUNTY UNIFORM STANDARD DRAWING 406 FOR ADDITIONAL INFORMATION

30" OUTLET AT EXISTING DRAIN STRUCTURE

NOT TO SCALE

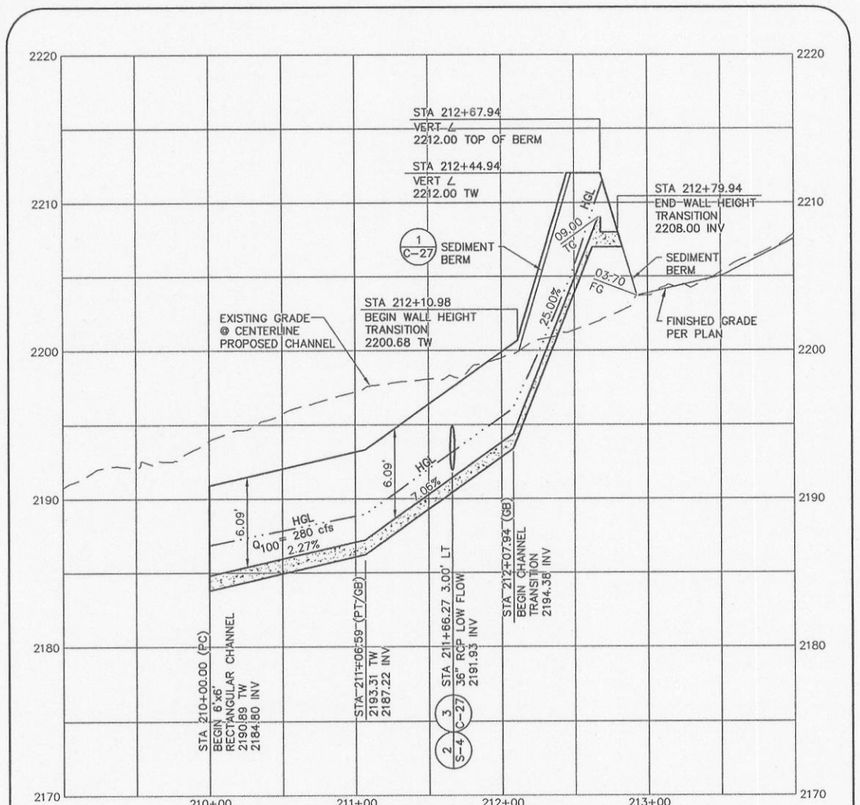
4 C-20



PRECAST REINFORCED CONCRETE WYE

NOT TO SCALE

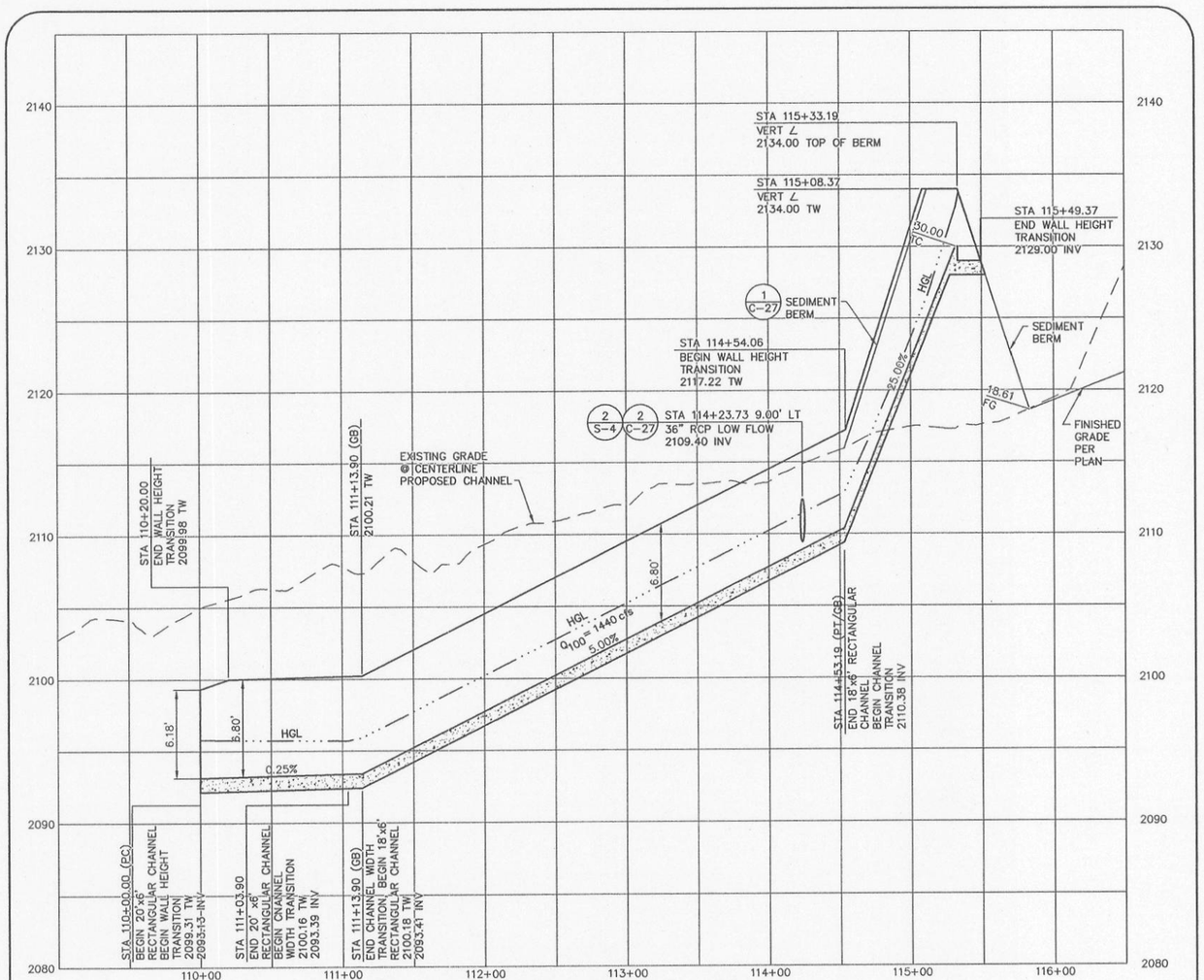
3 C-20



COLLECTION CHANNEL - SOUTH

SCALE: 1"=50' HORIZ., 1"=5' VERT.

2 C-20



COLLECTION CHANNEL - NORTH

SCALE: 1"=50' HORIZ., 1"=5' VERT.

1 C-20

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

COLLECTION CHANNEL PROFILES

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8833 STATE OF NEVADA 4/9/08

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY:

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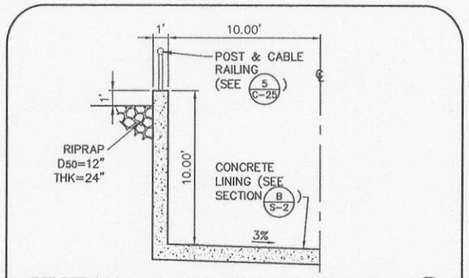
SCALE
HORIZ: 1"=50'
VERT: 1"=5'
FIELD BOOK

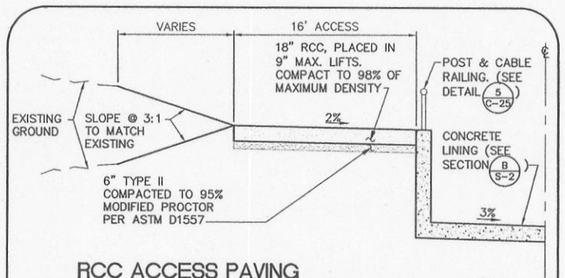
DRAWING NO. C-20
SHT. OF

07380



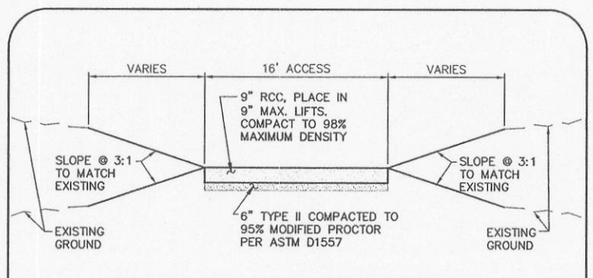
SECTION (STA 12+30.21 TO STA 13+74.84) 10 C-21

NOT TO SCALE



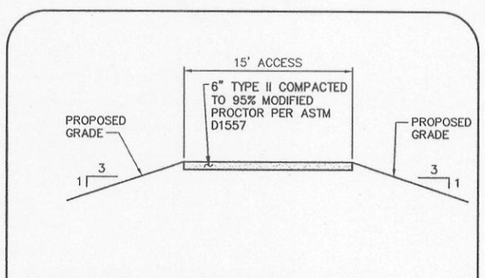
RCC ACCESS PAVING
(STA 19+50.00 TO STA 28+00.00) 9 C-21

NOT TO SCALE



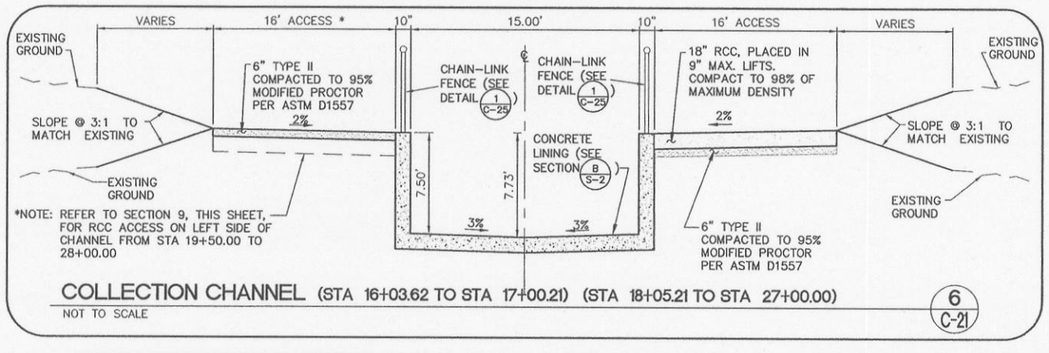
16' RCC ACCESS ROAD SECTION 8 C-21

NOT TO SCALE



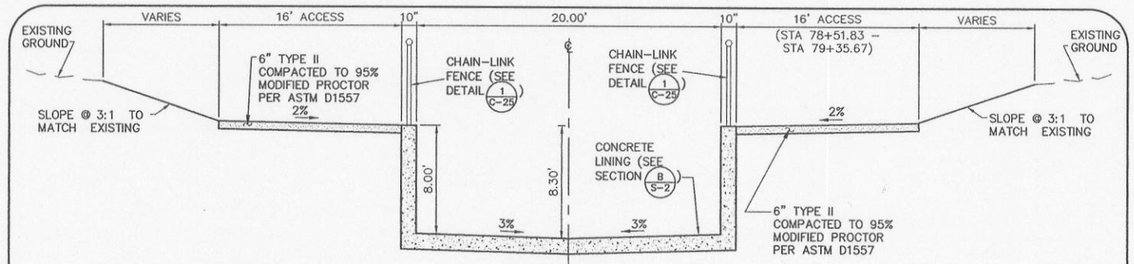
15' TYPE II ACCESS ROAD SECTION 7 C-21

NOT TO SCALE



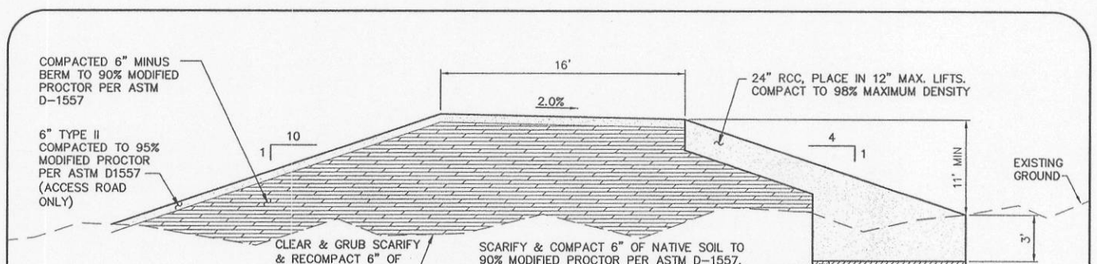
COLLECTION CHANNEL (STA 16+03.62 TO STA 17+00.21) (STA 18+05.21 TO STA 27+00.00) 6 C-21

NOT TO SCALE



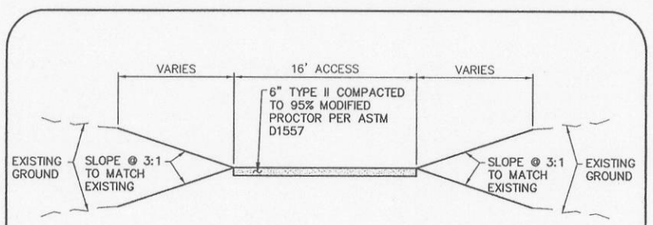
COLLECTION CHANNEL (STA 77+99.60 TO STA 79+35.67) 5 C-21

NOT TO SCALE



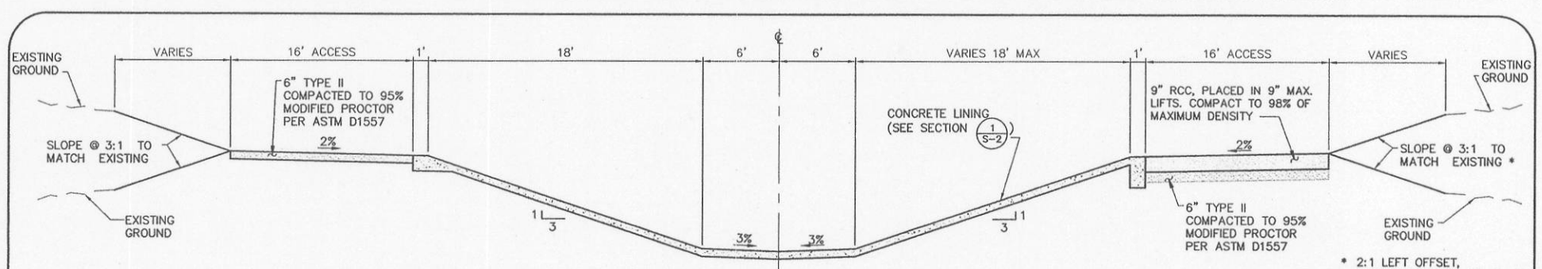
BERM SECTION 2 C-21

NOT TO SCALE



16' ACCESS ROAD SECTION 4 C-21

NOT TO SCALE



COLLECTION CHANNEL SECTION (STA 28+00.00 TO STA 37+83.71) (STA 45+20.92 TO STA 76+12.88) (STA 81+38.21 TO STA 92+51.90) 1 C-21

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

CHANNEL AND BERM SECTIONS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8833 3/3/08

PROJECT No: 504.424 DRAWN BY:

DESIGNED BY: CHECKED BY:

APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE

HORIZ: NONE

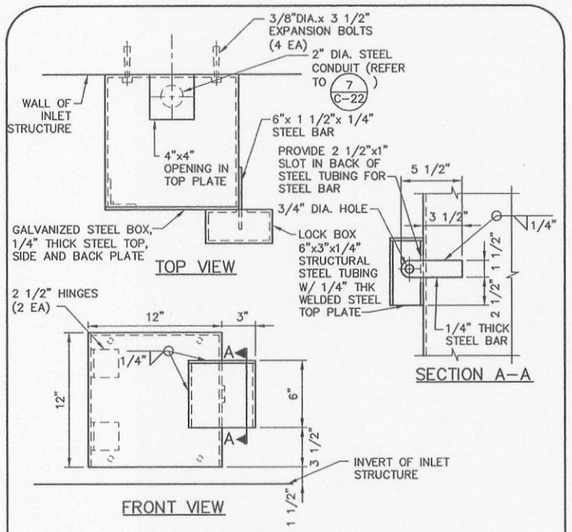
VERT: NONE

FIELD BOOK

DRAWING NO. C-21

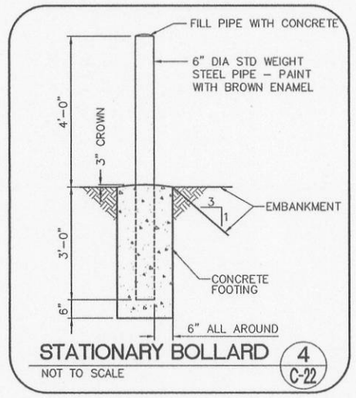
SHT. OF

07380



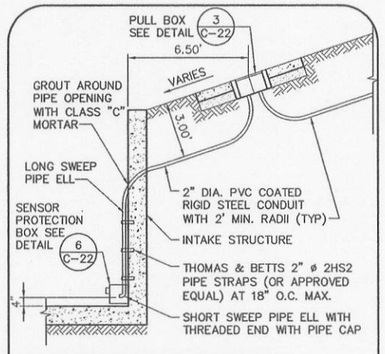
SENSOR PROTECTION BOX 6 C-22

NOT TO SCALE



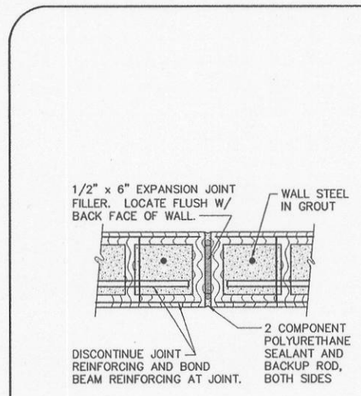
STATIONARY BOLLARD 4 C-22

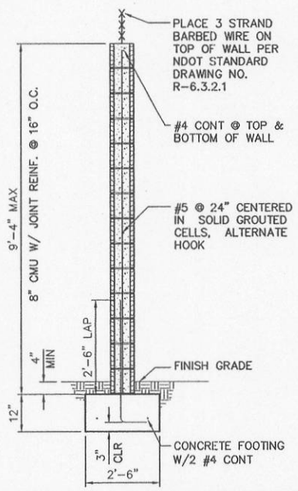
NOT TO SCALE



SENSOR CONDUIT DETAIL 7 C-22

NOT TO SCALE





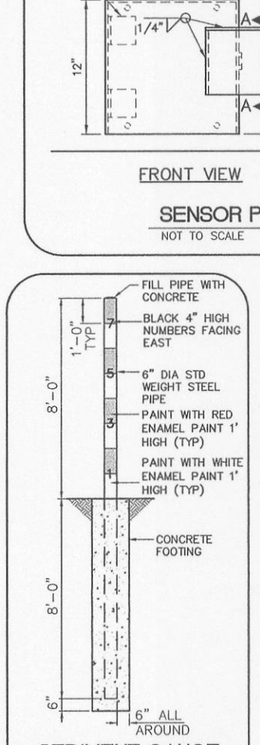
WALL CROSS SECTION 2 C-22

NOT TO SCALE

GENERAL STRUCTURAL NOTES:

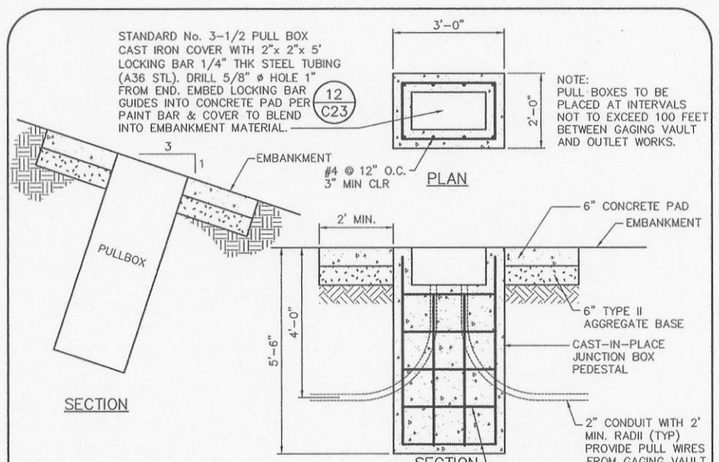
1. REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60.
2. CONCRETE SHALL HAVE A MINIMUM STRENGTH OF 3000 psi AT 28 DAYS USING TYPE V CEMENT PER ASTM C-150. (DESIGN BASED ON f'c=2500 psi, NO SPECIAL INSPECTION IS REQUIRED)
3. MASONRY UNITS SHALL BE ASTM C-90, GRADE N-1 HOLLOW CONCRETE UNITS. MASONRY DESIGN STRESS IS AS FOLLOWS: f'm=1500 psi. HALF STRESSES ARE USED. SPECIAL INSPECTION IS NOT REQUIRED.
4. MORTAR SHALL BE ASTM C270, TYPE "M" OR "S" WITH A MINIMUM STRENGTH OF 1800 psi AT 28 DAYS.
5. GROUT SHALL HAVE A MINIMUM STRENGTH OF 2000 psi AT 28 DAYS USING TYPE V CEMENT PER ASTM C-150.
6. HORIZONTAL JOINT REINFORCING, WHERE REQUIRED, SHALL BE 9-GA. LADDER TYPE WITH LAP SPLICES OF 12" MINIMUM, INCLUDING CORNERS AND INTERSECTIONS.
7. UNLESS OTHERWISE NOTED, ALL CONSTRUCTION SHALL CONFORM TO THE UNIFORM BUILDING CODE, LATEST EDITION, AND PER STANDARD SPECIFICATIONS FOR THE CITY OF HENDERSON, NEVADA, BUILDING DEPARTMENT.
8. ALL WALLS ARE SUBJECT TO APPROVAL BY THE CITY OF HENDERSON, NEVADA, BUILDING DEPARTMENT.
9. SOLID GROUT ALL MASONRY UNITS THAT ARE BELOW THE HIGHEST FINISH GRADE AT THE WALL.
10. ALL CORNERS OR ANGLES SHALL BE TIED TOGETHER WITH REINFORCING STEEL AND GROUTED SOLID.
11. WHERE VERTICAL GROUT POURS ARE NOT CONTINUOUS FOR THE ENTIRE HEIGHT OF THE WALL, TERMINATE LIFT 1 1/2" BELOW TOP OF TOP BLOCK TO FORM A KEY FOR FUTURE LIFTS.
12. LOCATE CONSTRUCTION JOINT IN WALL AT A MAXIMUM SPACING OF 24'-0".
13. BOND BEAMS AND JOINT REINFORCING SHALL NOT BE CONTINUOUS THROUGH WALL CONSTRUCTION JOINTS.
14. WHERE RETAINING WALLS ARE SHOWN ON PERIMETER STREETS, USE DECORATIVE BLOCK TO MATCH THOSE OF THE PERIMETER WALLS.
15. SOILS REPORT PREPARED BY WESTERN TECHNOLOGIES, INC., PROJECT No. 4125JD022 DATED JUNE 29, 2005.

ALLOWABLE SOILS BEARING PRESSURE = 3000
psf SOIL ACTIVE PRESSURE = 30 psf/ft (LEVEL)
SOIL PASSIVE PRESSURE = 300 psf/ft
COEFFICIENT OF FRICTION = 0.35



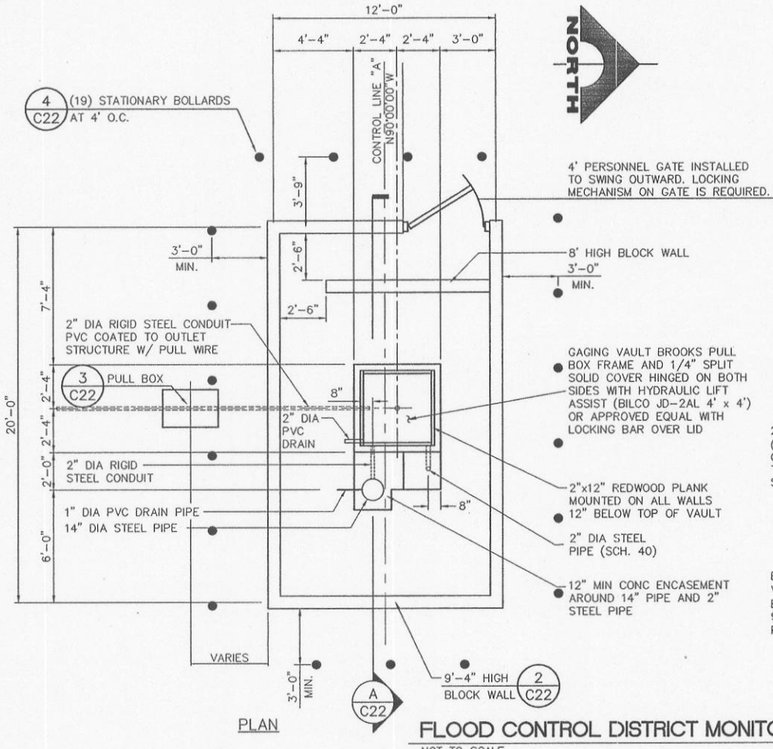
SEDIMENT GAUGE DETAIL 5 C-22

NOT TO SCALE



PULL BOX PEDESTAL DETAIL 3 C-22

NOT TO SCALE



SECTION A C-22

NOT TO SCALE

FLOOD CONTROL DISTRICT MONITORING STATION 1 C-22

NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

FLOOD CONTROL DISTRICT MONITORING STATION AND DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

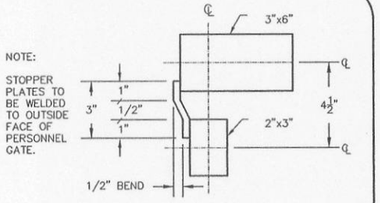
WILLIAM E. HUNTER III, Exp. 06/30/2009, CIVIL, No. 8833, STATE OF NEVADA, PROFESSIONAL ENGINEER, 4/3/08

PROJECT No: 504-424 DRAWN BY: DWJ
DESIGNED BY: CHECKED BY:
APPROVED BY

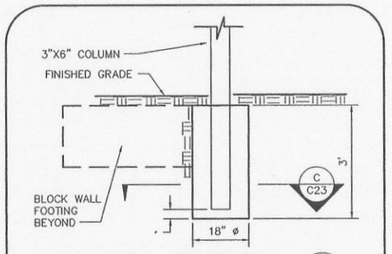
G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

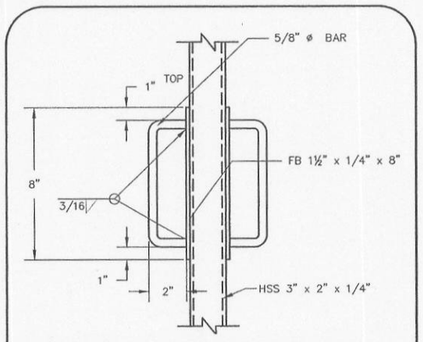
DRAWING NO. C-22
SHT. OF



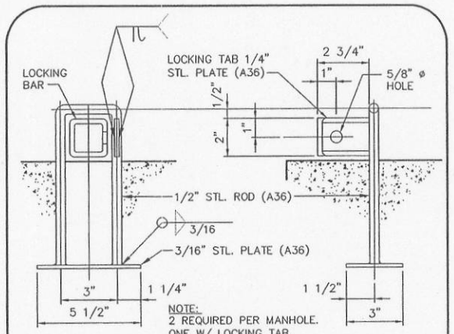
SECTION
NOT TO SCALE
D C-23



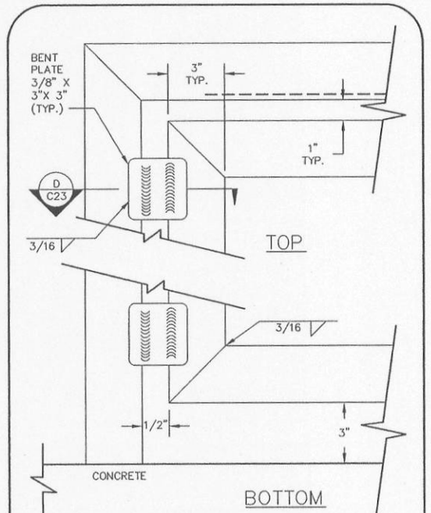
COLUMN - SECTION
NOT TO SCALE
13 C-23



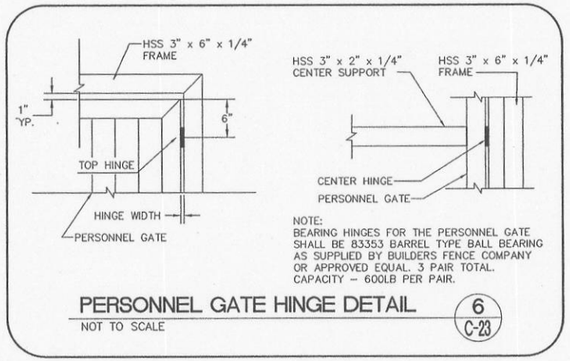
PERSONAL GATE HANDLES
NOT TO SCALE (TYPICAL ON BOTH SIDES)
8 C-23



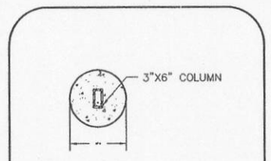
LOCKING BAR DETAIL
NOT TO SCALE
12 C-23



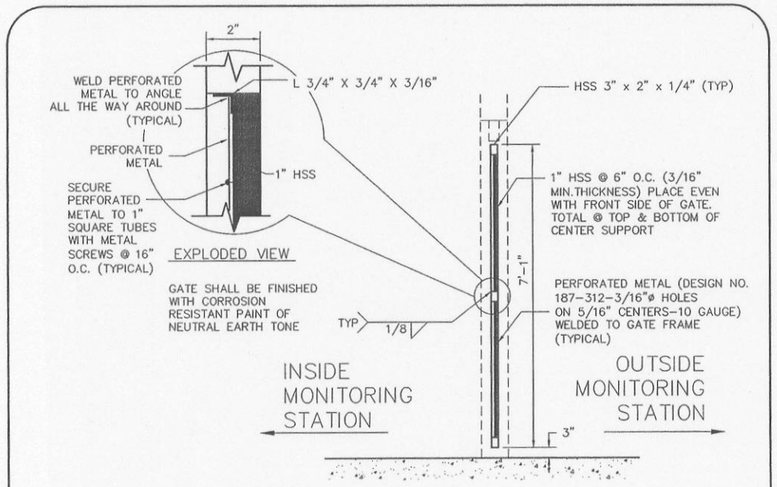
PERSONAL GATE STOPPERS
NOT TO SCALE
9 C-23



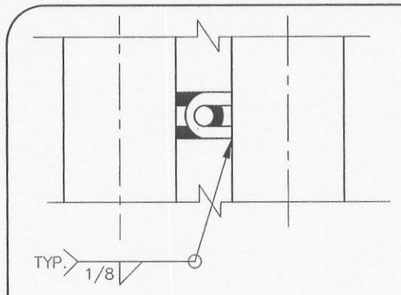
PERSONNEL GATE HINGE DETAIL
NOT TO SCALE
6 C-23

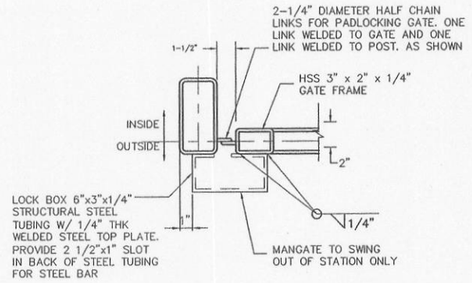


SECTION
NOT TO SCALE
C C-23



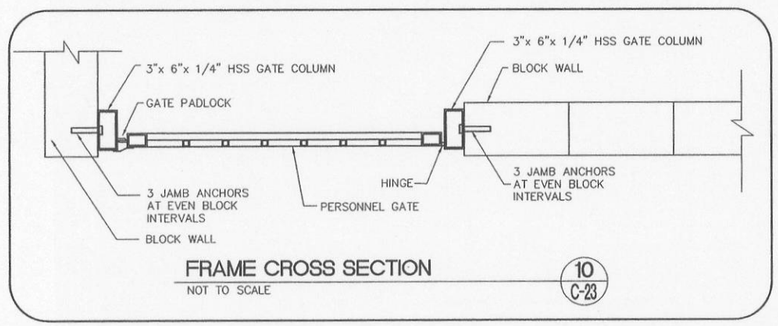
SWING GATE - SECTION
NOT TO SCALE
11 C-23



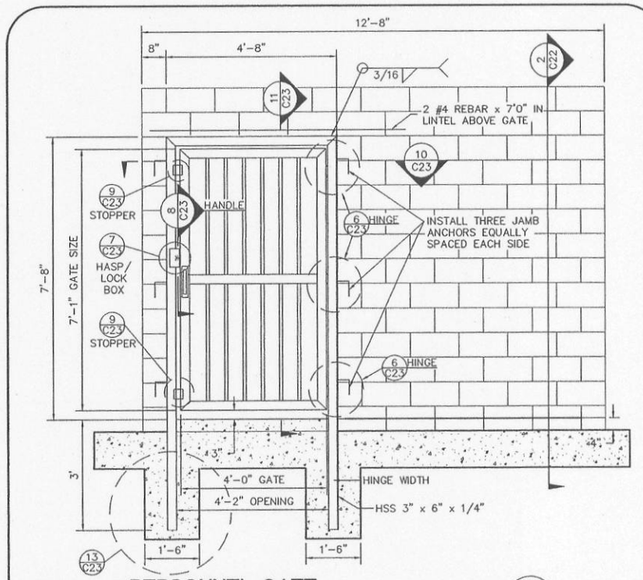


NOTE: HASP TO BE LOCATED 3" MINIMUM ABOVE HANDLE TO INSURE SUFFICIENT SPACE FOR OPERATION OF LOCK.

HASP/LOCK BOX ASSEMBLY
NOT TO SCALE
7 C-23



FRAME CROSS SECTION
NOT TO SCALE
10 C-23



PERSONNEL GATE
NOT TO SCALE
2 C-23

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

FLOOD CONTROL DISTRICT

MONITORING STATION AND DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM E. HUNTER III
Exp. 06/30/2009
No. 8835
CIVIL
4/3/08

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
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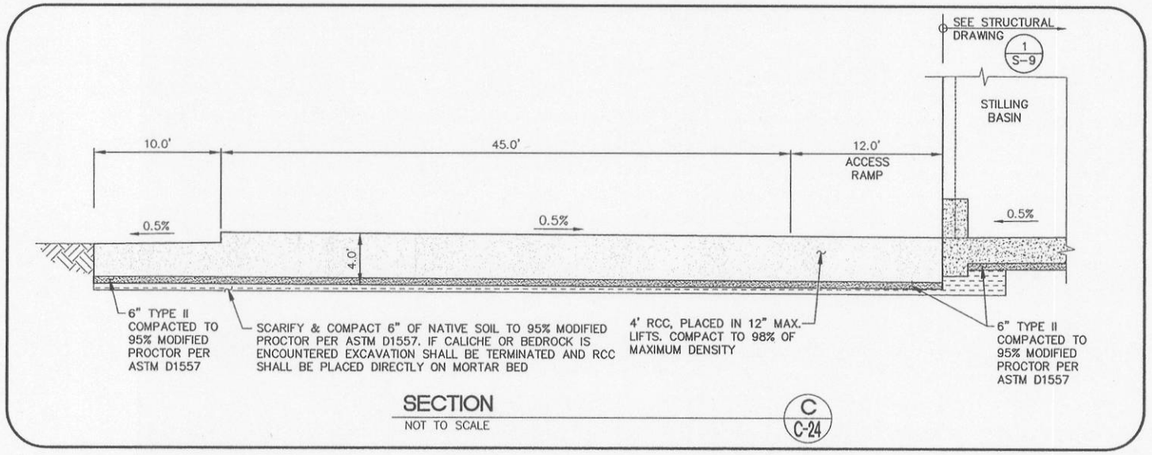
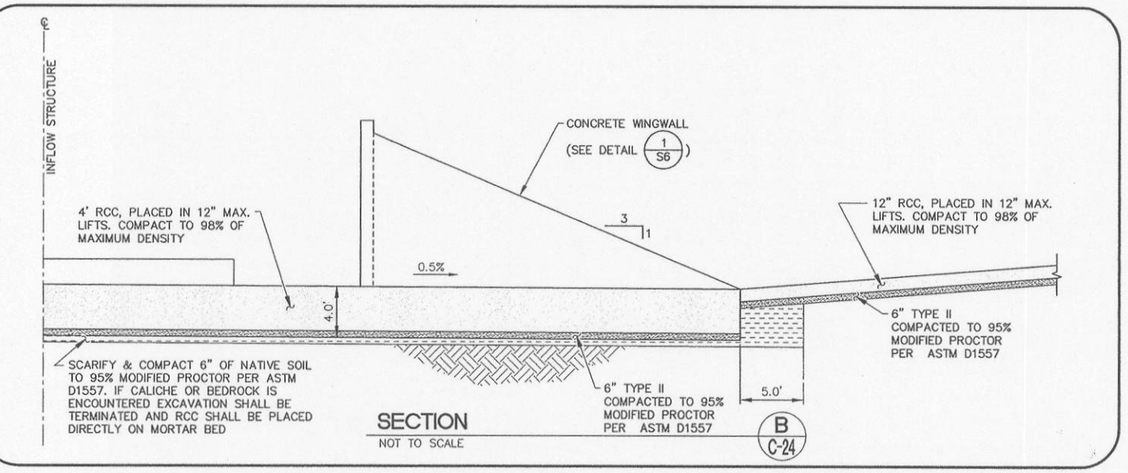
SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. C-23
SHT. OF

07380



SECTION
NOT TO SCALE — C C-24



SECTION
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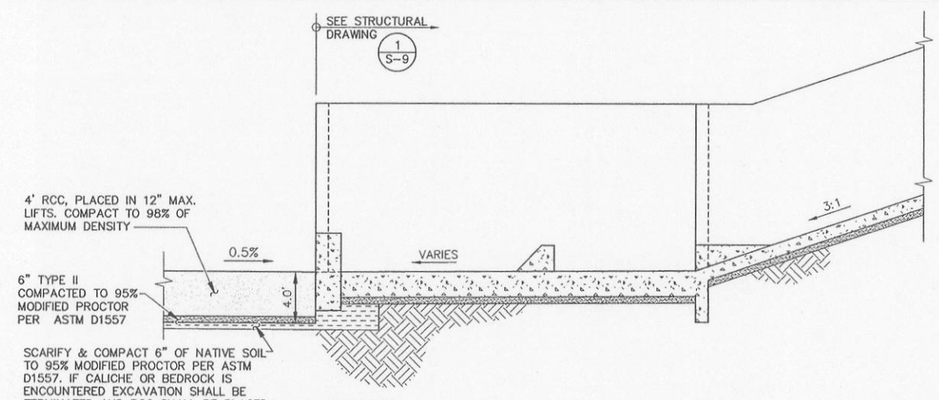

SECTION
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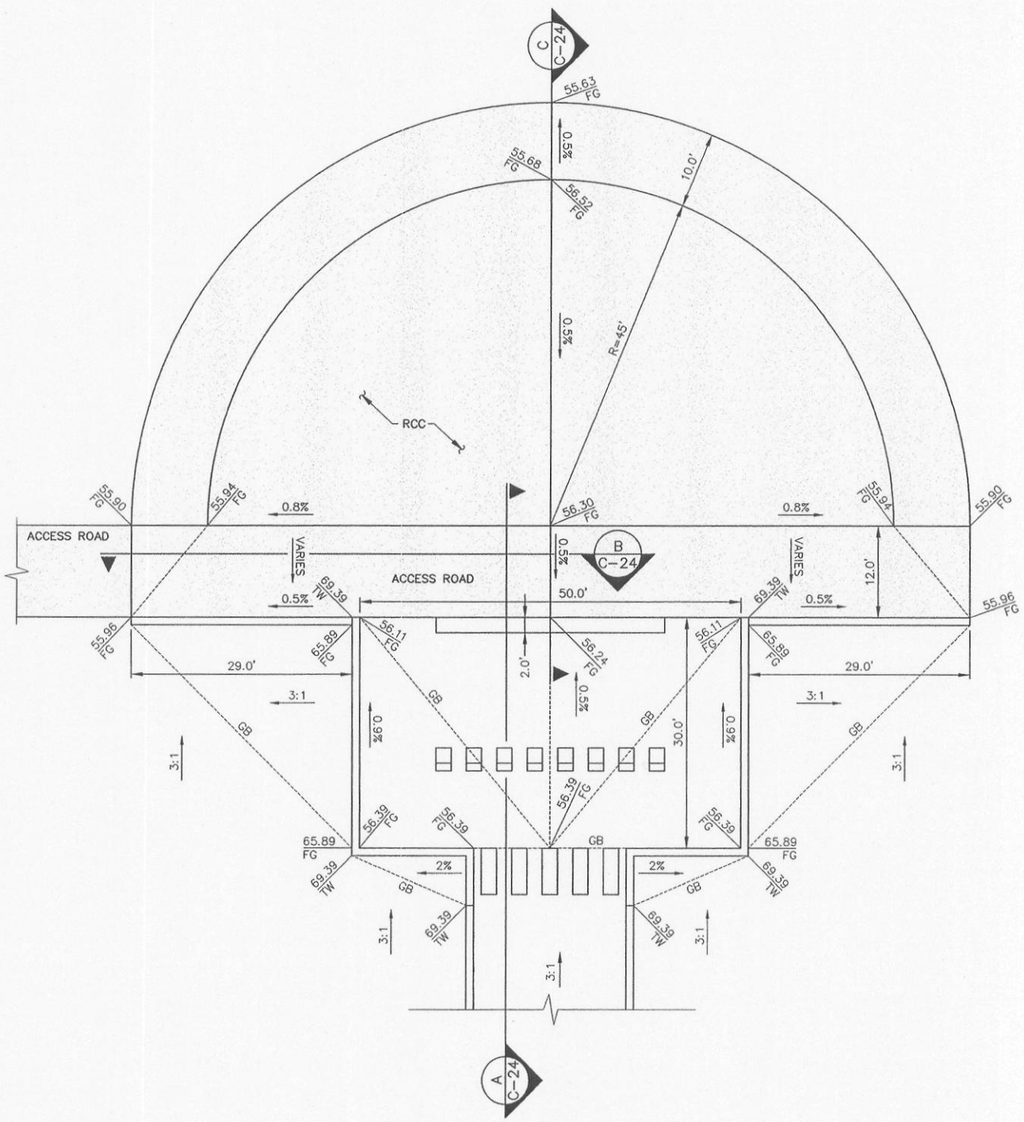

INFLOW STRUCTURE
NOT TO SCALE — 1 C-24

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

INFLOW STRUCTURE DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA — WILLIAM E. HUNTER III — Exp. 06/30/2009 — CIVIL — No. 8833 — 3/28/08

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

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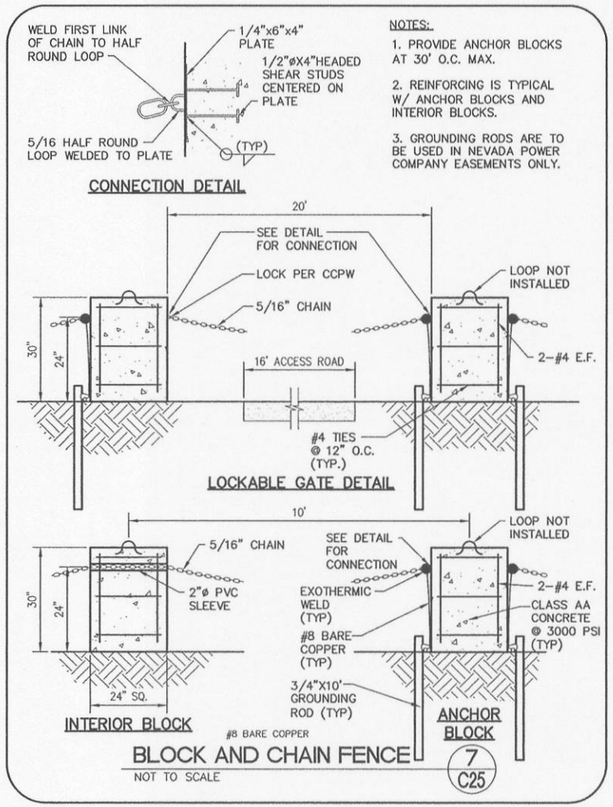
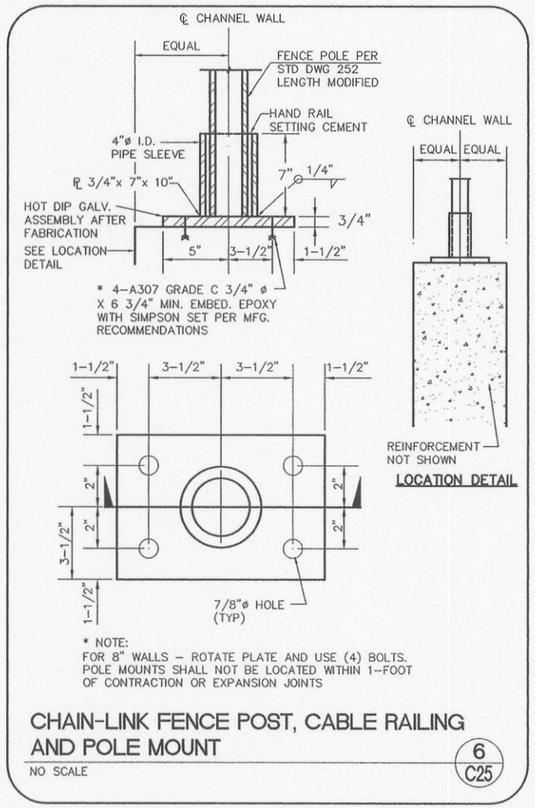
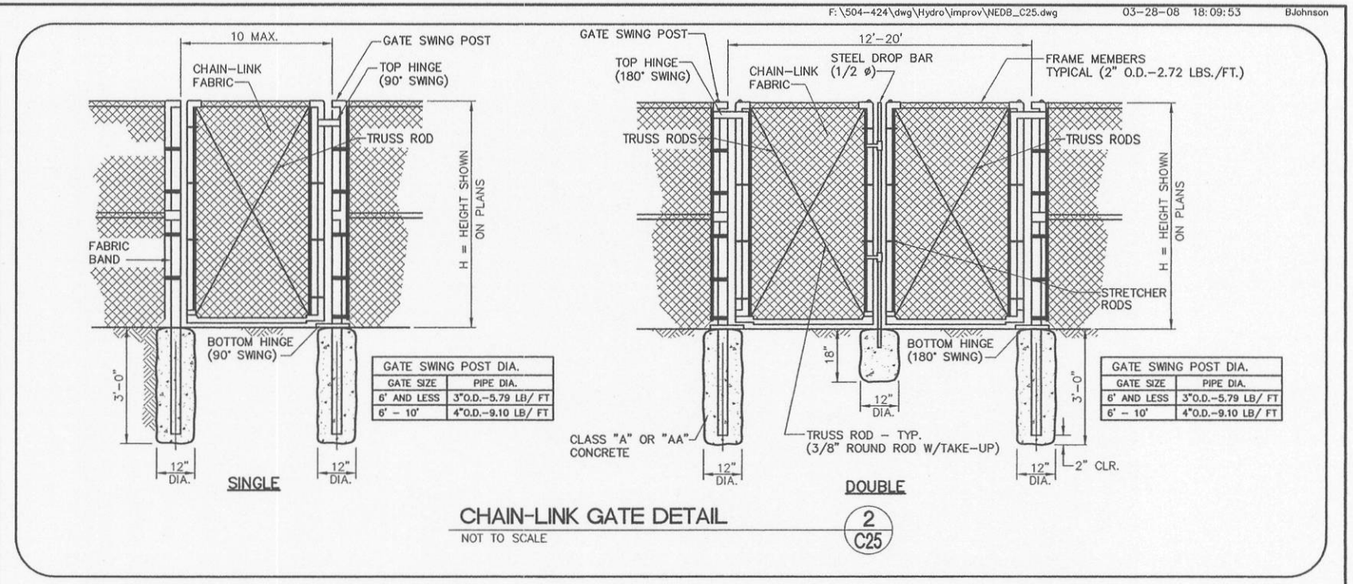
SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

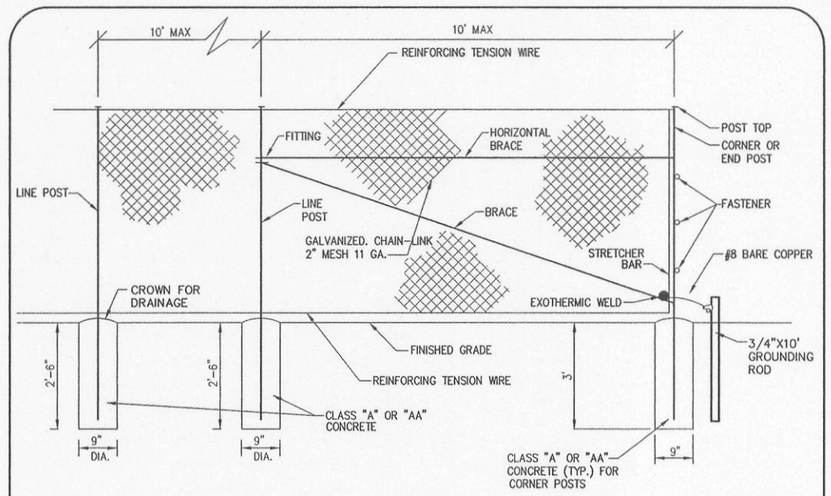
DRAWING NO. C-24
SHT. OF

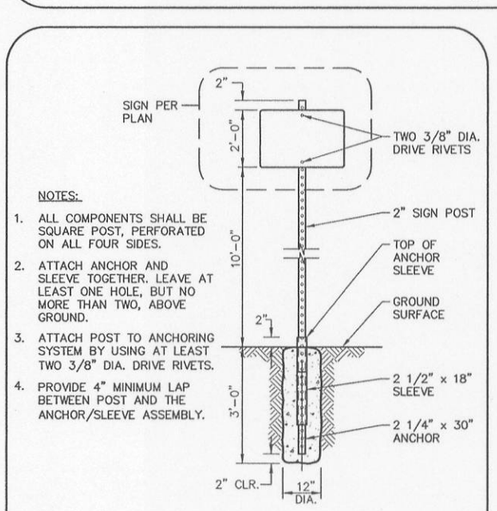
07380

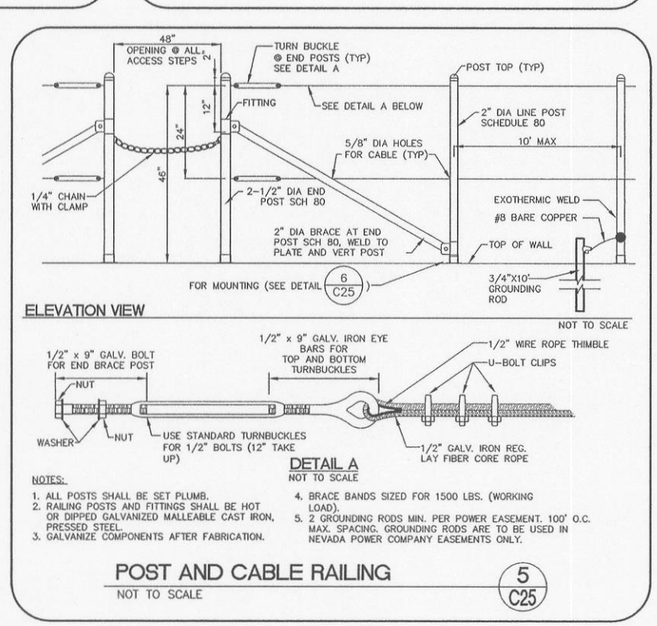


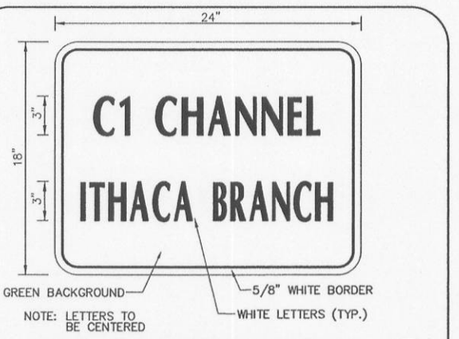












REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
FENCING DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA — WILLIAM E. HUNTER III — Exp. 06/30/2009 — CIVIL — No. 8833 — 5/5/08

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
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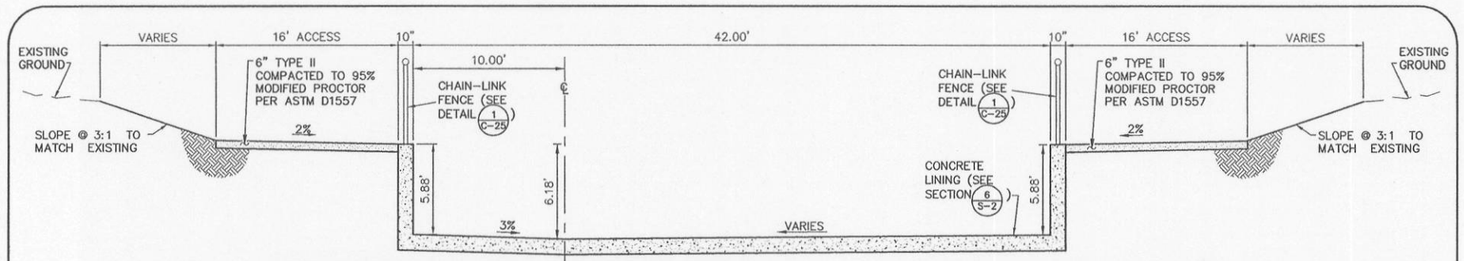
SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. C-25
SHT. OF

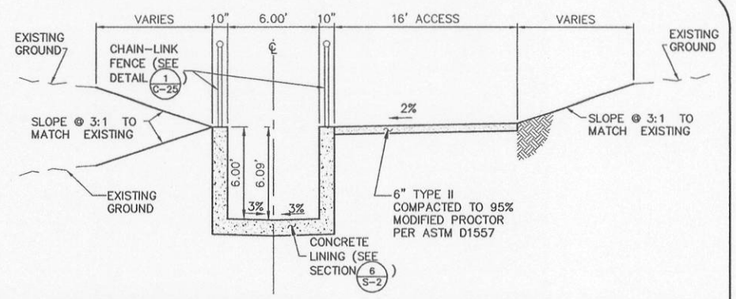
07380



COLLECTION CHANNEL CONFLUENCE SECTION (STA 40+28.71 TO STA 40+70.71)

NOT TO SCALE

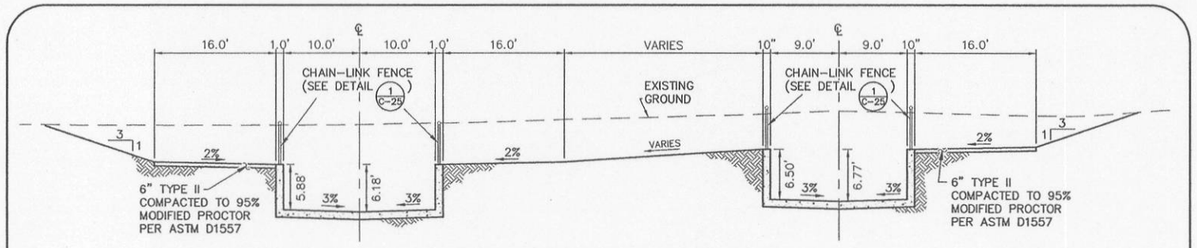
5 C-26



COLLECTION CHANNEL TRANSITION SECTION (STA 210+00.00 TO STA 212+07.94)

NOT TO SCALE

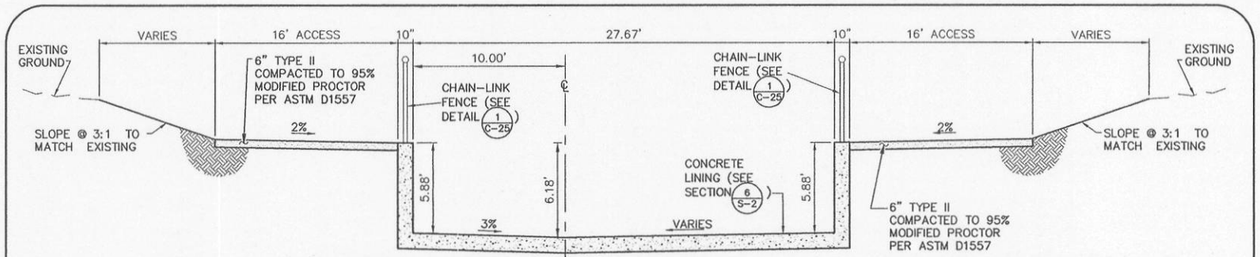
4 C-26



COLLECTION CHANNEL CONFLUENCE SECTION (STA 41+88.96 TO STA 43+56.39)

NOT TO SCALE

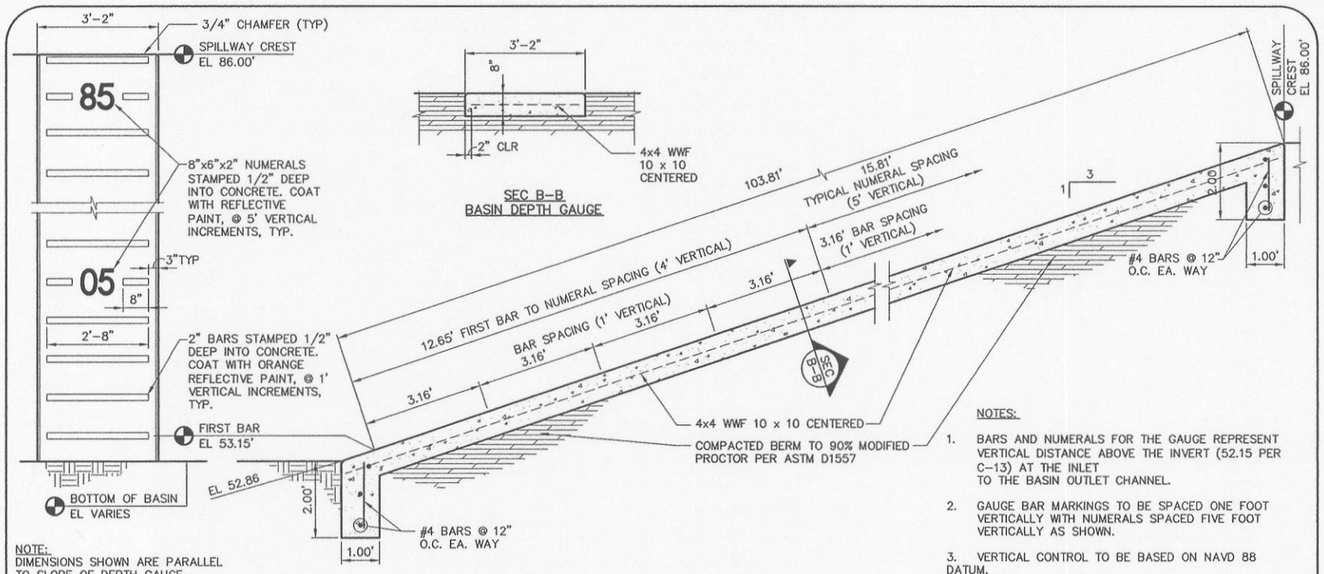
7 C-26



COLLECTION CHANNEL CONFLUENCE SECTION (STA 77+59.60 TO STA 77+99.60)

NOT TO SCALE

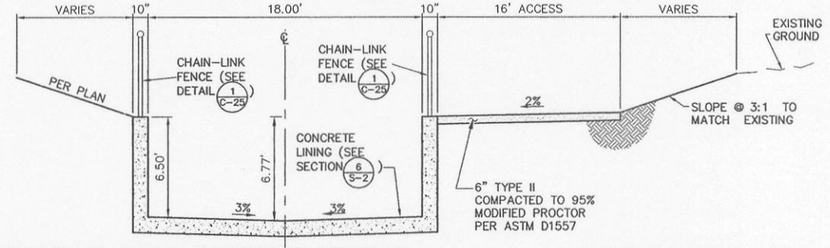
3 C-26



DEPTH GAUGE DETAIL

NOT TO SCALE

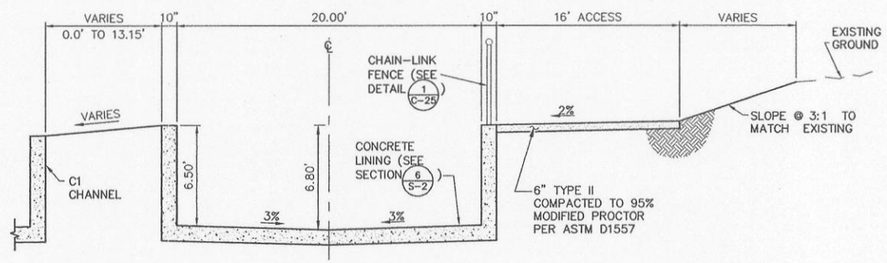
6 C-26



COLLECTION CHANNEL TRANSITION SECTION (STA 111+13.90 TO STA 114+53.19)

NOT TO SCALE

2 C-26



COLLECTION CHANNEL TRANSITION SECTION (STA 110+20.00 TO STA 111+13.90)

NOT TO SCALE

1 C-26

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

COLLECTION CHANNEL TRANSITIONAL SECTIONS AND DEPTH GAUGE DETAIL

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8833 3/3/08

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. C-26
SHT. OF

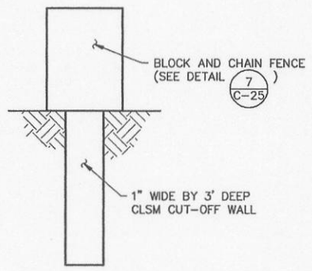
07380

SIGNS SHALL BE LOCATED 200' ON CENTER, BOTH SIDES OF CHANNEL FROM STA 28+00 TO STA 92+00

WARNING SIGN - DUAL USE FACILITY

7 / C27

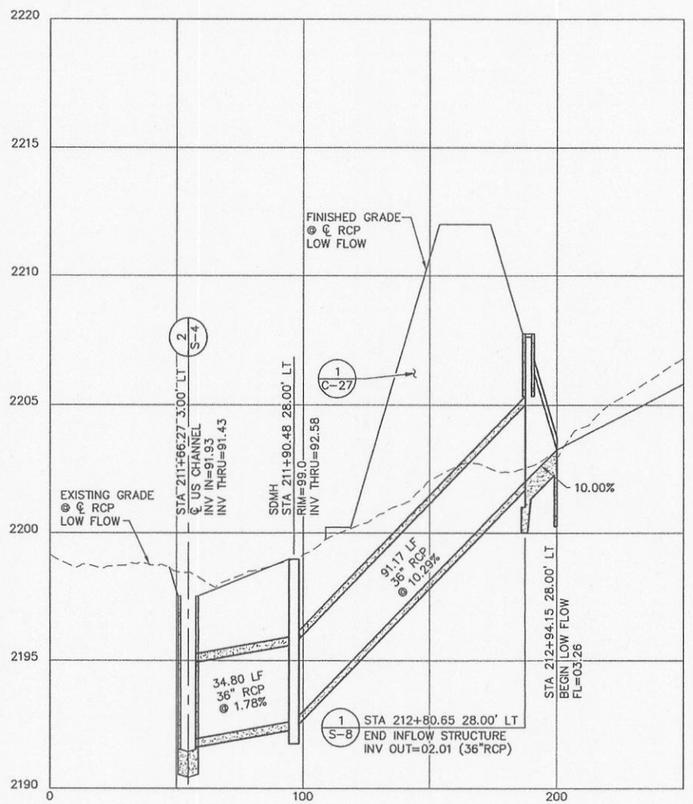
NOT TO SCALE NOTE: LETTERS TO BE CENTERED



CLSM CUT-OFF WALL

6 / C-27

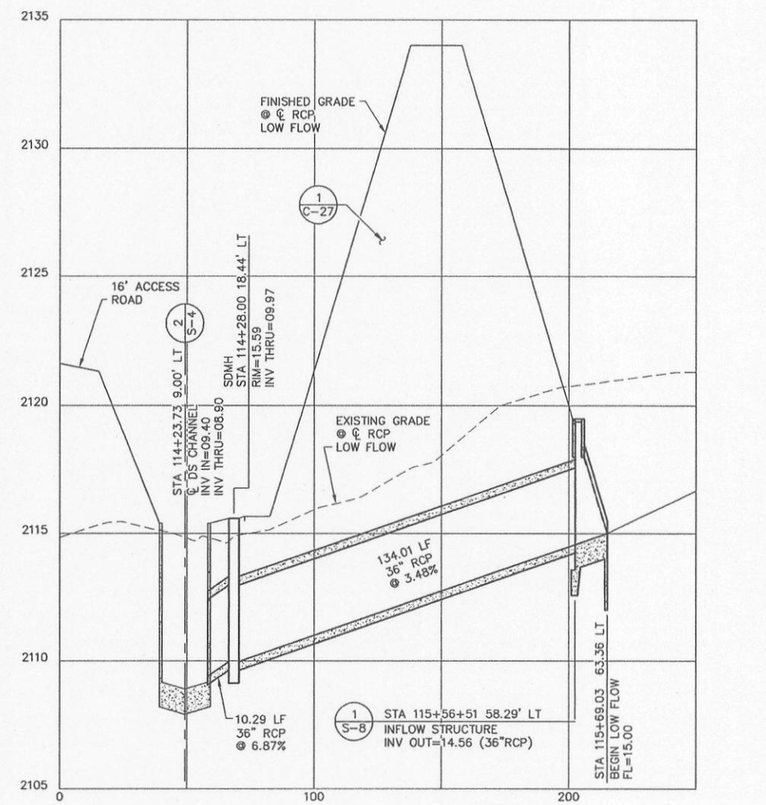
NOT TO SCALE



US CHANNEL LOW FLOW

SCALE: 1"=30' HORIZ, 1"=3' VERT.

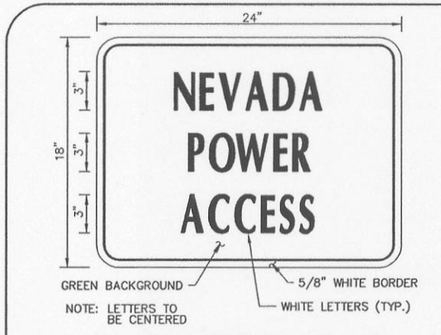
3 / C-27



DS CHANNEL LOW FLOW

SCALE: 1"=30' HORIZ, 1"=3' VERT.

2 / C-27

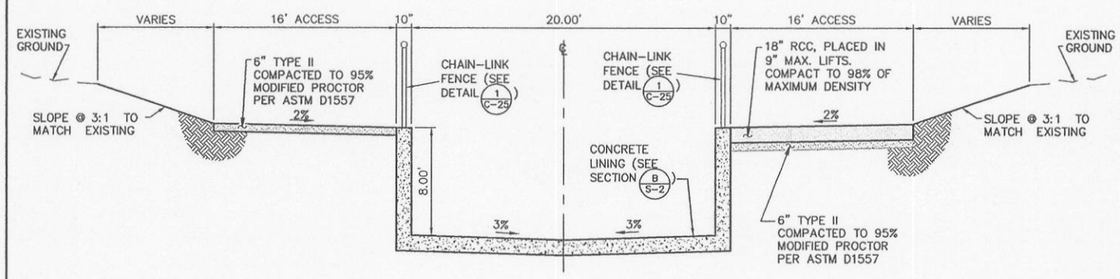


NOTE: ACCESS SIGNS SHALL BE PLACED ON BOTH SIDES OF GATE ON EACH SIDE OF CHANNEL.

IDENTIFIER SIGN DETAIL

5 / C-27

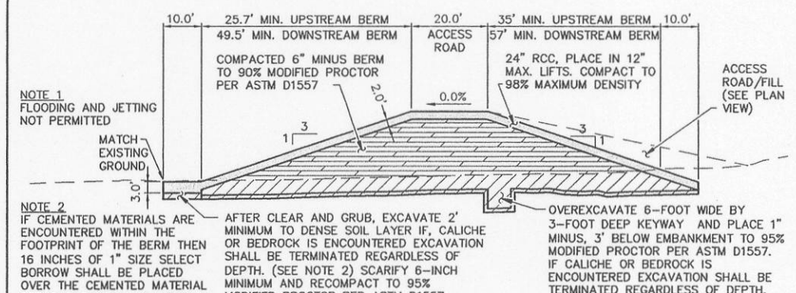
NOT TO SCALE



COLLECTION CHANNEL (STA. 14+52.52 TO STA. 15+53.62)

NOT TO SCALE

4 / C-27



BERM SECTION

NOT TO SCALE

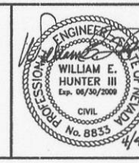
1 / C-27

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

COLLECTION CHANNEL BERM SECTIONS AND LOW FLOW PROFILES

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS



PROJECT No: 504.424 DRAWN BY:

DESIGNED BY: CHECKED BY:

APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE

HORIZ: AS SHOWN

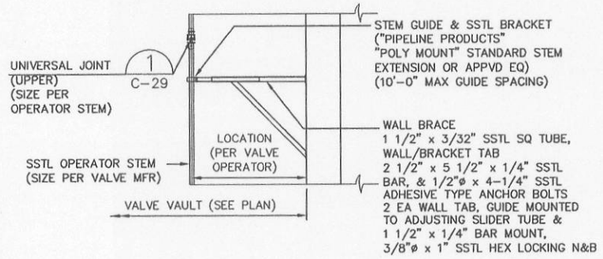
VERT: AS SHOWN

FIELD BOOK

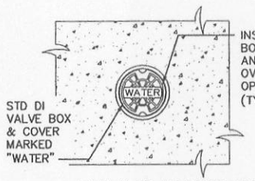
DRAWING NO. C-27

SHT. OF

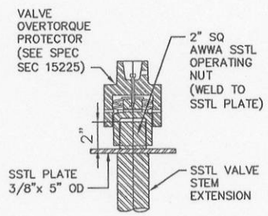
07380



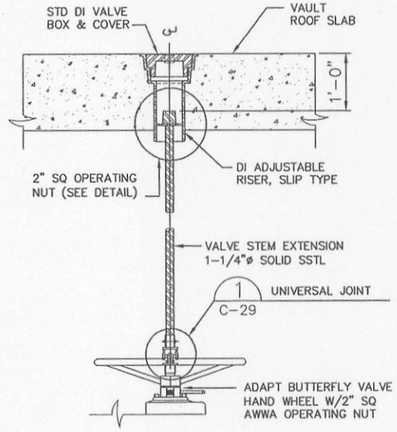
OPERATOR STEM GUIDE DETAIL



VAULT ROOF PLAN



OPERATING NUT DETAIL



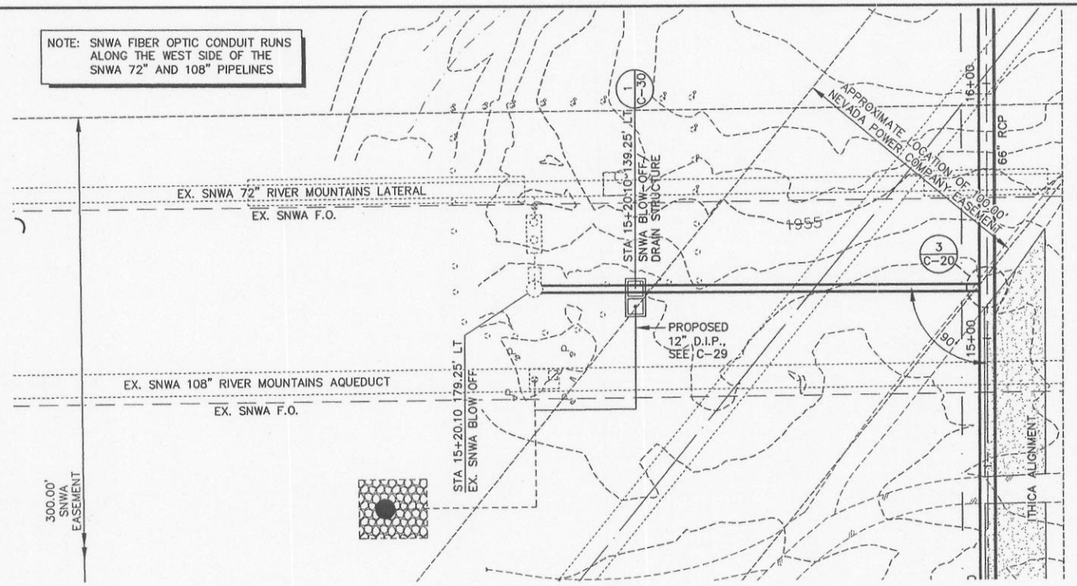
ELEVATION

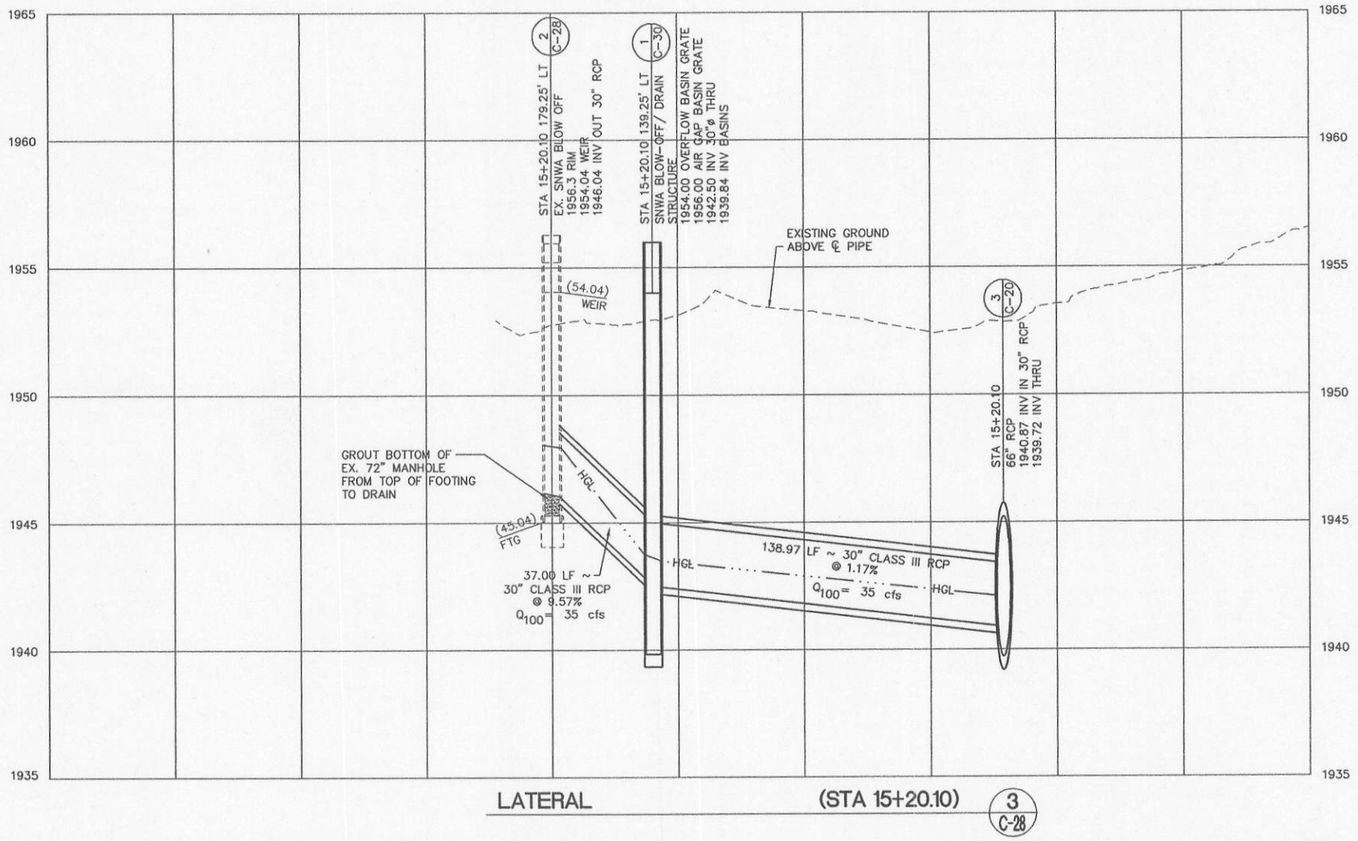
VAULT VALVE OPERATOR EXTENSION AND BOX ASSEMBLY TYPE 2 DETAIL

SCALE: NTS VT-VBOX-2 040908 1 C-28

C-30

NOTE: SNWA FIBER OPTIC CONDUIT RUNS ALONG THE WEST SIDE OF THE SNWA 72" AND 108" PIPELINES



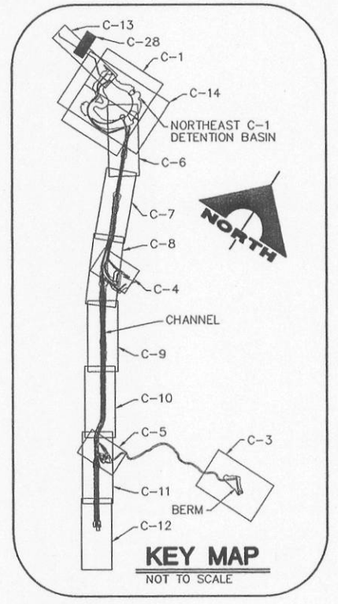


LATERAL (STA 15+20.10) 3 C-28

SOUTHERN NEVADA WATER AUTHORITY CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL SNWA/SNWS APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS AND CATHODIC PROTECTION SYSTEMS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. CATHODIC PROTECTION TEST STATIONS, RECTIFIERS, AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER SNWA STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY SOUTHERN NEVADA WATER AUTHORITY DEVELOPMENT PLAN REVIEW, AT (702) 862-3444 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
2. SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

Valerie A Schulte 4/15/08
SOUTHERN NEVADA WATER AUTHORITY DATE



DISCLAIMER NOTE

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REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

SNWA BLOW OFF
PLAN AND PROFILE

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA PAUL B. PENDMUDI No. 16076 CIVIL 04-17-08

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1"=30'
VERT: 1"=3'
FIELD BOOK

L
DRAWING NO. C-28
SHT. OF

07380

NOTE:

NON-POTABLE WATER AND SEWER PIPELINE CROSSING AS PER SNWA PLATE NUMBER 03-04-01 - SHEET 2 OF 3

NOTE 1
"ALL NON-POTABLE WATER AND SEWER 'PIPELINES MUST MAINTAIN A MINIMUM OF THREE (3) FEET SEPARATION WHEN INSTALLED OVER SNWS PIPELINES."

THE PIPELINE IN THE DESIGN CROSSING ABOVE THE EXISTING SNWS PIPELINE IS IN EXCESS OF THE MINIMUM THREE (3) FOOT SEPARATION.

NOTE 2
"ALL NON-POTABLE WATER OR SEWER LINE CROSSINGS AT ANY DISTANCE ABOVE SNWS PIPELINE WILL BE CONSTRUCTED USING ONE OF THE FOLLOWING OPTIONS."
OPTION B
"THE LINE WILL BE CONSTRUCTED OF WATER QUALITY MATERIALS MEETING AWWA STANDARDS."

THE CROSSING LINE WILL BE CONSTRUCTED OF DUCTILE IRON PIPE WITH RESTRAINED MECHANICAL JOINT FITTINGS

SOUTHERN NEVADA WATER AUTHORITY CONSTRUCTION NOTES

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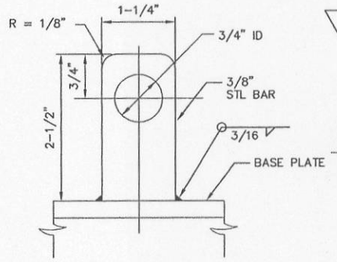
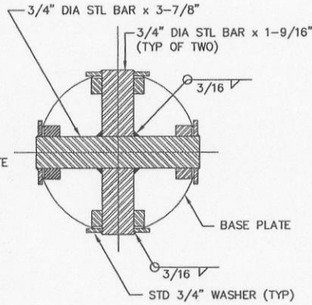
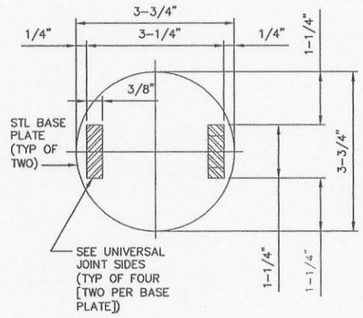
Valerie A Schulte — 4/15/08
SOUTHERN NEVADA WATER AUTHORITY — DATE



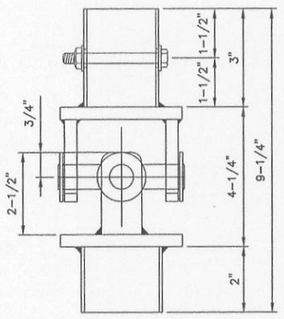
UNIVERSAL JOINT SIDES



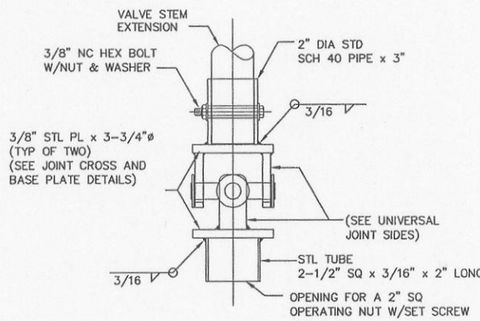
JOINT CROSS



BASE PLATE



ELEVATION - ENLARGEMENT



ELEVATION

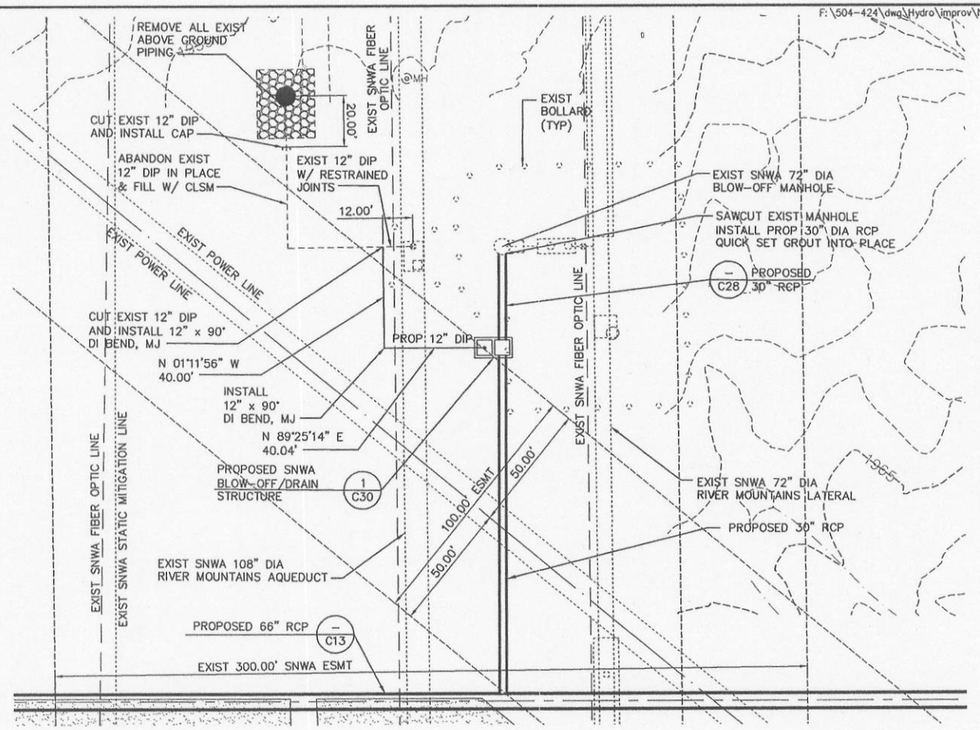
UNIVERSAL JOINT

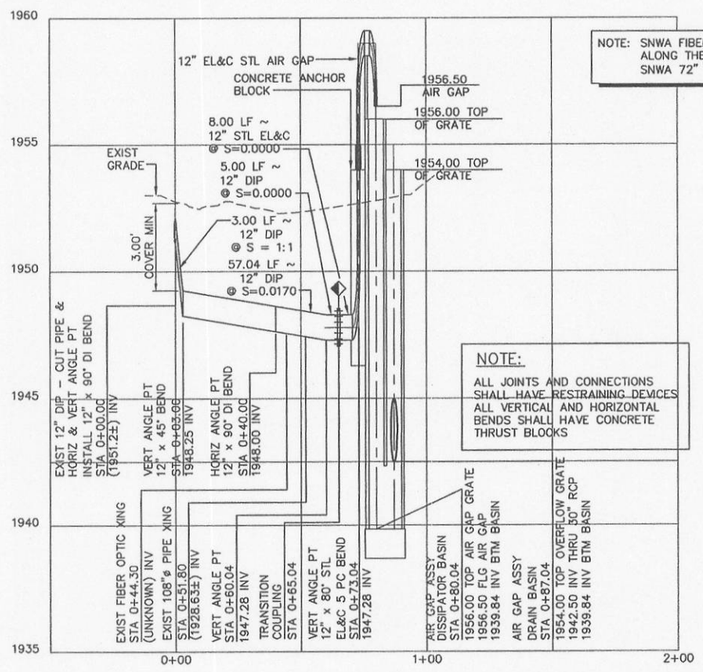
NOTE:
ASSEMBLY SHALL BE GALVANIZED AFTER WELDING.

UNIVERSAL JOINT DETAIL — 1

SCALE: NTS — VT-VBOX-2-UJONT — 040908 — C-29

C-30





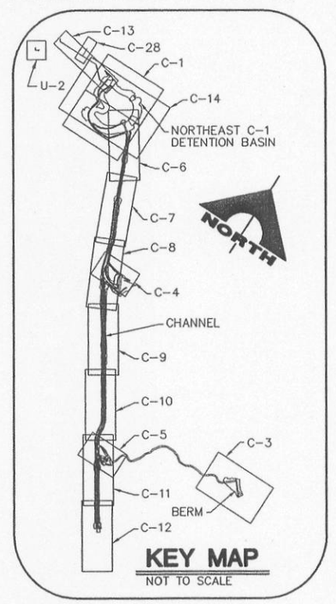
NOTE: SNWA FIBER OPTIC CONDUIT RUNS ALONG THE WEST SIDE OF THE SNWA 72" AND 108" PIPELINES

NOTE:
ALL JOINTS AND CONNECTIONS SHALL HAVE RESTRAINING DEVICES
ALL VERTICAL AND HORIZONTAL BENDS SHALL HAVE CONCRETE THRUST BLOCKS

NORTH
SCALE 1" = 30'
50 0 50 100
SCALE FEET

NOTES:

1. CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN WORKING IN THE VICINITY OF THE STATIC MIGRATION FIBER OPTIC CABLE. DAMAGE TO THE CABLE RESULTING FROM THE CONTRACTOR'S CONSTRUCTION ACTIVITIES SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S SOLE EXPENSE.
2. CONTRACTOR SHALL VERIFY OVERHEAD CLEARENCE AND SEPARATION REQUIREMENTS PRIOR TO PREFORMING WORK IN THE VICINITY OF THE ELECTRICAL TRANSMISSION LINES AND EXERCISE EXTREME CAUTION WITH HIGH PROFILE EQUIPMENT.



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Avoid cutting underground utility lines. It's costly. Call before you Dig. 1-800-227-2600 UNDERGROUND SERVICE (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD 1-702-227-2929

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
12" DIP BLOW OFF
PLAN AND PROFILE
CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER - STATE OF NEVADA — PAUL B. PENUMPOTA — No. 19076 — CIVIL

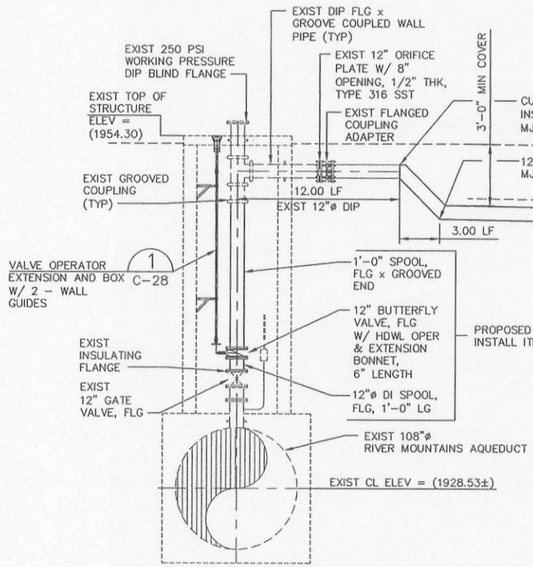
PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1"=30'
VERT: 1"=3'
FIELD BOOK

L
DRAWING NO. C-29
SHT. 1 OF

07380



NOTE:

SEE DRAWING C-29 FOR PIPING PLAN AND PROFILE

NOTE:

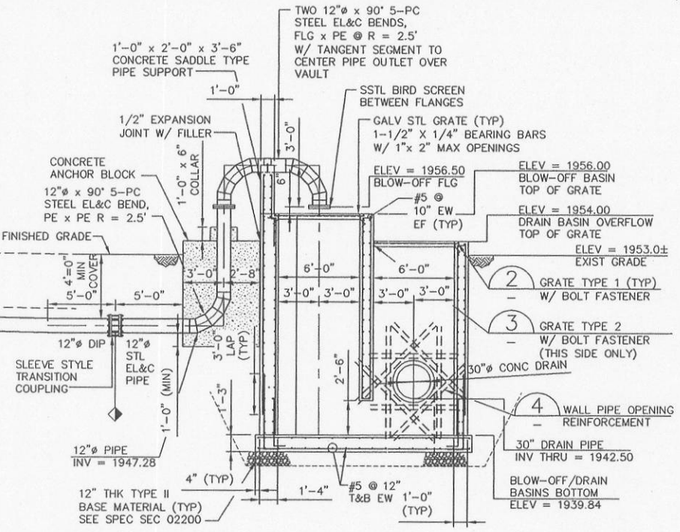
ALL JOINTS AND CONNECTIONS SHALL HAVE HARNESS RESTRAINTS AND HORIZONTAL AND VERTICAL BENDS SHALL HAVE CONCRETE THRUST BLOCKS

NOTE:

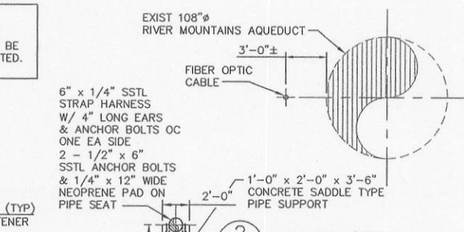
ALL STEEL PIPE SHALL BE EPOXY LINED AND COATED.

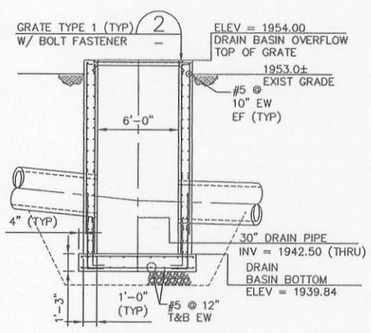
EXIST VALVE VAULT ASSEMBLY

SCALE: 3/16" = 1'-0"

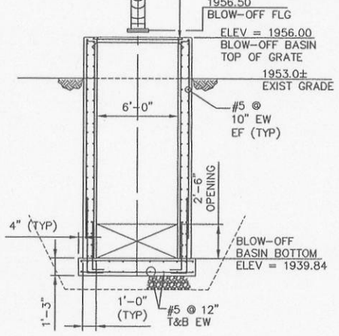


SECTION A

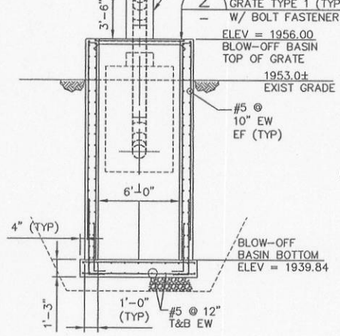




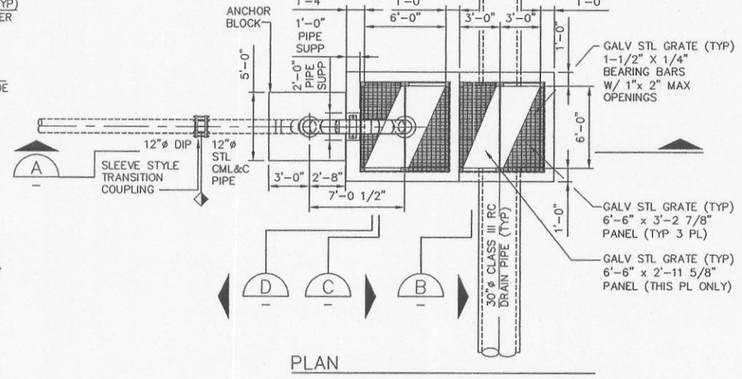
SECTION B



SECTION C



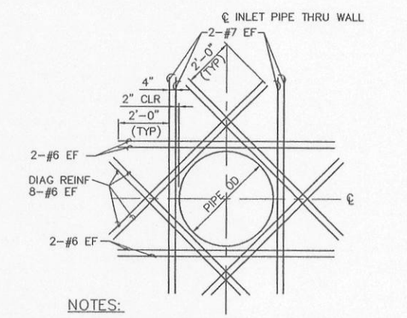
SECTION D



PLAN

SNWA BLOW-OFF/DRAIN STRUCTURE DETAIL 1

SCALE: 3/16" = 1'-0"

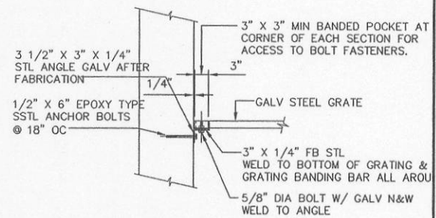


NOTES:

1. ALL REINFORCING STEEL SHOWN IS ADDITIONAL TO TYPICAL REINFORCING OF WALL.
2. CUT TYPICAL WALL REINFORCING 2" CLEAR OF PIPE.

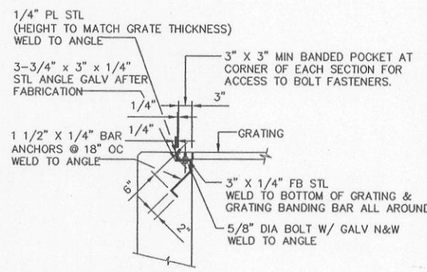
WALL PIPE OPENING REINFORCEMENT DETAIL 4

NOT TO SCALE



GRATE TYPE 2 DETAIL W/ BOLT FASTENER 3

NOT TO SCALE



GRATE TYPE 1 DETAIL W/ BOLT FASTENER 2

NOT TO SCALE

SOUTHERN NEVADA WATER AUTHORITY CONSTRUCTION NOTES

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Valerie A Semmelhack — SOUTHERN NEVADA WATER AUTHORITY — 4/15/08 DATE

NOTES:

1. CONTRACTOR SHALL PROVIDE A SITE GRADING DRAWING FOR APPROVAL OF THE INSTALLATION AFTER VERIFYING EXISTING TOPOGRAPHY.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF PIPE LOCATIONS AND INVERTS PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF CHANGES. DESIGN SUBJECT TO MODIFICATION DUE TO THESE CHANGES.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF FIBER OPTIC LOCATIONS PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF CHANGES. DESIGN SUBJECT TO MODIFICATION DUE TO THESE CHANGES.
4. BREAKS IN CABLES DUE TO CONSTRUCTION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

MISCELLANEOUS DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER - STATE OF NEVADA - PAUL B PENDMUR - No. 6076 - Exp. 12/31/09 - CIVIL

PROJECT No: 504.424 DRAWN BY: J.C. LITTLE
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: (SEE DETAIL)
VERT:
FIELD BOOK

DRAWING NO. C-30
SHT. OF

07380

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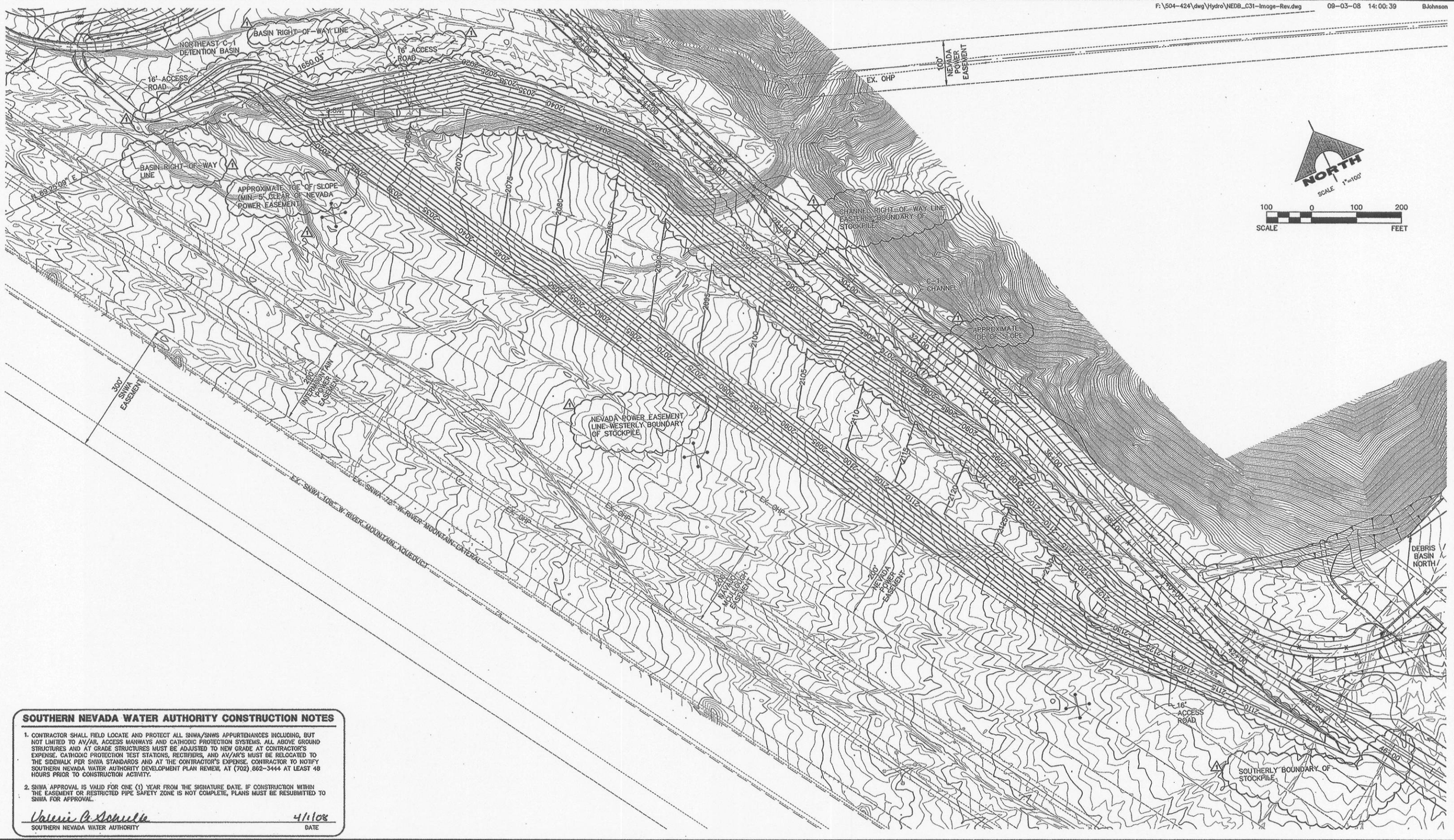


SOUTHERN NEVADA WATER AUTHORITY CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL SNWA/SNWS APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS AND CATHODIC PROTECTION SYSTEMS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. CATHODIC PROTECTION TEST STATIONS, RECTIFIERS, AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER SNWA STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY SOUTHERN NEVADA WATER AUTHORITY DEVELOPMENT PLAN REVIEW, AT (702) 862-3444 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
2. SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

Valerie A. Gonella 4/1/08
SOUTHERN NEVADA WATER AUTHORITY DATE

REV. NO.	DATE	DESCRIPTION	APPROVED
1	8/28/08	REVISE STOCKPILE ACCESS ROAD	

NORTHEAST C-1 DETENTION BASIN
STOCKPILE

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM E. HUNTER III Exp. 06/30/2009 No. 8833 CIVIL 9/26/08

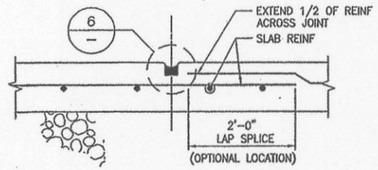
PROJECT No: 504-424 DRAWN BY: WHJ
DESIGNED BY: WHJ CHECKED BY:
APPROVED BY: WEH

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1"=100'
VERT: NONE
FIELD BOOK

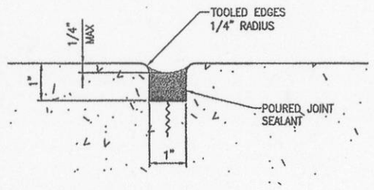
DRAWING NO. C-31
SHT. OF

07380

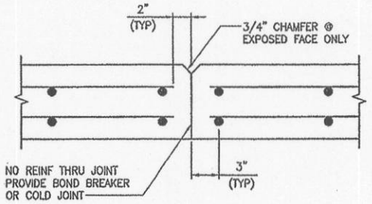


NOTE:
SPRAY GALVANIZE REINFORCING BARS
9" EACH SIDE OF WEAKENED PLANE JOINT

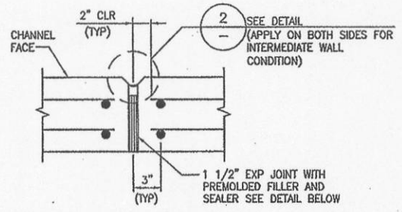
7 INVERT WEAKENED PLANE JT
SCALE: NTS



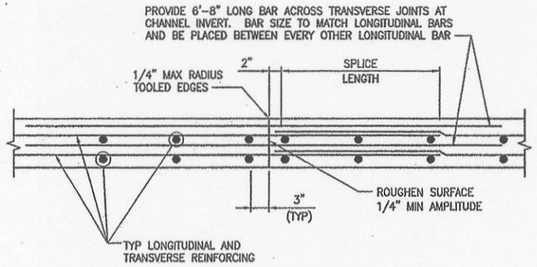
6 SEALANT DETAIL
SCALE: NTS



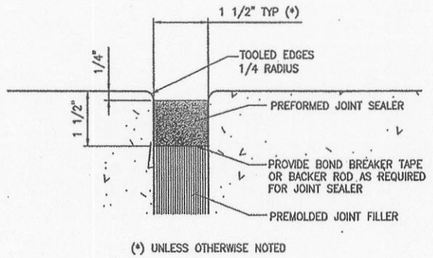
3 WALL CONTRACTION JOINT
SCALE: NTS



1 WALL EXPANSION JOINT
SCALE: NTS

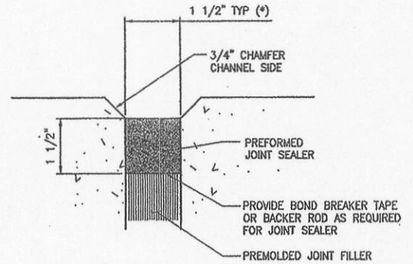


8 CONSTRUCTION JOINT DETAIL
SCALE: NTS



(*) UNLESS OTHERWISE NOTED

4 SLAB EXPANSION JOINT
SCALE: NTS



(*) UNLESS OTHERWISE NOTED

2 DETAIL
SCALE: NTS

STRUCTURE NOTES:

1. DESIGN SPECIFICATIONS: INTERNATIONAL BUILDING CODE (IBC 2000). AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 2002. REINFORCED CONCRETE DESIGN BASED ON LOAD FACTOR DESIGN.
2. CONSTRUCTION SPECIFICATIONS: UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA.
3. LIVE LOAD: TRAFFIC SURCHARGE FROM MAINTENANCE VEHICLES (2' OF SOIL) AS PER AASHTO SPECIFICATIONS.
4. CONCRETE:
   INVERT SLAB: CLASS A TYPE V FOR CONCRETE IN CONTACT WITH SOIL. 0.45 MAXIMUM BY WEIGHT WATER TO CEMENT RATIO, UNLESS NOTED OTHERWISE. 28 DAY MINIMUM COMPRESSIVE STRENGTH SHALL BE THE FOLLOWING:

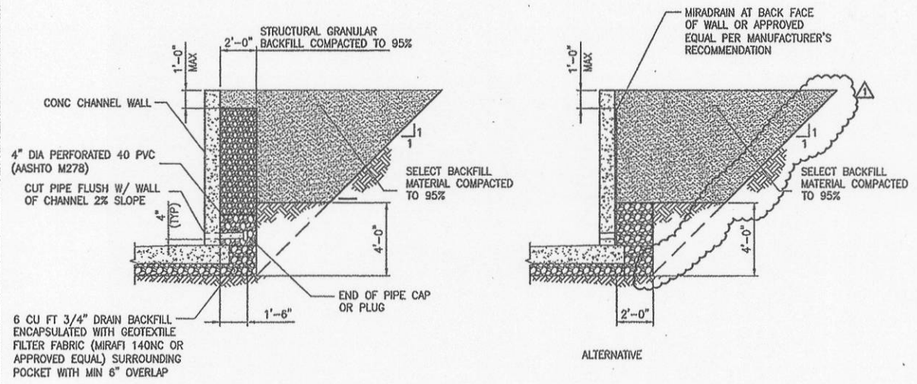
LOCATION	f'c(PSI)
STA 12+30.00 TO STA 38+62.29	6000
CHUTE BLOCKS	6000
END SILL	6000
ALL OTHER INVERT SLABS	4500

   WALL AND ALL OTHER STRUCTURES: CLASS D. f'c = 4500 PSI FOR 28 DAY MINIMUM COMPRESSIVE STRENGTH BY WEIGHT. 0.45 MAXIMUM WATER TO CEMENT RATIO. SEE DETAIL BELOW.

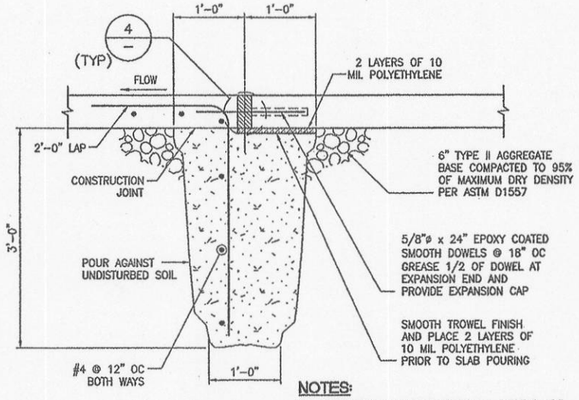
   REINFORCING STEEL: ALL REINFORCING STEEL SHALL BE ASTM A615 REINFORCING STEEL STRENGTH, Fy = 60,000 PSI.
5. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" UNLESS OTHERWISE INDICATED.
6. TRANSVERSE JOINTS IN INVERT SLAB AND WALLS FOR RECTANGULAR CHANNELS WILL BE REQUIRED AT THE END OF EACH CONTINUOUS POURING OPERATION. TRANSVERSE CONSTRUCTION JOINTS SHALL NOT BE PLACED WITHIN 10-FEET OF AN EXPANSION JOINT OR PIPE PENETRATION.
7. ALL TRANSVERSE JOINTS IN WALLS AND SLABS (CONSTRUCTION, WEAKENED, CONTRACTION AND EXPANSION) SHALL BE IN THE SAME PLANE. NO STAGGERING OF JOINTS WILL BE PERMITTED UNLESS SHOWN OTHERWISE. TRANSVERSE CONSTRUCTION JOINTS SHALL BE NORMAL OR RADIAL TO CENTERLINE OF CONSTRUCTION.
8. ALL SINGLE LAYER REINFORCEMENT SHALL BE PLACED IN THE CENTER OF CONCRETE UNLESS NOTED OTHERWISE.
9. IN CURVED CHANNEL SECTIONS TRANSVERSE BARS SHALL BE PLACED NORMAL TO THE CHANNEL CENTERLINE.
10. IN CURVED CHANNEL SECTIONS, THE MAXIMUM SPACING OF BARS SHALL NOT EXCEED THAT SHOWN FOR TYPICAL SECTIONS. STEEL SHALL BE PLACED RADIALLY FROM THE MAXIMUM SPACING.
11. AT THE BEGINNING AND ENDING OF ALL POURS, A COMPLETE CURTAIN OF MAIN REINFORCEMENT SHALL BE PLACED 3-INCHES FROM THE TRANSVERSE CONSTRUCTION, CONTRACTION AND EXPANSION JOINTS.
12. CHANNEL ELEVATIONS: FOR CHANNEL INVERT ELEVATIONS REFER TO THE CHANNEL PLAN AND PROFILE SHEETS LOCATED ELSEWHERE IN THIS DRAWING SET.
13. SOILS REPORT: PROVIDED BY WESTERN TECHNOLOGIES, INC. PROJECT NO. 4125JD022, DATED JANUARY 3, 2006.
    SITE CLASS = D
    BEARING = 3000 psf
    EFPa = 35 pcf (LEVEL)
    = 45 pcf (3:1 SLOPE)
    COEF OF FRICTION = 0.35
    EFPp = 300 pcf
    Kh = 0.14 g

DRAWING LIST

S-1 CHANNEL NOTES AND TYPICAL DETAILS
S-2 CHANNEL TYPICAL PLANS AND SECTIONS
S-3 RECTANGULAR CHANNEL ACCESS RAMP DETAILS AND STEP DETAILS
S-4 TRAPEZOIDAL CHANNEL ACCESS RAMP DETAILS AND PIPE INLET DETAILS
S-5 CHANNEL TRANSITION TRAPEZOIDAL TO RECTANGULAR-STA 27+00.00 AND CUT-OFF WALL DETAILS
S-6 CHANNEL TRANSITION RECTANGULAR TO TRAPEZOIDAL-STA 40+97.58
S-7 CHANNEL TRANSITION RECTANGULAR TO TRAPEZOIDAL-STA 78+16.20
S-8 BOX-BRIDGE STRUCTURE AND DEBRIS BASIN
S-9 INFLOW STRUCTURE DETAILS
S-10 OUTLET STRUCTURE DETAILS
S-11 NORTH AND SOUTH COLLECTION CHANNEL TRANSITIONS

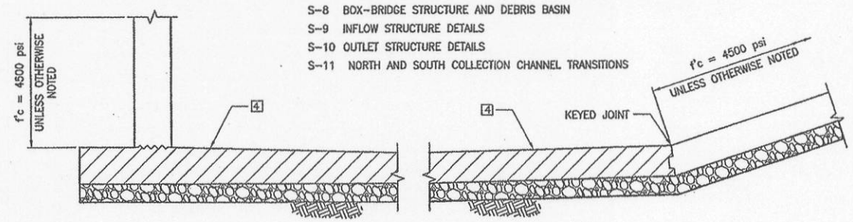


9 CHANNEL WEEPHOLE W/ BACKFILL AND COMPACTION
SCALE: NTS



NOTES:
1. CONTRACTOR TO VERIFY THAT ALL DOWELS ARE IN PLANE AND PERPENDICULAR TO JOINT PRIOR TO POURING CONCRETE.
2. CONTRACTOR TO ENSURE UPSTREAM AGGREGATE IS COMPACTED WITH NO CONCRETE SLAB SEEPAGE BEHIND CUT-OFF WALL.

5 TRANVERSE CUT-OFF WALL EXPANSION
SCALE: NTS



10 CONCRETE STRENGTH
SCALE: NTS

REV. NO.	DATE	DESCRIPTION	APPROVED
1	8/28/08	REVISE BACKFILL EXTENTS AT DETAIL 9	

NORTHEAST C-1 DETENTION BASIN
CHANNEL NOTES AND TYPICAL DETAILS
CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

EDUARDO VILLALOBOS Exp. 06/30/2010 CIVIL / STRUCTURAL — STATE OF NEVADA — 8/28/08

G. C. WALLACE COMPANIES
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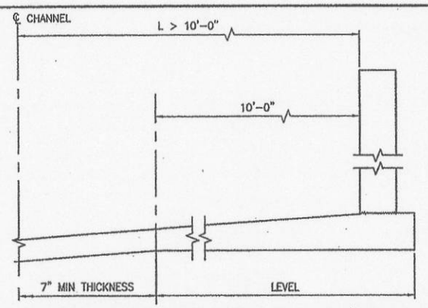
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
Ph 702.804.2000 · Fx 702.804.2299 · GCWALLACE.COM

PROJECT No: 504.424 DRAWN BY: NO/JMH
DESIGNED BY: RDB CHECKED BY:
APPROVED BY FEV

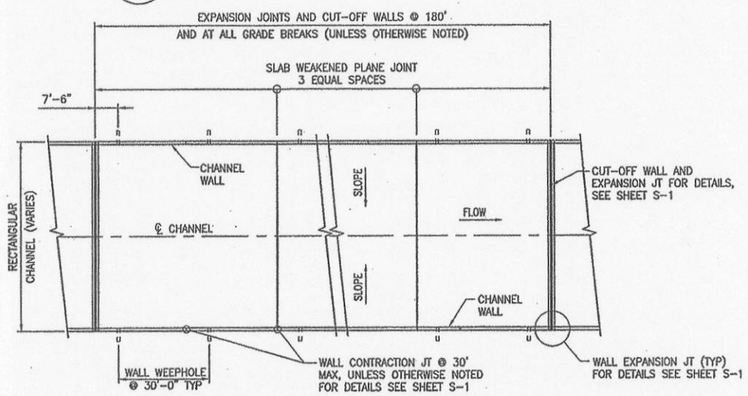
SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. S-1
SHT. 35 OF 42

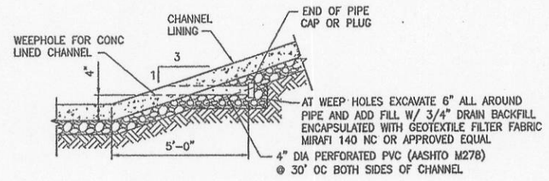
07380



6 WIDE RECTANGULAR CHANNEL
SCALE: NTS



4 RECTANGULAR CHANNEL PLAN
SCALE: NTS



3 TRAPEZOIDAL CHANNEL WEEPHOLE
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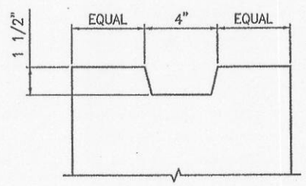
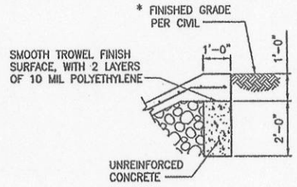
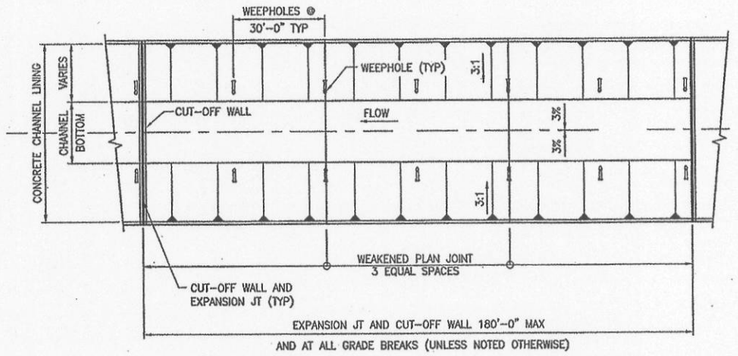


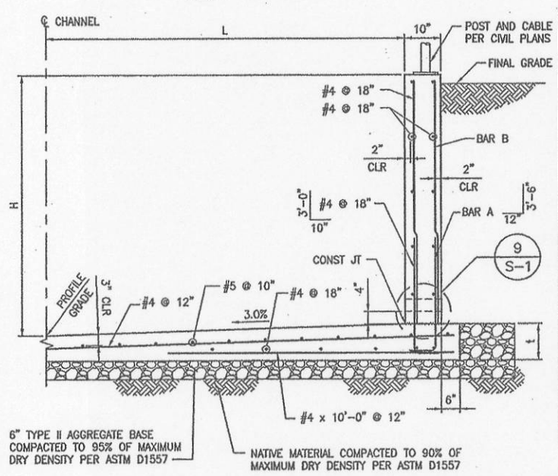
5 KEYED JOINT
SCALE: NTS



2 LONGITUDINAL CUT-OFF WALL
SCALE: 3/8" = 1'-0"



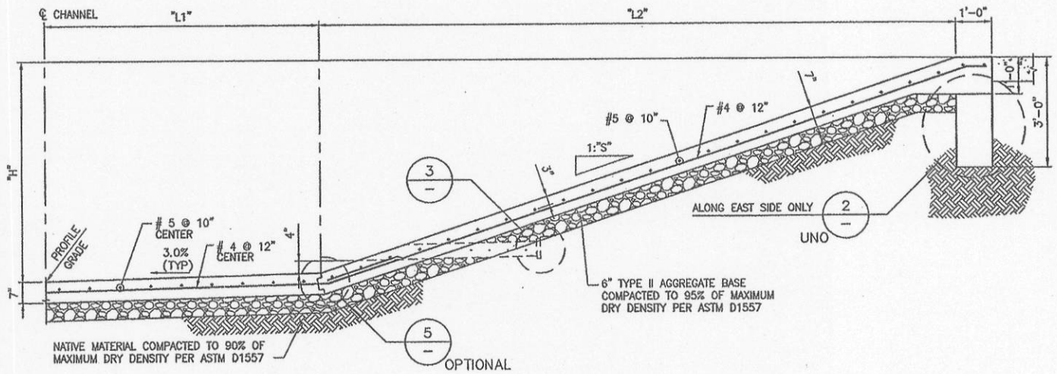
1 TRAPEZOIDAL CHANNEL PLAN
SCALE: NTS



	STATION	L * LEFT	L * RIGHT	H	BAR A	BAR B	t
MAIN CHANNEL	13+92.84 TO 14+52.52	10'-0"	10'-0"	10'-0" TO 8'-3 5/8"	#5 @ 8"	#4 @ 8"	1'-6"
	14+52.52 TO 15+53.62	10'-0"	10'-0"	8'-3 5/8"	#5 @ 10"	#4 @ 10"	1'-0"
	15+53.62 TO 16+03.62	10'-0" TO 7'-6"	10'-0" TO 7'-6"	8'-3 5/8" TO 7'-8 3/4"	#5 @ 10"	#4 @ 10"	1'-0"
	16+03.62 TO 27+00.00	7'-6"	7'-6"	7'-8 3/4"	#5 @ 12"	#4 @ 12"	1'-0"
	40+28.71 TO 40+70.71	32'-0"	10'-0"	6'-2 1/8"	#5 @ 12"	#4 @ 12"	1'-0"
	40+97.58 TO 43+28.87	10'-0"	10'-0"	6'-2 1/8"	#5 @ 12"	#4 @ 12"	1'-0"
	77+59.60 TO 77+99.60	10'-0"	10'-0"	6'-2 1/8"	#5 @ 12"	#4 @ 12"	1'-0"
	78+07.83 TO 79+35.67	10'-0"	10'-0"	6'-2 1/8"	#5 @ 12"	#4 @ 12"	1'-0"
SOUTH CHANNEL	210+00.00 TO 212+07.94	3'-0"	3'-0"	6'-2 1/8"	#5 @ 12"	#4 @ 12"	1'-0"
	212+07.94 TO 212+10.98	3'-0" TO 3'-4"	3'-0" TO 3'-4"	6'-2 1/8"	#5 @ 12"	#4 @ 12"	1'-0"
	212+1098 TO 212+44.94	3'-4" TO 7'-4"	3'-4" TO 7'-4"	6'-2 1/8"	#5 @ 12"	#4 @ 12"	1'-0"
	212+44.94 TO 212+79.94	----	----	SEE SHEET 2/S-11	----	----	----
NORTH CHANNEL	110+00.00 TO 110+20.00	10'-0"	10'-0"	6'-2" TO 6'-10"	#5 @ 12"	#4 @ 12"	1'-0"
	110+20.00 TO 111+03.90	10'-0"	10'-0"	6'-10"	#5 @ 12"	#4 @ 12"	1'-0"
	111+03.90 TO 111+13.90	10'-0" TO 9'-0"	10'-0" TO 9'-0"	6'-10" TO 6'-9"	#5 @ 12"	#4 @ 12"	1'-0"
	111+13.90 TO 114+53.19	9'-0"	9'-0"	6'-9"	#5 @ 12"	#4 @ 12"	1'-0"
	114+53.19 TO 114+53.94	9'-0" TO 9'-2"	9'-0" TO 9'-2"	6'-9" TO 6'-8"	#5 @ 12"	#4 @ 12"	1'-0"
	114+53.94 TO 115+49.37	----	----	SEE SHEET 1/S-11	----	----	----

* FOR L > 10' SEE DETAIL 6

B RECTANGULAR CHANNEL TYPICAL SECTION
SCALE: NTS



STATION	"L1"	"L2" LEFT	"L2" RIGHT	"H" LEFT	"H" RIGHT	"S" LEFT	"S" RIGHT	STATION ℄ TO CHANNEL ℄ OFFSET
28+00.00 TO 37+83.71	6'-0"	18'-0"	18'-0"	6'-2"	6'-2"	1:3	1:3	0
45+20.92 TO 76+12.88	6'-0"	18'-0"	18'-0"	6'-2"	6'-2"	1:3	1:3	0
1 81+38.21 TO 92+51.90	6'-0"	18'-0"	18'-0"	6'-2"	6'-2"	1:3	1:3	0
92+51.90 TO 93+71.90	6'-0"	18'-0" TO 67'-8"	18'-0" TO 59'-2"	6'-2"	6'-2" TO 6'-6"	1:3 TO 1:11.3	1:3 TO 1:9.6	0 TO 3.20' L

A TRAPEZOIDAL CHANNEL TYPICAL SECTION
SCALE: NTS

REV. NO.	DATE	DESCRIPTION	APPROVED
1	8/28/08	REVISE STATION AT SECTION A	

NORTHEAST C-1 DETENTION BASIN
CHANNEL TYPICAL PLAN AND SECTIONS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

F. EDUARDO VILLALOBOS Exp. 06/30/2010 CIVIL / STRUCTURAL — PROFESSIONAL ENGINEER — STATE OF NEVADA — 8/28/08

PROJECT No: 504.424 DRAWN BY: NO/JMH
DESIGNED BY: RDB CHECKED BY:
APPROVED BY FEV

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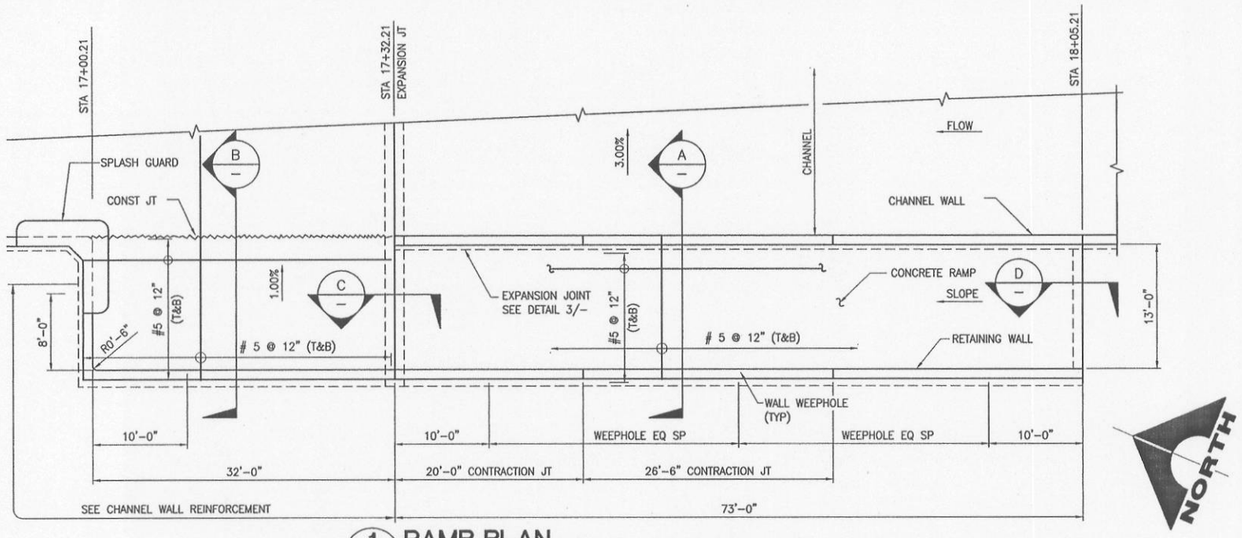
SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. S-2
SHT. 36 OF 42

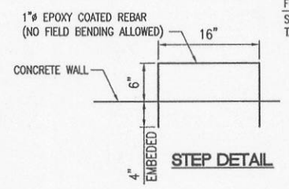
07380



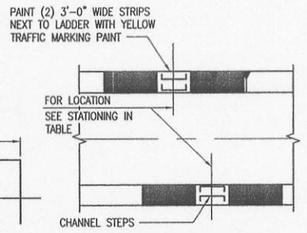
1 RAMP PLAN
SCALE: 1/8" = 1'-0"

RECTANGULAR CHANNEL	
LEFT OFFSET	RIGHT OFFSET
STA 15+20.00	STA 15+00.00
STA 20+15.00	STA 20+00.00
STA 26+15.00	STA 26+00.00
STA 43+20.00	STA 43+00.00
STA 79+20.00	STA 79+00.00

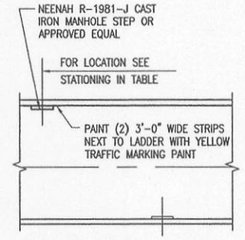
TRAPEZOIDAL CHANNEL	
LEFT OFFSET	RIGHT OFFSET
STA 32+20.00	STA 32+00.00
STA 38+18.67	STA 38+01.31
STA 49+20.00	STA 49+00.00
STA 55+20.00	STA 55+00.00
STA 61+20.00	STA 61+00.00
STA 67+20.00	STA 67+00.00
STA 73+19.14	STA 73+00.00
STA 85+20.00	STA 85+00.00
STA 91+20.00	STA 91+00.00



STEP DETAIL



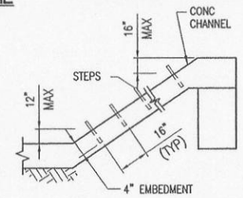
TRAPEZOIDAL CHANNEL



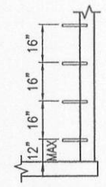
RECTANGULAR CHANNEL

NOTES:

1. AT CONTRACTOR'S OPTION STEPS MAY BE INSTALLED BY DRILLING AND EPOXY GROUTING
2. STEP LOCATION PER CIVIL DRAWINGS

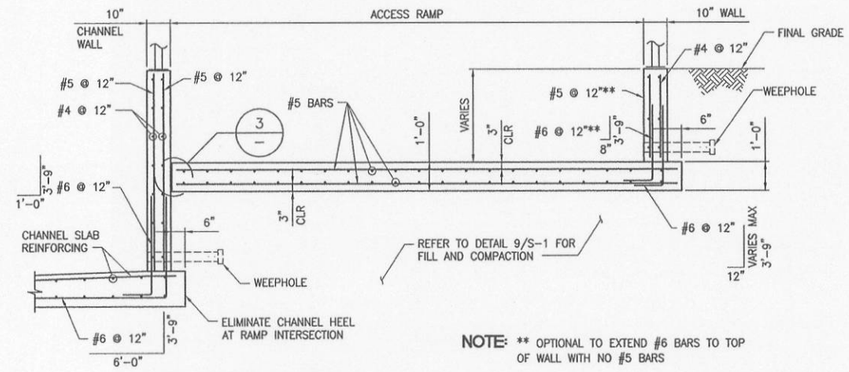


SECTION



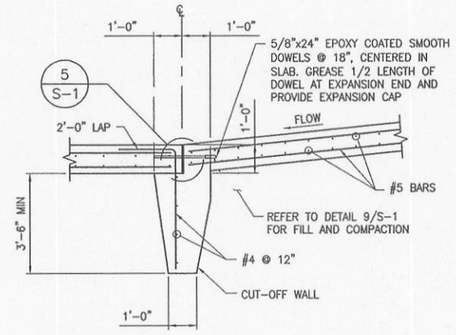
SECTION

4 CHANNEL STEP DETAILS
SCALE: NTS

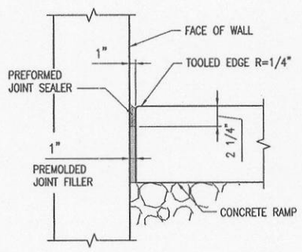


NOTE: ** OPTIONAL TO EXTEND #6 BARS TO TOP OF WALL WITH NO #5 BARS

A SECTION
SCALE: 3/8" = 1'-0"



C SECTION
SCALE: 3/8" = 1'-0"



3 SECTION
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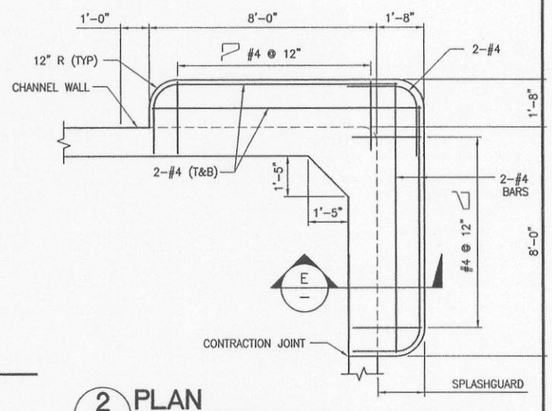
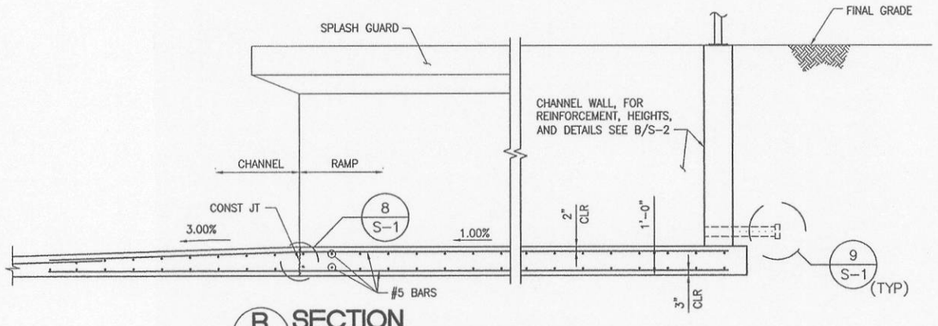
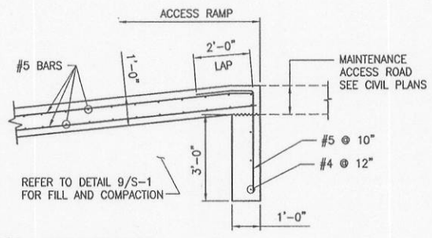


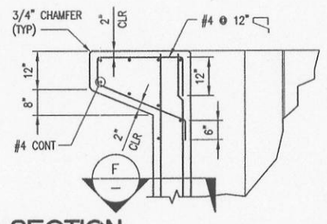
2 PLAN
SCALE: 3/8" = 1'-0"



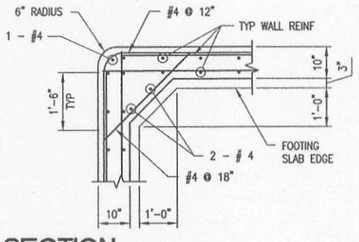
B SECTION
SCALE: 3/8" = 1'-0"



D SECTION
SCALE: 3/8" = 1'-0"



E SECTION
SCALE: 1/2" = 1'-0"



F SECTION
SCALE: 1/2" = 1'-0"

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
RECTANGULAR CHANNEL ACCESS RAMP DETAILS AND STEP DETAILS
CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

EDWARD R. VILLALOBOS, STATE OF NEVADA, PROFESSIONAL ENGINEER, No. 14661, Exp. 06/30/2008, CIVIL / STRUCTURAL
4/03/08

PROJECT No: 504.424 DRAWN BY: NO
DESIGNED BY: RDB CHECKED BY:
APPROVED BY FEV

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
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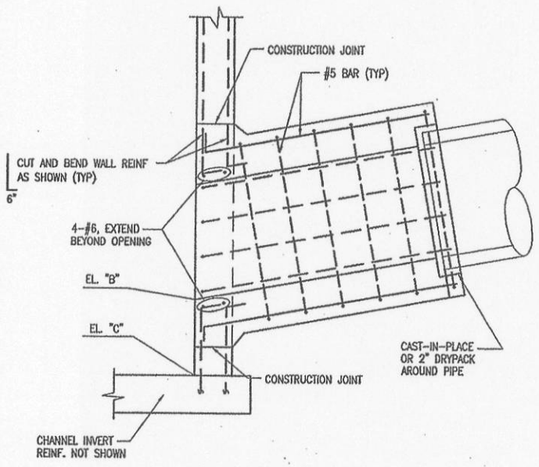
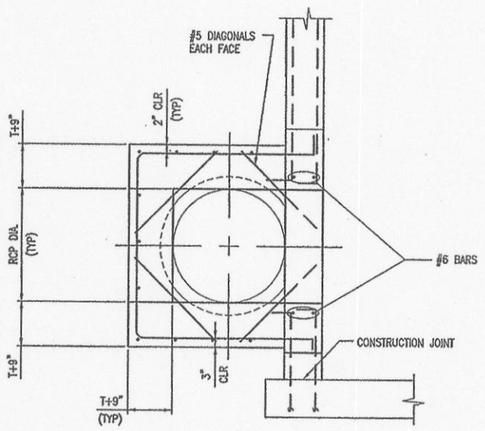
SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. S-3
SHT. OF

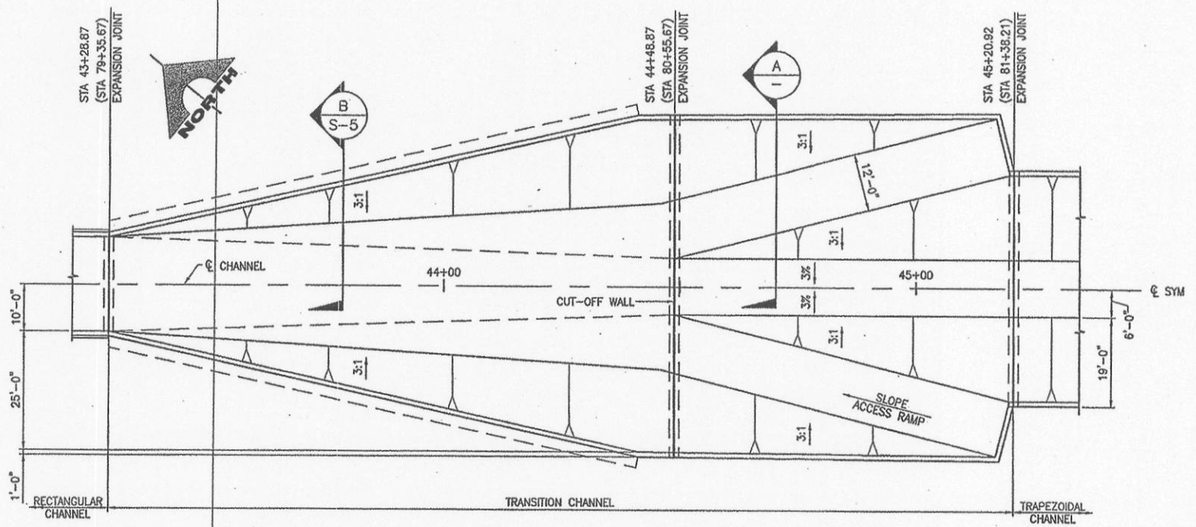
07380



B / – SECTION
SCALE: 1/2" = 1'-0"

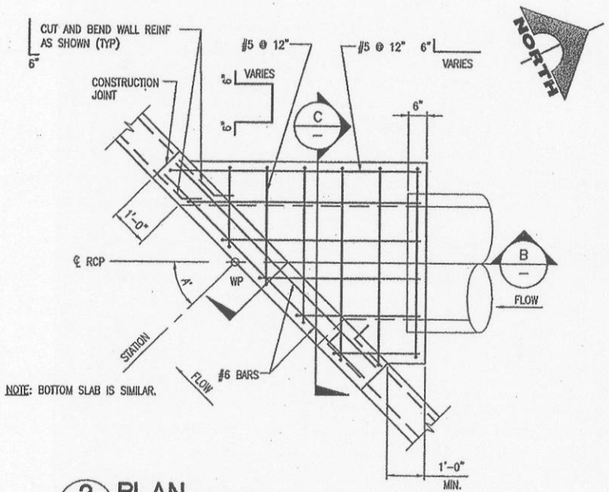


C / – SECTION
SCALE: 1/2" = 1'-0"



( ) PARENTHESIS VALUES ARE DIFFERENT MEASUREMENTS FOR RAMP FROM STA 79+35.67 TO STA 81+38.21

1 / – TRAPEZOIDAL CHANNEL TRANSITION
SCALE: 1/16" = 1'-0"



NOTE: BOTTOM SLAB IS SIMILAR.

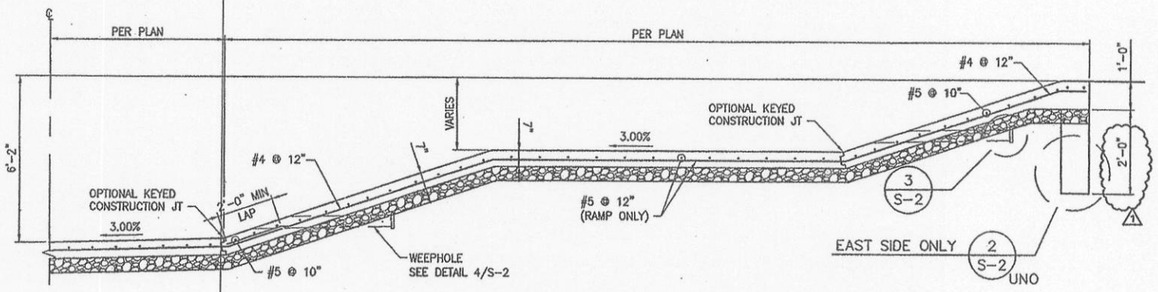
3 / – PLAN
SCALE: 1/2" = 1'-0"

WALL PENETRATION SCHEDULE					
CHANNEL STATION	WALL	PIPE DIA. (IN)	A°	EL. "B"	EL. "C"
"CHAN-NORTH" 114+36.42	LT	36	23.20°	2110.50	2110.00
"CHAN-SOUTH" 211+66.27	LT	36	44.09°	2192.43	2191.93

NOTES:

1. OPENINGS IN CHANNEL WALL SHALL BE CHAMFERED 3/4-INCH UNLESS OTHERWISE NOTED.
2. CUT WALL REINFORCEMENT 2-INCHES FROM OPENING IN CHANNEL WALL EXCEPT WHEN NOTED OTHERWISE.
3. "T" EQUALS WALL THICKNESS OF PIPE. WHERE HDPE PIPE IS USE ASSUME T=3".
4. ALL REINFORCEMENT SHALL HAVE A MINIMUM OF 2-INCHES CLEARANCE UNLESS OTHERWISE NOTED.
5. ALL REINFORCING STEEL SHALL BE #5 @ 12" UNLESS NOTED OTHERWISE.

2 / – PIPE INLET DETAIL
SCALE: 1/2" = 1'-0"



A / – SECTION
SCALE: 3/8" = 1'-0"

REV. NO.	DATE	DESCRIPTION	APPROVED
1	8/28/08	REVISE CUT-OFF WALL DIMENSION AT SECTION A	

NORTHEAST C-1 DETENTION BASIN

TRAPEZOIDAL CHANNEL ACCESS RAMP DETAILS AND PIPE INLET DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

F. EDUARDO VILLALOBOS Exp. 06/30/2010 CIVIL / STRUCTURAL No. 14661 STATE OF NEVADA 8/28/08

PROJECT No: 504.424 DRAWN BY: NO
DESIGNED BY: RDB CHECKED BY:
APPROVED BY FEV

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
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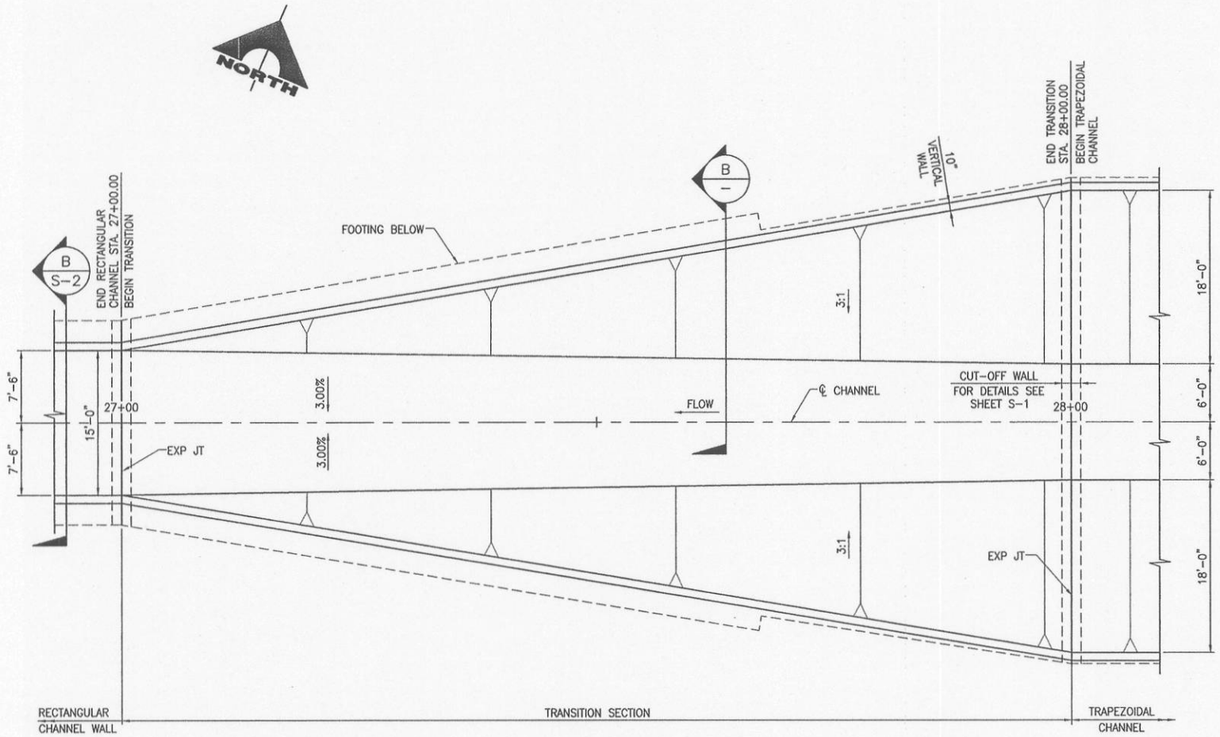
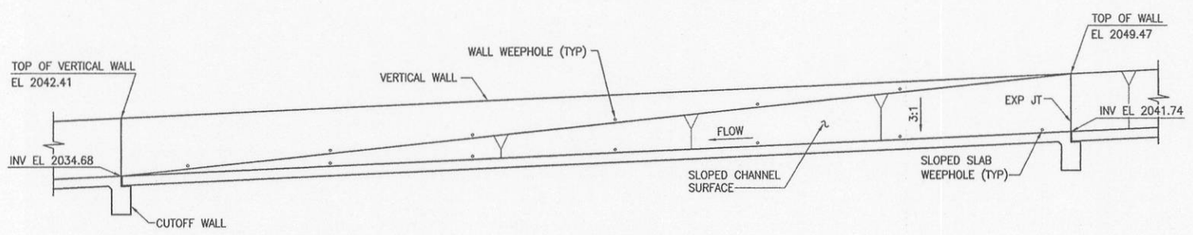
SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. S-4
SHT. 39 OF 42

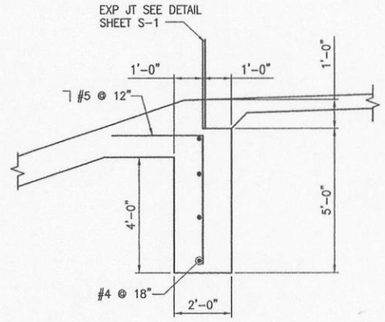
07380



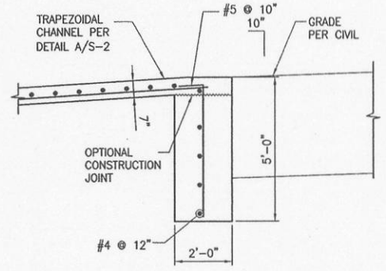
1 PLAN
SCALE: 1/8" = 1'-0"



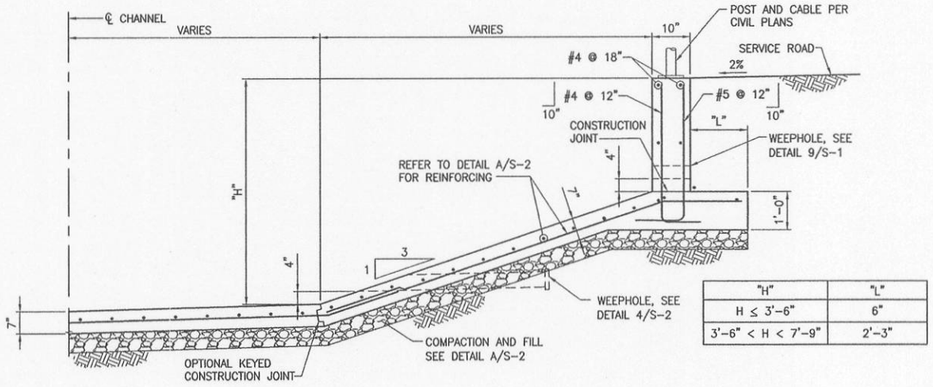
A ELEVATION
SCALE: 1/8" = 1'-0"



3 CUT-OFF WALL DETAIL AT INFLOW
SCALE: 3/8" = 1'-0"



2 CUT-OFF WALL AT STA 93+71.90
SCALE: 3/8" = 1'-0"



"H"	"L"
H ≤ 3'-6"	6"
3'-6" < H < 7'-9"	2'-3"

B SECTION
SCALE: 1/2" = 1'-0"

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
CHANNEL TRANSITION TRAPEZOIDAL TO RECTANGULAR AND CUT-OFF WALL DETAILS
CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

ENGINEER — F. EDUARDO VILLALOBOS — Exp. 06/30/2008 — CIVIL / STRUCTURAL — STATE OF NEVADA — PROFESSIONAL — No. 14661
4/03/08

PROJECT No: 504.424 DRAWN BY: RDB/NO
DESIGNED BY: RDB CHECKED BY:
APPROVED BY FEV

G. C. WALLACE COMPANIES
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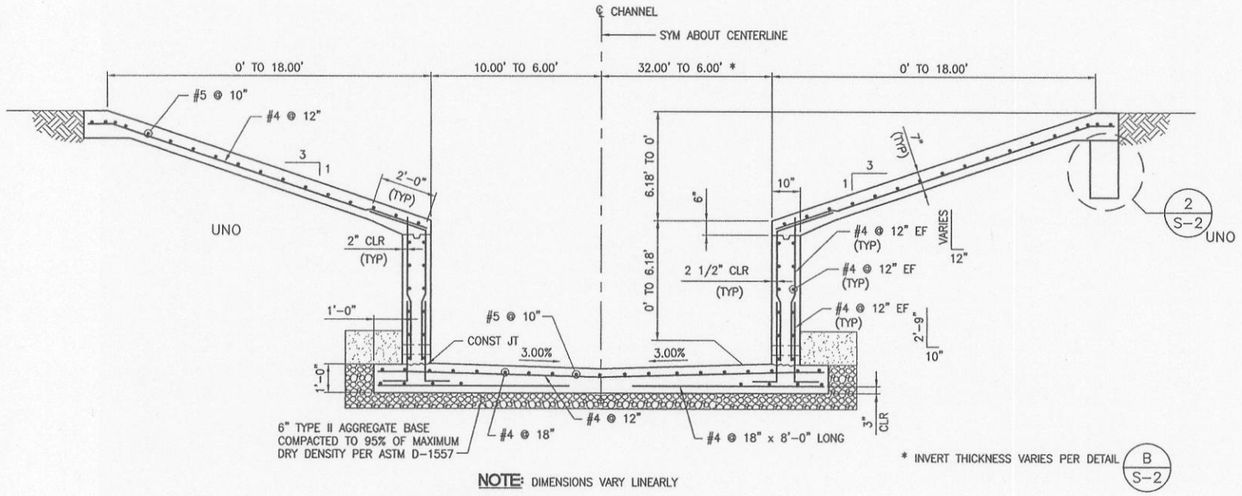
SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

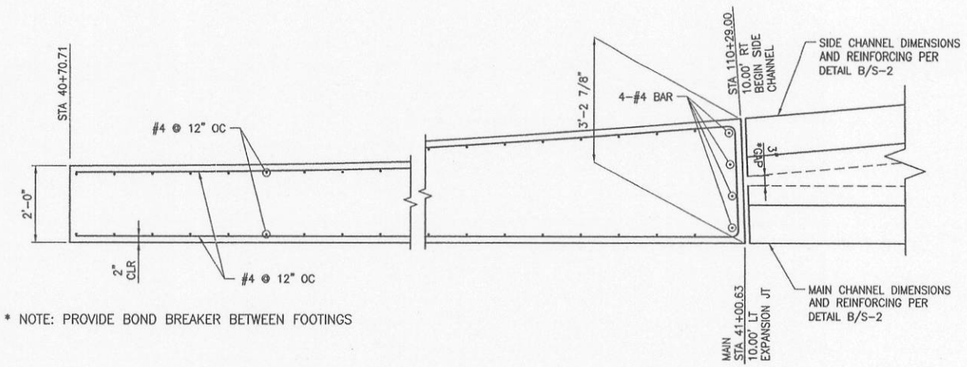
DRAWING NO. S-5
SHT. OF

07380



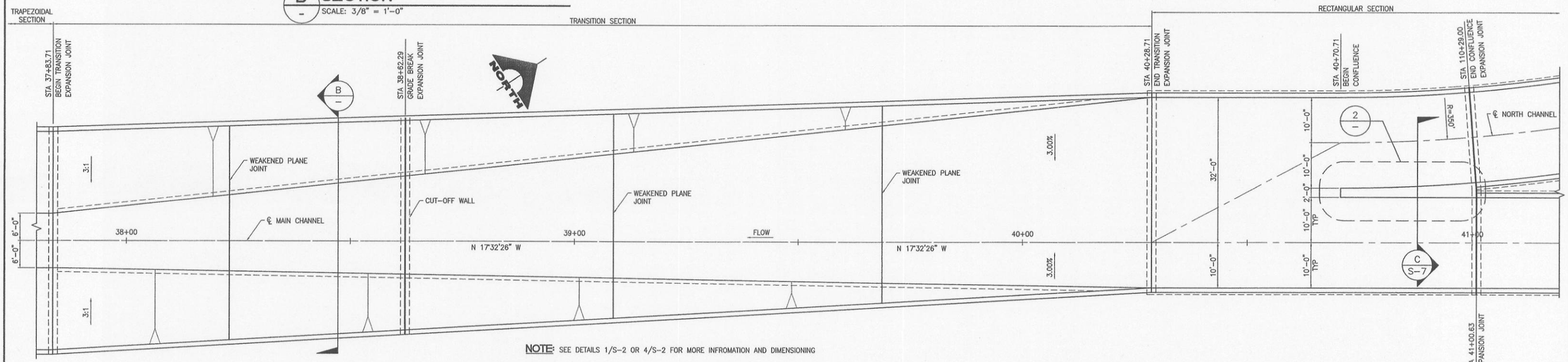
NOTE: DIMENSIONS VARY LINEARLY

B SECTION
SCALE: 3/8" = 1'-0"



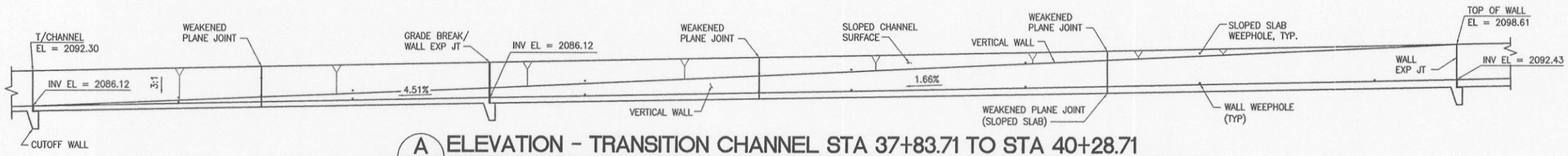
* NOTE: PROVIDE BOND BREAKER BETWEEN FOOTINGS

2 DETAIL
SCALE: 1/2" = 1'-0"



NOTE: SEE DETAILS 1/S-2 OR 4/S-2 FOR MORE INFROMATION AND DIMENSIONING

1 PLAN - TRAPEZOIDAL CHANNEL TRANSITION AND CONFLUENCE CHANNEL STA 37+83.71 TO STA 41+00.63
SCALE: 3/32" = 1'-0"



A ELEVATION - TRANSITION CHANNEL STA 37+83.71 TO STA 40+28.71
SCALE: 3/32" = 1'-0"

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
CHANNEL TRANSITION RECTANGULAR TO TRAPEZOIDAL

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA F. EDUARDO VILLALOBOS Exp. 06/30/2009 CIVIL / STRUCTURAL No. 14661 4/03/08

PROJECT No: 504.424 DRAWN BY: JMH
DESIGNED BY: RDB CHECKED BY:
APPROVED BY FEV

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
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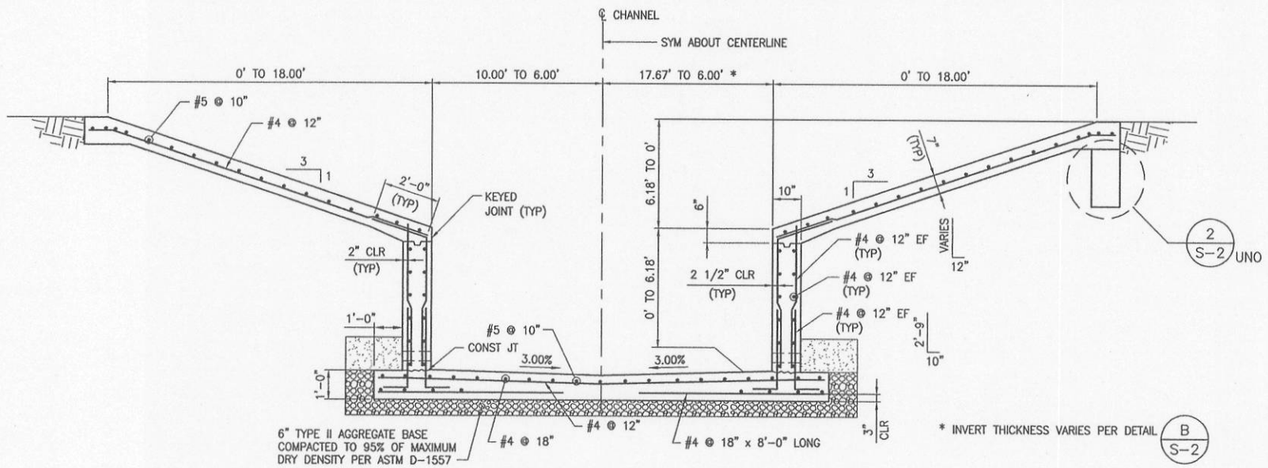
SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

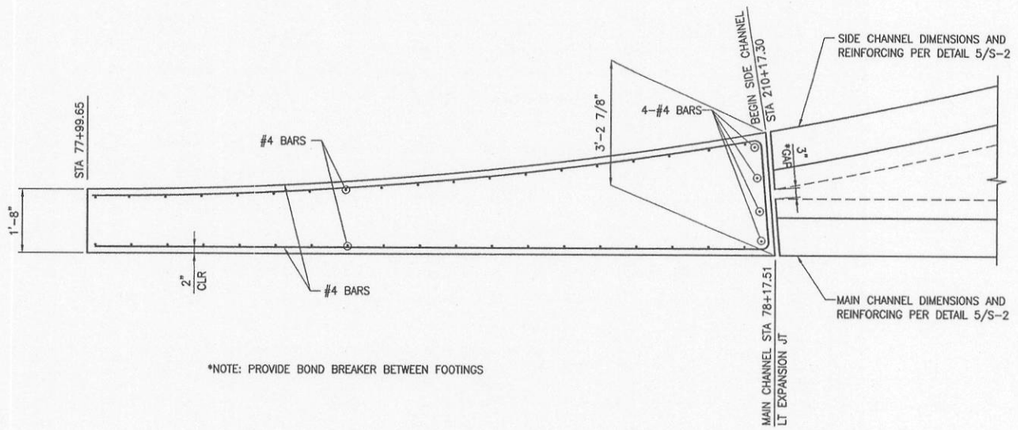
DRAWING NO. S-6
SHT. OF

07380



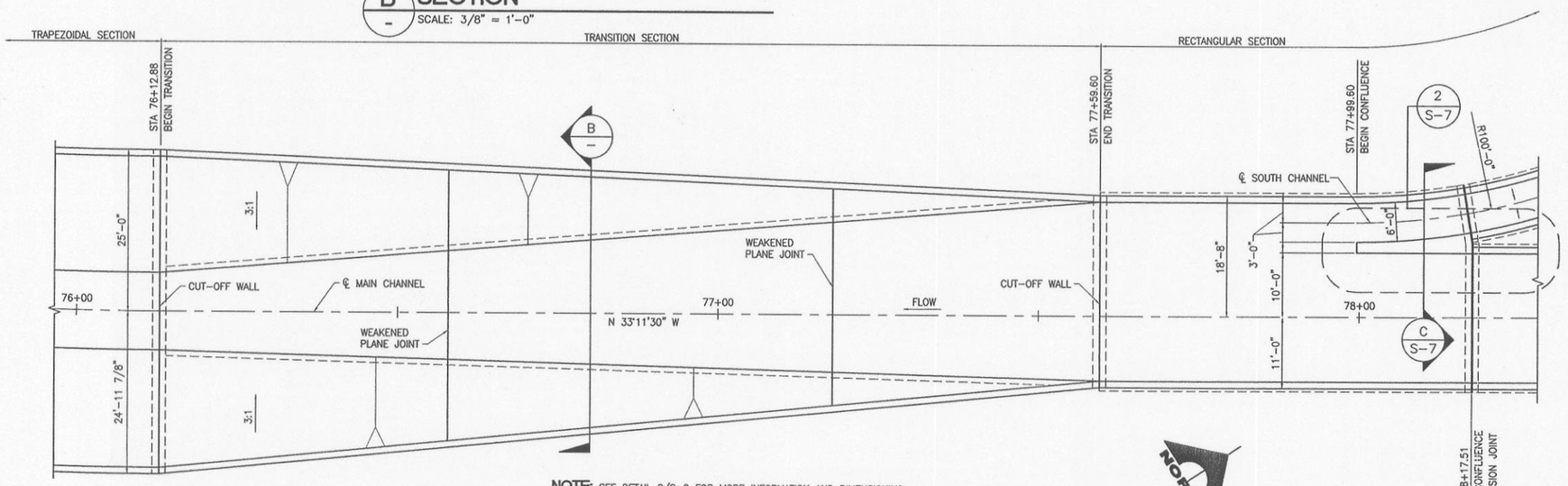
NOTE: DIMENSIONS VARY LINEARLY

B SECTION
SCALE: 3/8" = 1'-0"



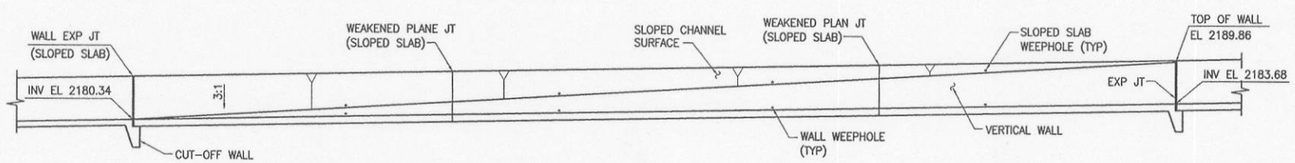
*NOTE: PROVIDE BOND BREAKER BETWEEN FOOTINGS

2 DETAIL
SCALE: 1/2" = 1'-0"

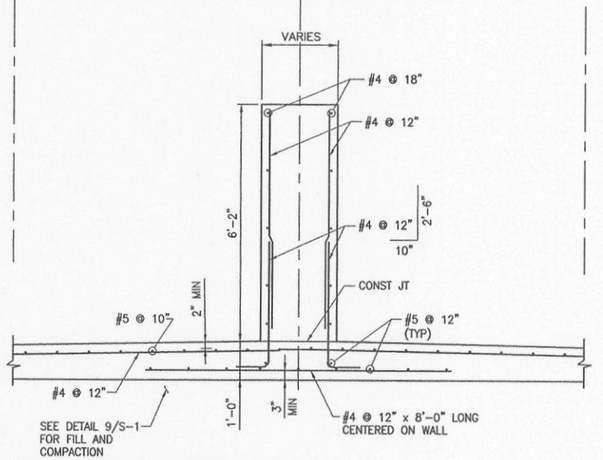


NOTE: SEE DETAIL 2/S-2 FOR MORE INFORMATION AND DIMENSIONING

1 PLAN - TRANSITION CHANNEL STA 76+12.88 TO STA 78+17.51
SCALE: 3/32" = 1'-0"



A ELEVATION - TRANSITION CHANNEL STA 76+12.88 TO STA 77+59.60
SCALE: 3/32" = 1'-0"



C SECTION
SCALE: 1/2" = 1'-0"

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
CHANNEL TRANSITION RECTANGULAR TO TRAPEZOIDAL

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER — F. EDUARDO VILLALOBOS — Exp. 06/30/2008 — CIVIL / STRUCTURAL — No. 14661 — STATE OF NEVADA — 4/03/08

PROJECT No: 504.424	DRAWN BY: JMH	SCALE	
DESIGNED BY: RDB	CHECKED BY:	HORIZ: NONE	DRAWING NO.
APPROVED BY FEV		VERT: NONE	S-7
		FIELD BOOK	SHT. OF

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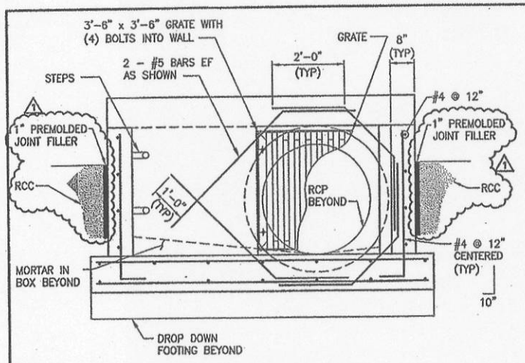

D SECTION
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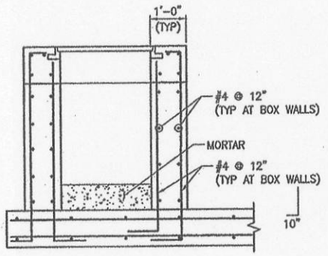
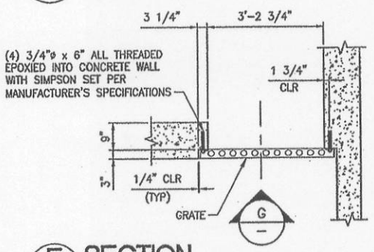
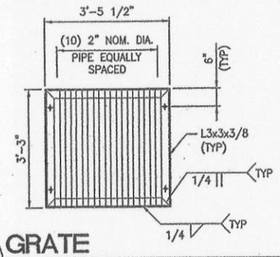


E SECTION
SCALE: 1/2" = 1'-0"



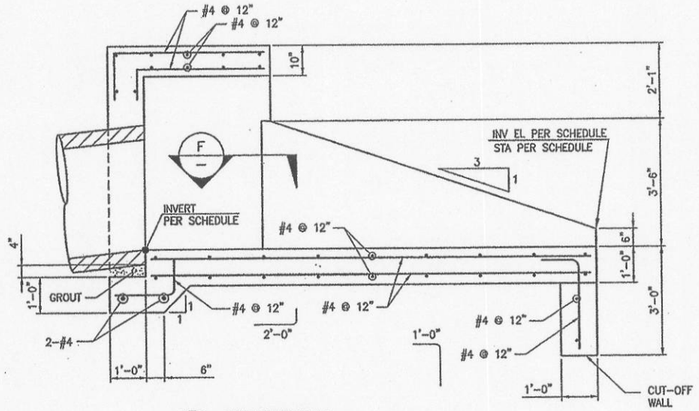
F SECTION
SCALE: 1/2" = 1'-0"



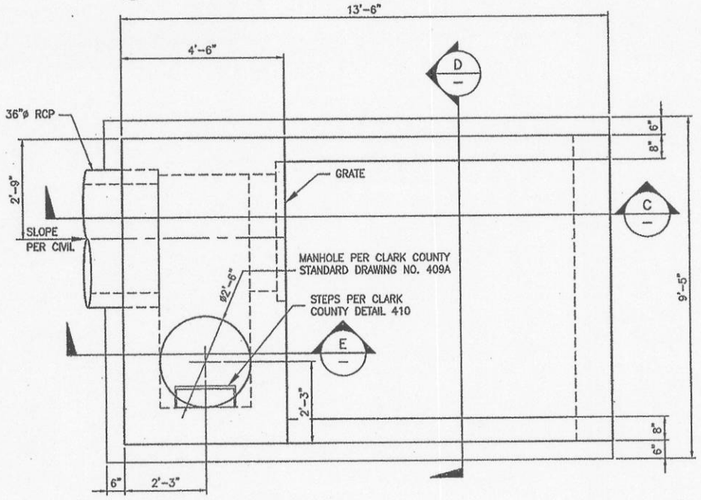
G GRATE
SCALE: 1/2" = 1'-0"

LOCATION	END OF LOW FLOW		END INLFLOW STRUCTURE (RCP)	
	STATION	END INVERT EL	STATION	END INVERT EL
US CHANNEL	212+94.15~28.0' LT	2103.26	212+80.65~28.0' LT	2102.01
DS CHANNEL	115+67.03~63.4' LT	2115.00	115+56.51~58.3' LT	2114.56

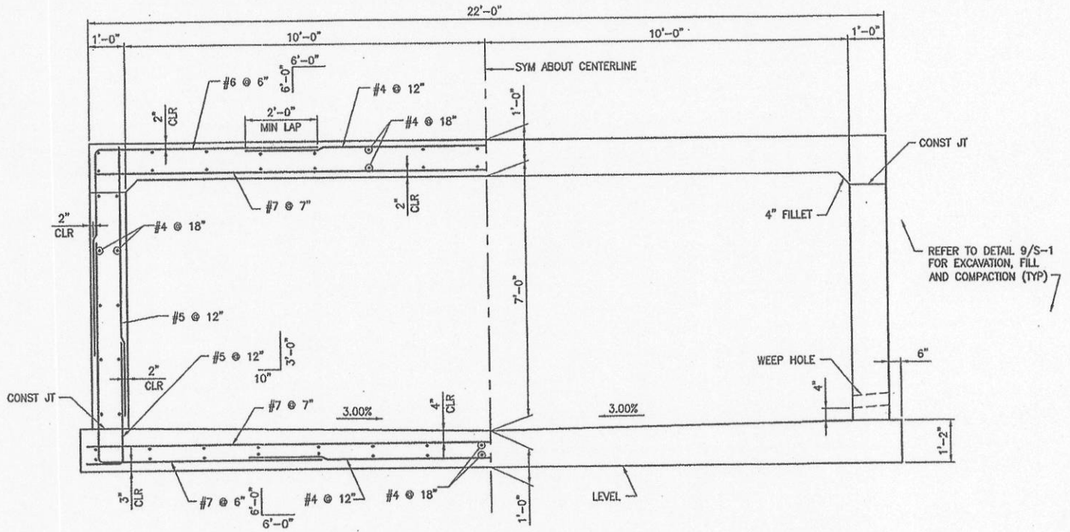
H LOW FLOW SCHEDULE
SCALE: NTS



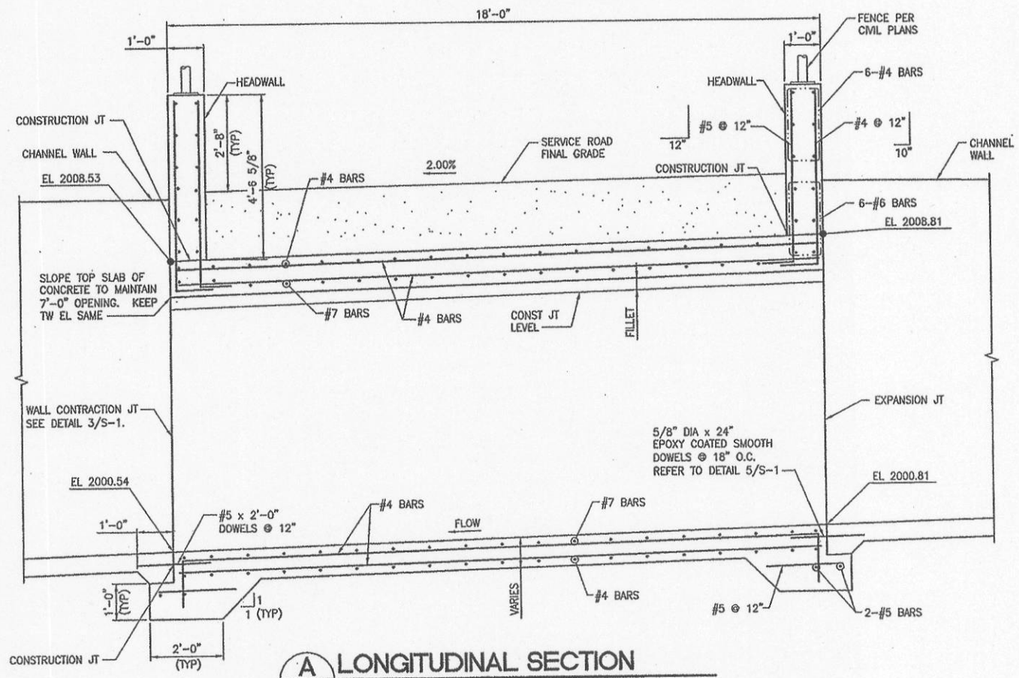
C SECTION
SCALE: 1/2" = 1'-0"



1 PLAN - DEBRIS BASIN
SCALE: 1/2" = 1'-0"



B TRANSITION BOX SECTION
SCALE: 1/2" = 1'-0"



A LONGITUDINAL SECTION
SCALE: 1/2" = 1'-0"

REV. NO.	DATE	DESCRIPTION	APPROVED
1	8/28/08	ADD RCC AT SECTION D	

NORTHEAST C-1 DETENTION BASIN
BOX - BRIDGE STRUCTURE AND DEBRIS BASIN INLET
CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

ENGINEER'S SEAL — EDUARDO VILLALOBOS, Exp. 06/30/2010, CIVIL / STRUCTURAL, No. 14661, STATE OF NEVADA, PROFESSIONAL ENGINEER
8/28/08

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
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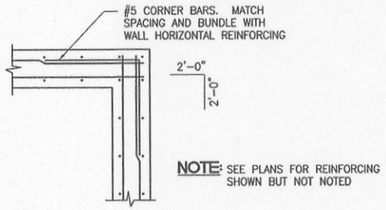
PROJECT No: 504.424 DRAWN BY: DJ/ND
DESIGNED BY: RDB CHECKED BY:
APPROVED BY FEV

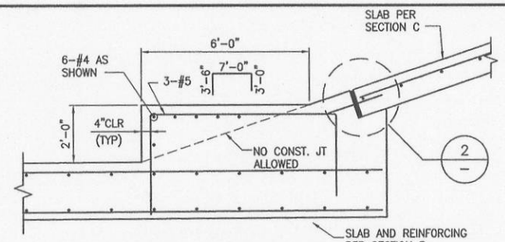
SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. S-8
SHT. 42 OF 42

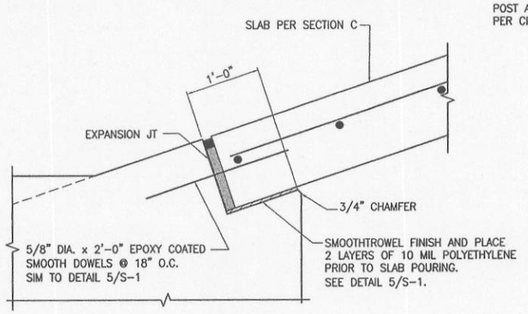
07380



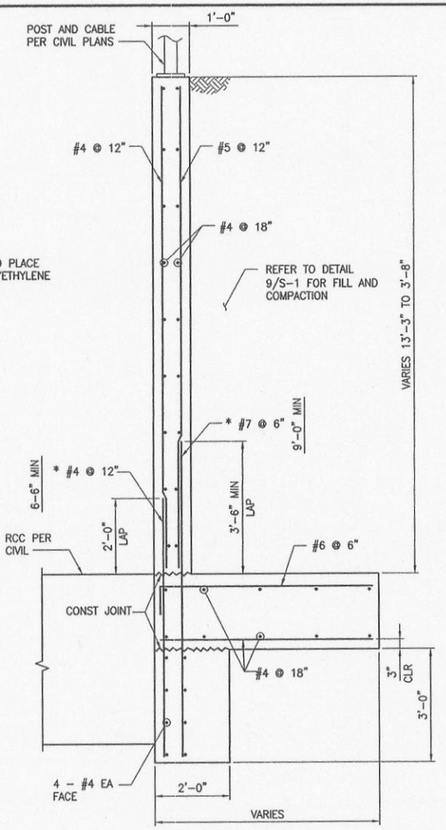
4 DETAIL
SCALE: 1/2" = 1'-0"



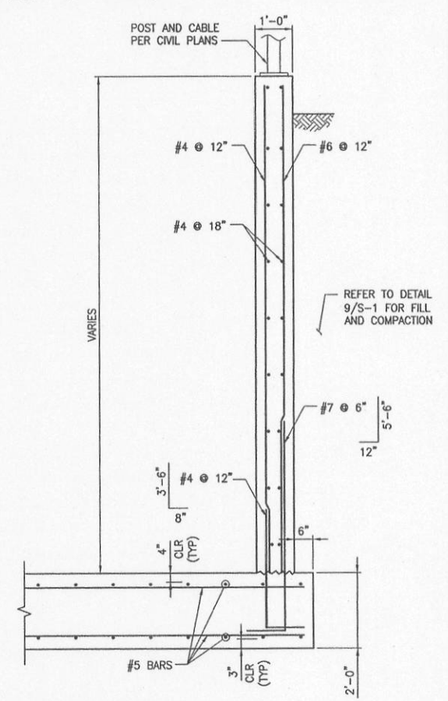
5 CHUTE DETAIL
SCALE: 3/8" = 1'-0"



2 DETAIL
SCALE: 1" = 1'-0"



D SECTION
SCALE: 1/2" = 1'-0"



B SECTION
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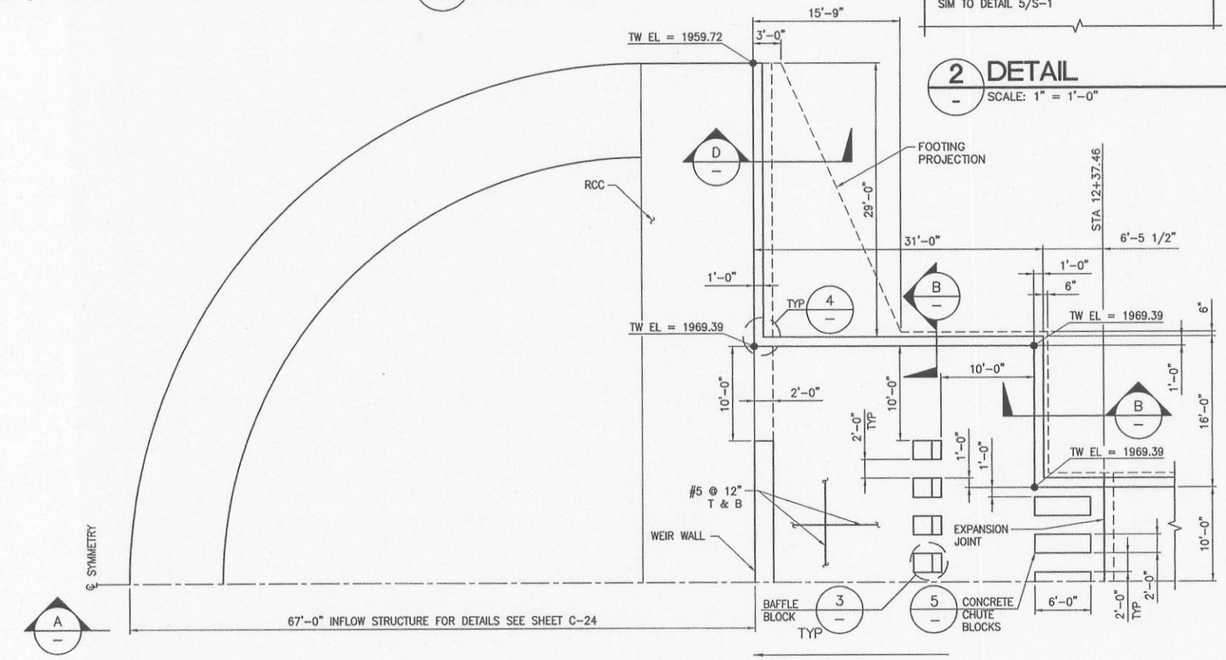
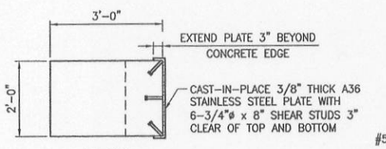
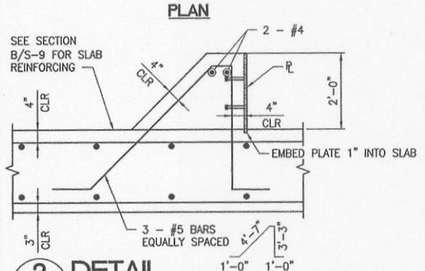
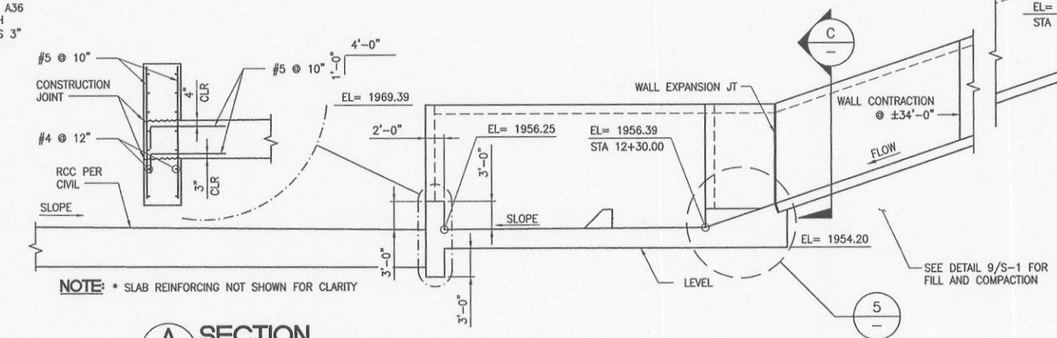


1 INFLOW PLAN
SCALE: 1/8" = 1'-0"





3 DETAIL
SCALE: 1/2" = 1'-0"



A SECTION
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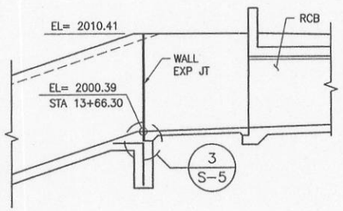
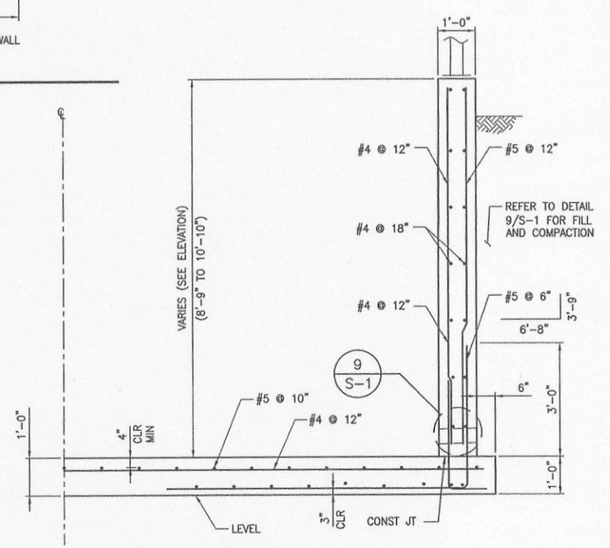




C SECTION
SCALE: 1/2" = 1'-0"

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
INFLOW STRUCTURE DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

F. EDUARDO VILLALOBOS Exp. 06/30/2008 CIVIL / STRUCTURAL No. 14661 STATE OF NEVADA PROFESSIONAL ENGINEER 4/03/08

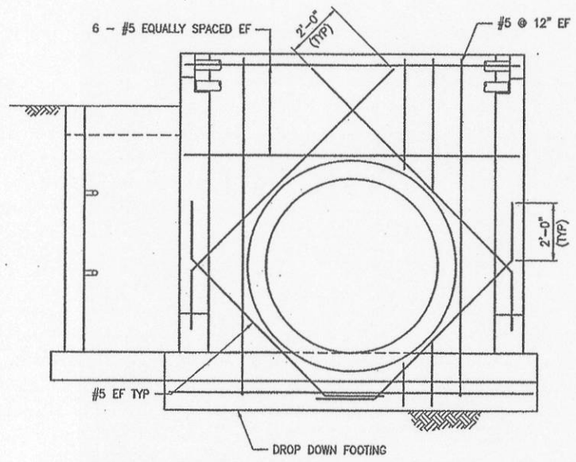
PROJECT No: 504.424 DRAWN BY: NO/JMH
DESIGNED BY: RDB CHECKED BY:
APPROVED BY FEV

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

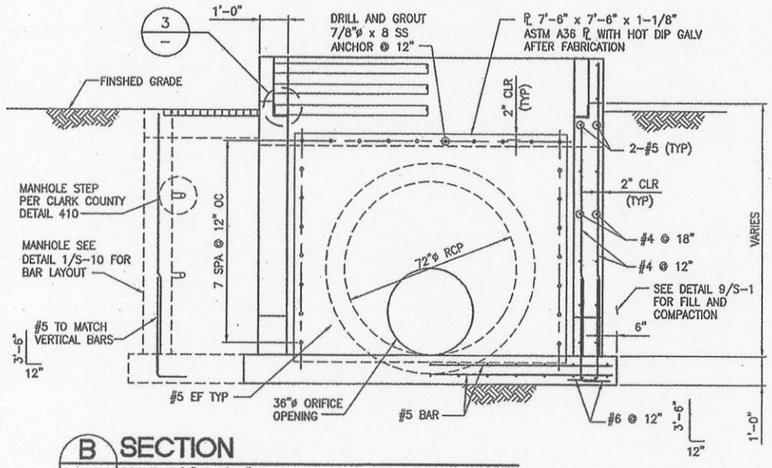
DRAWING NO. S-9
SHT. OF

07380

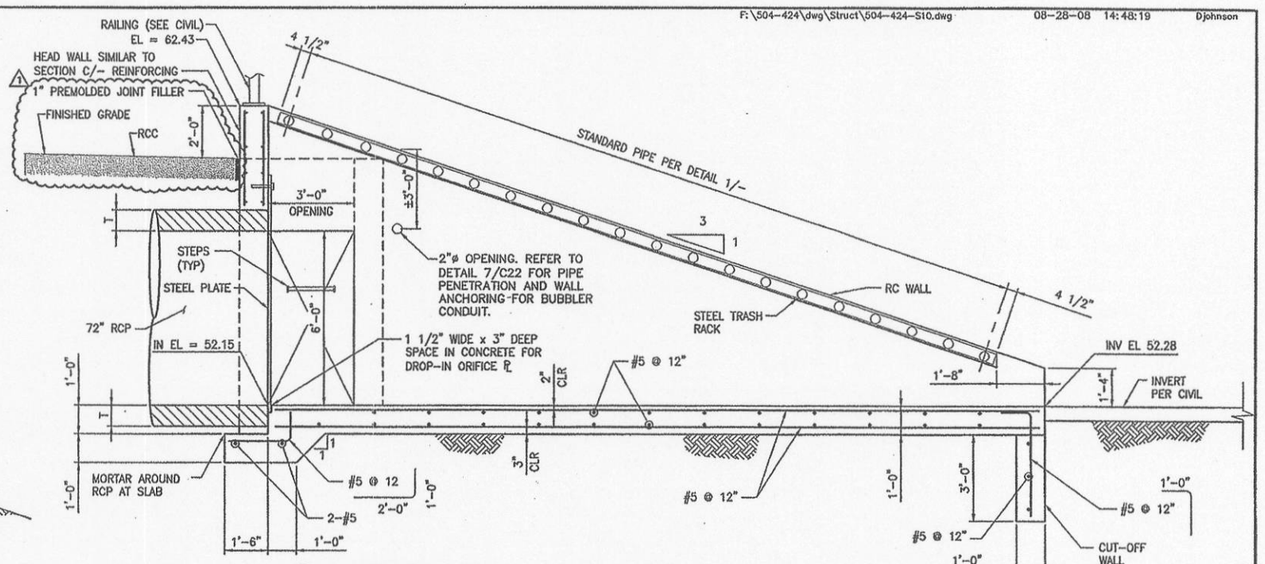


NOTE: ITEMS NOT SHOWN FOR CLARITY, SEE SECTION B/- FOR MORE INFORMATION

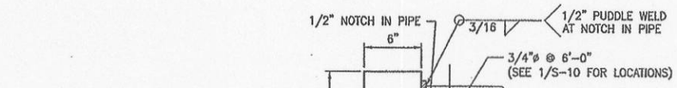
C SECTION
SCALE: 3/8" = 1'-0"



B SECTION
SCALE: 3/8" = 1'-0"

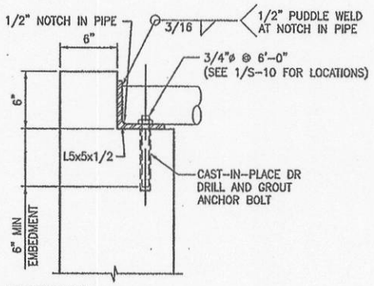


A SECTION
SCALE: 3/8" = 1'-0"

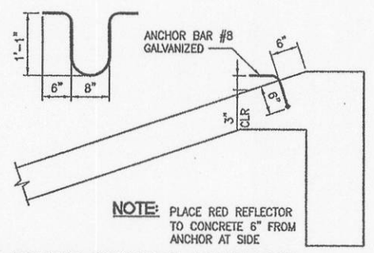


NOTE: PROVIDE EXPANSION JOINTS EVERY 180' AND CONTRACTION JOINTS EVERY 30'

4 SPILLWAY DETAIL
SCALE: 3/8" = 1'-0"

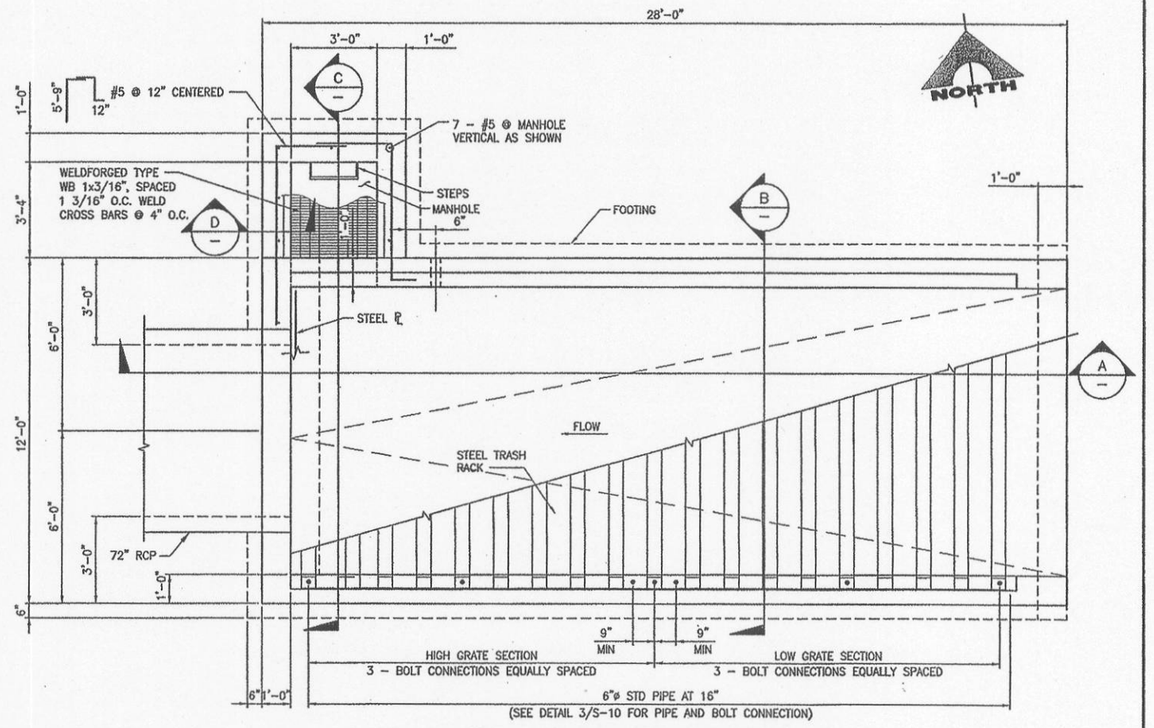


3 DETAIL
SCALE: 1 1/2" = 1'-0"



NOTE: PLACE RED REFLECTOR TO CONCRETE 6" FROM ANCHOR AT SIDE

2 EMERGENCY ANCHOR
SCALE: 3/4" = 1'-0"



1 OUTLET STRUCTURE
SCALE: 3/8" = 1'-0"

REV. NO.	DATE	DESCRIPTION	APPROVED
1	8/28/08	ADD RCC AT SECTION A	

NORTHEAST C-1 DETENTION BASIN
OUTLET STRUCTURE DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

F. EDUARDO VILLALOBOS Exp. 06/30/2010 CIVIL / STRUCTURAL No. 14661 STATE OF NEVADA 8/28/08

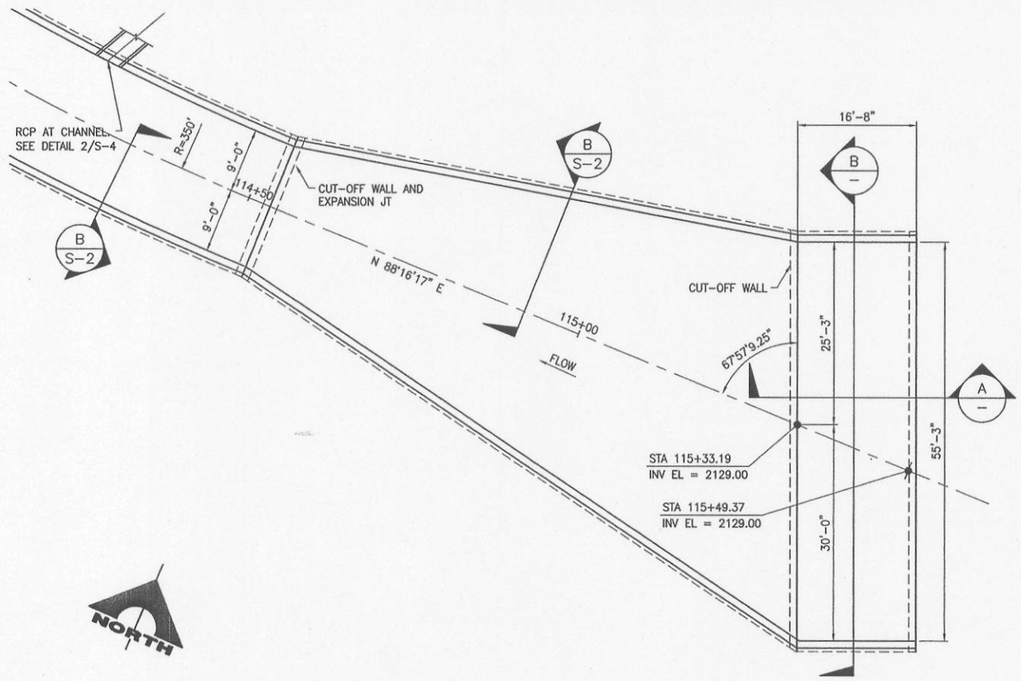
PROJECT No: 504.424 DRAWN BY: RDB/NO/JMH
DESIGNED BY: RDB CHECKED BY:
APPROVED BY FEV

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

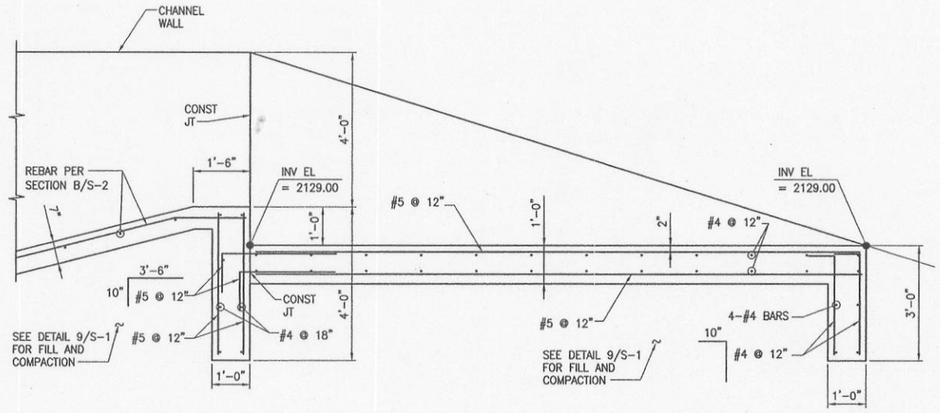
SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. S-10
SHT. 41 OF 42

07380



1 COLLECTION CHANNEL NORTH TRANSITION
SCALE: 3/32" = 1'-0"



A SECTION
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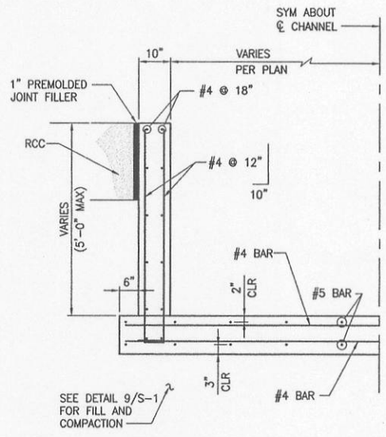
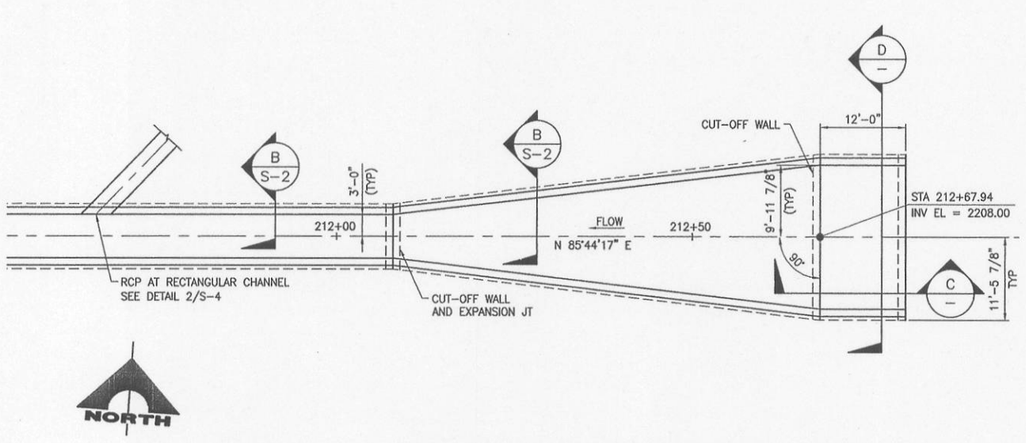
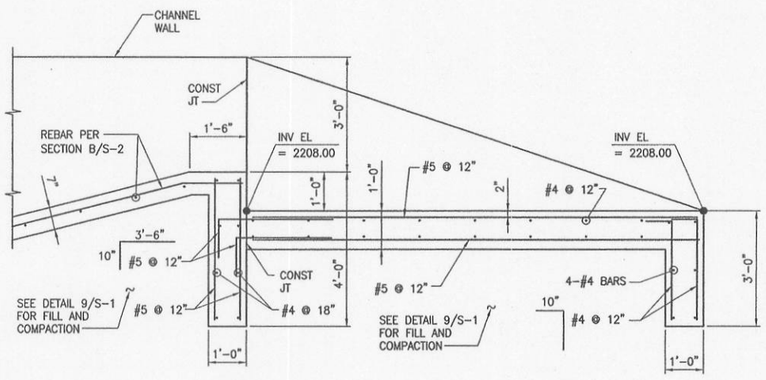


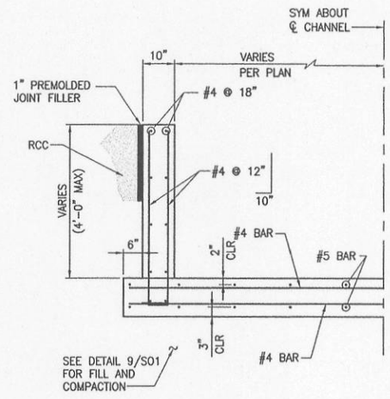
B SECTION
SCALE: 1/2" = 1'-0"



2 COLLECTION CHANNEL SOUTH TRANSITION
SCALE: 3/32" = 1'-0"



C SECTION
SCALE: 1/2" =1'-0"



D SECTION
SCALE: 1/2" =1'-0"

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
NORTH AND SOUTH COLLECTION CHANNEL TRANSITIONS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

ENGINEER · STATE OF NEVADA · F. EDUARDO VILLALOBOS · Exp. 06/30/2008 · CIVIL / STRUCTURAL · No. 14661 · PROFESSIONAL · 4/02/08

PROJECT No: 504.424 DRAWN BY: RDB/NO
DESIGNED BY: RDB CHECKED BY:
APPROVED BY FEV

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. S-11
SHT. OF

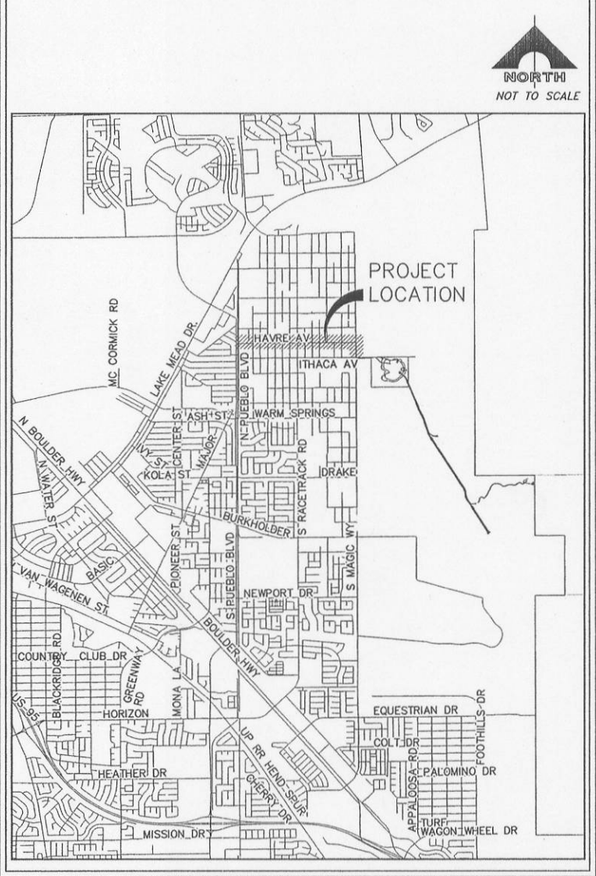
07380

NORTHEAST C-1
DETENTION BASIN OUTFALL
CONTRACT No. 131-08-FC-015-004
VOLUME 2
PWP-CL-2008-225
FUNDED BY:
CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

INDEX OF SHEETS

No.	DESCRIPTION
G1	COVER SHEET, LOCATION MAP, & INDEX OF SHEETS
G2	KEY MAP
G3	GENERAL NOTES
G4	GENERAL AND CONSTRUCTION NOTES LEGEND, ABBREVIATIONS, AND SUMMARY OF QUANTITIES
G5	HORIZONTAL CONTROL PLAN
G6	RIGHT-OF-WAY MAP
C1	PLAN & PROFILE STA. 10+00.00 TO 22+50.00
C2	PLAN & PROFILE STA. 22+50.00 TO 35+50.00
C3	PLAN & PROFILE STA. 35+50.00 TO 48+50.00
C4	PLAN & PROFILE STA. 48+50.00 TO 61+50.00
C5	PLAN & PROFILE STA. 61+50.00 TO 71+50.00
C6	ENLARGED PLANS
C7	ENLARGED PLANS
C8	LATERAL PROFILES
C9	PLAN & PROFILE 8" WATER RELOCATIONS
C10	DETAILS
C11	DETAILS
S1	CUSTOM DROP INLET
S2	CIP JUNCTION STRUCTURE
S3	CONCRETE CAP AT EMDEN

LOCATION MAP



REVISIONS

No.	DESCRIPTION	BY	DATE	APPROVAL

CITY OF HENDERSON
CLARK COUNTY, NEVADA
DEPARTMENT OF PUBLIC WORKS

MAYOR
JAMES B. GIBSON

CITY COUNCIL
GERRI SCHRODER
ANDY A. HAFEN
JACK K. CLARK
STEVEN D. KIRK

CITY MANAGER
MARY KAY PECK

THE AFFIXED EMBARQ APPROVAL DOES NOT ASSUME OR GUARANTEE LIABILITY FOR KNOWN OR UNKNOWN CONFLICTS WITH EXISTING OR PROPOSED IMPROVEMENTS. RESOLUTION OF ANY CONFLICT WILL BE ACCOMPLISHED PURSUANT TO LOCAL ORDINANCES, NEVADA REVISED STATUTES AND/OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

NEVADA POWER COMPANY ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. NEVADA POWER COMPANY RESERVES THE RIGHT TO ADDRESS ANY EXISTING OR FUTURE CONFLICTS ONCE THE FINAL DESIGN IS COMPLETED. THE NEW SERVICE AND THE RESOLUTION OF ANY CONFLICTS WILL BE ACCOMPLISHED PURSUANT TO THE NEVADA PUBLIC UTILITY COMMISSION'S RULES AND REGULATIONS.

DIRECTOR OF PUBLIC WORKS
ROBERT MURNANE

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM E. HUNTER III
Exp. 06/30/2009
CIVIL
No. 8833
3/10/08

APPROVAL

TITLE	APPROVED	DATE
DIRECTOR OF PUBLIC WORKS		8/11/08
FLOOD CONTROL COORDINATOR		8/6/08
ENGINEERING SERVICES MANAGER		8/11/08
SURVEY		8/6/08
RIGHT OF WAY		8/6/08
NEW DEVELOPMENT	P.E.	8/11/08
CITY TRAFFIC ENGINEER		8/11/08
UTILITY SERVICES DIRECTOR	for: DBP	8/11/08

AGENCY APPROVAL

AGENCY	NO SERVICE	REVIEWED BY	DATE
NEVADA POWER CO. - DISTRIBUTION			3/10/08
NEVADA POWER CO. - TRANSMISSION			3/10/08
EMBARQ			3-11-08
SOUTHWEST GAS CORP.			3/10/08
COX COMMUNICATION LAS VEGAS, INC.			3/11/08
BASIC WATER COMPANY			3-26-08
SOUTHERN NEVADA WATER AUTHORITY			3-28-08

SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

FOR
GALE Wm. FRASER, II. P.E.
CHIEF ENGINEER/GENERAL MANAGER
CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

NORTHEAST C-1 DETENTION BASIN OUTFALL
CONTRACT No. 131-08-FC-015-004
VOLUME 2
PWP-CL-2008-225

PROJECT No. 504.430

DATE : FEB. 14, 2008

DRAWING No.
G1

SHEET No. 1

07380

KEY MAP

SCALE: 1"=400'

BWC CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL BWC APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. RECTIFIERS AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER BWC STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY BASIC WATER COMPANY AT (702) 567-0464 OR (702) 429-8971 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.

2. BWC APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO BWC FOR APPROVAL.

Mark Paris 3-26-08
BASIC WATER COMPANY DATE

SOUTHERN NEVADA WATER AUTHORITY CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL SNWA/SNWS APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS AND CATHODIC PROTECTION SYSTEMS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. CATHODIC PROTECTION TEST STATIONS, RECTIFIERS, AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER SNWA STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY SOUTHERN NEVADA WATER AUTHORITY DEVELOPMENT PLAN REVIEW, AT (702) 862-3444 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.

2. SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

Valerie A Donnelly 3-28-08
SOUTHERN NEVADA WATER AUTHORITY DATE

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN OUTFALL

KEY MAP

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM E. HUNTER III No. 8833 Exp. 06/30/2009 CIVIL 3/20/08

PROJECT No: 504.430 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1" = 400'
VERT: NONE
FIELD BOOK

DRAWING NO. G2
SHT. OF

07380

STANDARD GENERAL NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, OFFSITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, 1986, AND THE UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, OFFSITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, 1986 (REVISED 10/14/04).
2. APPLICATION FOR INSPECTION BY THE CITY OF HENDERSON PUBLIC WORKS SHALL BE MADE BY THE CONTRACTOR AT LEAST 24 HOURS BEFORE THE INSPECTION SERVICES WILL BE REQUIRED, 267-3144.
3. WORK IN PUBLIC STREETS, ONCE BEGUN, SHALL BE PROSECUTED TO COMPLETION WITHOUT DELAY SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.
4. THE CONTRACTOR SHALL TAKE ALL NECESSARY AND PROPER PRECAUTIONS TO PROTECT ADJACENT PROPERTIES FROM ANY AND ALL DAMAGE THAT MAY OCCUR FROM STORM WATER RUNOFF AND/OR DEPOSITION OF DEBRIS RESULTING FROM ANY AND ALL WORK IN CONNECTION WITH CONSTRUCTION.
5. PRIOR TO FINAL ACCEPTANCE A CERTIFIED LEGIBLE AS-BUILT DRAWING MUST BE SUBMITTED TO THE CITY OF HENDERSON. AS-BUILT MUST SHOW ALL CHANGES AND ACTUAL FIELD LOCATIONS. IN THE ABSENCE OF CHANGES, A COPY OF APPROVED DRAWINGS WILL BE REQUIRED STATING "INSTALLED AS PER DRAWINGS" AND CERTIFIED AS SUCH BY THE CONTRACTOR.
6. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITION BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND OF INGRESS AND EGRESS TO SAID CONSTRUCTION. THE EXTENT OF TRANSITIONS IS TO BE DETERMINED BY THE CITY ENGINEER.
7. EXISTING UTILITIES ARE LOCATED ON PLANS FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE CONTRACTOR SHALL BEAR FULL RESPONSIBILITY FOR THE PROTECTION OF UTILITIES AND THE ENGINEER BEARS NO RESPONSIBILITY FOR UTILITIES NOT SHOWN ON THE PLANS OR NOT IN THE LOCATION SHOWN ON THE PLANS. THIS INCLUDES ALL SERVICE LATERALS OF ANY KIND.
8. POWER POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHOWN HEREON WILL BE RELOCATED AT NO EXPENSE TO THE CITY OF HENDERSON.
9. ALL STREET STRUCTURAL SECTIONS SHALL BE PER THE RECOMMENDATIONS OF THE SOILS ENGINEER. BASED ON CBR OR R-VALUES. NO PAVING OR BASE WORK SHALL COMMENCE UNTIL A STREET STRUCTURAL SECTION IS APPROVED BY THE CITY ENGINEER, CITY OF HENDERSON.
10. BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL INSTALL ALL ADVANCE-WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL INSTALL TEMPORARY STOP SIGNS AT ALL NEW STREET ENCROACHMENTS INTO EXISTING PUBLIC STREETS IMMEDIATELY AFTER THE FIRST GRADING WORK IS ACCOMPLISHED AND SHALL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED. ALL CONSTRUCTION SIGNING, BARRICADING, AND TRAFFIC DELINEATION SHALL CONFORM TO THE "NEVADA TRAFFIC CONTROL MANUAL" - CURRENT EDITION AND TO THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" -CURRENT EDITION AND BE APPROVED BY THE CITY OF HENDERSON BEFORE CONSTRUCTION BEGINS.
11. WHERE EXISTING PAVEMENT IS CUT TO INSTALL UTILITY SERVICE LINES, BACKFILL AND PAVEMENT REPLACEMENT SHALL BE DONE PER CLARK COUNTY AREA STANDARD DRAWINGS 502, 503, 504, AND SECTIONS 206, 207, AND 208 OF THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS' CONSTRUCTION OFFSITE IMPROVEMENTS, THIRD EDITION.
12. ALL STATIONING IS REFERENCED TO CENTERLINE.
13. EXACT LOCATION OF ALL SAWCUT LINES SHALL BE DETERMINED IN THE FIELD BY A CITY OF HENDERSON PUBLIC WORKS INSPECTOR.
14. PROTECTION AND REPLACEMENT OF SURVEY MONUMENTS OR PROPERTY STAKES NOT DELINEATED ON THE CONTRACT DRAWINGS SHALL BE THE CONTRACTOR'S RESPONSIBILITY. REPLACEMENT OF SURVEY MONUMENTS OR PROPERTY STAKES SHALL BE DONE TO THE CITY OF HENDERSON SURVEY DIVISION'S SATISFACTION.
15. AFFECTED UTILITY COMPANIES SHALL BE NOTIFIED AT LEAST TWO (2) WORKING DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
16. CALL BEFORE YOU DIG, 1-800-227-2600.
17. MODIFICATIONS TO EXISTING UTILITIES SHALL CONFORM TO THE OWNER'S UTILITY STANDARDS AND SPECIFICATIONS.
18. THE CONTRACTOR SHALL TAKE REASONABLE MEASURES TO PROTECT EXISTING IMPROVEMENTS FROM DAMAGE AND ALL SUCH IMPROVEMENTS DAMAGED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED OR RECONSTRUCTED TO THE ENGINEER'S SATISFACTION AT THE EXPENSE OF THE CONTRACTOR.
19. ALL OFFSITE AND ONSITE WATER AND SEWER FACILITIES UP TO WITHIN 5 FEET OF BUILDINGS SHALL BE CONSTRUCTED TO PUBLIC WORKS STANDARDS.
20. IF SEWER OR WATER LINES WITHIN THE PUBLIC UTILITY EASEMENTS REQUIRE REPAIRS, ALL SUCH REPAIRS WILL BE DONE IN ACCORDANCE WITH THE CITY OF HENDERSON'S UTILITY DEPARTMENT STANDARDS.
21. IF SIGNS ARE PRESENT ON THIS CONSTRUCTION SITE, PLEASE CONTACT THE SIGN COMPANY LISTED ON THE SIGN 24 HOURS PRIOR TO COMMENCING CONSTRUCTION IN THE SIGN'S LOCATION. CITY OWNED AND CITY SPONSORED SIGNS (KIOSKS) SHALL BE REMOVED AND REPLACED FOLLOWING CONSTRUCTION IN THEIR ORIGINAL LOCATION IN LIKE-NEW CONDITION AT CONSTRUCTION CONTRACTOR'S EXPENSE. ANY CONTRACTOR HAVING TO REMOVE A SIGN, WHICH WAS DAMAGED PRIOR TO THE CONTRACTOR OCCUPYING THE SITE, SHALL ARRANGE FOR VERIFICATION OF THE SIGN'S CONDITION BY A CITY INSPECTOR PRIOR TO REMOVAL. ALL SIGNS NOT PREVIOUSLY VERIFIED BY A CITY INSPECTOR SHALL BE ASSUMED TO BE IN LIKE-NEW CONDITION PRIOR TO REMOVAL.
22. THE CONTRACTOR SHOULD CONTACT THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION (NDEP) TO OBTAIN A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT PRIOR TO CONSTRUCTION. ALL CONSTRUCTION PROJECTS ONE ACRE OR LARGER MUST APPLY FOR THE PERMIT THROUGH THE NDEP. ALL QUESTIONS REGARDING THE NPDES PERMIT REQUIREMENTS SHOULD BE DIRECTED TO THE NDEP (775) 687-9429.
23. LOCATIONS OF UNDERGROUND UTILITIES SHOWN ON THE DRAWINGS WERE OBTAINED FROM INFORMATION RECEIVED FROM THE APPLICABLE UTILITY COMPANIES. CONTRACTOR SHALL CONTACT APPROPRIATE UTILITY COMPANY TO COORDINATE AND SCHEDULE ANY RELOCATIONS. NEITHER THE OWNER NOR ENGINEER ASSUMES ANY RESPONSIBILITY FOR UTILITIES OR STRUCTURES NOT SHOWN, OR FOR UTILITIES OR STRUCTURES NOT SHOWN AT ACTUAL LOCATIONS ON THE DRAWINGS. EXISTING SERVICE LATERALS ARE NOT SHOWN ON THESE DRAWINGS. CONTRACTOR TO VERIFY THE EXACT LOCATION OF UTILITIES PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR'S RESPONSIBILITY REGARDING UTILITIES SHALL BE AS REQUIRED UNDER SECTION 107.17 OF THE UNIFORM STANDARD SPECIFICATIONS FOR CLARK COUNTY AREA, NEVADA AND AS PROVIDED IN THE SPECIFICATIONS.
24. UNLESS OTHERWISE SHOWN ON THE CONTRACT DRAWINGS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OR RELOCATION OF ALL WATER SERVICES AND METERS WHICH INTERFERE WITH IMPROVEMENTS SHOWN ON THE CONTRACT DRAWINGS.
25. THE CONTRACTOR SHALL DETERMINE THE LOCATION AND DEPTH OF SUSPECTED UTILITY INTERFERENCES, AND SHALL FURNISH INFORMATION ON THE SAME TO THE ENGINEER, NOT LESS THAN TEN (10) DAY PRIOR TO THE ANTICIPATED IMPACT OF THESE SUSPECTED INTERFERENCE'S ON HIS WORK. IF CONFLICTS EXIST, THE CONTRACTOR WILL IMMEDIATELY CONTACT THE ENGINEER AND PROVIDE THE ENGINEER WITH ALL THE NECESSARY DATA SUCH AS ELEVATIONS, HORIZONTAL LOCATIONS, ETC., AND PROVIDE THE ENGINEER WITH SKETCHES INDICATING THE PROPOSED IMPROVEMENT AND THE UTILITY CONFLICT. THE ENGINEER WILL EXAMINE AND REVIEW ALL THE DATA AND SKETCHES PROVIDED, AND WILL PROVIDE THE CONTRACTOR WITH AN ALTERNATIVE DESIGN WITHIN FIVE (5) DAYS AFTER RECEIPT OF DATA AND SKETCHES.
26. ALL LENGTH OF STORM DRAIN AND SEWER PIPE IS MEASURED HORIZONTALLY FROM CENTER OF MANHOLE TO CENTER OF MANHOLE, UNLESS OTHERWISE NOTED.

CITY OF HENDERSON STANDARD WATER NOTES

1. NO WORK SHALL BEGIN UNTIL THE PLANS HAVE BEEN RELEASED FOR CONSTRUCTION BY THE CITY. FOLLOWING PLAN APPROVAL, A MINIMUM 48-HOUR NOTICE SHALL BE GIVEN TO THE CITY'S QUALITY CONTROL DIVISION PRIOR TO THE START OF CONSTRUCTION. NOTICE MUST BE GIVEN TO THE CITY NO LATER THAN 2:00 P.M. OF THE BUSINESS DAY PRIOR TO ANY REQUESTED INSPECTION, SUBSEQUENT TO THE START OF CONSTRUCTION.
2. ALL WORK SHALL CONFORM TO THE MOST CURRENT UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR POTABLE WATER SYSTEMS, INCLUDING THE CITY OF HENDERSON ADDENDUM. ALL MATERIALS UTILIZED SHALL CONFORM TO THE LATEST EDITION OF THE CITY'S APPROVED MATERIALS LIST.
3. A SINGLE WATER MAIN PIPE MATERIAL SHALL BE USED THROUGHOUT THE PROJECT, UNLESS OTHERWISE APPROVED BY THE CITY.
4. ALL WATER METER BOXES SHALL BE LOCATED OUTSIDE OF DRIVEWAY AREAS, UNLESS RECEIVING SPECIFIC PROJECT APPROVAL FOR THIS APPLICATION.
5. ALL VALVES SHALL BE LOCATED OUTSIDE OF DRIVEWAYS, VALLEY AND CURB GUTTERS.
6. ALL WATER MAIN APPURTENANCES SHALL BE LOCATED AS SHOW ON THE UDACS STANDARD PLATES. WHERE DISCREPANCIES EXIST BETWEEN THIS PLAN SET AND THE UDACS STANDARD PLATES, THE STANDARD PLATES SHALL APPLY.
7. 14 GAUGE SOLID COPPER WIRE FOR LINE LOCATIONS SHALL BE REQUIRED UNDER ALL MAINS, ALL SERVICE LATERALS SIX (6) INCH DIAMETER AND LARGER, AND ANY SERVICE LATERAL NOT INSTALLED PERPENDICULAR TO THE MAIN.
8. ALL WATER FACILITIES SHALL BE FILLED, DISINFECTED, PRESSURE TESTED, FLUSHED, FILLED AND AN ACCEPTABLE WATER SAMPLE OBTAINED, PRIOR TO ALLOWING CONNECTION TO THE CITY'S WATER SYSTEM.
9. ALL WATER METERS 2 INCHES AND SMALLER WILL BE SUPPLIED AND INSTALLED BY THE CITY OF HENDERSON. ALL WATER METERS 3 INCHES AND LARGER SHALL BE SUPPLIED AND INSTALLED BY THE CONTRACTOR.
10. ALL FLANGED DUCTILE IRON FITTINGS SHALL BE COATED WITH EC-244 AND WRAPPED WITH 120 MIL THICK POLYETHYLENE.
11. ALL VALVE BOXES SHALL HAVE CONCRETE COLLARS AT THE SURFACE OF THE PAVED AREAS, PER CLARK COUNTY AREA UNIFORM STANDARD DRAWING NUMBER 517.
12. WATER METER BOXES THAT ARE INSTALLED WITHIN LANDSCAPED AREAS SHALL BE INSTALLED WITH REINFORCED CONCRETE COLLARS PER CLARK COUNTY AREA UNIFORM STANDARD DRAWING NUMBER 329.
13. NO OTHER UTILITY LINES MAY BE PLACED IN THE SAME TRENCH WITH WATER LINES.
14. BLUE REFLECTORS ARE REQUIRED AND MUST BE INSTALLED AT THE CENTERLINE OF THE NEAREST DRIVING LANE TO ALL FIRE HYDRANTS, AND MUST BE PERPENDICULAR TO THE HYDRANT.
15. ALL WATER MAINS INSTALLED ON ANY PROJECT SHALL BE A MINIMUM PRESSURE CLASS 150. THE MINIMUM TEST PRESSURE FOR ALL WATER MAINS IS 200 PSI.
16. ANY CONFLICT WITH EXISTING UTILITIES SHALL BE IMMEDIATELY CALLED TO THE ATTENTION OF THE ENGINEER.
17. UNLESS OTHERWISE APPROVED BY THE CITY, ALL PIPING 4 INCHES IN DIAMETER AND LARGER SHALL BE EITHER PVC C-900 OR DUCTILE IRON PIPE. ALL PIPING 2 INCHES IN DIAMETER AND LESS SHALL BE EITHER TUBE SIZE POLYETHYLENE PIPE OR TYPE K SOFT COPPER TUBING. NO 3-INCH PIPE SHALL BE USED WITHIN THE CITY FOR ANY DOMESTIC OR FIRE WATER SERVICE.
18. LANDSCAPING AND IRRIGATION, ADJACENT TO WATER VAULTS, SHALL BE INSTALLED IN SUCH A MANNER WHEREBY IRRIGATION WATER DRAINS AWAY FROM THE VAULT. ALL VAULTS LOCATED BEHIND CURB OR SIDEWALK MUST BE BUILT WITH THE VAULT OPENING DESIGNED TO PROVIDE UNOBSTRUCTED ACCESS FROM THE CURB/STREET SIDE OF THE VAULT.
19. CONTRACTOR SHALL PROVIDE APPURTENANCES TO PERFORM PRESSURE TEST AND DISINFECTION AS REQUIRED BY THE UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR POTABLE WATER SYSTEMS.
20. THE CONTRACTOR SHALL BE ADVISED THAT WATER SERVICE TO EXISTING CUSTOMERS SHALL REMAIN IN SERVICE AT ALL TIMES DURING CONSTRUCTION. LINE STOPS MAY BE REQUIRED IN ORDER TO MAINTAIN SERVICE TO EXISTING CUSTOMERS. GIVEN THIS, THE CONTRACTOR SHALL PLAN ALL WORK ACCORDINGLY. HOWEVER, IF THE CITY HAS DETERMINED THAT SERVICE MUST BE DISRUPTED IN ORDER TO ACCOMPLISH THE PROPOSED WORK, THE CONTRACTOR SHALL FOLLOW THE CITY'S ESTABLISHED PROCEDURE FOR WATER MAIN SHUTDOWNS. CIRCUMSTANCES MAY ALSO REQUIRE TEMPORARY SERVICE FEEDS TO BE INSTALLED. IF SO, THE COST FOR SUCH TEMPORARY SERVICE FEEDS SHALL BE 100% BORNE BY THE CONTRACTOR. ANY TEMPORARY SERVICE FEED MUST RECEIVE SPECIFIC APPROVAL FROM THE CITY.
21. ALL VALVE BOXES, LIDS, MANHOLES AND APPURTENANCES SHALL BE BROUGHT TO WITHIN 1/8" TO 1/4" BELOW FINAL STREET GRADE.

UPDATED 9/07

FIRE DEPARTMENT GENERAL NOTES

GENERAL:

1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE UNIFORM FIRE CODE AS AMENDED AND THE UNIFORM DESIGN AND CONSTRUCTION STANDARDS AS ADOPTED BY THE CITY OF HENDERSON.
2. FIRE APPARATUS ACCESS ROADS AND FIRE HYDRANTS INSTALLED FOR FIRE PROTECTION SHALL BE INSTALLED AND MADE OPERATIONAL PRIOR TO AND DURING THE TIME OF CONSTRUCTION.
3. ACCESS TO BUILDINGS FOR THE PURPOSE OF FIRE EMERGENCIES SHALL BE PROVIDED. CONSTRUCTION MATERIAL SHALL NOT BLOCK FIRE LANES, ACCESS TO BUILDINGS, HYDRANTS OR FIRE APPLIANCES (THIS INCLUDES BLOCKING BY OPEN UTILITY TRENCHING).
4. PRIOR TO CLOSING ANY WATER SUPPLY CONTROL VALVE OR PLACING ANY FIRE HYDRANT OUT OF SERVICE CONTACT HENDERSON FIRE DEPARTMENT DISPATCH CENTER (267-4900 OPTION 0) AND ANY MONITORING FACILITY SUPERVISING THE CONTROL VALVE(S).

FIRE HYDRANTS:

5. FIRE HYDRANTS SHALL BE MAINTAINED IN AN OPERATIVE CONDITION WITH THE REQUIRED WATER SUPPLY. HYDRANTS SHALL BE MAINTAINED IN ACCORDANCE WITH NFPA 25.
6. MANUFACTURER AND MODEL OF FIRE HYDRANT SHALL BE APPROVED BY UTILITIES PRIOR TO INSTALLATION.
7. FIRE HYDRANTS SHALL BE CONSIDERED ACCEPTED FOR USE WHEN APPROVED BY PUBLIC WORKS - QUALITY CONTROL DIVISION.
8. A 3-FOOT CLEAR SPACE SHALL BE MAINTAINED AROUND THE CIRCUMFERENCE OF FIRE HYDRANTS.
9. ALL PUBLIC FIRE HYDRANTS SHALL HAVE A SIX DIGIT NUMBER (AS DESIGNATED BY UTILITY SERVICES3 267-2536) PAINTED ON THE BARREL BY THE HYDRANT INSTALLER. THE NUMBER SHALL BE IN 1" HIGH BLOCK NUMBERS USING BLACK ENAMEL PAINT. ALL NUMBERS SHALL MATCH APPROVED PLANS.

FIRE DEPARTMENT CONNECTIONS (FDC):

10. SHALL BE LOCATED WITHIN 100 FEET OF A FIRE HYDRANT AS MEASURED BY AN APPROVED UNOBSTRUCTED ROUTE.
11. SHALL FACE THE FIRE LANE.
12. SHALL NOT BE CLOSER THAN 3 FEET TO ANY DOOR OR WINDOW OPENING AND SHALL NOT BE OBSTRUCTED BY TREES, SHRUBS, PARKING SPACES, ETC.

UNDERGROUND PIPING & VALVES:

13. WHEN UNDERGROUND PIPING CAN BE SUPPLIED OR PRESSURIZED BY A FIRE DEPARTMENT CONNECTION (FDC), THE UNDERGROUND PIPING SHALL BE DESIGNED TO WITHSTAND A WORKING PRESSURE OF NOT LESS THAN 175 PSI (CLASS 200).
14. ALL SECTIONAL CONTROL VALVES CONTROLLING WATER SUPPLIES ON PRIVATE FIRE SERVICE MAINS SHALL BE LISTED POST INDICATING VALVES (PIV). (THIS SHALL INCLUDE PRIVATE FIRE SERVICE MAINS WHICH ONLY SERVE FIRE HYDRANTS.

    EXCEPTION: LISTED STREET VALVES WITH APPROVED DEBRIS "LOCKOUT" CAPS WHEN THE VALVE IS LOCATED WITHIN A ROADWAY.
15. A POST INDICATING VALVE (PIV) SHALL BE PROVIDED AND INSTALLED A MINIMUM OF 5 FEET FROM THE BUILDING FOR ALL FIRE SPRINKLER SYSTEMS AND SHALL BE SET SO THE TOP OF THE POST WILL BE 36" ABOVE THE FINAL GRADE.
16. ALL VALVES THAT CONTROL THE WATER SUPPLY TO PRIVATE FIRE SERVICE MAINS AND/OR FIRE SPRINKLER SYSTEMS SHALL BE LISTED, INDICATING AND ELECTRICALLY SUPERVISED. THIS INCLUDES ALL VALVES STARTING FROM THE BACKFLOW ASSEMBLIES UNTIL THE WATER LINE ENTERS THE BUILDING.

    EXCEPTION 1: LISTED STREET VALVES WITH APPROVED DEBRIS "LOCKOUT" CAPS.
    EXCEPTION 2: DCDA'S THAT ARE CHAINED AND LOCKED (WITH AN APPROVED KNOX OR BREAK-AWAY LOCK) IN THE OPEN POSITION.
17. ALL PIPING AND VALVES SUPPLYING FIRE SPRINKLER SYSTEMS SHALL BE PROTECTED FROM FREEZING WHEN EXPOSED TO TEMPERATURES LESS THAN 40°F. FREEZE PROTECTION SHALL BE APPROVED, DURABLE AND PERMANENT.
18. ALL BACKFLOW OR CROSS CONNECTION REQUIREMENTS OF THE PUBLIC WORKS UTILITY DIVISION SHALL BE INSTALLED UPSTREAM OF THE FIRE SPRINKLER OR STANDPIPE SYSTEM "POST INDICATOR VALVE".
19. ALL REQUIRED TESTING AND FLUSHING OF THE UNDERGROUND FIRE SPRINKLER/STANDPIPE WATER SUPPLY PIPING SHALL BE PERFORMED IN THE PRESENCE OF (QC) QUALITY CONTROL (267-3100). THE INSTALLING CONTRACTOR SHALL FURNISH A "CONTRACTOR'S MATERIAL AND TESTING CERTIFICATE" (CM&T) COUNTERSIGNED BY THE PROPERTY OWNER OR REPRESENTATIVE. THE CM&T SHALL BE FILLED OUT COMPLETELY WITH THE QC'S INITIALS, WITNESSING EACH TEST. A COPY OF THE UNDERGROUND FLUSH AND HYDROSTATIC TESTING DOCUMENTATION SHALL BE ON-SITE AND SIGNED BY THE AHJ PRIOR TO THE CONNECTION OF THE UNDERGROUND WATER SUPPLY TO THE FIRE SPRINKLER SYSTEM.

GATES:

20. SHOP DRAWINGS FOR ALL GATES AND MOTORIZED OPENERS OBSTRUCTING FIRE DEPARTMENT ACCESS ROADS SHALL BE SUBMITTED SEPARATELY FOR REVIEW AND RECEIVE APPROVAL PRIOR TO INSTALLATION.

UPDATED 9/07

CITY OF HENDERSON SEWER NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE DESIGN & CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS AND THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, AS AMENDED. IN ALL CASES, THESE STANDARDS SHALL SUPERSEDE THE UNIFORM STANDARD SPECIFICATIONS. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO BE AWARE OF THE CONTENTS OF THE ABOVE SPECIFICATION BOOKS. ALL MATERIALS UTILIZED SHALL CONFORM TO THE LATEST EDITION OF THE CITY'S APPROVED MATERIALS LIST.
2. SEWER MAINS ONLY SHALL BE LAID IN SEWER TRENCHES.
3. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PERFORM CONSTRUCTION PER PLANS. ANY ADDITIONS, DELETIONS, OR CHANGES SHALL FIRST MEET WITH THE APPROVAL OF THE CITY OF HENDERSON.
4. SOIL TESTING SHALL BE IN ACCORDANCE WITH SECTION 3.11 OF THE DESIGN & CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS.
5. ALL EXFILTRATION, INFILTRATION, AIR TESTING AND TELEVISING OF LINES SHALL BE IN ACCORDANCE WITH THE DESIGN & CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS.
6. CUT SHEETS MUST BE SUBMITTED TO THE AGENCY BEFORE CONSTRUCTION WILL BE PERMITTED TO START.
7. ALL CONTRACTORS INSTALLING SEWER MAINS THAT WILL BE UNDER THE JURISDICTION OF THE CITY OF HENDERSON MUST BE CLASS "A" CONTRACTORS.
8. ALL HOUSE SEWER LATERALS SHALL BE LAID TO A MINIMUM 2 PERCENT SLOPE AND SHALL CONFORM TO ALL STANDARDS FOR CONSTRUCTION OF OFFSITE IMPROVEMENTS IN THE CLARK COUNTY AREA, UNLESS RECEIVING SPECIFIC PROJECT APPROVAL.
9. ALL SANITARY SEWER MANHOLES SHALL BE CONSTRUCTED WITH 24-HOUR, SEVEN DAY A WEEK, ALL-WEATHER DRIVE ACCESS TO ACCOMMODATE SEWER MAINTENANCE VEHICLES. THIS INCLUDES A 12-FOOT WIDE ACCESS ROAD WITH A MINIMUM 50-FOOT INSIDE TURNING RADIUS.
10. THE CONTRACTOR IS REQUIRED TO MAINTAIN ACCESS, AS DESCRIBED IN NOTE 9, TO ALL LIVE SEWER MANHOLES DURING CONSTRUCTION. FAILURE TO DO SO MAY RESULT IN THE PROJECT BEING SHUT DOWN UNTIL SUCH ACCESS IS PROVIDED.
11. ALL SEWER MAINS BEING CONSTRUCTED SHALL BE PLUGGED AT THE POINT OF CONNECTION TO THE EXISTING SEWER SYSTEM. THIS PLUG SHALL REMAIN IN PLACE UNTIL ALL FINAL ACCEPTANCE PROCEDURES ARE COMPLETE.
12. ALL MANHOLES UNDER CONSTRUCTION SHALL HAVE PLYWOOD PLACED IN THE BASE TO STOP DEBRIS FROM GETTING INTO THE SEWER MAIN. ALL PLYWOOD SHALL BE REMOVED BEFORE CLEANING AND ACCEPTANCE.
13. ANY MANHOLE BEING MODIFIED THAT HAS AN EXISTING LINING SYSTEM REQUIRES THE REPAIR OF THE LINING SYSTEM AFTER ALL MODIFICATIONS ARE COMPLETE.
14. ANY SEWER MANHOLE LINING SYSTEM SHALL ONLY BE INSTALLED AFTER ALL FINAL GRADE ADJUSTMENTS ARE COMPLETE FOR THAT MANHOLE.
15. ALL SEWER MAINS UNDER CONSTRUCTION AT LESS THAN ONE (1) PERCENT SHALL BE STAKED FOR CONSTRUCTION AT A MAXIMUM OF 25 FEET ON CENTER.
16. SEWER LATERALS SHALL MAKE CONNECTION TO SEWER MAINS ONLY. SEWER LATERALS SHALL NOT BE CONNECTED DIRECTLY TO ANY SEWER MANHOLE.
17. A SINGLE TYPE OF PIPE MATERIAL SHALL BE USED FROM MANHOLE TO MANHOLE. A CHANGE IN SEWER MAIN PIPE MATERIAL OR PIPE SIZE SHALL ONLY OCCUR AT A MANHOLE.

UPDATED 9/07

CITY OF HENDERSON TRAFFIC NOTES

1. ANY EXISTING TRAFFIC CONTROL DEVICES AND/OR SIGNS SHALL BE MAINTAINED DURING THE PERIOD OF CONSTRUCTION AND SHALL BE REPOSITIONED, AS REQUIRED, PER M.U.T.C.D. AND CITY STANDARDS, UPON COMPLETION OF THE PROJECT.
2. CONTRACTORS ARE RESPONSIBLE FOR SUBMITTING TRAFFIC CONTROL AND BARRICADING PLANS NOT LESS THAN THREE (3) WORKING DAYS BEFORE OBSTRUCTING AND BEGINNING OF CONSTRUCTION WITHIN THE PUBLIC RIGHT OF WAY, INCLUDING SIDEWALKS. BEFORE ANY WORK IS STARTED IN THE RIGHT OF WAY, THE CONTRACTOR WILL INSTALL ALL ADVANCE WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR WILL INSTALL TEMPORARY GROUND MOUNTED STOP SIGNS AT ALL NEW STREET ENCROACHMENTS INTO EXISTING CITY STREETS IMMEDIATELY AFTER FIRST GRADING WORK IS ACCOMPLISHED, AND WILL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED.
3. LOCATION AND DESCRIPTION OF NEW AND EXISTING TRAFFIC CONTROL DEVICES, STREET STRIPING, MEDIAN ISLANDS, DRIVEWAYS AND TRAFFIC SIGNALS MUST BE SHOWN ON PLANS SUBMITTED TO THE CITY FOR APPROVAL. ALL NEW TRAFFIC SIGNS WILL BE FABRICATED WITH DIAMOND GRADE VIP (CLASS 6) REFLECTIVE SHEETING. ALL NEW TRAFFIC SIGNS, EXCEPT STREET NAME SIGNS, WILL HAVE "F-CAL" OR 3M SERIES 1160 OR APPROVED EQUIVALENT ANTI-GRAFFITI PROTECTIVE FILM.
4. LOCATION AND DESCRIPTION OF NEW AND EXISTING STREET NAME SIGNS MUST BE SHOWN ON PLANS SUBMITTED TO THE CITY FOR APPROVAL. STREET NAME SIGNS WILL COMPLY WITH CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS NO. 249, 250 AND 251. ALL STREET NAME SIGNS WILL BE FABRICATED WITH DIAMOND GRADE VIP (CLASS 6) REFLECTIVE SHEETING. ALL INTERSECTIONS WITH 100 FOOT OR GREATER RIGHT OF WAY ROADWAYS WILL HAVE THE CITY OF HENDERSON LOGO ON BOTH STREET NAME PANELS. CONTACT CITY OF HENDERSON TRAFFIC SERVICES MAINTENANCE THREE (3) WORKING DAYS IN ADVANCE, MONDAY THROUGH THURSDAY, AT 267-3200 TO RECEIVE LOGO TO BE APPLIED BY THE CONTRACTOR TO THE STREET NAME PANELS PER CITY OF HENDERSON STANDARD DETAIL. PRIVATE STREETS SHALL HAVE BROWN BACKGROUND.
5. BLUE REFLECTORIZED PAVEMENT MARKINGS MUST BE INSTALLED AND CURB MUST BE PAINTED AT EVERY FIRE HYDRANT LOCATION PER CITY OF HENDERSON FIRE DEPARTMENT STANDARDS.
6. ALL CONSTRUCTION SIGNING, BARRICADING AND PAVEMENT MARKINGS WILL CONFORM TO THE NEVADA WORK ZONE TRAFFIC CONTROL HANDBOOK - 1986 AND TO THE CURRENT EDITION OF THE MUTCD WITH ANY ADDENDAS AND REVISIONS.
7. WHERE STREETS END AT THE PROJECT BOUNDARY, THREE (3) 18-INCH DIAMOND (MINIMUM), REFLECTORIZED, RED PANELS SHALL BE INSTALLED AT THE END OF THE ROADWAY AND MAINTAINED UNTIL ADJOINING PROJECT IS BUILT.
8. IF THE IMPROVEMENTS NECESSITATE THE OBLITERATION, TEMPORARY OBSTRUCTION, TEMPORARY REMOVAL, OR RELOCATION OF ANY EXISTING TRAFFIC PAVEMENT MARKING, SUCH PAVEMENT MARKING WILL BE RESTORED OR REPLACED WITH LIKE MATERIALS TO THE SATISFACTION OF THE CITY TRAFFIC ENGINEER.
9. THE FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.) MAY HAVE UNDERGROUND FACILITIES IN THE AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND PROTECTING ALL FAST INFRASTRUCTURE ON ROADWAYS WITH RIGHT OF WAYS OF 80' AND GREATER. CONTACT F.A.S.T. AT (702) 432-5300, 72 HOURS IN ADVANCE OF ANY CONSTRUCTION ACTIVITIES IN THE AREA OF THEIR FACILITIES. FAST INTERCONNECT POLICY IS IN EFFECT. INTERCONNECT CABLE MUST BE MAINTAINED AT ALL TIMES. DAMAGES WILL BE ASSESSED AFTER 24 HOURS HAS ELAPSED FROM TIME OF BREAK OR DAMAGE PER FAST AND RTC REQUIREMENTS.

REVISED JULY 2006

BASIS OF BEARINGS

BASIS OF BEARINGS:
NORTH 00°15'25" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 9, TOWNSHIP 22 SOUTH, RANGE 63 EAST, M.D.M., AS SHOWN ON CONSTRUCTION DRAWINGS FOR THE "NORTHEAST C-1 DETENTION BASIN" CURRENTLY UNDER REVIEW BY THE CITY OF HENDERSON.
SURVEY CONTROL PLAN 1, DRAWING No. G-4, SHEET 4.

BENCHMARK

PROJECT BENCHMARK:
CITY OF HENDERSON BENCHMARK No. 506
A CITY OF HENDERSON 2" BRASS CAP IN A MONUMENT WELL AT THE INTERSECTION OF RACETRACK ROAD AND ITHACA AVENUE.
NAVD 88 DATUM: 571.435 METERS / 1874.783 US SURVEY FEET

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

LEGEND & ABBREVIATIONS

LEGEND

(00.0) INV — EXIST. ELEVATION
00.0 INV — PROPOSED ELEVATION
(2356.1) — EXIST. SPOT ELEVATION
RIGHT-OF-WAY LINE
PROPERTY LINE
CENTERLINE
HYDRAULIC GRADE LINE (HGL)
EASEMENT
-TEL- EXISTING TELEPHONE CABLE
EXISTING POWER POLES
-SS- EXISTING SANITARY SEWER LINE
SS PROPOSED SANITARY SEWER LINE
-W- EXISTING WATER LINE
W PROPOSED WATER LINE
-G- EXISTING GAS LINE
-UGE- EXISTING UNDERGROUND POWER
-OHP- EXISTING OVERHEAD POWER
-SD- EXISTING STORM DRAIN
CHANNEL/BOX PROPOSED RECTANGULAR CHANNEL/BOX
PROPOSED STORM DRAIN
PROPOSED DRAINAGE SWALE
1875 EXISTING CONTOUR INDEX
1874 EXISTING CONTOUR INTERMEDIATE
PROPOSED CHAIN-LINK FENCE
HGL

LEGEND

SAWCUT LINE
EXISTING MANHOLE
PROPOSED MANHOLE
EXISTING FIRE HYDRANT
EXISTING VALVE
PROPOSED VALVE
DROP INLET — PROPOSED DROP INLET
00 — COORDINATE KEYNOTE
TEMPORARY CONSTRUCTION EASEMENT
FLOW DIRECTION
PROPOSED SCARP
BUREAU OF RECLAMATION BOUNDARY

ABBREVIATIONS

AA = ALDYL-A PIPE
AC = ASPHALTIC CONCRETE
ACP = ASBESTOS CEMENT PIPE
ASSY = ASSEMBLY
AVAR = AIR VACUUM AIR RELIEF (VALVE)
AWWA = AMERICAN WATER WORKS ASSOCIATION
BC = BACK OF CURB
BCR = BEGIN CURB RETURN
BM = BENCHMARK
BW = BACK OF WALK
CATV = CABLE TELEVISION
CCWRD = CLARK COUNTY WATER RECLAMATION DISTRICT
CIP = CAST IN PLACE
CL/C = CENTERLINE
CLSM = CONTROLLED LOW STRENGTH MATERIAL
CML&C = CONCRETE MORTAR LINED AND COATED
CMP = CORRUGATED METAL PIPE
CMU = CONCRETE MASONARY UNIT
COH = CITY OF HENDERSON
CONC. = CONCRETE
D = DEPTH
DI = DROP INLET
DIP = DUCTILE IRON PIPE
DR = DRIVE OR DRAIN
EA. = EACH
EFF = EFFLUENT
EGL = ENERGY GRADE LINE
ELEV./ EL = ELEVATION
EP/ EOP = EDGE OF PAVEMENT
ERW = EFFLUENT REUSE WATER
EXIST./ EX = EXISTING
FF = FINISH FLOOR
FG = FINISH GRADE
FH = FIRE HYDRANT
FL = FLOW LINE
FO = FIBER OPTIC CABLE
FS = FINISH SURFACE
FUT = FUTURE
G = GAS

ABBREVIATIONS (CONTINUED)

GB = GRADE BREAK
GIS = GEOGRAPHIC INFORMATION SYSTEM
HERCP = HORIZONTAL ELLIPTICAL REINFORCED CONCRETE PIPE
HGL = HYDRAULIC GRADE LINE
HP = HIGH POINT
HPG = HIGH PRESSURE GAS
HSS = HOLLOW STRUCTURAL SECTIONS
I.D. = INSIDE DIAMETER
INV = INVERT
L= = LENGTH
L / LT = LEFT OF
LF = LINEAR FEET
LP = LOW POINT
LVVWD = LAS VEGAS VALLEY WATER DISTRICT
NAVD = NORTH AMERICAN VERTICAL DATUM
NDOT = NEVADA DEPARTMENT OF TRANSPORTATION
NG = NATURAL GRADE
NPCO = NEVADA POWER COMPANY
OCS = ORIGIN OF CONICAL SURFACE
OHP = OVERHEAD POWER
OPP. = OPPOSITE
PBS = PLANTMIX BITUMINOUS SURFACE
PLS = PLACES
PPCBR = PORTABLE PRECAST BARRIER RAIL
PC = POINT OF CURVE
PCC = POINT OF COMPOUND CURVE
PRC = POINT REVERSE CURVE
PROP = PROPOSED
PT = POINT OF TANGENT
PVC = POLYVINYL CHLORIDE PIPE
Q_{ult}100 = 100 YEAR ULTIMATE CONDITION DESIGN FLOW
(R) = RADIAL
R / RT = RIGHT OF
RCB = REINFORCED CONCRETE BOX
RCC = ROLLER COMPACTED CONCRETE
RCP = REINFORCED CONCRETE PIPE
RGRCP = RUBBER GASKET REINFORCED CONCRETE PIPE

ABBREVIATIONS (CONTINUED)

RR = RAILROAD
R/W = RIGHT-OF-WAY
SD = STORM DRAIN
SDMH = STORM DRAIN MANHOLE
SIM = SIMILAR
SNWA = SOUTHERN NEVADA WATER AUTHORITY
SS = SANITARY SEWER
SSMH = SANITARY SEWER MANHOLE
STA = STATION
STD.DWG.NO. = STANDARD DRAWING NUMBER
STL = STEEL
SW = SIDEWALK
SWG = SOUTHWEST GAS CORPORATION
T&B = TOP AND BOTTOM
TC = TOP OF BACK OF CURB
TEL = TELEPHONE
T/THK = THICK
TMH = TOP OF MANHOLE
TOE = TOE OF CHANNEL
TOP = TOP OF CHANNEL
TRANS = TRANSITION
TW = TOP OF WALL
UDACS = UNIFORM DESIGN AND CONSTRUCTION STANDARDS
USD = CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS
USGLO = UNITED STATES GENERAL LAND OFFICE
UNO = UNLESS NOTED OTHERWISE
U.S. = UNITED STATES
VAR. = VARIES
V.C. = VERTICAL CURVE
VCP = VITRIFIED CLAY PIPE
W = WATER
W/ = WITH
WP = WORKING POINT
WWF = WELDED WIRE FABRIC

REMOVAL NOTES

1. REMOVE WATERLINE
2. REMOVE 38"x60" HERCP
3. REMOVE HEADWALL
4. REMOVE AC PAVEMENT
5. REMOVE EXISTING DROP INLET
6. REMOVE EXISTING CHAIN-LINK FENCE
7. REMOVE RIPRAP
8. REMOVE CUTOFF WALL
9. REMOVE GUARDRAIL
10. REMOVE TRAPEZOIDAL CONCRETE CHANNEL

CONSTRUCTION NOTES

1. INSTALL REINFORCED PRECAST CONCRETE PLUG TO FIT PIPE PER RCP MANUFACTURER SPECIFICATIONS.
2. CONSTRUCT DROP INLET PER (1/S1)
3. INSTALL CHAIN-LINK FENCE PER (2/C11)

NOTE: APPROXIMATE QUANTITIES OF VARIOUS ITEMS OF WORK TO BE PERFORMED AND MATERIALS TO BE FURNISHED.

SUMMARY OF QUANTITIES

Description	C1	C2	C3	C4	C5	Quantity	Unit
REMOVE 38"x60" HERCP & 27' AREA INLET			1			1	LS
REMOVE AND SALVAGE CHAIN-LINK FENCE	40					40	LF
REMOVE AND SALVAGE RIPRAP					70	70	CY
REMOVE CUTOFF WALL					90	90	LF
ASPHALTIC CONCRETE PAVEMENT REPLACEMENT (3")	1694	3675	4045	4045	2955	16,414	SY
ADDITIONAL AREAS PAVEMENT REPLACEMENT	382		103	44		529	SY
CAST-IN-PLACE JUNCTION STRUCTURE (10+99.7 TO 11+34.1)	1					1	LS
CONCRETE CAP OVER BWC WATERLINE (STA 24+07.45)		1				1	LS
12' X 4' REINFORCED CONCRETE BOX - PRECAST	15					14	LF
9' X 4' REINFORCED CONCRETE BOX - PRECAST	278	538				816	LF
6' X 5' REINFORCED CONCRETE BOX - PRECAST	779					778	LF
PRECAST CONCRETE TRANSITION (STA 11+48 TO STA 11+63)	1					1	LS
PRECAST CONCRETE TRANSITION (STA 12+68 TO STA 12+83)	1					1	LS
PRECAST CONCRETE TRANSITION (STA 20+62 TO STA 20+77)	1					1	LS
PRECAST CONCRETE TRANSITION (STA 27+83 TO STA 27+93)		1				1	LS
PRECAST CONCRETE TRANSITION (STA 37+80 TO STA 37+90)			1			1	LS
PRECAST CONCRETE TRANSITION (STA 63+08 TO STA 63+18)					1	1	LS
24" REINFORCED CONCRETE PIPE (CLASS III)	4	36	8	8	12	68	LF
36" REINFORCED CONCRETE PIPE (CLASS III)	12	12	10		42	76	LF
48" REINFORCED CONCRETE PIPE (CLASS III)			80	72	4	156	LF
54" REINFORCED CONCRETE PIPE (CLASS III)			1060	1300	159	2,519	LF
66" REINFORCED CONCRETE PIPE (CLASS III)		757	230		658	1,710	LF
24-INCH STORM DRAIN PLUG	1	2	2	3	1	9	EA
36-INCH STORM DRAIN PLUG	2	1	1		1	5	EA
RCP/RCB MANHOLE RISER	4	3	5	5	3	20	EA
CUSTOM DROP INLET L=12' (Fife)		1				1	EA
CUSTOM DROP INLET L=42' (Racetrack)			1			1	EA
CUSTOM DROP INLET L=33' (Milan)				1		1	EA
CUSTOM DROP INLET L=28' (Magic W)					1	1	EA
CUSTOM DROP INLET L=40' (Magic E)					1	1	EA
72-INCH CHAIN-LINK FENCE	40					40	LF
8" WATERLINE RELOCATION - PUEBLO STREET	1					1	LS
8" WATERLINE RELOCATION - EMDEN STREET		1				1	LS
8" WATERLINE RELOCATION - CANNES STREET	1					1	LS

NOTE: UNLESS OTHERWISE NOTED, ALL UTILITIES ARE TO BE PROTECTED IN PLACE.

NOTE: ALL STATIONING FROM CENTERLINE OF ROADWAY UNLESS OTHERWISE NOTED.

BASIS OF BEARINGS

BASIS OF BEARINGS:
NORTH 00°15'25" WEST, BEING THE BEARING OF THE EAST LINE OF THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 9, TOWNSHIP 22 SOUTH, RANGE 63 EAST, M.D.M., AS SHOWN ON CONSTRUCTION DRAWINGS FOR THE "NORTHEAST C-1 DETENTION BASIN" CURRENTLY UNDER REVIEW BY THE CITY OF HENDERSON. SURVEY CONTROL PLAN 1, DRAWING No. G-4, SHEET 4.

BENCHMARK

PROJECT BENCHMARK:
CITY OF HENDERSON BENCHMARK No. 506
A CITY OF HENDERSON 2" BRASS CAP IN A MONUMENT WELL AT THE INTERSECTION OF RACETRACK ROAD AND ITHACA AVENUE.
NAVD 88 DATUM: 571.435 METERS / 1874.783 US SURVEY FEET

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN OUTFALL

GENERAL AND CONSTRUCTION NOTES
LEGEND, ABBREVIATIONS, AND SUMMARY OF QUANTITIES
CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER — WILLIAM E. HUNTER III — Exp. 06/30/2009 — CIVIL — No. 8833 — STATE OF NEVADA — 4/10/08

PROJECT No: 504.430 DRAWN BY: DVJ
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. G4
SHT. OF

07380

CURVE TABLE				
CURVE	RADIUS	LENGTH	TANGENT	DELTA
C1	25.00	26.32	14.53	60°18'58"
C2	50.00	78.80	50.27	90°18'11"

NOTE: UNLESS OTHERWISE NOTED, ALL UTILITIES ARE TO BE PROTECTED IN PLACE

NOTE: ALL STATIONING FROM CENTERLINE OF ROADWAY UNLESS OTHERWISE NOTED.

BASIS OF BEARINGS

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SURVEY CONTROL PLAN 1, DRAWING No. G-4, SHEET 4.

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REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN OUTFALL

HORIZONTAL CONTROL PLAN

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

ROBERT L. CARRINGTON — Exp: 12-31-08 — No. 9188 — STATE OF NEVADA — PROFESSIONAL ENGINEER — 2/4/08

PROJECT No: 504.430 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

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1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
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SCALE
HORIZ: 1"=100'
VERT: NONE
FIELD BOOK

DRAWING NO. G5
SHT. OF

07380

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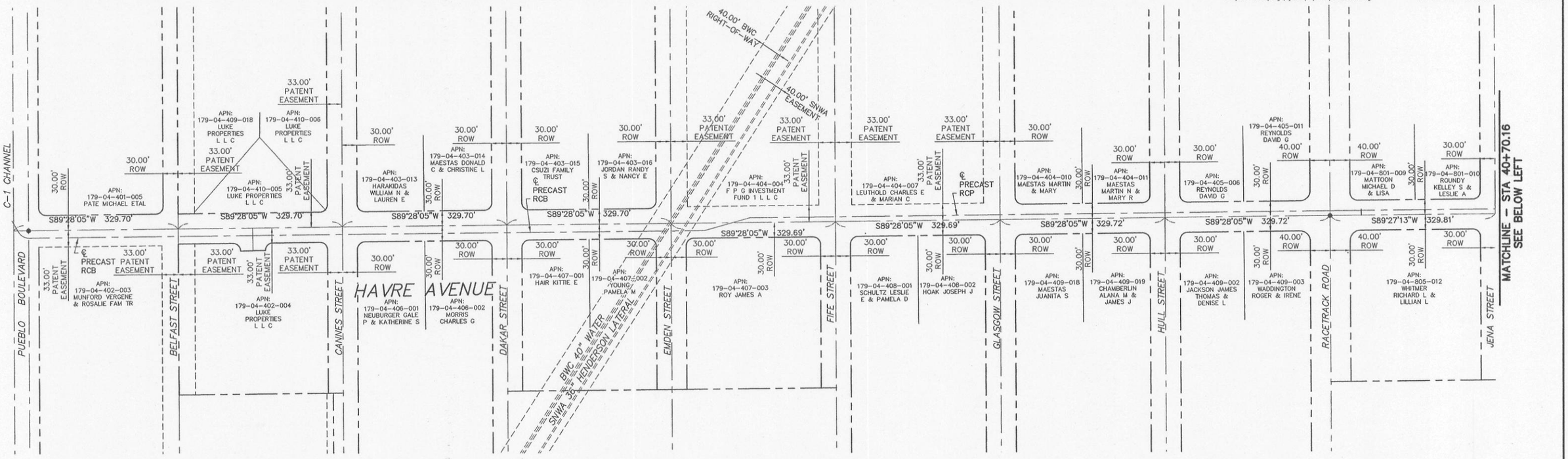

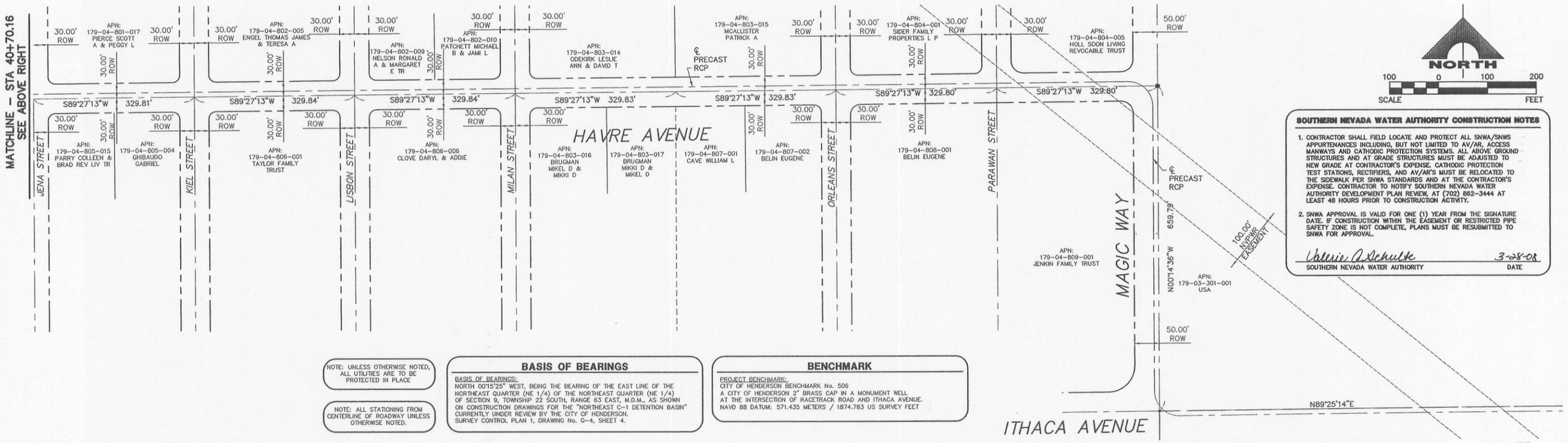

SOUTHERN NEVADA WATER AUTHORITY CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL SNWA/SNWS APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS AND CATHODIC PROTECTION SYSTEMS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. CATHODIC PROTECTION TEST STATIONS, RECTIFIERS, AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER SNWA STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY SOUTHERN NEVADA WATER AUTHORITY DEVELOPMENT PLAN REVIEW, AT (702) 862-3444 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
2. SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

Valerie A Schulte 3-28-08
SOUTHERN NEVADA WATER AUTHORITY DATE

NOTE: UNLESS OTHERWISE NOTED, ALL UTILITIES ARE TO BE PROTECTED IN PLACE

NOTE: ALL STATIONING FROM CENTERLINE OF ROADWAY UNLESS OTHERWISE NOTED.

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SURVEY CONTROL PLAN 1, DRAWING No. G-4, SHEET 4.

BENCHMARK

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CITY OF HENDERSON BENCHMARK No. 506
A CITY OF HENDERSON 2" BRASS CAP IN A MONUMENT WELL AT THE INTERSECTION OF RACETRACK ROAD AND ITHACA AVENUE.
NAVD 88 DATUM: 571.435 METERS / 1874.783 US SURVEY FEET

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN OUTFALL

RIGHT-OF-WAY MAP

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL LAND SURVEYOR ROBERT L CARRINGTON Exp: 12-31-08 STATE OF NEVADA No. 9108 8/6/08

PROJECT No: 504.430 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
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SCALE
HORIZ: 1"=100'
VERT: NONE
FIELD BOOK

DRAWING NO. G6
SHT. OF

07380

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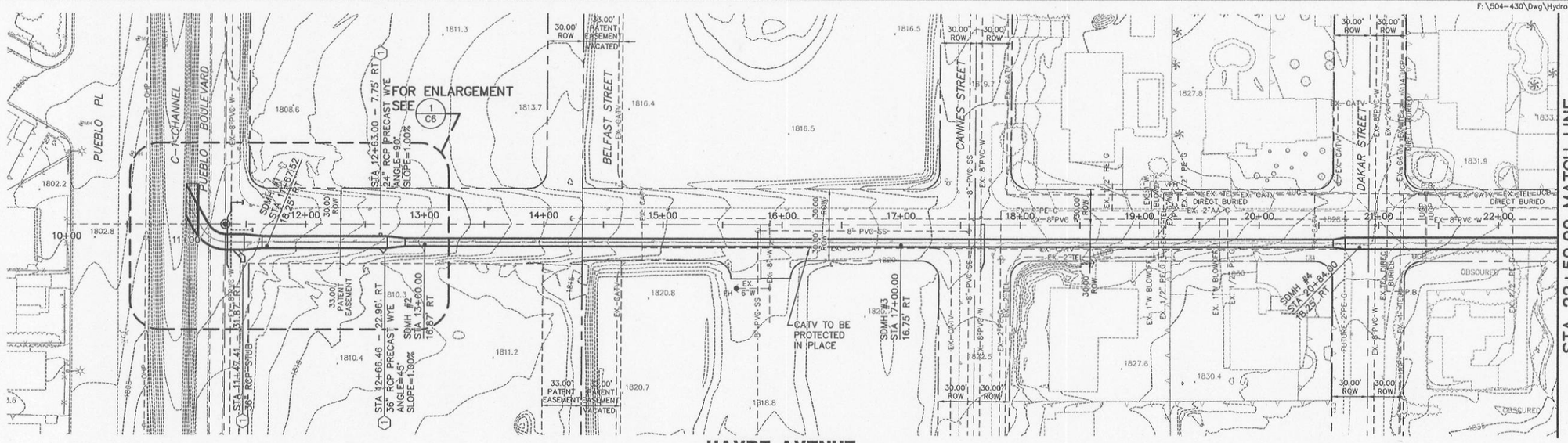
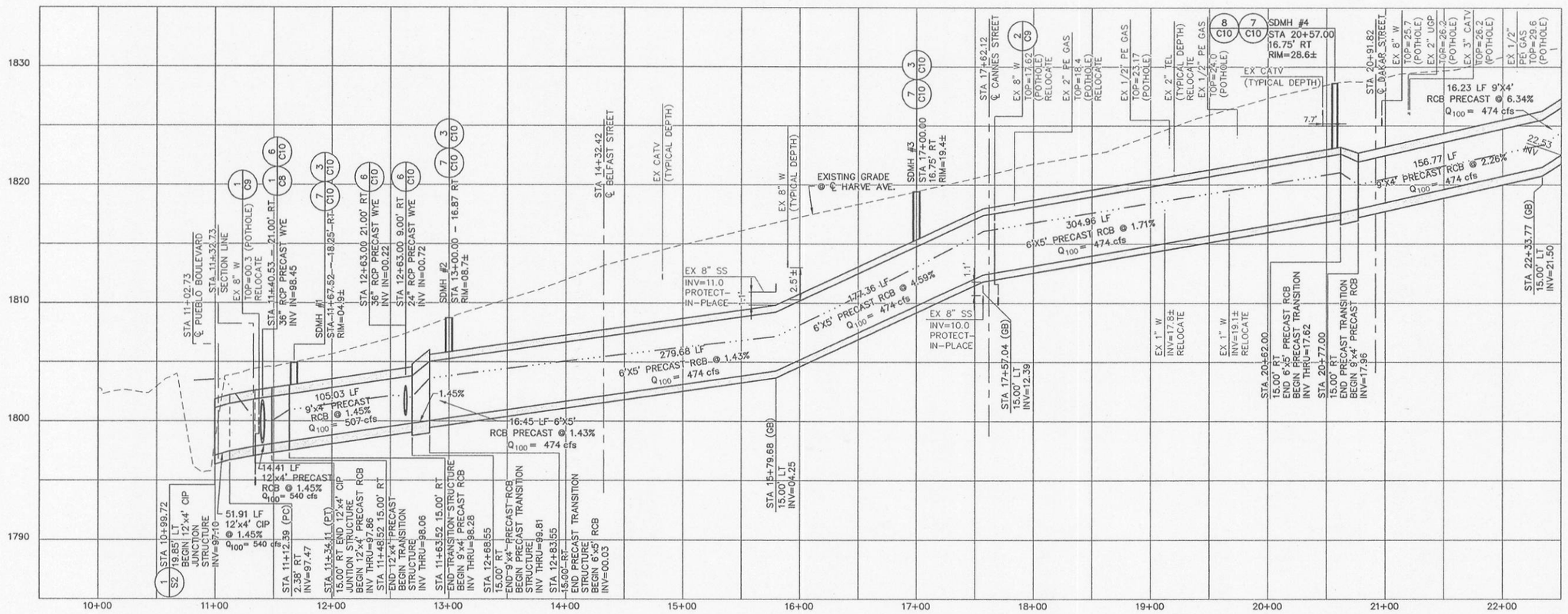


STA 22+50.00 MATCH LINE
SEE SHEET C2

NORTH
SCALE 1" = 50'
50 0 50 100
SCALE FEET

CONSTRUCTION NOTES

1. INSTALL REINFORCED PRECAST CONCRETE PLUG TO FIT PIPE PER RCP MANUFACTURER SPECIFICATIONS.



NOTE: UNLESS OTHERWISE NOTED, ALL UTILITIES ARE TO BE PROTECTED IN PLACE

NOTE: ALL STATIONING FROM CENTERLINE OF ROADWAY UNLESS OTHERWISE NOTED.

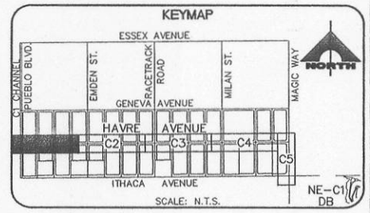
SOUTHWEST GAS NOTE

CONTACT SWG AT 365-2296
FOR RELOCATION OF GAS LINE.

COX COMMUNICATIONS NOTE

CONTACT COX AT 564-1674
FOR RELOCATION OF CATV LINE

KEYMAP



DISCLAIMER NOTE

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UNDERGROUND SERVICE (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.
CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN OUTFALL

PLAN & PROFILE

STA. 10+00.00 TO STA. 22+50.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

THE CITY OF HENDERSON

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM HUNTER III Exp. 06/30/2009 CIVIL No. 8833 3/3/08

PROJECT No: 504.430 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
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SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

DRAWING NO. C1
SHT. OF

07380

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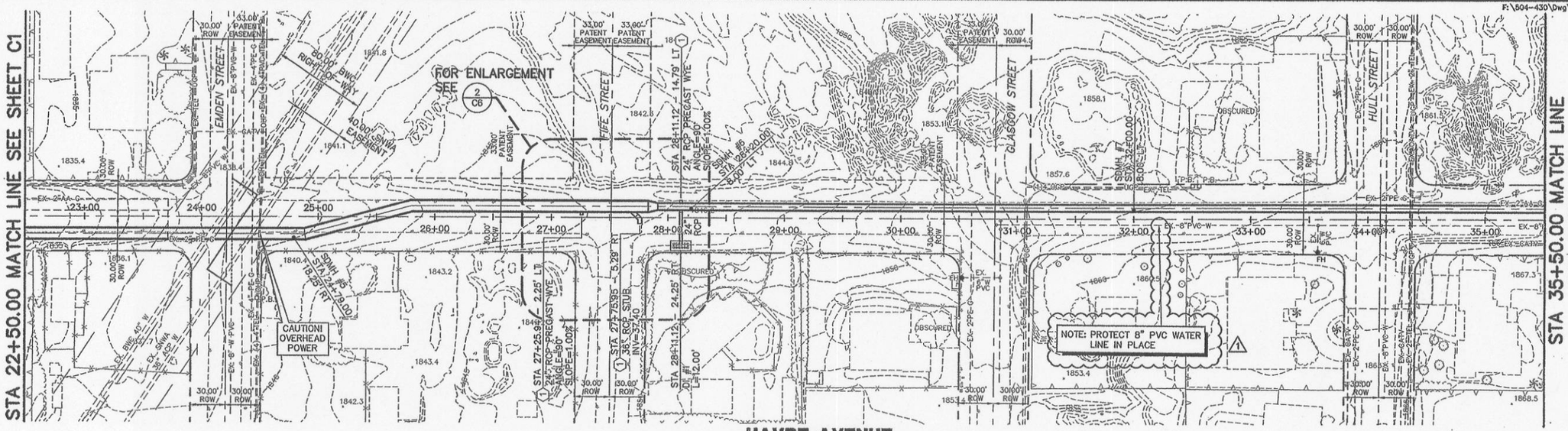
STA 22+50.00 MATCH LINE SEE SHEET C1

STA 35+50.00 MATCH LINE SEE SHEET C3


FOR ENLARGEMENT SEE 2/C6
EMDEN STREET
FIFE STREET
GLASGOW STREET
HULL STREET
80.00' RIGHT-OF-WAY
40.00' SNWA EASEMENT
33.00' PATENT EASEMENT
30.00' ROW
CAUTION! OVERHEAD POWER
NOTE: PROTECT 8" PVC WATER LINE IN PLACE
SDMH #5 STA 24+79.00 RIM=39.25
SDMH #6 STA 28+20.00 RIM=46.12±
SDMH #7 STA 32+00.00 RIM=59.3±
STA 28+11.12 24" RCP PRECAST WYE ANGLE=90° SLOPE=1.00%
STA 27+75.95 — 5.29' RT 36" RCP SIDE INV=37.40
STA 27+25.94 2.25' LT 24" RCP PRECAST WYE ANGLE=90° SLOPE=1.00%
24.25' RCP
12.00'
EX 8" PVC-W
EX 8" SNWA W
EX 36" SNWA W
EX 4" TEL
EX 2" PE GAS
EX 4" CATV
EX 2" PE-G
EX 8" W PVC
EX BWC 40" W
EX SNWA 36" W
EX 2" RCP
EX 24" RCP
EX 2" PVC
EX 6" PVC-W
EX 8" PVC-W
EX 6" W
EX 2" PE-G
EX 2" PE-G
EX 8" PVC-W
EX CATV
EX 2" PE-G
EX 2" PE-G
EX 2" PE-G

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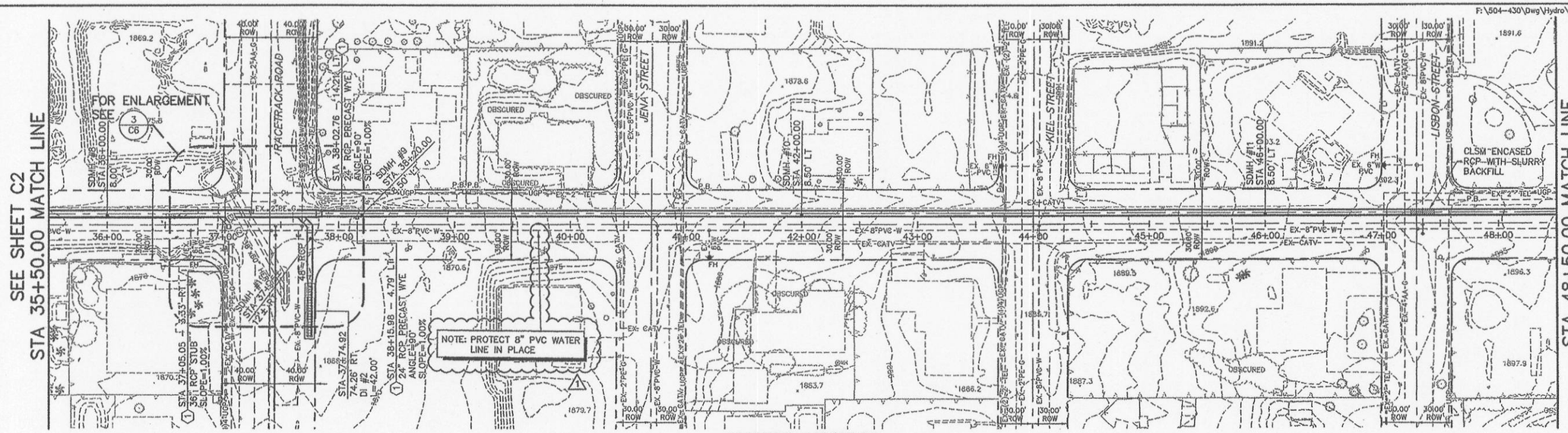

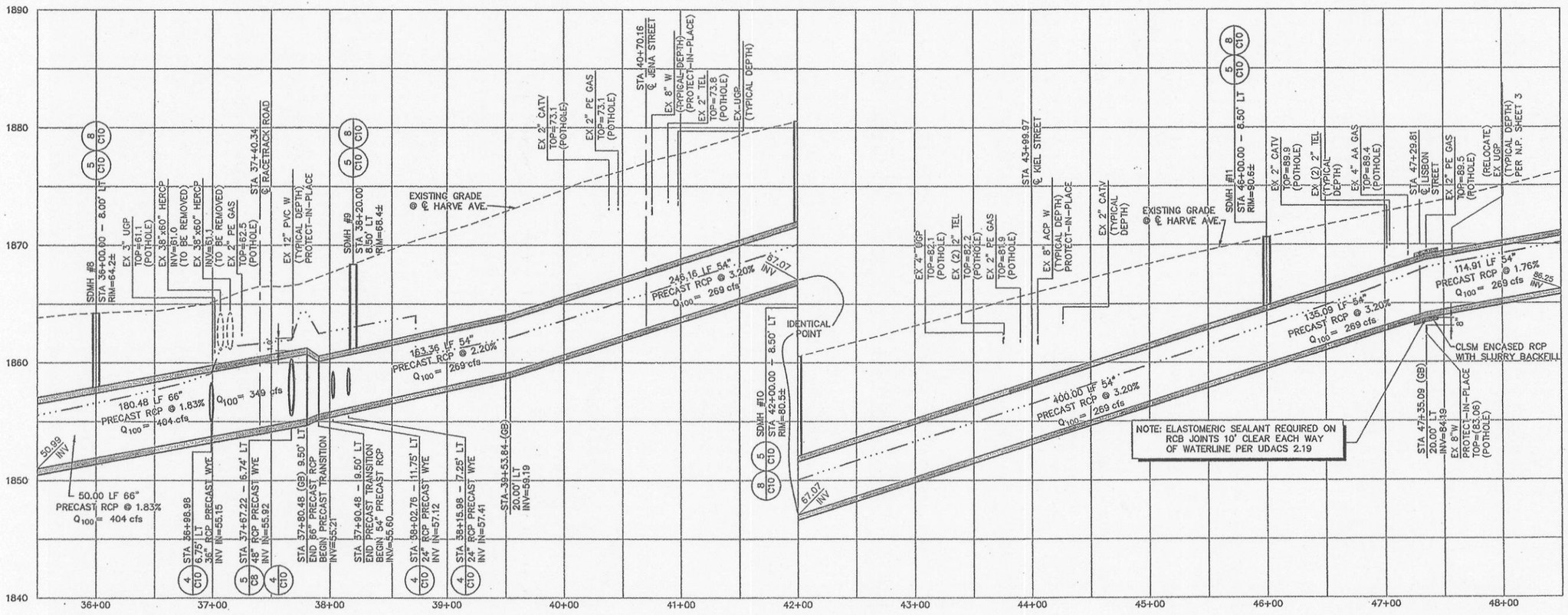

NORTH

SCALE 1" = 50'

50 0 50 100

SCALE FEET

CONSTRUCTION NOTES

1. INSTALL REINFORCED PRECAST CONCRETE PLUG TO FIT PIPE PER RCP MANUFACTURER SPECIFICATIONS.

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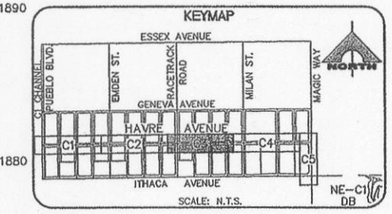
NOTE: ALL STATIONING FROM CENTERLINE OF ROADWAY UNLESS OTHERWISE NOTED.

SOUTHWEST GAS NOTE

CONTACT SWG AT 365-2296 FOR RELOCATION OF GAS LINE.

KEYMAP



NE-C1 DB

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REV. NO.	DATE	DESCRIPTION	APPROVED
1	8/28/08	ADD PROTECT IN PLACE NOTE	WES

NORTHEAST C-1 DETENTION BASIN OUTFALL

PLAN & PROFILE

STA 35+50.00 TO STA 48+50.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8833 9/2/08

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

PROJECT No: 504.430 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

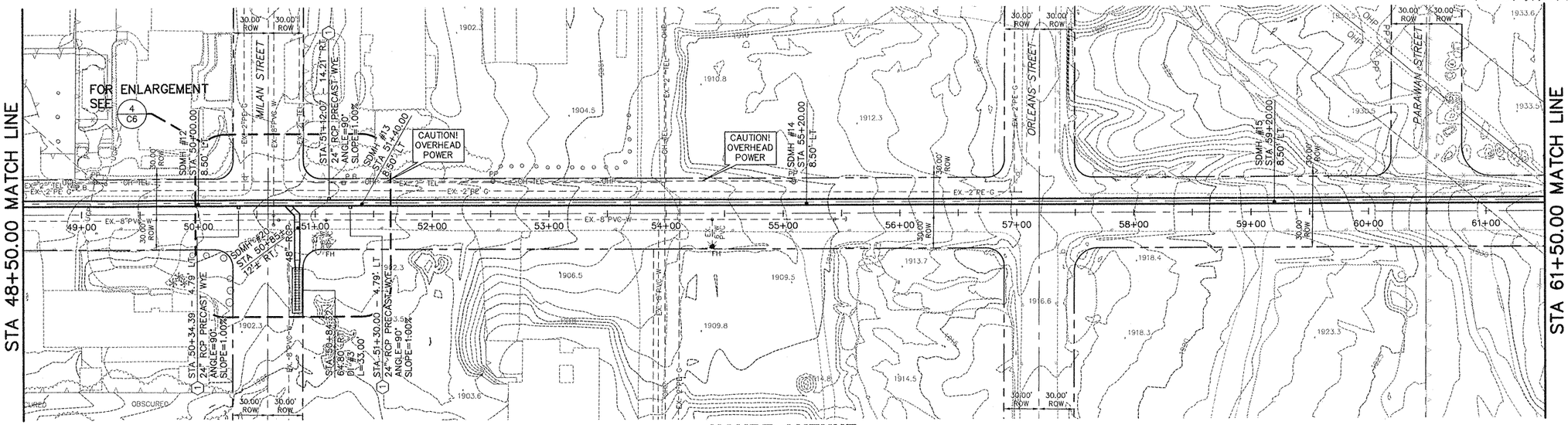
DRAWING NO. C3
SHT. OF

07380

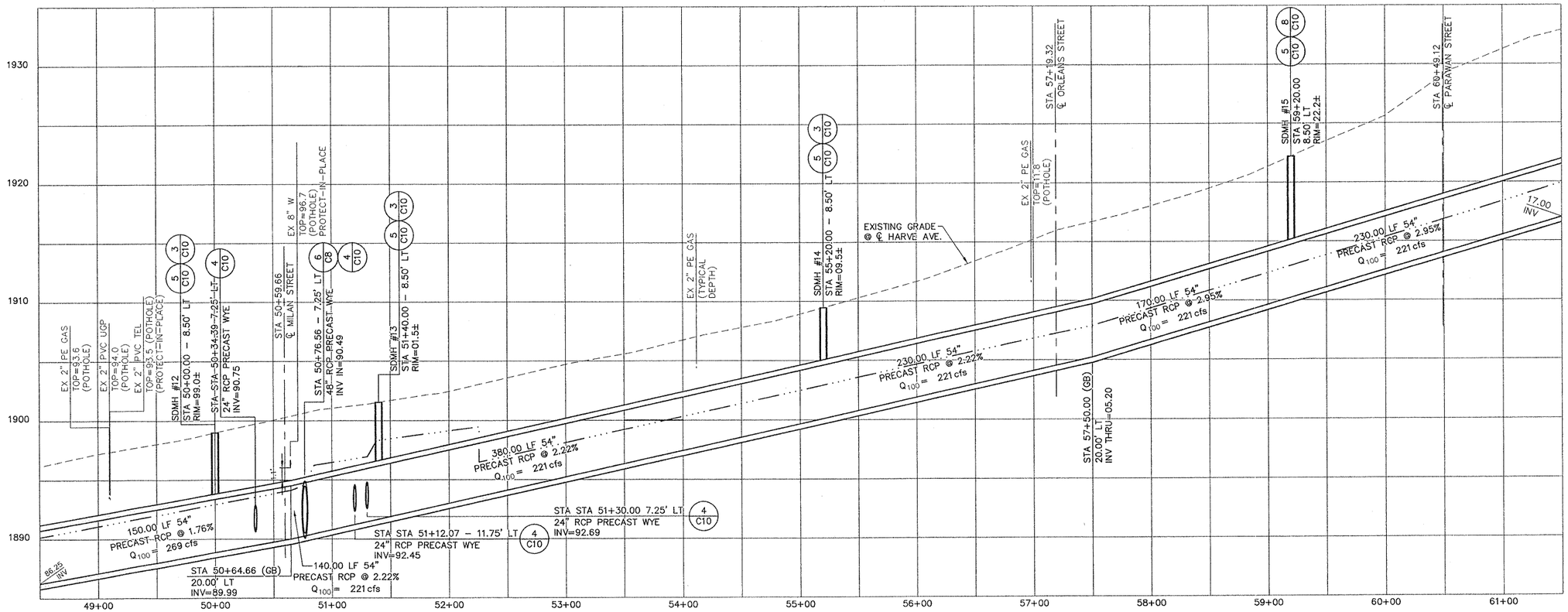
F:\504-430\Dwg\Hydro\improv\430_C04.dwg 03-28-08 16:04:59 BJohnson

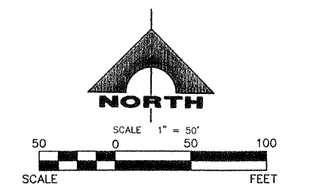
SEE SHEET C3
STA 48+50.00 MATCH LINE

STA 61+50.00 MATCH LINE
SEE SHEET C5



HAVRE AVENUE





CONSTRUCTION NOTES

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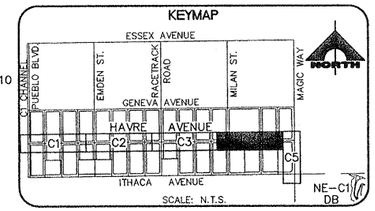
FOR RELOCATION OF GAS LINE.

KEYMAP



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1-702-227-2929

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN OUTFALL

PLAN & PROFILE

STA 48+50.00 TO STA 61+50.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER — STATE OF NEVADA — WILLIAM E. HUNTER III — Exp. 06/30/2009 — CIVIL — No. 8833 — 3/08

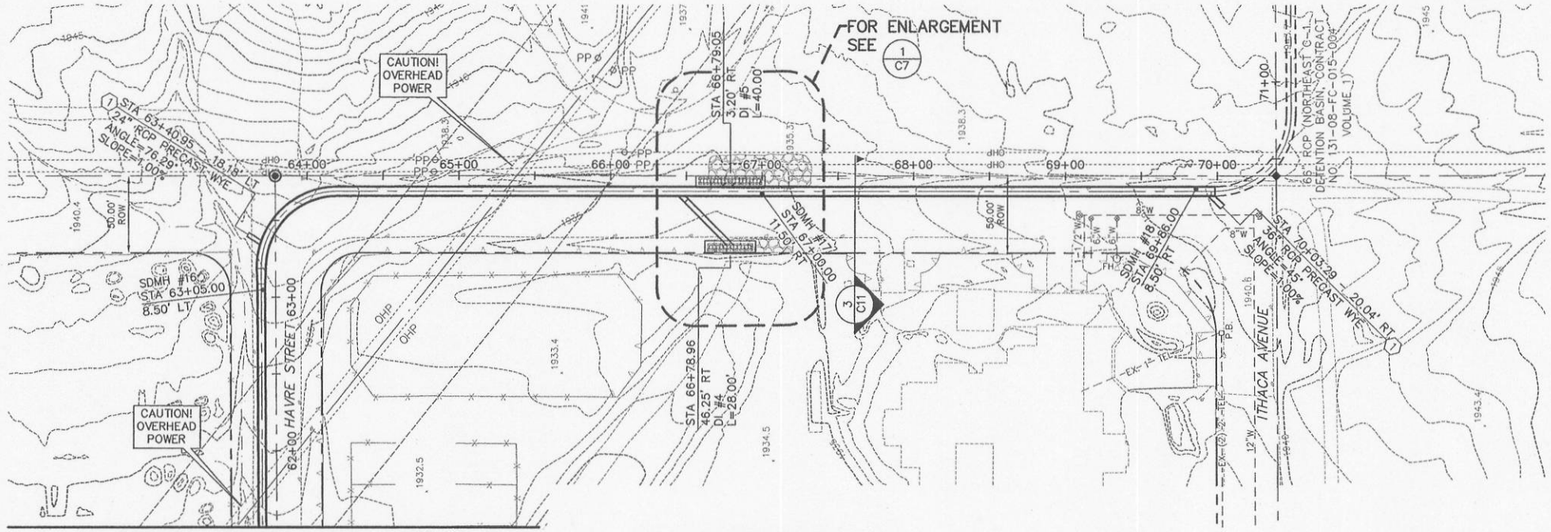
PROJECT No: 504.430 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

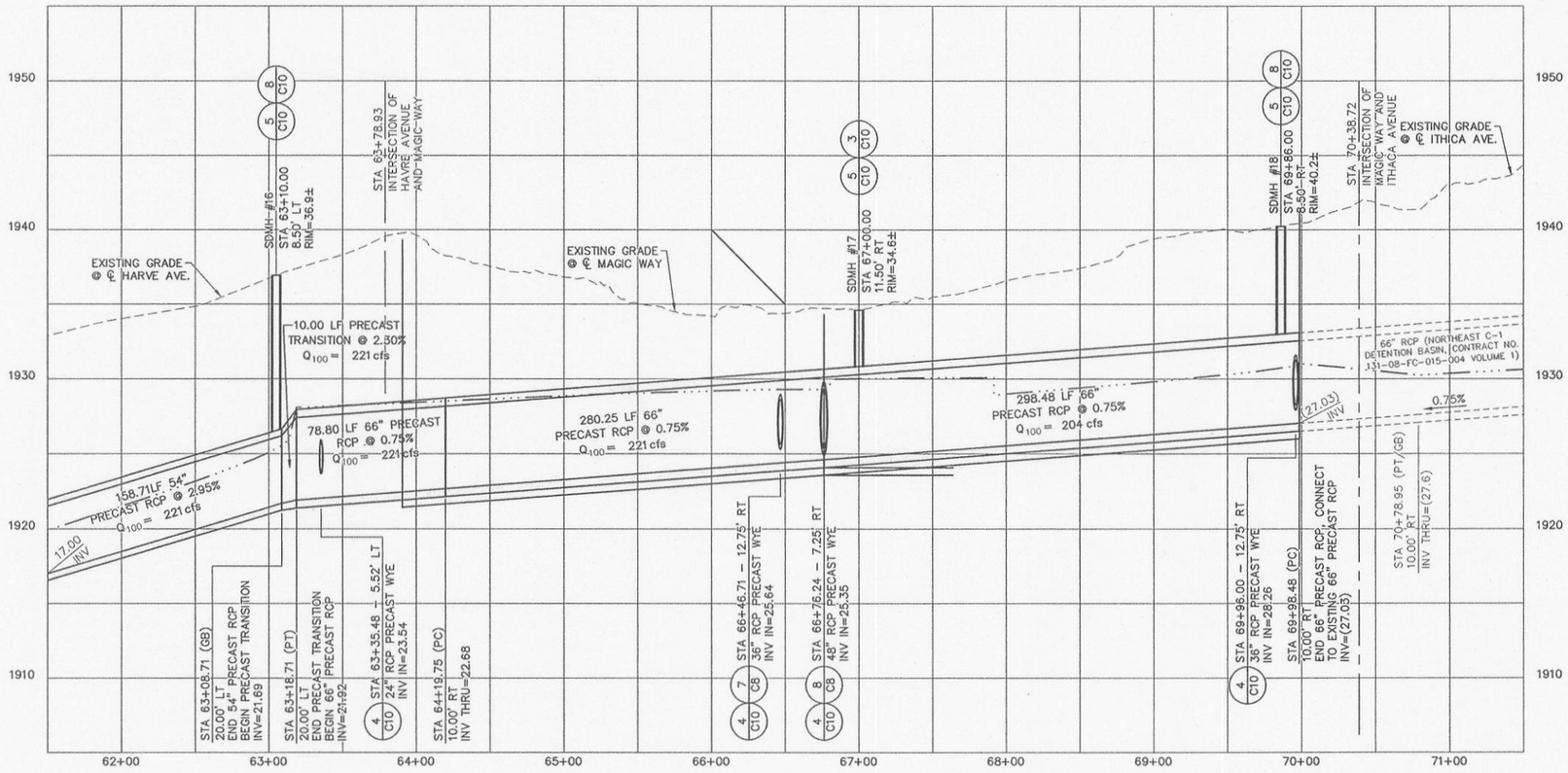
DRAWING NO. C4
SHT. OF

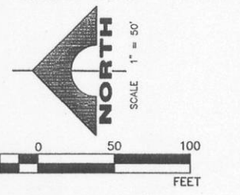
07380



STA 61+50.00 MATCH LINE
SEE SHEET C4

MAGIC WAY





CONSTRUCTION NOTES

1. INSTALL REINFORCED PRECAST CONCRETE PLUG TO FIT PIPE PER RCP MANUFACTURER SPECIFICATIONS.

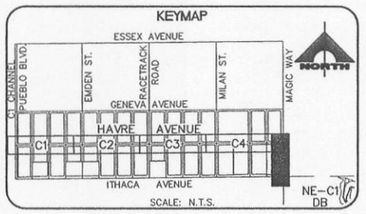
NOTE: UNLESS OTHERWISE NOTED, ALL UTILITIES ARE TO BE PROTECTED IN PLACE

NOTE: ALL STATIONING FROM CENTERLINE OF ROADWAY UNLESS OTHERWISE NOTED.

SOUTHWEST GAS NOTE

CONTACT SWG AT 365-2296
FOR RELOCATION OF GAS LINE.

KEYMAP



DISCLAIMER NOTE

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UNDERGROUND SERVICE (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN OUTFALL

PLAN & PROFILE

STA 61+50.00 TO STA 71+50.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM E. HUNTER III
Exp. 06/30/2009
CIVIL
No. 8833
4/3/08

PROJECT No: 504.430 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

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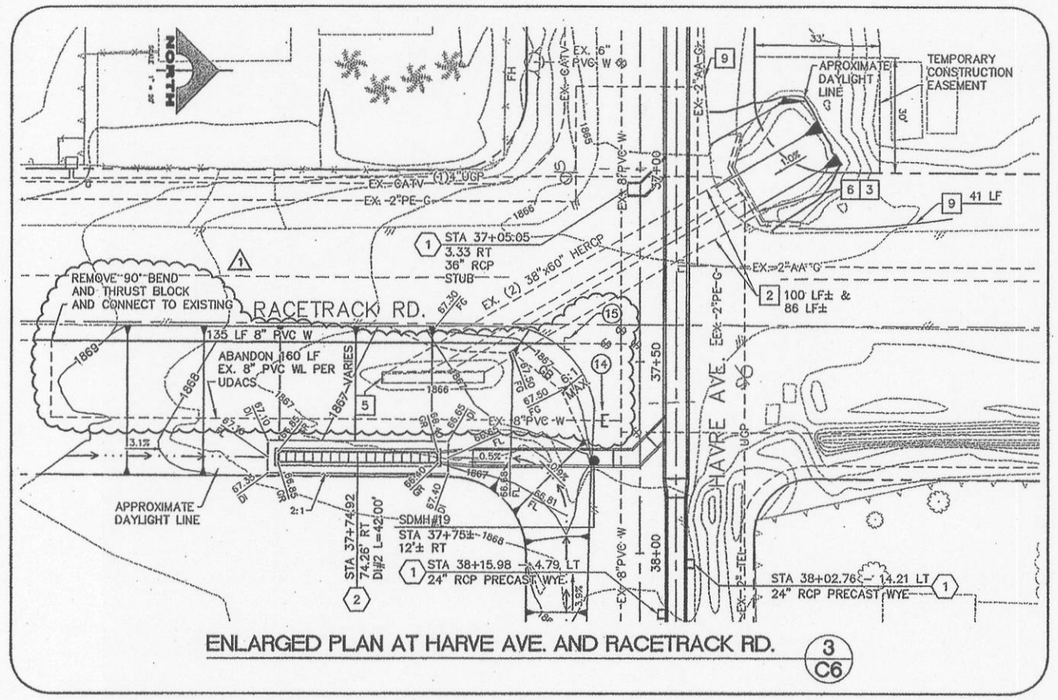
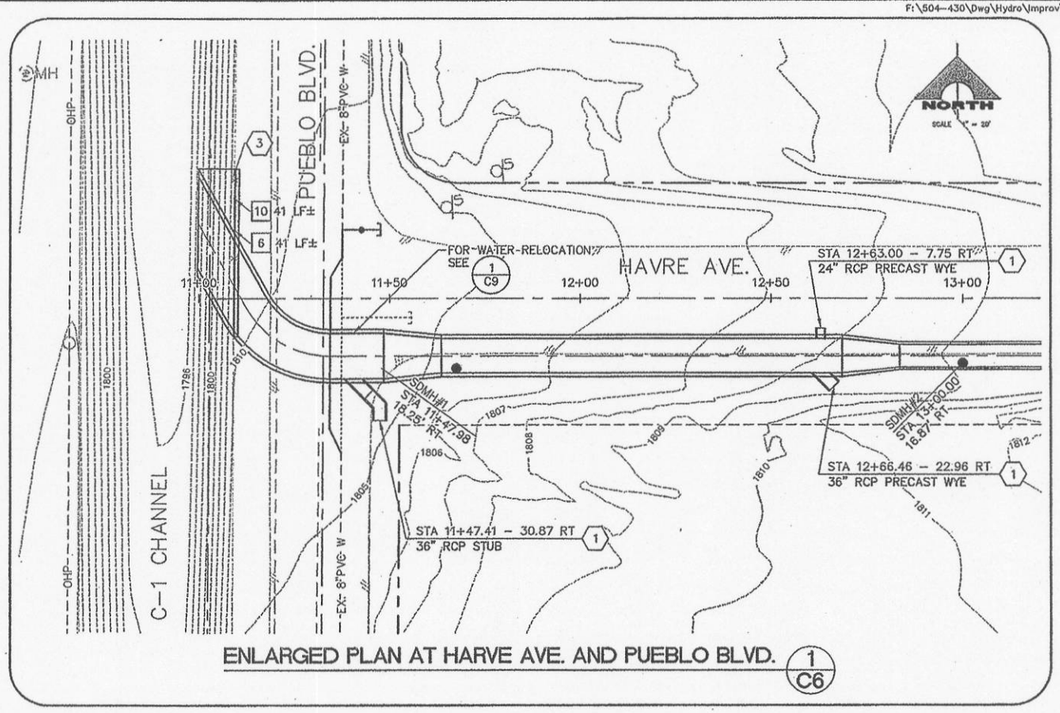
SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

DRAWING NO.
C5
SHT. OF

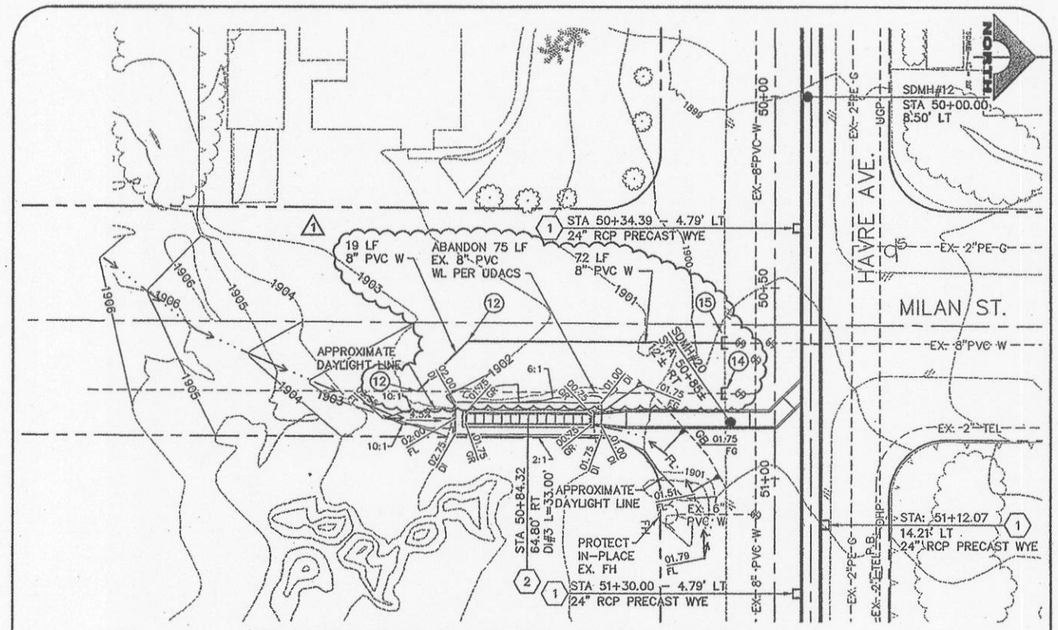
07380



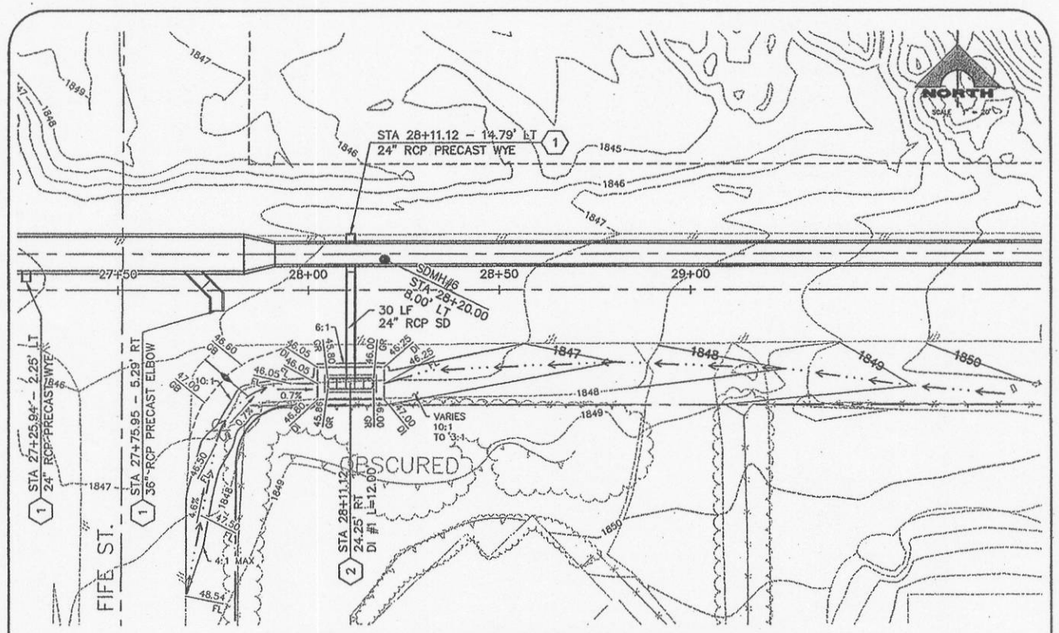
ENLARGED PLAN AT HARVE AVE. AND RACETRACK RD. 3/C6



ENLARGED PLAN AT HARVE AVE. AND PUEBLO BLVD. 1/C6



ENLARGED PLAN AT HARVE AVE. AND MILAN ST. 4/C6



ENLARGED PLAN AT HARVE AVE. AND FIFE ST. 2/C6

REMOVAL NOTES

1. REMOVE WATERLINE
2. REMOVE 38"x60" HERCP
3. REMOVE HEADWALL
4. REMOVE AC PAVEMENT
5. REMOVE EXISTING DROP INLET
6. REMOVE EXISTING CHAIN-LINK FENCE
7. REMOVE RIPRAP
8. REMOVE CUTOFF WALL
9. REMOVE GUARDRAIL
10. REMOVE TRAPEZOIDAL CONCRETE CHANNEL

CONSTRUCTION NOTES

1. INSTALL REINFORCED PRECAST CONCRETE PLUG TO FIT PIPE PER RCP MANUFACTURER SPECIFICATIONS.
2. CONSTRUCT DROP INLET PER (1/S1)
3. INSTALL CHAIN-LINK FENCE PER (2/C11)

WATER NOTES

12. INSTALL 8" 45° BEND WITH THRUST BLOCK PER UDACS PLATE No. 5.
14. CUT AND CAP EXISTING 8" PVC WATERLINE PER UDACS PLATE No. 4A
15. REMOVE CAP AND CONNECT TO EXISTING 8" PVC WATERLINE

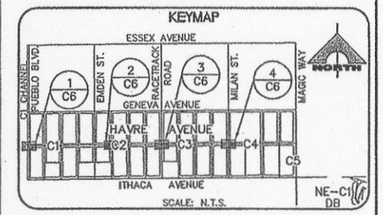
NOTE: UNLESS OTHERWISE NOTED, ALL UTILITIES ARE TO BE PROTECTED IN PLACE

NOTE: ALL STATIONING FROM CENTERLINE OF ROADWAY UNLESS OTHERWISE NOTED.

SOUTHWEST GAS NOTE

CONTACT SWG AT 365-2296 FOR RELOCATION OF GAS LINE.

KEYMAP



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REV. NO.	DATE	DESCRIPTION	APPROVED
1	8/28/08	ADD 8" PVC WATERLINE RELOCATIONS, ADD ENCASEMENTS	WES

NORTHEAST C-1 DETENTION BASIN OUTFALL

ENLARGED PLANS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8833 9/2/08

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ENGINEERS | PLANNERS | SURVEYORS
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PROJECT No: 504.430 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

SCALE
HORIZ: 1" = 20'
VERT: 1" = 2'
FIELD BOOK

DRAWING NO. C6
SHT. OF

07380

F:\504-430\Dwg\Hydro\Improv\430_C07.dwg 03-28-08 16:22:27 BJohnson

NORTH

SCALE 1" = 20'

20 0 20 40

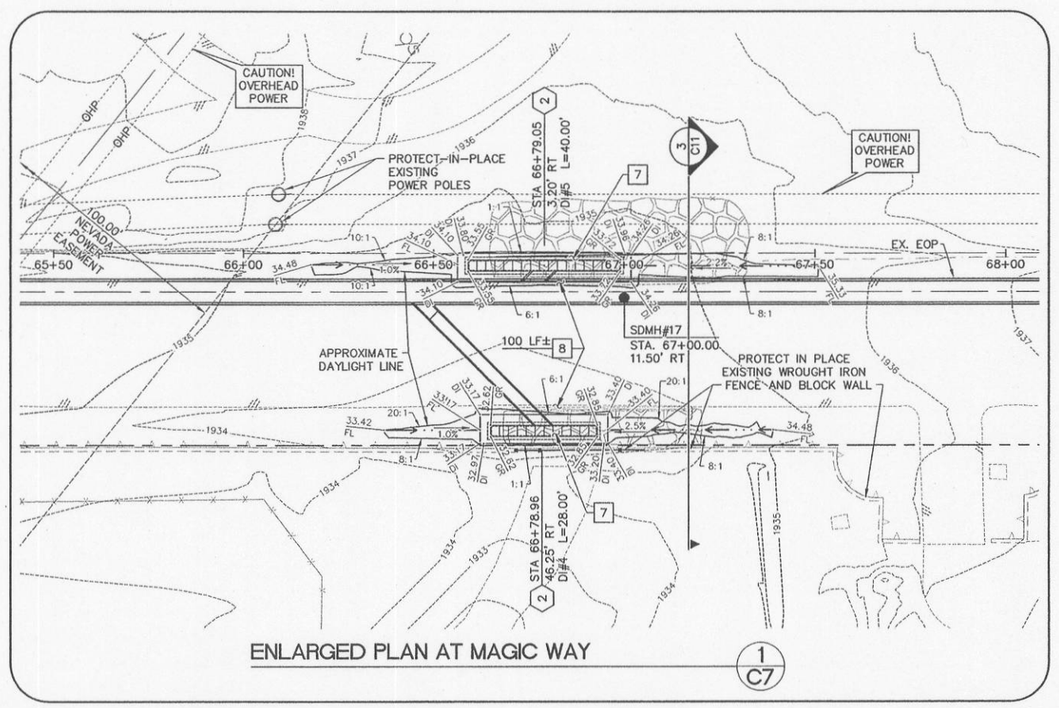
SCALE FEET

REMOVAL NOTES

1. REMOVE WATERLINE
2. REMOVE 38"x60" HERCP
3. REMOVE HEADWALL
4. REMOVE AC PAVEMENT
5. REMOVE EXISTING DROP INLET
6. REMOVE EXISTING CHAIN-LINK FENCE
7. REMOVE RIPRAP
8. REMOVE CUTOFF WALL
9. REMOVE GUARDRAIL
10. REMOVE TRAPEZOIDAL CONCRETE CHANNEL

CONSTRUCTION NOTES

1. INSTALL REINFORCED PRECAST CONCRETE PLUG TO FIT PIPE PER RCP MANUFACTURER SPECIFICATIONS.
2. CONSTRUCT DROP INLET PER (1/S1)
3. INSTALL CHAIN-LINK FENCE PER (2/C11)



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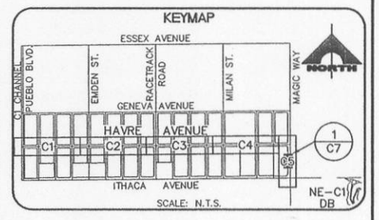
NOTE: ALL STATIONING FROM CENTERLINE OF ROADWAY UNLESS OTHERWISE NOTED.

SOUTHWEST GAS NOTE

CONTACT SWG AT 365-2296
FOR RELOCATION OF GAS LINE.

KEYMAP



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REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN OUTFALL

ENLARGED PLANS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8833 3/3/08

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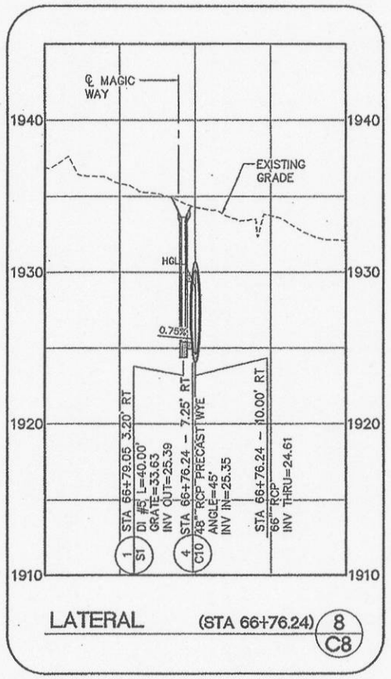
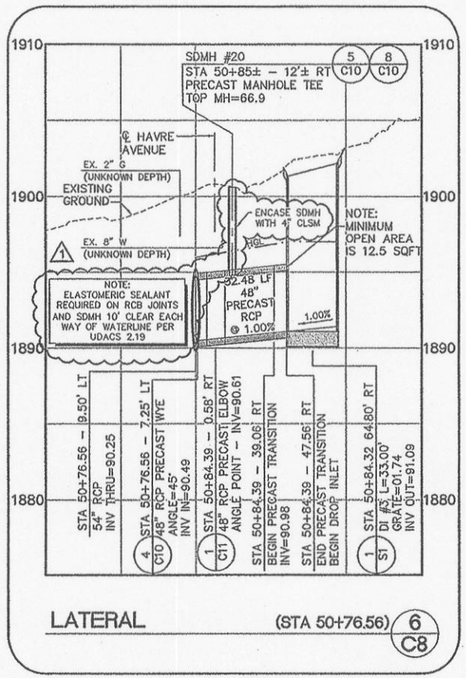
SCALE
HORIZ: 1" = 20'
VERT: N/A
FIELD BOOK

DRAWING NO. C7
SHT. OF

07380



LATERAL (STA 66+76.24) 8 C8



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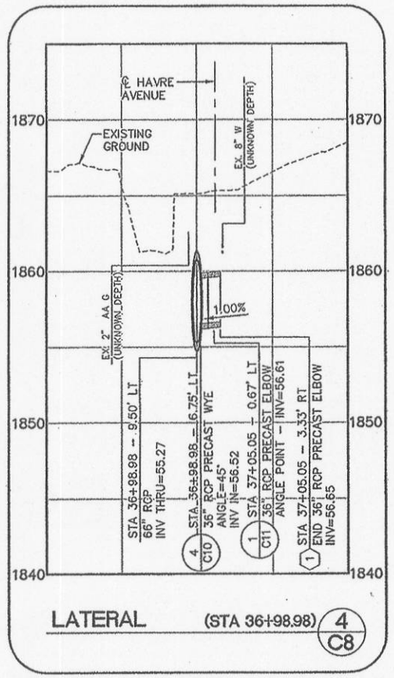

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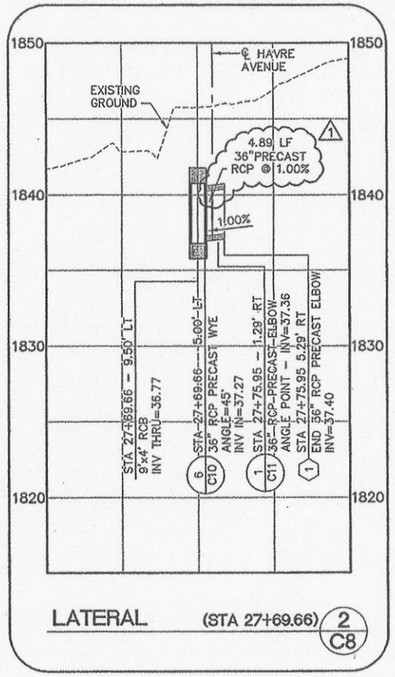
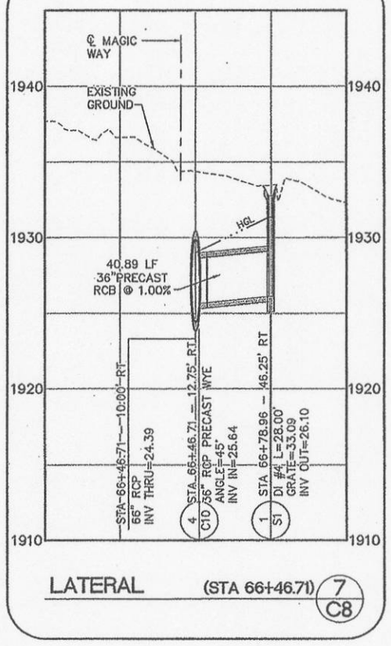


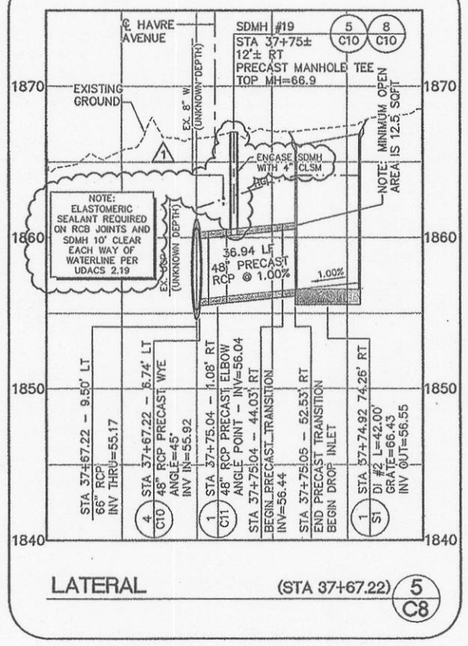
LATERAL (STA 27+69.66) 2 C8

CONSTRUCTION NOTES

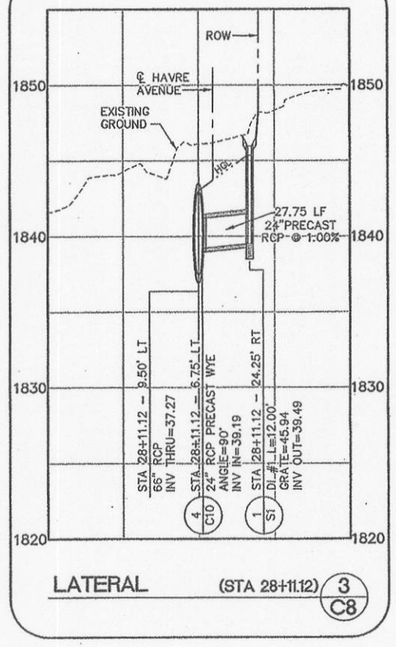
1. INSTALL REINFORCED PRECAST CONCRETE PLUG TO FIT PIPE PER RCP MANUFACTURER SPECIFICATIONS.



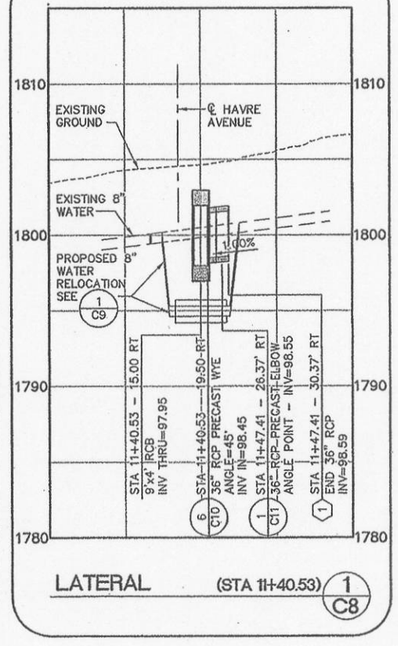
LATERAL (STA 66+46.71) 7 C8



LATERAL (STA 37+67.22) 5 C8



LATERAL (STA 28+11.12) 3 C8



LATERAL (STA 11+40.53) 1 C8

REV. NO.	DATE	DESCRIPTION	APPROVED
1	8/28/08	ADD CONCRETE ENCASEMENTS, ADD CALLOUT	WEH

NORTHEAST C-1 DETENTION BASIN OUTFALL

LATERAL PROFILES

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8833 9/2/08

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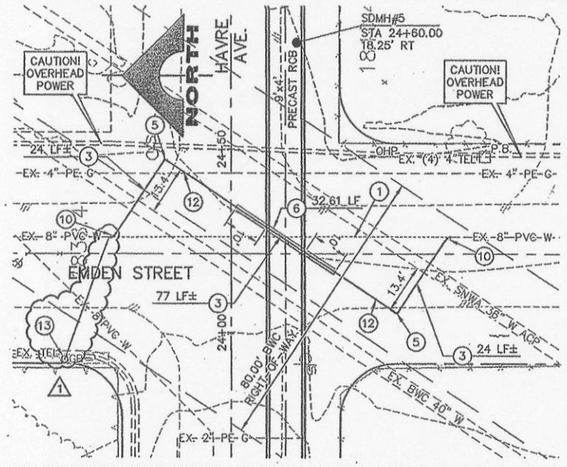
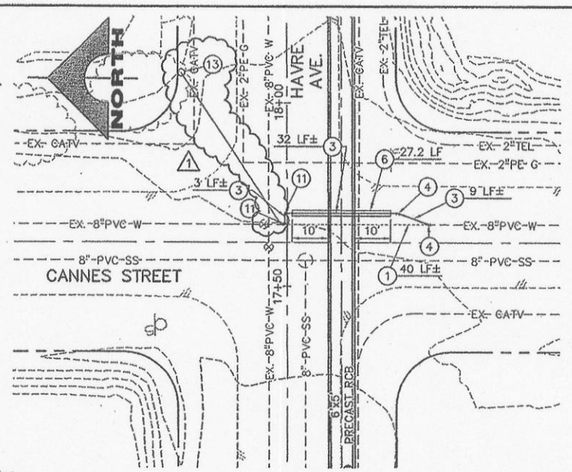
SCALE
HORIZ: 1"=50'
VERT: 1"=5'
FIELD BOOK

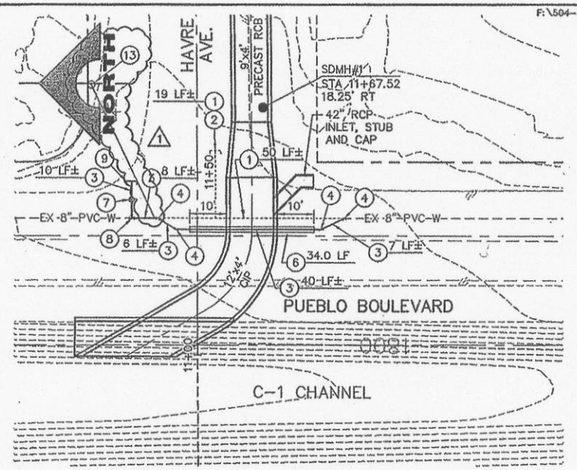
DRAWING NO. C8
SHT. OF

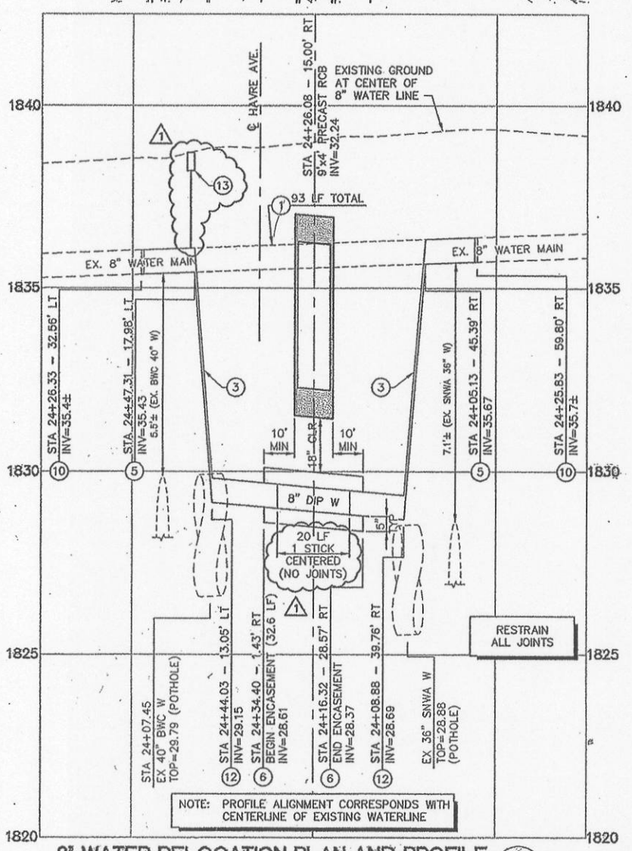
07380

F:\504-430\Dwg\Hydro\Improv\430_C09.dwg 03-20-08 16:14:58 BJohnson

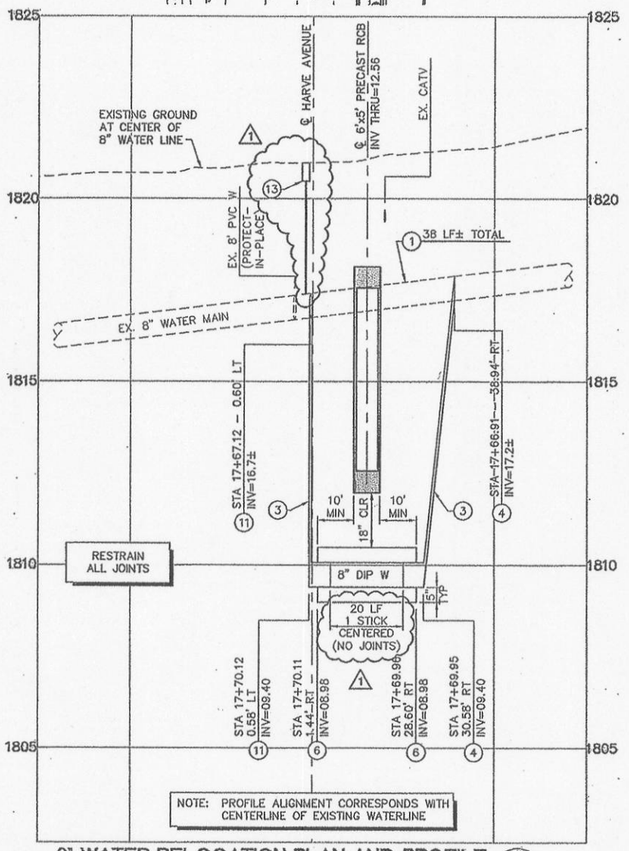




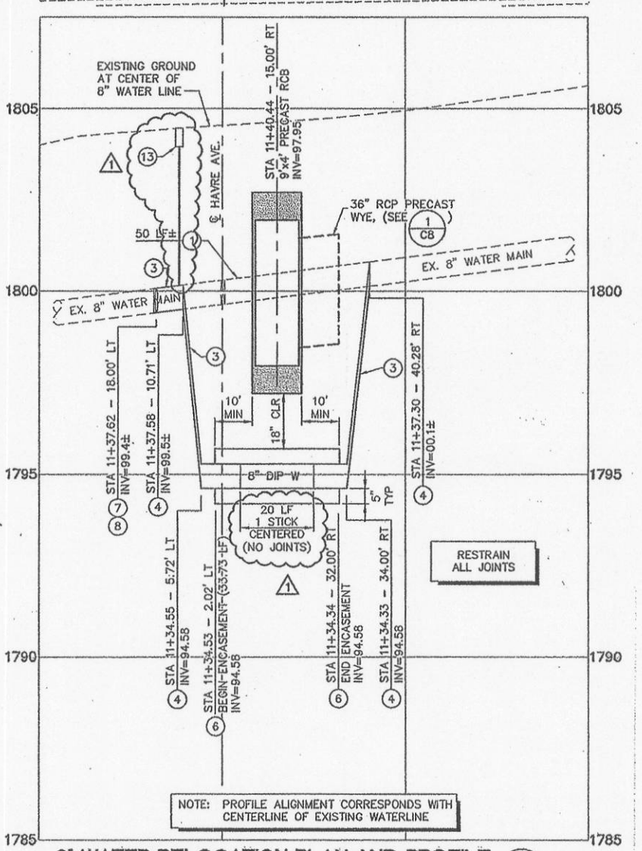




8" WATER RELOCATION PLAN AND PROFILE 3/C9



8" WATER RELOCATION PLAN AND PROFILE 2/C9



8" WATER RELOCATION PLAN AND PROFILE 1/C9

SCALE: 20 0 20 40 FEET

WATER NOTES

1. CUT AND REMOVE EXISTING 8" WATER LINE PER UDACS.
2. REMOVE GATE VALVE, TEE, CAP & STUB AND THRUST BLOCKS.
3. INSTALL 8" DIP CLASS 350.
4. INSTALL 8" 45° BEND ROLLED DOWN ±67° WITH THRUST BLOCK PER UDACS PLATE No. 5.
5. INSTALL 8" 90° BEND ROLLED DOWN 45° WITH THRUST BLOCK PER UDACS PLATE No. 5.
6. INSTALL PIPE ENCASEMENT PER UDACS PLATE No. 16.
7. INSTALL 8" GATE VALVE.
8. INSTALL 8"X8"X8" TEE.
9. STUB AND PLUG FOR FUTURE.
10. INSTALL 8" 45° MJ x PE ELBOW CONNECTED TO A 8" 11 1/4° RESTRAINED MJ x MJ ELBOW TO WITH A SINGLE THRUST BLOCK PER UDACS PLATE No. 5.
11. INSTALL 8" 90° BEND ROLLED DOWN ±67° WITH THRUST BLOCK PER UDACS PLATE No. 5.
12. INSTALL 8" 45° BEND WITH THRUST BLOCK PER UDACS PLATE No. 5.
13. INSTALL 2" COMBINATION AIR VALVE PER UDACS PLATE No. 37.

BWC CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL BWC APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. RECTIFIERS AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER BWC STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY BASIC WATER COMPANY AT (702) 567-0484 OR (702) 429-8971 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
2. BWC APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO BWC FOR APPROVAL.

Mark Davis 2-26-08
BASIC WATER COMPANY DATE

SOUTHERN NEVADA WATER AUTHORITY CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL SNWA/SNWS APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS AND CATHODIC PROTECTION SYSTEMS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. CATHODIC PROTECTION TEST STATIONS, RECTIFIERS, AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER SNWA STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY SOUTHERN NEVADA WATER AUTHORITY DEVELOPMENT PLAN REVIEW, AT (702) 862-3444 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
2. SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

Valerie A. Schuler 3-28-08
SOUTHERN NEVADA WATER AUTHORITY DATE

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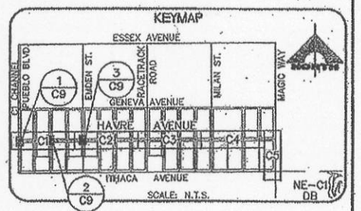
NOTE: ALL STATIONING FROM CENTERLINE OF ROADWAY UNLESS OTHERWISE NOTED.

KEYMAP



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Avoid hitting overhead power lines. It's costly. CALL BEFORE YOU DO OVERHEAD 1-702-227-2929

REV. NO.	DATE	DESCRIPTION	APPROVED
1	8/28/08	ADD 2" COMBINATION AIR VALVE, REVISE DIMENSION	W.E.H. III

NORTHEAST C-1 DETENTION BASIN OUTFALL

PLAN & PROFILE
8" WATER RELOCATION

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8835

PROJECT No: 504.430 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1" = 20'
VERT: 1" = 2'
FIELD BOOK

DRAWING NO. C9
SHT. OF

07380

NOTE: UNLESS OTHERWISE NOTED, ALL UTILITIES ARE TO BE PROTECTED IN PLACE

NOTE: ALL STATIONING FROM CENTERLINE OF ROADWAY UNLESS OTHERWISE NOTED.

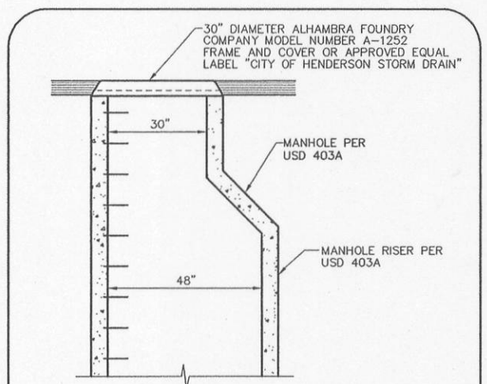
PERMANENT AC PAVEMENT REPLACEMENT – ADDITIONAL AREAS

APPROXIMATE STATION	QTY (SY)	COMMENTS	THICKNESS*
11+19	247	AT PUEBLO	3" MIN.
18+93	110	DRIVEWAY	3" MIN.
22+16	25	DRIVEWAY	3" MIN.
38+90	17	DRIVEWAY	3" MIN.
40+03	43	DRIVEWAY	3" MIN.
46+72	43	DRIVEWAY	3" MIN.
48+52	44	DRIVEWAY	3" MIN.

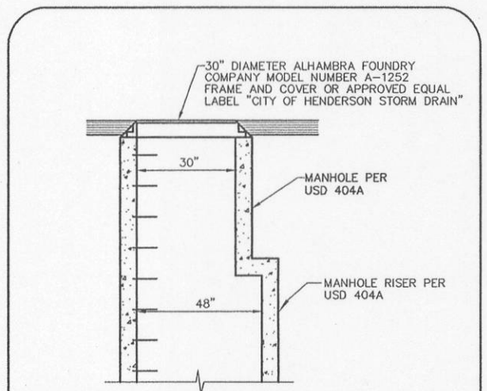
PERMANENT AC PAVEMENT REPLACEMENT

FROM	TO	WIDTH	QTY. (SY)	STD. DWG.	THICKNESS*	COMMENTS
+/- 11+61	+/- 24+88	14	2,064	209	3" MIN.	HAVRE SECTION
+/- 24+88	+/- 64+19	28	12,230	209	3" MIN.	HAVRE SECTION
+/- 64+19	+/- 70+15	32	2120	209	3" MIN.	MAGIC WAY SECTION

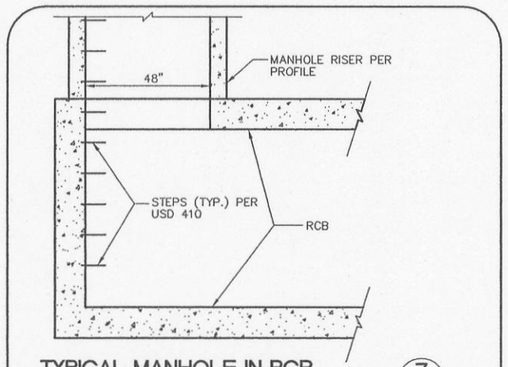
*PERMANENT PAVEMENT DEPTH TO MATCH CONTIGUOUS PAVEMENT BUT NOT LESS THAN THICKNESS SHOWN IN THE PERMANENT AC PAVEMENT REPLACEMENT TABLES.



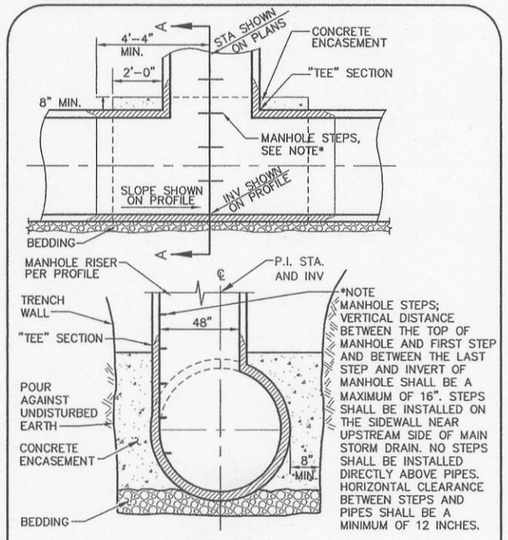
MANHOLE PER USD 403A (8 C10)
NOT TO SCALE



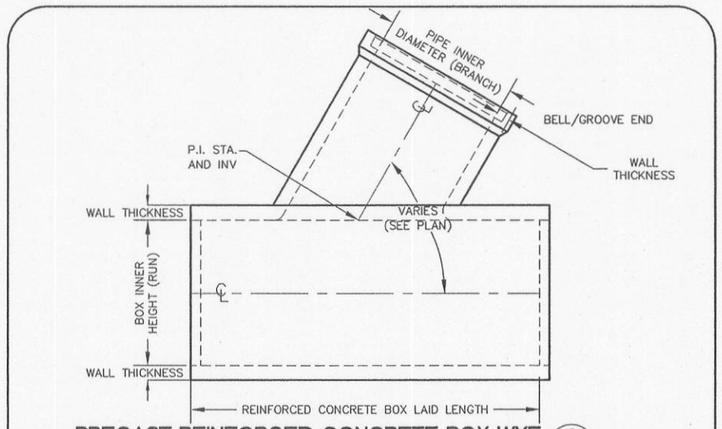
MANHOLE PER USD 404A (3 C10)
NOT TO SCALE



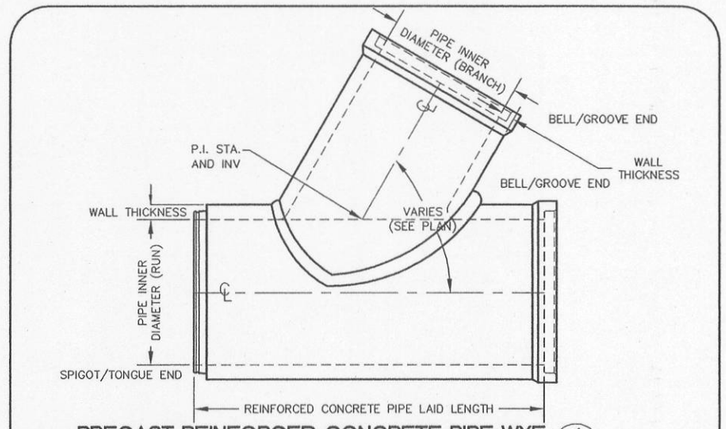
TYPICAL MANHOLE IN RCB (7 C10)
NOT TO SCALE



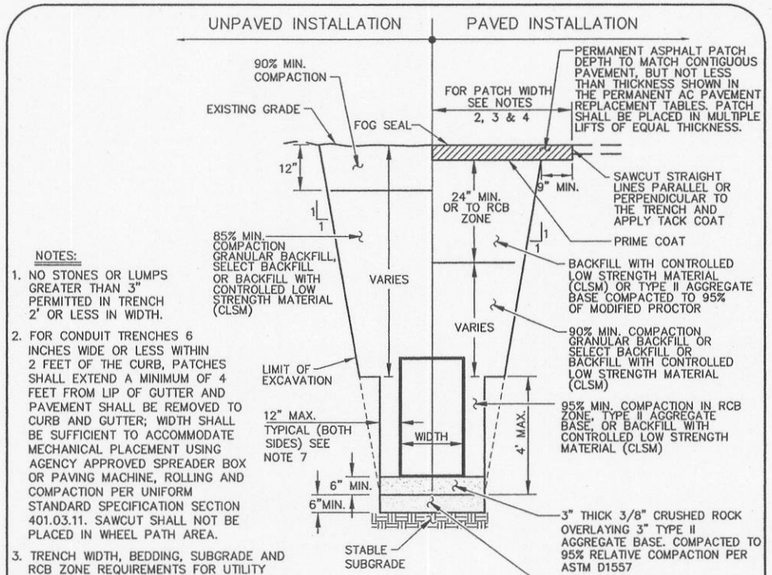
PREFABRICATED ECCENTRIC MANHOLE TEE (5 C10)
NOT TO SCALE



PRECAST REINFORCED CONCRETE BOX WYE (6 C10)
NO SCALE

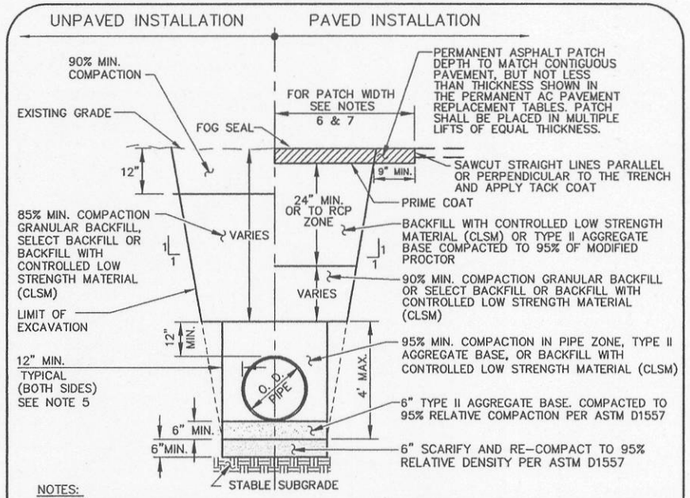


PRECAST REINFORCED CONCRETE PIPE WYE (4 C10)
NO SCALE



NOTES:
1. NO STONES OR LUMPS GREATER THAN 3" PERMITTED IN TRENCH 2' OR LESS IN WIDTH.
2. FOR CONDUIT TRENCHES 6 INCHES WIDE OR LESS WITHIN 2 FEET OF THE CURB, PATCHES SHALL EXTEND A MINIMUM OF 4 FEET FROM LIP OF GUTTER AND PAVEMENT SHALL BE REMOVED TO CURB AND GUTTER; WIDTH SHALL BE SUFFICIENT TO ACCOMMODATE MECHANICAL PLACEMENT USING AGENCY APPROVED SPREADER BOX OR PAVING MACHINE, ROLLING AND COMPACTION PER UNIFORM STANDARD SPECIFICATION SECTION 401.03.11. SAWCUT SHALL NOT BE PLACED IN WHEEL PATH AREA.
3. TRENCH WIDTH, BEDDING, SUBGRADE AND RCB ZONE REQUIREMENTS FOR UTILITY INSTALLATIONS SHALL CONFORM TO OSHA REGULATIONS. SLOPES SHOWN ARE BASED ON TYPE "B" SOILS. OTHER SLOPES AND/OR SHORING MAY BE APPLICABLE DEPENDING ON SOIL CONDITIONS. CONTRACTOR TO VERIFY DURING CONSTRUCTION.
4. CRUSHED ROCK MAY BE USED FOR RCB BEDDING ONLY IF MATERIAL USE HAS BEEN SPECIFICALLY APPROVED BY THE GOVERNING AGENCY.
5. TRENCH WIDTH MAY BE REDUCED WHEN USING CLSM AS APPROVED BY THE ENGINEER.
6. ALL LONGITUDIAL SAWCUTS SHALL BE AT THE EDGE OF THE TRAVEL LANE. FOR ACCESS ROAD THE TRAVEL LANE SHALL INCLUDE THE PAVED SHOULDER.

RCB TRENCH DETAIL (TYP.) (2 C10)
NOT TO SCALE



NOTES:
1. NO STONES OR LUMPS GREATER THAN 3" PERMITTED IN TRENCH 2' OR LESS IN WIDTH.
2. TRENCH WIDTH, BEDDING, SUBGRADE AND RCP ZONE REQUIREMENTS FOR UTILITY INSTALLATIONS SHALL CONFORM TO OSHA REGULATIONS. SLOPES SHOWN ARE BASED ON TYPE "B" SOILS. OTHER SLOPES AND/OR SHORING MAY BE APPLICABLE DEPENDING ON SOIL CONDITIONS. CONTRACTOR TO VERIFY DURING CONSTRUCTION.
3. CRUSHED ROCK MAY BE USED FOR PIPE BEDDING ONLY IF MATERIAL USE HAS BEEN SPECIFICALLY APPROVED BY THE GOVERNING AGENCY. SEE STANDARD DRAWING NO. 505 FOR PIPE BEDDING METHODS.
4. UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR POTABLE WATER SYSTEMS REQUIRES PIPE BEDDING AND BACKFILL WITHIN THE PIPE ZONE TO BE OF THE SAME MATERIAL.
5. TRENCH WIDTH MAY BE REDUCED WHEN USING CLSM AS APPROVED BY THE ENGINEER.
6. TRANSVERSE PATCHES SHALL BE WIDTH (4 FEET MINIMUM) SUFFICIENT TO ACCOMMODATE MECHANICAL PLACEMENT, ROLLING AND COMPACTION PER UNIFORM STANDARD SPECIFICATION SECTION 401.03.11.
7. FOR CONDUIT TRENCHES 6 INCHES WIDE OR LESS WITHIN 2 FEET OF THE CURB, PATCHES SHALL EXTEND A MINIMUM OF 4 FEET FROM LIP OF GUTTER AND PAVEMENT SHALL BE REMOVED TO CURB AND GUTTER; WIDTH SHALL BE SUFFICIENT TO ACCOMMODATE MECHANICAL PLACEMENT USING AGENCY APPROVED SPREADER BOX OR PAVING MACHINE, ROLLING AND COMPACTION PER UNIFORM STANDARD SPECIFICATION SECTION 401.03.11. SAWCUT SHALL NOT BE PLACED IN WHEEL PATH AREA.

RCP TRENCH DETAIL (TYP.) (1 C10)
NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN OUTFALL
DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM E. HUNTER III Exp. 06/30/2009 CIVIL No. 8833 4/10/08

PROJECT No: 504.430 DRAWN BY:
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SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. C10
SHT. OF

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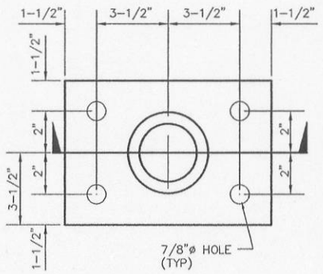
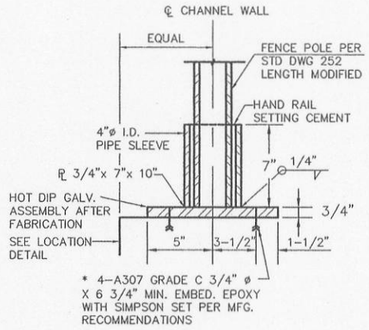
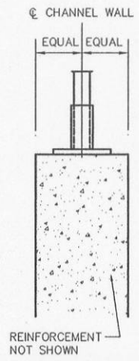


* NOTE:
FOR 8" WALLS – ROTATE PLATE AND USE (4) BOLTS. POLE MOUNTS SHALL NOT BE LOCATED WITHIN 1-FOOT OF CONTRACTION OR EXPANSION JOINTS



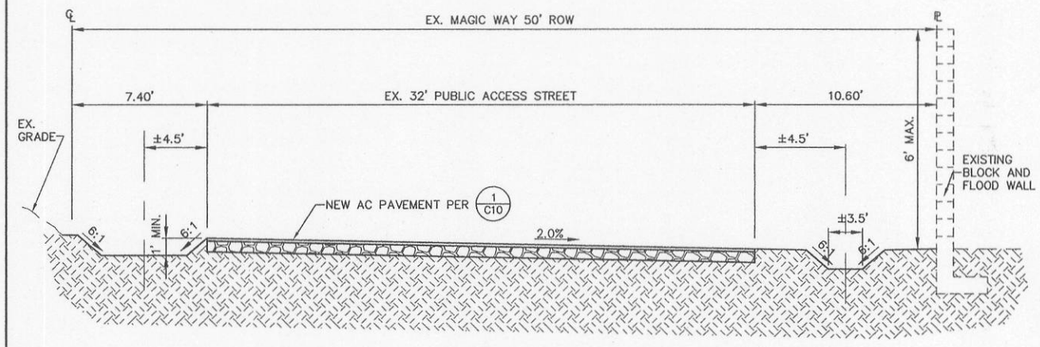


LOCATION DETAIL

CHAIN-LINK FENCE POST MOUNT

NO SCALE

4 / C11

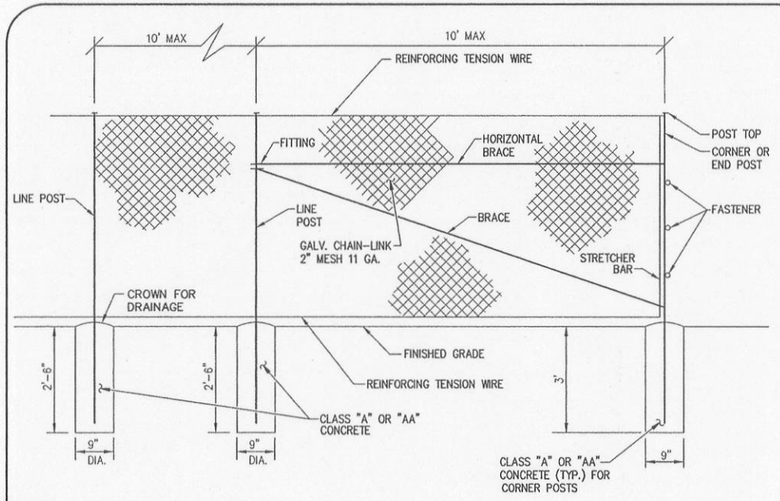


ROAD CROSS SECTION

NOT TO SCALE

STA 66+17.78 TO STA 67+50.97 (EAST) AND STA 66+36.98 TO STA 67+39.05 (WEST)

3 / C11



NOTES:

1. FENCING SHALL BE CHAIN-LINK AND SHALL CONSIST OF GALVANIZED CHAIN-LINK FABRIC ON STEEL POSTS.
   (A) ALL POST TOPS SHALL BE FITTED WITH SUITABLE FINIALS.
   (B) BRACES SHALL BE SPACED APPROXIMATELY 12" BELOW TOP OF TERMINAL POSTS AND SHALL EXTEND FROM END, GATE, OR CORNER POSTS TO FIRST ADJACENT LINE POST.
   (C) ALL FITTINGS SHALL BE HOT DIPPED GALVANIZED MALLEABLE, CAST IRON, OR PRESSED STEEL
   (D) TOP AND BOTTOM SELVAGES OF THE FENCE SHALL HAVE A TWISTED AND BARBED FINISH.
   (E) 2 GROUNDING RODS MIN. PER POWER EASEMENT. 100' O.C. MAX SPACING.

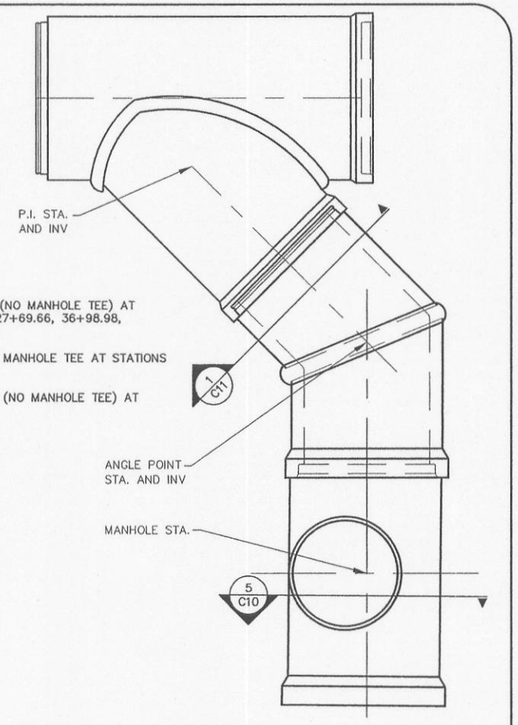
TABLE I
FOR 6' HIGH CHAIN-LINK FENCE

LOCATION	MIN. SIZE	MIN. WEIGHT
END, CORNER AND PULL	2.351 O.D.	3.10
LINE	2.00 O.D.	2.72
BRACES	1.63 O.D.	2.27
TOP RAIL	1.63 O.D.	2.27

CHAIN-LINK FENCE DETAIL

NOT TO SCALE

2 / C11



NOTES:

36" PRECAST STUB AND ELBOW (NO MANHOLE TEE) AT STATIONS 11+40.53, 12+63.00, 27+69.66, 36+98.98, 66+46.71, AND 69+96.00

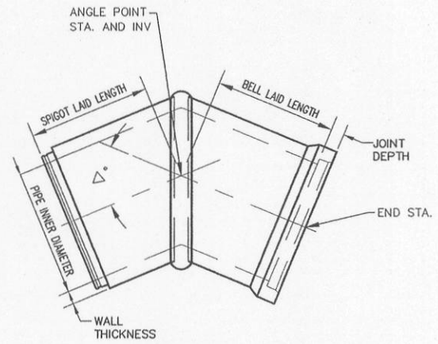
48" PRECAST STUB, ELBOW AND MANHOLE TEE AT STATIONS 37+67.22 AND 50+76.56

48" PRECAST STUB, AND ELBOW (NO MANHOLE TEE) AT STATION 66+76.24

DETAIL

NOT TO SCALE

A / C11



TWO PIECE ELBOW

NOTES:

1. PRODUCED TO MEET ASTM SPECIFICATIONS.
2. CONTACT A CONCRETE PIPE DIVISION REPRESENTATIVE FOR DETAILS NOT LISTED ON THIS SHEET.

ELBOW FABRICATION DETAILS

NOT TO SCALE

1 / C11

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN OUTFALL

DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA — WILLIAM E. HUNTER III — Exp. 06/30/2009 — CIVIL — No. 8833 — 3/3/08

PROJECT No: 504.430 DRAWN BY:
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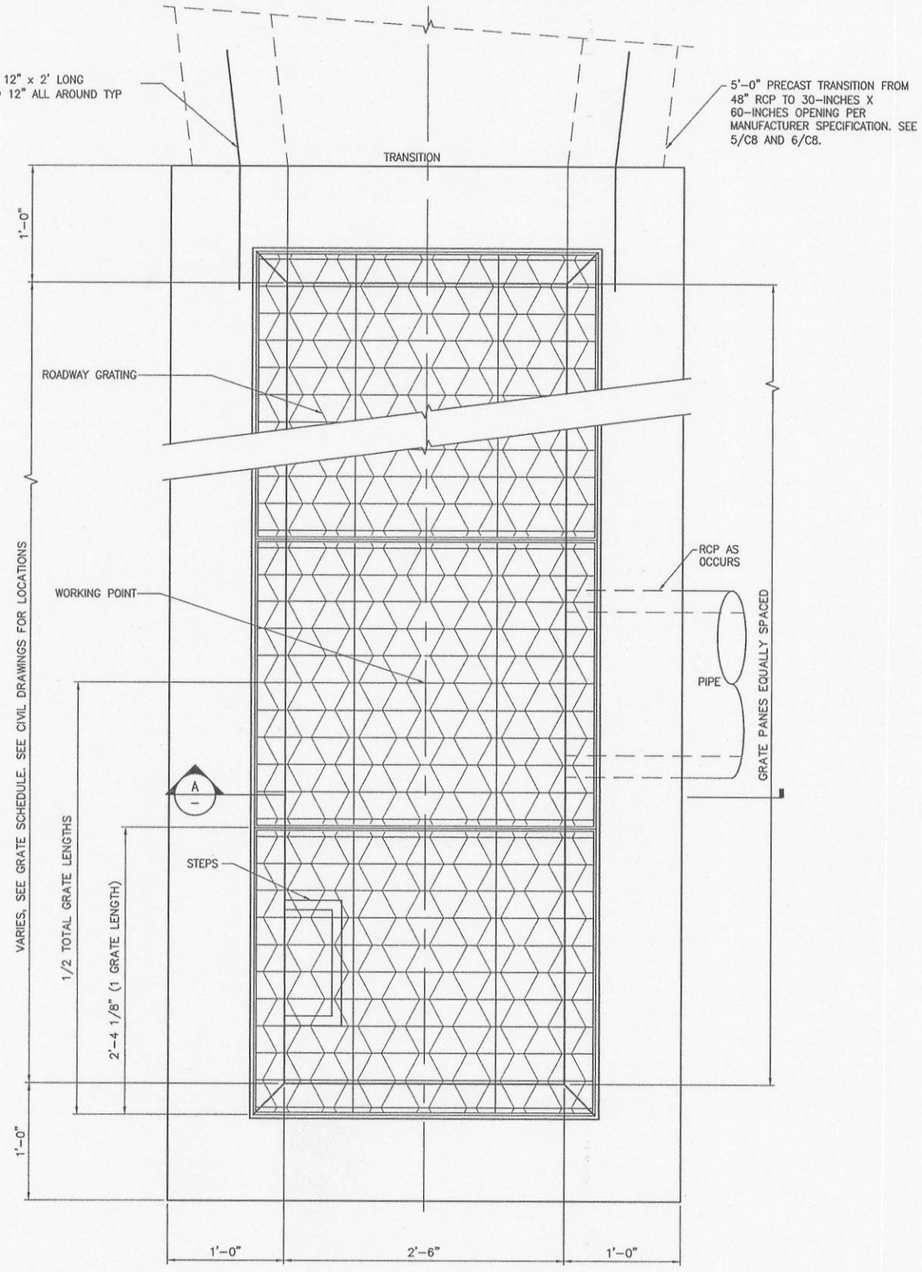
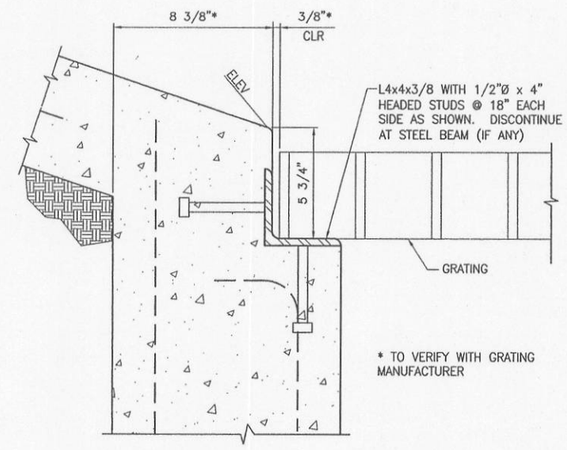
SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. C11
SHT. OF

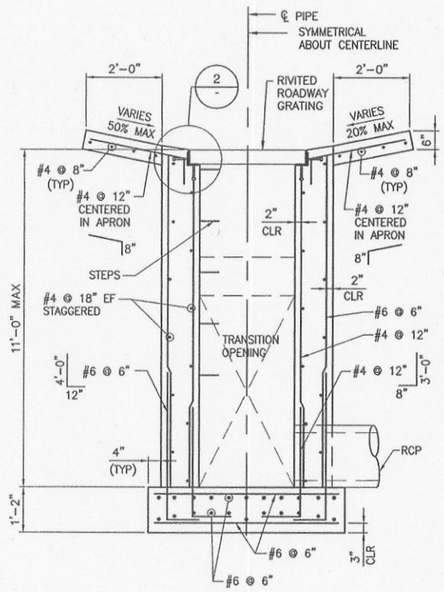
07380



DROP INLET PLAN
1 1/2" = 1'-0"
1 / S1



DETAIL
3" = 1'-0"
2 / S1



DROP INLET SECTION
1/2" = 1'-0"
A / S1

GENERAL STRUCTURAL NOTES

1. CONCRETE: ALL CONCRETE SHALL BE USING TYPE V CEMENT PER ASTM C-150. MODIFIED CLASS D (MAJOR) CONCRETE WITH 3/4" AGGREGATES. EXCEPT FOR CONCRETE USED IN CHANNEL OR BOX CULVERT INVERT, THE AGGREGATE SHALL BE 1 ½ INCHES.

   MINIMUM ULTIMATE COMPRESSIVE STRENGTH f'c=4500 psi AT 28 DAYS AND A MAXIMUM WATER/CEMENT RATIO BY WEIGHT OF 0.45.

   ALL CONCRETE SHALL HAVE A 4"± SLUMP WITHOUT PLASTICIZERS AND 6"± SLUMP WHEN PLASTICIZERS ARE USED.

   ALL EXPOSED CORNERS SHALL BE BEVELED 3/4" UNLESS OTHERWISE NOTED.

   AGGREGATE HARDNESS WILL BE CLOSELY MONITORED AND TESTED DURING CONSTRUCTION TO ENSURE THAT CLARK COUNTY STANDARD SPECIFICATIONS ARE MET.

   CURING PROCESS OF BOTTOM SLAB SHALL REQUIRE CURING COMPOUND METHOD PER THE STANDARD SPECIFICATIONS (REFER TO SECTION 501.03.09).

2. REINFORCING STEEL: ALL REINFORCING STEEL SHALL BE ASTM A615, GRADE 60. DIMENSIONS RELATING TO BAR SPACING ARE CENTER TO CENTER. BENDING DIMENSIONS ARE FROM OUT TO OUT OF BARS. MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 2" UNLESS OTHERWISE NOTED. HOOKS MAY BE ROTATED OR TILTED, AS NECESSARY, TO PROVIDE PROPER CLEARANCES.

3. STRUCTURAL STEEL: ALL WIDE FLANGE STEEL SHALL CONFORM TO ASTM A992 (FY = 50 KSI). ALL PIPE STEEL SHALL CONFORM TO ASTM A53, TYPE E OR S, GRADE B (FY = 35 KSI). ALL HOLLOW STRUCTURAL SECTIONS (HSS) SHALL CONFORM TO ASTM A500 GRADE B (FY = 46 KSI). ALL OTHER STANDARD STRUCTURAL STEEL SHAPES, ROLLED SECTIONS, BARS, AND PLATES SHALL CONFORM TO ASTM A36 (FY = 36 KSI).

4. WELDING: WELDING SHALL BE BY WELDERS HOLDING CURRENT VALID CERTIFICATES AND HAVING EXPERIENCE IN THE TYPE OF WELDS SHOWN ON THE DRAWINGS AND NOTES. ALL WELDS SHALL HAVE A MINIMUM TENSILE STRENGTH OF 70 KSI UNLESS NOTED OTHERWISE. ALL WELDING SHALL BE PER THE LATEST AMERICAN WELDING SOCIETY STANDARDS. ALL WELDS ON DRAWINGS ARE SHOWN AS SHOP WELDS. CONTRACTOR MAY SHOP WELD OR FIELD WELD AT HIS DISCRETION.

5. BEDDING MATERIAL: BEDDING MATERIAL SHALL BE 6" OF CLARK COUNTY TYPE II AGGREGATE. THE BEDDING LAYER SHALL BE COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY AS ESTABLISHED BY ASTM TEST METHOD D-1557.

6. EXISTING UTILITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL EXISTING UTILITIES WITHIN THE WORK AREA, AND PROVIDING PROTECTION FOR THE VARIOUS UTILITIES AFFECTED, BEFORE PROCEEDING WITH THE WORK.

7. GALVANIZING: ALL EXPOSED METAL PARTS SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION AND ALL GALVANIZING DAMAGED BY FABRICATION OR INSTALLATION SHALL RECEIVE TWO COATS OF ALUMINUM PAINT (GALVONOX OR EQUAL).

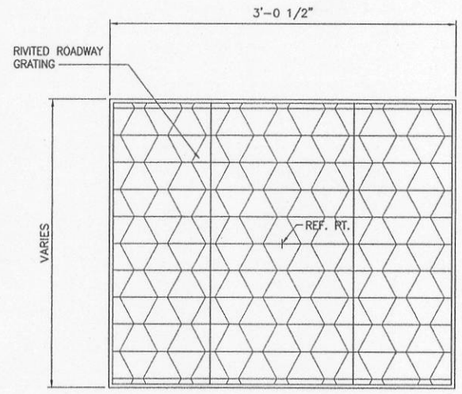
8. EPOXY: HILTI HIT-RE 500-SD (ICC ESR-2322). INSTALL PER ICC REPORT AND MANUFACTURER'S INSTRUCTIONS.

9. GRATING: STEEL GRATING SHALL BE IKG INDUSTRIES RIVETED ROADWAY STEEL GRATING TYPE RW-L-20C, OR EQUIVALENT.

GRATE SCHEDULE

WP/DI#	STATION	OFFSET	ELEV	INVERT	LENGTH	TRANS	PIPE
1	STA 28+11.12	24.25' RT	45.94	39.49	12.0'	NA	24"
2	STA 37+74.92	75.27' RT	66.43	56.55	42.0'	YES	NA
3	STA 50+84.32	64.80' RT	01.74	91.09	33.0'	YES	NA
4	STA 66+78.96	46.25' RT	33.09	26.10	28.0'	NA	36"*
5	STA 66+79.05	3.20' RT	33.63	25.39	40.0'	NA	48"

*SKEW AT 45° ANGLE



TYPICAL GRATE PLAN
1 1/2" = 1'-0"
3 / S1

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN OUTFALL

CUSTOM DROP INLET

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER - STATE OF NEVADA - RICARDO VILLALOBOS Exp. 06/30/2008 CIVIL / STRUCTURAL NO. 14661 4/03/08

PROJECT No: 504.430 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

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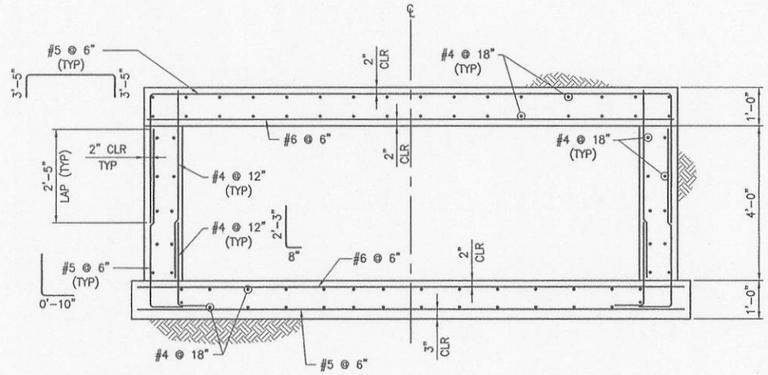
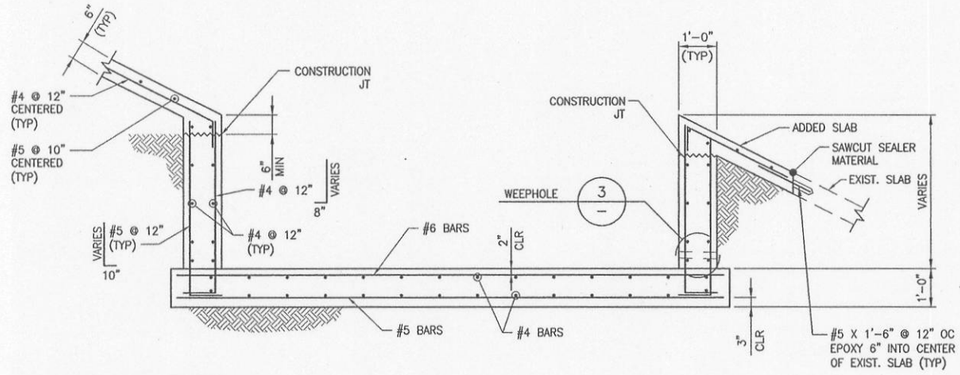
SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. S1
SHT. OF

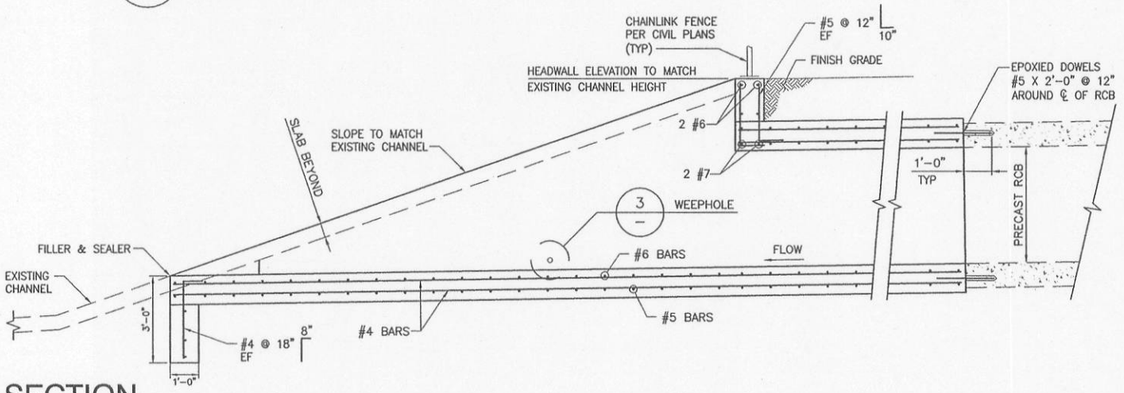
07380



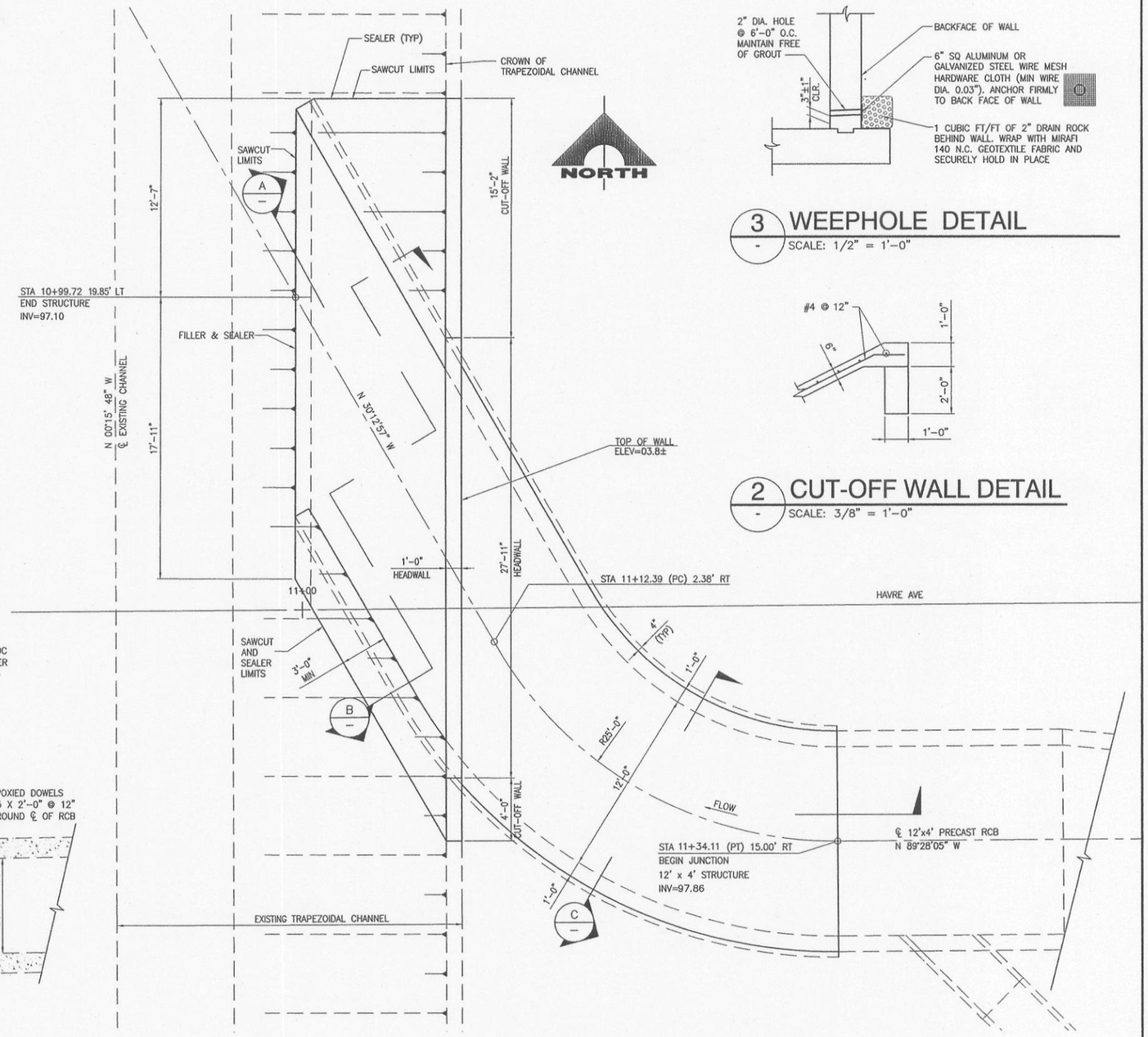
C SECTION
SCALE: 1/2" = 1'-0"



B SECTION
SCALE: 1/2" = 1'-0"



A SECTION
SCALE: 3/8" = 1'-0"



1 PLAN
SCALE: 1/4" = 1'-0"

3 WEEPHOLE DETAIL
SCALE: 1/2" = 1'-0"

2 CUT-OFF WALL DETAIL
SCALE: 3/8" = 1'-0"

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN OUTFALL
CIP JUNCTION STRUCTURE

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

EDUARDO VILLALOBOS Exp. 06/30/2008 CIVIL / STRUCTURAL No. 14661 — 4/03/08

PROJECT No: 504.430 DRAWN BY: EAV
DESIGNED BY: RDB CHECKED BY: FEV
APPROVED BY FEV

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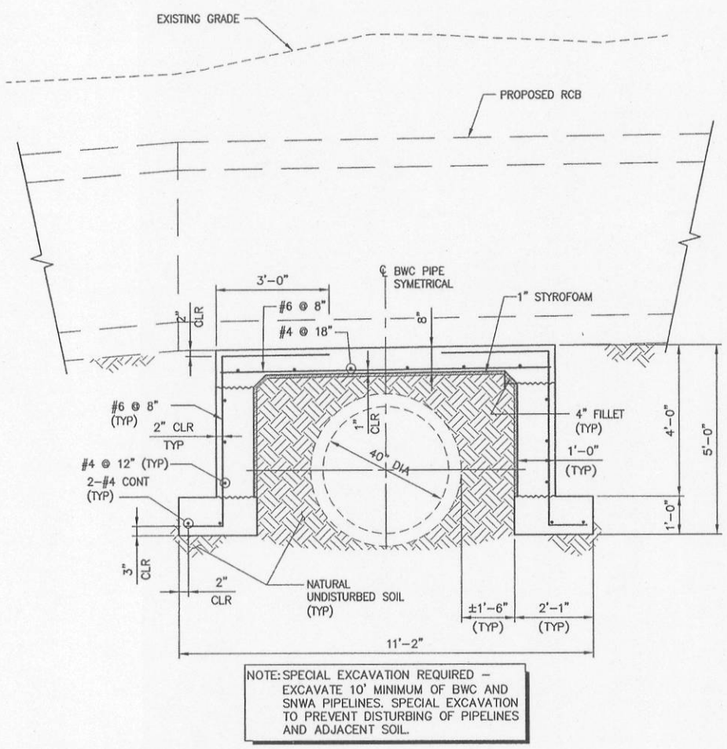
SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. S2
SHT. OF

07380

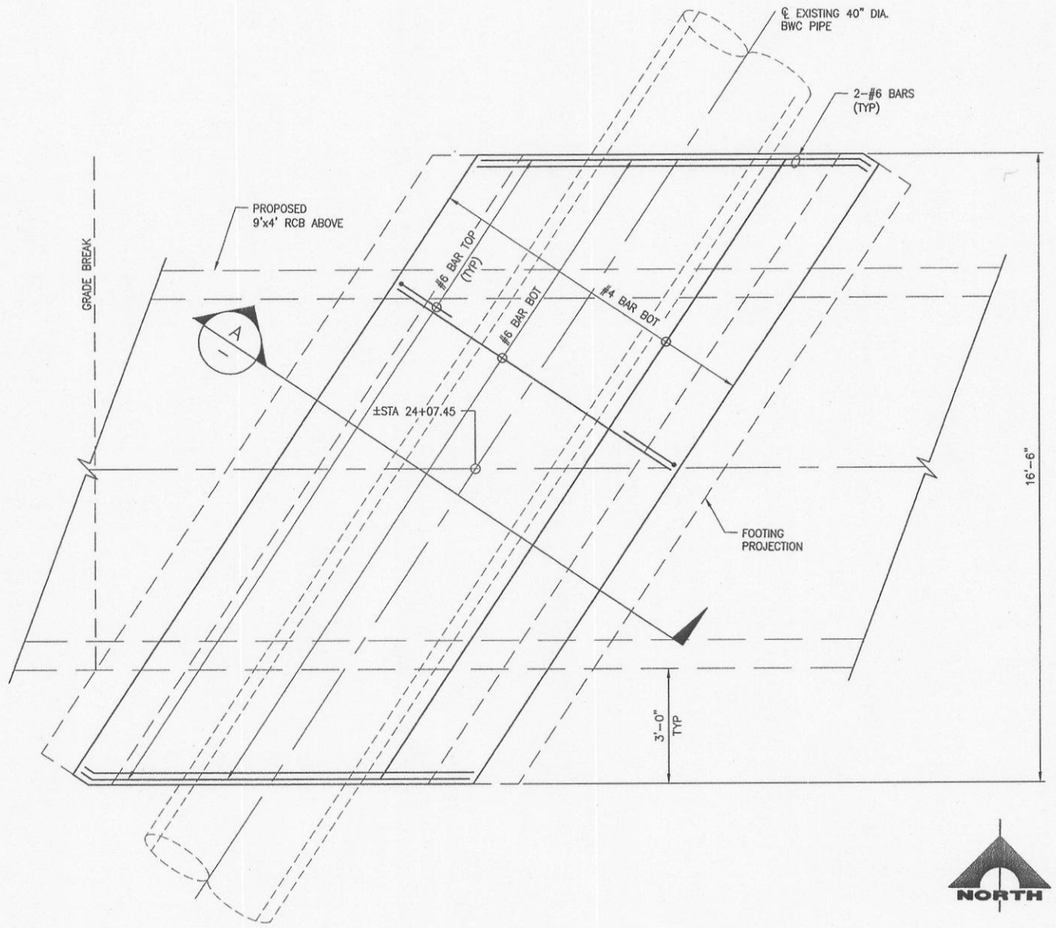
GENERAL NOTES:

1. DESIGN SPECIFICATIONS: AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 2002". REINFORCED CONCRETE BASED ON LOAD FACTOR DESIGN.
2. CONCRETE: ALL CONCRETE SHALL BE CLASS D WITH A MINIMUM ULTIMATE COMPRESSIVE STRENGTH f'c=4500psi AT 28 DAYS. ALL CONCRETE SHALL BE MADE USING TYPE V CEMENT. ALL EXPOSED CORNERS SHALL BE BEVELED 3/4" UNLESS OTHERWISE NOTED.
3. REINFORCING STEEL: ALL REINFORCING STEEL SHALL BE ASTM A615, GRADE 60. DIMENSIONS ARE FROM OUT TO OUT OF BARS. MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 2" UNLESS OTHERWISE NOTED. HOOKS MAY BE ROTATED OR TILTED AS NECESSARY TO PROVIDE PROPER CLEARANCES.
4. MAXIMUM ALLOWABLE CONSTRUCTION WHEEL LOAD = 4.0 TONS.
5. GEOTECHNICAL REPORT: WESTERN TECHNOLOGIES INC.
   DATE: JANUARY 3, 2006
   ALLOWABLE SOIL PRESSURE = 3000 psf
   PLUS 1/3 FOR WIND OR SEISMIC LOADS
   FRICTION COEFFICIENT = 0.35
   PASSIVE PRESSURE = 300 psf/ft



NOTE: SPECIAL EXCAVATION REQUIRED – EXCAVATE 10' MINIMUM OF BWC AND SNWA PIPELINES. SPECIAL EXCAVATION TO PREVENT DISTURBING OF PIPELINES AND ADJACENT SOIL.

A / - SECTION
SCALE: 1/2" = 1'-0"



1 / - PLAN
SCALE: 1/2" = 1'-0"

BWC CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL BWC APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. RECTIFIERS AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER BWC STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY BASIC WATER COMPANY AT (702) 567-0464 OR (702) 429-8971 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
2. BWC APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO BWC FOR APPROVAL.

Mark Rejis 3-26-08
BASIC WATER COMPANY DATE

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN OUTFALL
CONCRETE CAP AT EMDEN

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

PROFESSIONAL ENGINEER STATE OF NEVADA — EDUARDO VILLALOBOS — Exp. 09/30/2008 — CIVIL / STRUCTURAL — No. 14661 — 3/21/08

PROJECT No: 504.430 DRAWN BY: RDB
DESIGNED BY: RDB CHECKED BY:
APPROVED BY EAV

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD - LAS VEGAS, NV 89146
T: 702.804.2000 - F: 702.804.2299 - GCWALLACE.COM

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. S3
SHT. OF

07380

NORTHEAST C-1 DETENTION BASIN ADDITIONAL DATA IN SUPPORT OF A LETTER OF MAP REVISION

504-424

June 2010

Prepared by:

G. C. Wallace, Inc.
1555 S. Rainbow Blvd.
Las Vegas, NV 89146
Phone: (702) 804-2000
Fax: (702) 804-2299

G. C. WALLACE COMPANIES
ENGINEERS · PLANNERS · SURVEYORS

G. C. WALLACE, INC.

Writer's Contact Information:

(702) 804-2011

504-424

June 14, 2010

Ms. Sara DeGroot
LOMC Clearinghouse
6730 Santa Barbara Court
Elkridge, MD 21075

Re: Additional Data Required to Support a Letter of Map Revision (LOMR), Case No. 10-09-2495P

Dear Ms. DeGroot:

Per your letter dated May 26, 2010, additional data is required to complete the review of LOMR Case No. 10-09-2495P. At your request, the following items are provided to facilitate your review:

1. Topographic work maps, certified by a registered professional engineer, containing relevant items listed on Page 2, Section C, of the "Riverine Hydrology & Hydraulics Form".

2. Post-project conditions HEC-1 models, digital and paper copies.

3. Post-project conditions HEC-RAS and WSPG models, digital and paper copies.

The topographic work maps for the Northeast C-1 Detention Basin and Outfall have been updated to include the project benchmarks, elevation reference markers where available, and the engineer's seal and signature. The work maps for the Drake Channel were generated from design drawings prepared by other engineers. Research was performed and documentation indicating the vertical datum is provided with the design drawings. The work maps generated from Carter Burgess plans are on the NAVD 88 datum; those generated from the Summit plans are on the NGVD 29 datum. GC Wallace engineer seals on the Drake Channel work maps validate the hydraulic results presented with the Northeast C-1 Detention Basin project only. The technical information shown on the work maps have not changed from that submitted with the CLOMR (Case No. 08-09-0093R).

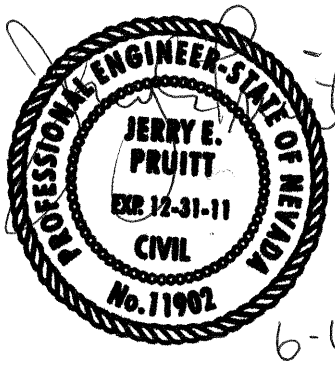
As stated in the original LOMR submittal, the calculations supporting the approved CLOMR have not changed; the hydrologic and hydraulic models provided are taken from the CLOMR and response to comments on the CLOMR. A copy of the MT-2 Forms from the CLOMR is also provided for your convenience.

I certify that the drainage improvements shown on the submitted work maps conform to the design drawings titled "Northeast C-1 Detention Basin" and "Northeast C-1 Detention Basin Outfall", included with the original LOMR submittal. The proposed floodplain mapping shown on the work maps are based on the results from the hydraulic models. A site investigation confirmed that the flood-control structures were built in substantial conformance with the previously mentioned design drawings.

If you have any questions or need additional information, please contact me at (702) 804-2011.

Cordially,

G. C. WALLACE, INC.



6-14-10

Jerry E. Pruitt, PE
Senior Vice President
Flood Control Division

JP/dy/vlr

Enclosures

c: Lance Olsen, COH
Albert Jankowiak, COH
Layne Weber, CC
Kevin Eubanks, CCRFCD
Calvin L. Black, GCW

Job # 504-424

NATIONAL FLOOD INSURANCE PROGRAM

FEMA PRODUCTION AND TECHNICAL SERVICES CONTRACTOR

May 26, 2010

Mr. Jerry E. Pruitt, P.E.
Senior Vice President
Flood Control Division
G.C. Wallace, Inc.
1555 South Rainbow Boulevard
Las Vegas, NV 89146

IN REPLY REFER TO:
Case No.: 10-09-2495P
Communities: City of Henderson and
Clark County, NV
Community Nos.: 320005 and 320003

316-AD

Dear Mr. Pruitt:

This responds to your request dated May 13, 2010, that the Department of Homeland Security's Federal Emergency Management Agency (FEMA) issue a revision to the Flood Insurance Rate Map (FIRM) for Clark County, Nevada and Incorporated Areas. Pertinent information about the request is listed below.

Identifier:	Northeast C1 Detention Basin
Flooding Source:	Unnamed Tributary 1 to C-1 Channel and Unnamed Tributary 2 to C-1 Channel
FIRM Panel(s) Affected:	32003C2615E and 2620E

The data required to complete our review, which must be submitted within 90 days of the date of this letter, are listed on the enclosed summary.

If we do not receive the required data within 90 days, we will suspend our processing of your request. Any data submitted after 90 days will be treated as an original submittal and will be subject to all submittal/payment procedures, including the flat review and processing fee for requests of this type established by the current fee schedule. A copy of the notice summarizing the current fee schedule, which was published in the *Federal Register,* is enclosed for your information.

FEMA receives a very large volume of requests and cannot maintain inactive requests for an indefinite period of time. Therefore, we are unable to grant extensions for the submission of required data for revision requests. If a requester is informed by letter that additional data are required to complete our review of a request, the data **must** be submitted within 90 days of the date of the letter. Any fees already paid will be forfeited for any request for which the requested data are not received within 90 days.

If you have general questions about your request, FEMA policy, or the National Flood Insurance Program, please call the FEMA Map Information eXchange (FMIX), toll free, at 1-877-FEMA MAP (1-877-336-2627). If you have specific questions concerning your request, please contact your case reviewer, Ms. Sara DeGroot, by e-mail at sdegroot@mbakercorp.com or by telephone at (571) 357-6029, or the Revisions Coordinator for your request, Ms. Shilpa Mulik, CFM, at smulik@mbakercorp.com or at (703) 317-6255.

Sincerely,

Syed Qayum

Syed Qayum, CFM
LOMR Technical Manager
BakerAECOM

Enclosures

cc: Mr. Albert J. Jankowiak, P.E., CFM
Project Engineer
Public Works – Engineering Division
City of Henderson

Mr. W. Layne Weber, P.E., CFM
Principal Engineer
Civil Engineering Division
Department of Development Services
Clark County

Mr. Kevin Eubanks, P.E., CFM
Assistant General Manager
Clark County Regional Flood Control District

NATIONAL FLOOD INSURANCE PROGRAM

FEMA PRODUCTION AND TECHNICAL SERVICES CONTRACTOR

Summary of Additional Data Required to Support a
Letter of Map Revision (LOMR)

Case No.: 10-09-2495P

Requester: Mr. Jerry E. Pruitt, P.E.

Communities: City of Henderson and
Clark County, NV

Community Nos.: 320005 and 320003

The issues listed below must be addressed before we can continue the review of your request.

1. Please provide a topographic work map, certified by a registered professional engineer, for the entire requested area of revision that reflects all applicable items listed on page 2, Section C, of Application/Certification Form 2, entitled "Riverine Hydrology & Hydraulics Form." Please show this information on a map of suitable scale and topographic definition to provide reasonable accuracy. All items should be labeled for easy cross-referencing to the submitted existing conditions hydraulic models. Please ensure that the topographic maps are referenced to the North American Vertical Datum of 1988 (NAVD).

2. The submitted application did not include the post-project conditions HEC-1 hydrologic model. Please submit paper and digital copies of the post-project conditions HEC-1 hydrologic model to support the discharges used in the hydraulic analyses.

3. The submitted application did not include the post-project conditions HEC-RAS and WSPGW hydraulic models. Please submit paper and digital copies of the post-project conditions HEC-RAS and WSPGW hydraulic models for the area of revision.

Please send the required data and/or fee directly to us at the address shown at the bottom of this page. For identification purposes, please include the case number referenced above on all correspondence.

UPDATED TOPOGRAPHIC WORK MAPS AND VERTICAL DATUM REFERENCES

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

DRAFT

C-1 CHANNEL SYSTEM FLOOD INSURANCE RESTUDY

DECEMBER, 2002

RECD
DEC 10 AM 10:52

Prepared by Carter & Burgess, Inc.

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TABLE 2 - Storm Flow Summary (SDN3-5)

of the SFHA Zone A in C1G2B1. The lower half of Reach 4 (cross sections 1-12) shows flows depths greater than 1-foot, with velocities ranging from 4.3 to 7.3 fps, and a flow rate of 490 to 799 cfs (10% bulked). The SFHA Zone A was redefined based on the 100-year water surface elevations, but not entirely removed.

Section 3.3 Vertical Datum

All base flood elevations shown in the FIS Restudy have been referenced to NAVD88. Because the community and some of the as-built information utilized was referenced to NGVD29, a vertical adjustment factor of 1.86 feet and 2.31 feet, was applied to NGVD29 elevations at various locations. Survey notes and electronic files are located in Section 5, Volume IV.

Section 3.4 Sedimentation Analysis

Prior to the placement of flood control facilities the C-1 system comprised a typical alluvial watershed found in the arid southwest. Storm runoff flowed north and west from the McCullough Range and River Mountains to form alluvial bajadas that coalesced in the vicinity of the present C-1 Channel. Converging contours forming a continuous low point along the present day C-1 Channel that can still be seen under the existing, developed watershed.

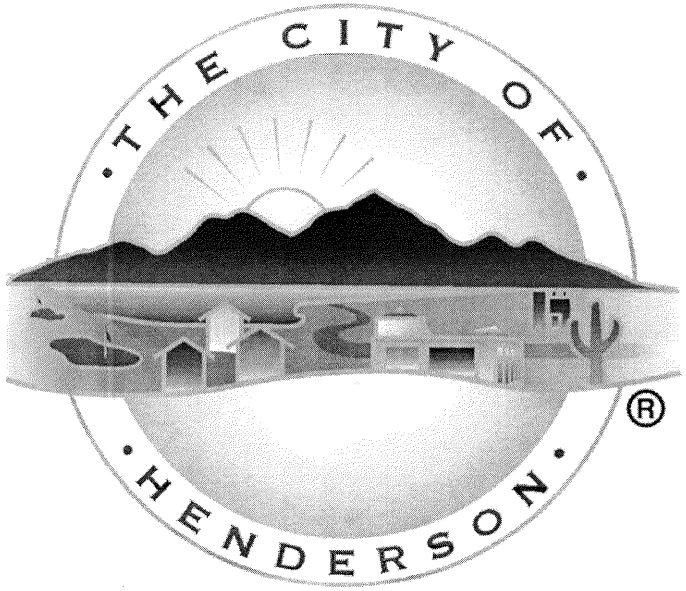
The lithology of the River Mountains and McCullough Range contributes to sediment laden runoff that forms the alluvial depositional surface. The River Mountains generally consist of a reddish-orange volcanic rock (dacite) supporting little or no vegetation, whereas the McCullough Range consists (generally) of a black volcanic rock (basalt) also supporting little or no vegetation. Both mountain ranges provide sediment laden silt, sands, and gravels transported downstream as both wash load and bed load. A normal fault of tectonic origin—typical of the basin and range physiographic province—strikes north-south along the base of the River Mountains forming a mountain block escarpment. This escarpment—combined with a sediment laden watershed---forms the basis of the River Mountain alluvial fan and bajada.

Superimposed on the River Mountain—McCullough Range alluvial system are flood control facilities that greatly diminish sediment transport, truncating the alluvial depositional environment. Facilities that act as barriers to sediment transport include the:

- Black Mountain (Southwest C-1) Detention Basin
- Mission Hills Western Interceptor
- Mission Hills Detention Basin
- Equestrian Detention Basin
- Equestrian Levee
- East C-1 Detention Basin
- East C-1 Levee

Sediment transport analysis has been performed for the Mission Hills and Equestrian System, and the Black Mountain (Southwest C-1) and East C-1 Detention Basins. These analyses are made a part of this study as supporting documentation to this

CITY OF HENDERSON



BENCHMARKS 2004

SURVEY / RIGHT-OF-WAY DIVISION

702-267-1300

Benchmark Number	Elevation Meters	Section	Township	Range	Other Jurisdictional Identifier
1	504.851	2	22	62	USC&GS W 51
2	505.952	1	22	62	
3	507.182	1	22	62	
4	512.573	1	22	62	
5	519.021	12	22	62	
6	528.384	12	22	62	
7	538.356	7	22	63	USC&GS K 364
8	Lost				
9	Lost				
10	Lost				
11	Lost				
12	Lost				
13	602.876	17	22	63	
14	Lost				
15	620.001	20	22	63	USC&GS M 364
16	Lost				
17	Lost				
18	639.258	21	22	63	
19	Lost				
20	646.205	28	22	63	USC&GS H 166
21	650.304	28	22	63	
22	653.260	28	22	63	
23	657.043	28	22	63	
24	660.623	28	22	63	
25	663.108	27	22	63	
26	667.083	27	22	63	
27	Lost				
28	676.068	34	22	63	
29	682.410	34	22	63	
30	Lost				

Benchmark Number	Elevation Meters	Section	Township	Range	Other Jurisdictional Identifier
31	570.777	18	22	63	
32	Lost				
33	Lost				
34	548.151	8	22	63	USC&GS 11 HLS
35	542.757	8	22	63	
36	536.333	5	22	63	
37	533.279	5	22	63	USC&GS 10 HLS
38	Lost				
39	517.394	33	21	63	USC&GS 9 HLS
40	Lost				
41	Lost				
42	574.849	18	22	63	
43	Lost				
44	Lost				
45	Lost				
46	Lost				
47	Lost				
48	Lost				
49	Lost				
50	Lost				
51	Lost				
52	560.096	8	22	63	
53	Lost				
54	Lost				
55	Lost				
56	Lost				

CITY OF HENDERSON VERTICAL CONTROL (NAVD 88)

CITY OF HENDERSON SURVEY DIVISION
PO BOX 95050
HENDERSON, NEVADA 89009-5050
(702) 267-1300

CONVERSION FACTOR:
METERS X $\left(\frac{3937}{1200}\right)$ = U.S. SURVEY FEET

REVISED 2004

Benchmarks

Benchmark Number	Elevation Meters	Section	Township	Range	Other Jurisdictional Identifier
169	569.808	9	22	62	
170	605.393	8	22	62	
171	600.294	8	22	62	
172	592.585	8	22	62	
173	594.639	8	22	62	
174	588.909	8	22	62	
175	580.890	5	22	62	
176	574.593	5	22	62	
177	570.049	5	22	62	
178	591.543	8	22	62	
179	593.243	17	22	62	
180	Lost				
181	Lost				
182	Lost				
183	Lost				
184	Lost				
185	Lost				
186	Lost				
187	Lost				
188	Lost				
189	Lost				
190	Lost				
191	Lost				
192	Lost				
193	Lost				
194	Lost				
195	Lost				
196	Lost				
197	Lost				
198	627.796	18	22	62	
199	637.508	18	22	62	
200	529.671	4	22	62	
201	526.150	4	22	62	
202	521.280	33	21	62	
203	521.549	33	21	62	
204	Lost				
205	521.618	33	21	62	
206	565.369	8	22	63	
207	557.656	8	22	63	
208	551.685	8	22	63	
209	628.895	20	22	63	
210	625.372	20	22	63	
211	Lost				
212	586.230	13	22	62	
213	Lost				
214	737.366	3	23	61	
215	638.035	20	22	63	
216	639.616	19	22	63	
217	646.249	19	22	63	
218	652.669	19	22	63	
219	659.729	19	22	63	
220	508.195	33	21	63	
221	Lost				
222	711.731	34	22	63	
223	700.844	34	22	63	
224	690.742	34	22	63	

CITY OF HENDERSON VERTICAL CONTROL (NAVD 88)

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HENDERSON, NEVADA 89009-5050
(702) 267-1300

CONVERSION FACTOR:
METERS X $\left(\frac{3937}{1200}\right)$ = U.S. SURVEY FEET

REVISED 2004

Benchmark Number	Elevation Meters	Section	Township	Range	Other Jurisdictional Identifier
225	687.317	34	22	63	
226	618.134	7	22	62	
227	507.327	33	21	63	
228	499.351	33	21	63	
229	Lost				
230	603.424	17	22	62	
231	605.314	17	22	62	
232	688.642	30	22	63	
233	689.473	30	22	63	
234	692.254	30	22	63	
235	652.982	29	22	63	
236	665.005	29	22	63	
237	679.426	29	22	63	
238	690.205	29	22	63	
239	607.011	18	22	63	
240	615.155	19	22	63	
241	626.366	19	22	63	
242	641.934	19	22	63	
243	655.587	19	22	63	
244	656.960	19	22	63	
245	656.950	19	22	63	
246	648.714	19	22	63	
247	640.510	19	22	63	
248	632.050	19	22	63	
249	590.410	17	22	62	
250	587.176	16	22	62	
251	584.522	16	22	62	
252	604.849	16	22	62	
253	564.481	8	22	63	
254	Lost				

Benchmark Number	Elevation Meters	Section	Township	Range	Other Jurisdictional Identifier
255	687.703	28	22	63	
256	683.846	28	22	63	
257	693.286	33	22	63	
258	698.426	33	22	63	
259	692.856	33	22	63	
260	697.264	33	22	63	
261	706.760	34	22	63	
262	700.058	34	22	63	
263	703.056	33	22	63	
264	698.543	33	22	63	
265	703.936	33	22	63	
266	713.268	33	22	63	
267	700.542	33	22	63	
268	538.862	3	22	62	
269	Lost				
270	550.015	9	22	62	
271	559.355	9	22	62	
272	567.624	9	22	62	
273	575.118	15	22	62	
274	567.136	15	22	62	
275	565.190	15	22	62	
276	560.191	15	22	62	
277	540.506	3	22	62	
278	537.287	3	22	62	
279	Lost				
280	535.571	11	22	62	

CITY OF HENDERSON VERTICAL CONTROL (NAVD 88)

CITY OF HENDERSON SURVEY DIVISION
PO BOX 95050
HENDERSON, NEVADA 89009-5050
(702) 267-1300

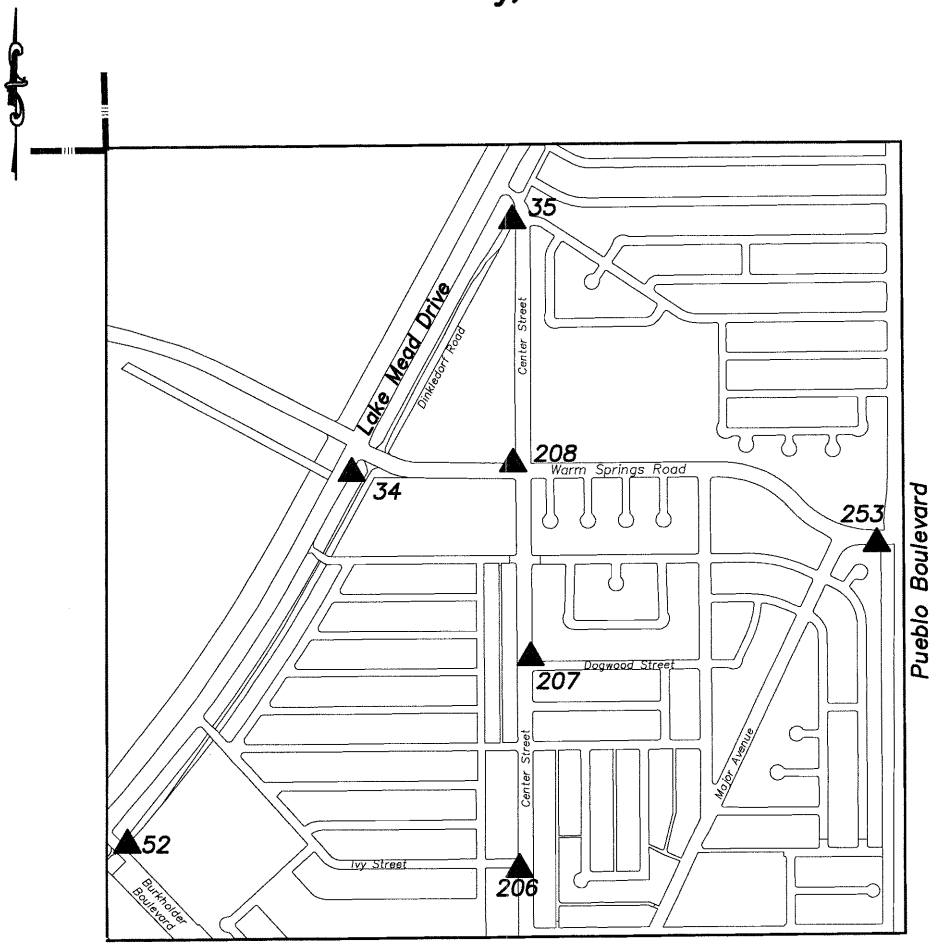
CONVERSION FACTOR:
METERS X $\left(\frac{3937}{1200}\right)$ = U.S. SURVEY FEET

REVISED 2004

Benchmarks

Section 8

Township 22 South, Range 63 East, M.D.M.
City of Henderson
Clark County, Nevada



City of Henderson Corporate Boundary

Benchmark Number	Elevation (Meters)		Description
34	548.151	FND	USC&GS Aluminum Cap in the top of a headwall on the easterly side of Lake Mead Drive, 150' +/- southwest of Warm Springs Road. (11 HLS)
35	542.757	FND	Bolt and Washer in the Top of Curb at the southeast corner of Center Street and Dinkledorf Road.
52	560.096	FND	1 1/2" Brass Cap in the Top of Curb at the northeast corner of Dinkledorf Road and Burkholder Boulevard.
206	565.369	FND	1 1/2" Brass Cap in the Top of Curb at the southwest corner of Center Street and Ivy Street.
207	557.656	FND	1 1/2" Brass Cap in the Top of Curb at the northeast corner of Center Street and Dogwood Street.
208	551.685	FND	1 1/2" Brass Cap in the Top of Curb at the northwest corner of Center Street and Warm Springs Road.
253	564.481	FND	2" Brass Cap in the Top of Curb at the southwest corner of Warm Springs Road and Pueblo Boulevard.

CITY OF HENDERSON VERTICAL CONTROL (NAVD 88)

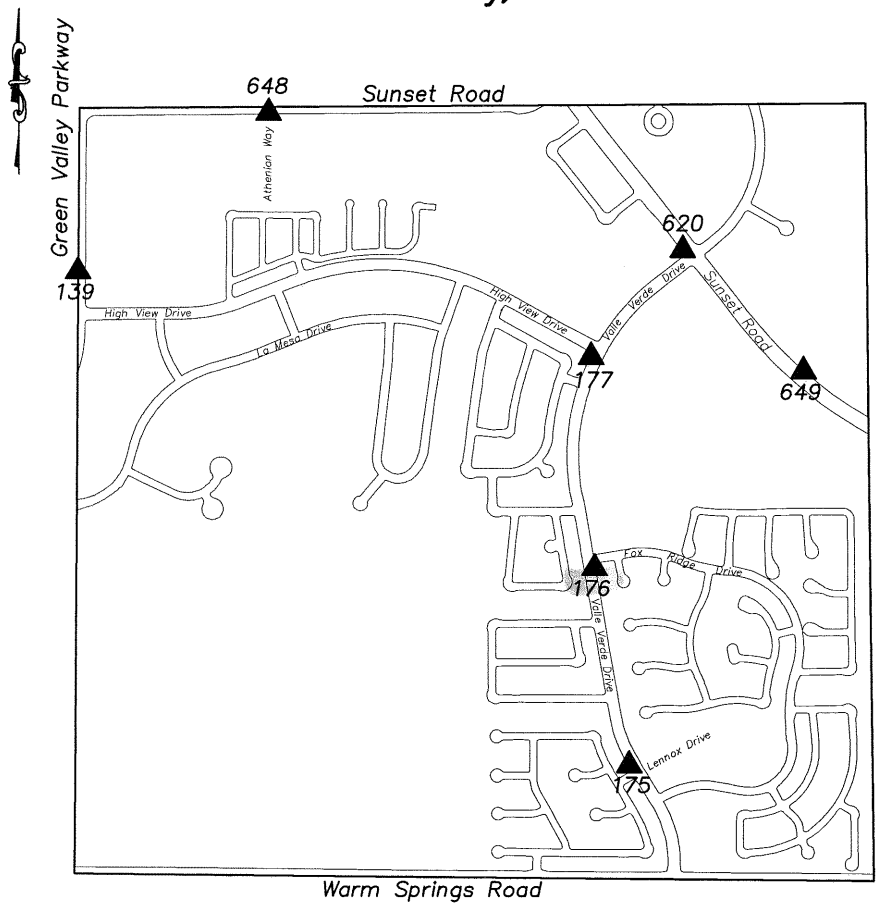
CITY OF HENDERSON SURVEY DIVISION
PO BOX 95050
HENDERSON, NEVADA 89009-5050
(702) 267-1300

CONVERSION FACTOR:
METERS X $\left(\frac{3937}{1200}\right)$ = U.S. SURVEY FEET

REVISED 2004 | SHEET 1 of 1 | SEC. 8 22 / 63

Section 5

Township 22 South, Range 62 East, M.D.M.
City of Henderson
Clark County, Nevada



Benchmark Number	Elevation (Meters)		Description
139	592.763	FND	2" Brass Cap in the Top and West side of the concrete base of a Steel Pole #P76092, in the center of Green Valley Pkwy., 300'+/- north of High View Dr.
175	580.890	FND	2" Brass Cap in the Top of Curb at the northwest corner of Valle Verde Drive and Lennox Drive.
176	574.593	FND	2" Brass Cap in the Top of Curb at the southeast corner of Valle Verde Drive and Fox Ridge Drive.
177	570.049	FND	2" Brass Cap in the Top of Curb at the southwest corner of Valle Verde Drive and High View Drive.
620	571.621	SET	2" Aluminum Cap in the Top of Curb at the northwest corner of Sunset Road and Valle Verde Drive.
648	589.532	FND	Round Aluminum Plate in the Top of Curb at the southwest corner of Sunset Road and Athenian Way. (7C22 5NNW6)
649	565.207	FND	Round Aluminum Plate in the Top of Curb on the north side of Sunset Road, 1,000' +/- south of Valle Verde Drive. (7C22 5E4)

CITY OF HENDERSON VERTICAL CONTROL (NAVD 88)

CITY OF HENDERSON SURVEY DIVISION
PO BOX 95050
HENDERSON, NEVADA 89009-5050
(702) 267-1300

CONVERSION FACTOR:
METERS X $\left(\frac{3937}{1200}\right)$ = U.S. SURVEY FEET

REVISED 2004 | SHEET 1 of 1 | SEC. 5 22 / 62

CONSTRUCTION PLANS
FOR
DRAKE CHANNEL CULVERT OF RACETRACK ROAD

NOTE: THE IMPROVEMENTS DEPICTED HEREON ARE FOR THE CONSTRUCTION OF THE CULVERT AND UPSTREAM TRANSITION IMPROVEMENTS TO THE DRAKE CHANNEL EXTENSION EAST OF RACETRACK ROAD. ALL STREET IMPROVEMENTS OVER THE CULVERT AND DOWNSTREAM IMPROVEMENTS WEST OF RACETRACK ROAD ARE DESIGNED AND CONSTRUCTED BY OTHERS UNDER SEPARATE CONTRACTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF CONSTRUCTION SEQUENCING AND TIMING TO MINIMIZE INCONVENIENCE TO THE PUBLIC AND ASSURE SAFE CONDITIONS. FAILURE OF THE CONTRACTOR TO COORDINATE WITH OTHERS SHALL NOT RELIEVE THE CONTRACTOR FROM ITS RESPONSIBILITY TO LEAVE THE CONSTRUCTION AREA IN A SAFE AND USABLE CONDITION UPON COMPLETION OF THE CULVERT WORK. THE CONTRACTOR SHALL OBTAIN A PERMIT FROM THE CITY OF HENDERSON AND COMPLY WITH ALL CONDITIONS OF THE PERMIT, INCLUDING ROAD CLOSURE AND TRAFFIC CONTROL.

CITY OF HENDERSON GENERAL NOTES:

1) ALL CONSTRUCTION SHALL CONFORM TO THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS CLARK COUNTY AREA, NEVADA, 1993," AND THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA 1988."

2) APPLICATION FOR INSPECTION BY THE CITY OF HENDERSON PUBLIC WORKS SHALL BE MADE BY THE CONTRACTOR AT LEAST 24 HOURS BEFORE THE INSPECTION SERVICES WILL BE REQUIRED BY CALLING 565-2136 OR 565-2140.

3) WORK IN PUBLIC STREETS, ONCE BEGUN, SHALL BE PROSECUTED TO COMPLETION WITHOUT DELAY SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.

4) THE CONTRACTOR SHALL TAKE ALL NECESSARY AND PROPER PRECAUTIONS TO PROTECT ADJACENT PROPERTIES FROM ANY AND ALL DAMAGE THAT MAY OCCUR FROM STORM WATER RUNOFF AND/OR DEPOSITION OF DEBRIS RESULTING FROM ANY AND ALL WORK IN CONNECTION WITH SUBDIVISION CONSTRUCTION.

5) PRIOR TO FINAL ACCEPTANCE, BOND RELEASES, AND A CERTIFICATE OF OCCUPANCY, A CERTIFIED LEGIBLE AS-BUILT DRAWING MUST BE SUBMITTED TO THE CITY OF HENDERSON. AS-BUILT MUST SHOW ALL CHANGES AND ACTUAL FIELD LOCATIONS. IN THE ABSENCE OF CHANGES A COPY OF APPROVED DRAWINGS WILL BE REQUIRED STATING "INSTALLED AS PER DRAWINGS" AND CERTIFIED AS SUCH BY THE DEVELOPER'S ENGINEER.

6) APPROVAL OF THESE PLANS IS FOR OFF-SITE IMPROVEMENTS ONLY. ALL ON-SITE IMPROVEMENTS, AS DEFINED BY THE CITY OF HENDERSON, INCLUDING BLOCK WALLS, MUST BE APPROVED BY THE BUILDING AND PLANNING DIVISIONS OF THE CITY OF HENDERSON.

7) CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITION BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND INGRESS AND EGRESS TO SAID CONSTRUCTION. EXTENT OF TRANSITIONS TO BE DETERMINED BY THE CITY ENGINEER.

8) EXISTING UTILITIES ARE LOCATED ON PLANS FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE CONTRACTOR SHALL BEAR FULL RESPONSIBILITY FOR THE PROTECTION OF UTILITIES AND THE ENGINEER BEARS NO RESPONSIBILITY FOR UTILITIES NOT SHOWN ON THE PLANS. THIS INCLUDES ALL SERVICE LATERALS OF ANY KIND.

9) POWER POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHOWN HEREON WILL BE RELOCATED AT NO EXPENSE TO THE CITY OF HENDERSON.

10) WHEELCHAIR RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING 235. EXACT LOCATION OF THE RAMPS SHALL BE DETERMINED BY A CITY OF HENDERSON INSPECTOR, OR AS SHOWN ON THE PLANS.

11) CURB AND GUTTER WITH A GRADE OF LESS THAN FOUR TENTHS OF ONE PERCENT SHALL BE CONSTRUCTED BY FORMING. EACH JOINT SHALL BE CHECKED FOR GRADE PRIOR TO CONSTRUCTION AND WATER TESTED AS SOON AS POSSIBLE AFTER CONSTRUCTION.

12) ALL GRADING SHALL CONFORM TO THE FOLLOWING SOILS REPORT:

ENGINEER: CONVERSE CONSULTANTS SOUTHWEST
DATE: JULY 24, 1987
PROJECT NO.: 87-33282-01

13) EARTHWORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PRELIMINARY GEOTECHNICAL REPORT.

14) ALL STREET STRUCTURAL SECTIONS SHALL BE PER THE RECOMMENDATIONS OF THE SOILS ENGINEER, BASED ON CBR OR R-VALUES. NO PAVING OR BASE WORK SHALL COMMENCE UNTIL A STREET STRUCTURAL SECTION IS APPROVED BY THE CITY ENGINEER, CITY OF HENDERSON.

15) BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL INSTALL TEMPORARY STOP SIGNS AT ALL NEW STREET ENCROACHMENTS INTO EXISTING PUBLIC STREETS IMMEDIATELY AFTER THE FIRST GRADING WORK IS ACCOMPLISHED AND SHALL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED. ALL CONSTRUCTION SIGNING, BARRICADING, AND TRAFFIC DELINEATION SHALL CONFORM TO THE "NEVADA TRAFFIC CONTROL MANUAL" CURRENT EDITION AND TO THE "NEVADA TRAFFIC CONTROL DEVICES" CURRENT EDITION AND BE APPROVED BY THE CITY OF HENDERSON BEFORE CONSTRUCTION BEGINS.

16) WHERE EXISTING PAVEMENT IS CUT TO INSTALL UTILITY SERVICE LINES, BACKFILL AND PAVEMENT REPLACEMENT SHALL BE DONE PER STANDARD DRAWING 502 AND SECTION 206, 207, AND 208 OF THE "STANDARD SPECIFICATION ISSUE, 1993".

17) ALL STATIONING IS REFERENCED TO CENTERLINE.

18) EXACT LOCATION OF ALL SAWCUT LINES SHALL BE DETERMINED IN THE FIELD BY A CITY OF HENDERSON INSPECTOR.

19) PROTECTION AND REPLACEMENT OF SURVEY MONUMENTS OR PROPERTY STAKES NOT DELINEATED ON THE CONTRACT DRAWINGS SHALL BE THE CONTRACTOR'S RESPONSIBILITY. REPLACEMENT OF SURVEY MONUMENTS OR PROPERTY STAKES SHALL BE DONE TO THE CITY OF HENDERSON SURVEY SECTION'S SATISFACTION.

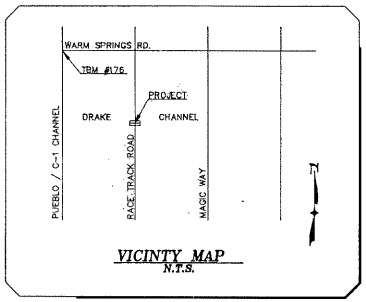
20) AFFECTED UTILITY COMPANIES SHALL BE NOTIFIED AT LEAST TWO (2) WORKING DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION.

21) CALL BEFORE YOU DIG, 1-800-227-2600.

22) MODIFICATIONS TO EXISTING UTILITIES SHALL CONFORM TO THE OWNER'S STANDARDS AND SPECIFICATIONS.

23) THE CONTRACTOR SHALL TAKE REASONABLE MEASURES TO PROTECT EXISTING IMPROVEMENTS FROM DAMAGE. ALL SUCH IMPROVEMENTS DAMAGED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED OR RECONSTRUCTED TO THE ENGINEER'S SATISFACTION AT THE EXPENSE OF THE CONTRACTOR.

24) CITY APPROVAL OF THE IMPROVEMENT PLANS IS GRANTED FOR ONE (1) YEAR ONLY. PLANS MUST BE RESUBMITTED FOR REVIEW AND APPROVAL TO THE DEPARTMENT OF PUBLIC WORKS, CITY OF HENDERSON, IF WORK IS NOT COMPLETED BY THE DATE INDICATED ON THE APPROVAL BLOCK.



VICINITY MAP
N.T.S.

BASIS OF BEARING

N 89°-48'-00" E, BEING THE SOUTH LINE OF THE SW 1/4 OF SECTION 9, T22S, R63W, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN ON BOOK 32 OF PLATS, PAGE 46, CLARK COUNTY, NEVADA RECORDER'S CUMULATIVE MAP INDEX.

OWNER/DEVELOPER

DASCO LIMITED PARTNERSHIP
5625 SOUTH VALLEY VIEW
LAS VEGAS, NEVADA 89118
(702) 736-8963

PROJECT BENCHMARK

CITY OF HENDERSON TBM #176 TOP OF EASTERLY MONUMENT IN WARM SPRINGS & PUEBLO INTERSECTION 30' EAST OF SECTION CORNER.
ELEV.= 1849.63 FEET OR 563.77 METERS

TEMPORARY BENCHMARK
CURRENT COH BM #176
IS LOCATED AT
VALLEY VERDE
AND
FOX RIDGE.

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA MARGARET C. BRAKE No 10133 CIVIL

APPROVALS

SPRINT/CENTRAL TELEPHONE-NEVADA — DATE 10.17.94
SOUTHWEST GAS — DATE 10/7/94
NEVADA POWER — DATE 10/18/94
MARK T. CALHOUN, P.E. — DATE 8-28-96
CITY ENGINEER
CITY OF HENDERSON
CURT CHANDLER — DATE 3/11/96
FLOOD CONTROL COORDINATOR
CITY OF HENDERSON

CITY APPROVAL OF THE IMPROVEMENT PLANS IS GRANTED FOR ONE (1) YEAR ONLY. PLANS MUST BE RESUBMITTED FOR REVIEW AND APPROVAL TO THE DEPARTMENT OF PUBLIC WORKS, CITY OF HENDERSON, IF WORK IS NOT COMPLETED BY Aug 29 1997

QUANTITIES

DESCRIPTION	AMOUNT	UNIT
DOUBLE 12' X 6' NDOT RCB	187	CU. YD.
TYPE II NDOT HEADWALL & WINGWALL	19	CU. YD.
GROUTED RIPRAP	42	CU. YD.

SHEET INDEX

1 ..... COVER SHEET
2 ..... PLAN AND PROFILE STA 9+39 TO STA 10+37
3 ..... CROSS SECTIONS

UTILITY NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Avoid cutting underground utility lines. It's costly.
Call before you Dig
1-800-227-2600
UNDERGROUND SERVICE (USA)

SUMMIT™ ENGINEERING CORPORATION
CONSULTING ENGINEERS AND SURVEYORS
3900 SOUTH HIGHLAND DR., LAS VEGAS, NEVADA 89109
PHONE: (702) 735-8040 FAX: (702) 735-8047

DESIGNED BY: M.C.B.
DRAWN BY: M.C.B.
CHECKED BY: J.T.A.
OCT. 13, 1994

IMPROVEMENT PLANS
DRAKE CHANNEL CULVERT
COVER SHEET
CITY OF HENDERSON — CLARK COUNTY — NEVADA

NO.	REV. DATE	DESCRIPTION	BY APP'D

SCALE — HORZ. NONE — VERT. NONE
JOB NO. 7010102
PLOTTED: 09/30/96 - 08:07 AM

SHEET 1 OF 3

04643

CONSTRUCTION PLANS
FOR
DRAKE CHANNEL IMPROVEMENTS

BASIS OF BEARING

N 89° 48' 00" E, BEING THE SOUTH LINE OF THE SW 1/4 OF SECTION 9, T22S, R63W, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN ON BOOK 32 OF PLATS, PAGE 46, CLARK COUNTY, NEVADA RECORDER'S CUMULATIVE MAP INDEX.

OWNER/DEVELOPER

ASSCO LIMITED PARTNERSHIP
3825 SOUTH VALLEY VIEW
LAS VEGAS, NEVADA 89118
(702) 736-8983

TEMPORARY BENCHMARK

PROJECT BENCHMARK

CITY OF HENDERSON TBM #176, TOP OF EASTERLY MONUMENT IN WARM SPRINGS & PUEBLO INTERSECTION 20' EAST OF SECTION CORNER.
ELEV.= 1841.63 FEET OR 561.77 METERS

QUANTITIES

DESCRIPTION	AMOUNT	UNIT
TYPE I GABION STRUCTURE	3793	CU. YD.
TYPE II GABION STRUCTURE	580	CU. YD.
10 'A' TYPE WIER	31	CU. YD.
STANDARD 16 'A' TYPE WIER	700	CU. YD.
20 'A' TYPE WIER	115	CU. YD.
6" HEAVY RIP-RAP	784	CU. YD.
TYPE II BASE	162	CU. YD.
*CUT TO STATION 28+50	19157	CU. YD.
*FILL TO STATION 28+50	3823	CU. YD.

* THESE FIGURES DO NOT INCLUDE ANY FACTORS FOR COMPACTION OR SUBSIDENCE

CITY OF HENDERSON GENERAL NOTES:

1) ALL CONSTRUCTION SHALL CONFORM TO THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AND IMPROVEMENT STANDARDS, OFF-SITE IMPROVEMENTS CLARK COUNTY AREA, NEVADA, 1986", AND THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, 1986".

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4) THE CONTRACTOR SHALL TAKE ALL NECESSARY AND PROPER PRECAUTIONS TO PROTECT ADJACENT PROPERTIES FROM ANY AND ALL DAMAGE THAT MAY OCCUR FROM STORM WATER RUNOFF AND/OR DEPOSITION OF DEBRIS RESULTING FROM ANY AND ALL WORK IN CONNECTION WITH SUBDIVISION CONSTRUCTION.

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9) POWER POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHOWN HEREON WILL BE RELOCATED AT NO EXPENSE TO THE CITY OF HENDERSON.

10) WHEELCHAIR RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING 230. EXACT LOCATION OF THE RAMPS SHALL BE DETERMINED BY A CITY OF HENDERSON INSPECTOR, OR AS SHOWN ON THE PLANS.

11) CURB AND GUTTER WITH A GRADE OF LESS THAN FOUR TENTHS OF ONE PERCENT SHALL BE CONSTRUCTED BY FORMING. EACH JOINT SHALL BE CHECKED FOR GRADE PRIOR TO CONSTRUCTION AND WATER TESTED AS SOON AS POSSIBLE AFTER CONSTRUCTION.

12) ALL GRADING SHALL CONFORM TO THE FOLLOWING SOILS REPORT:

ENGINEER: WESTERN TECHNOLOGIES
DATE: JULY 24, 1987
PROJECT NO.: 87-33282-01

13) EARTHWORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PRELIMINARY GEOTECHNICAL REPORT.

14) ALL STREET STRUCTURAL SECTIONS SHALL BE PER THE RECOMMENDATIONS OF THE SOILS ENGINEER, BASED ON CBR OR R-VALUES. NO PAVING OR BASE WORK SHALL COMMENCE UNTIL A STREET STRUCTURAL SECTION IS APPROVED BY THE CITY ENGINEER, CITY OF HENDERSON.

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17) ALL STATIONING IS REFERENCED TO CENTERLINE.

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20) AFFECTED UTILITY COMPANIES SHALL BE NOTIFIED AT LEAST TWO (2) WORKING DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION.

21) CALL BEFORE YOU DIG, 1-800-227-2600.

22) MODIFICATIONS TO EXISTING UTILITIES SHALL CONFORM TO THE OWNER'S STANDARDS AND SPECIFICATIONS.

23) THE CONTRACTOR SHALL TAKE REASONABLE MEASURES TO PROTECT EXISTING IMPROVEMENTS FROM DAMAGE AND ALL SUCH IMPROVEMENTS DAMAGED BY THE CONTRACTOR'S OPERATION SHALL BE REPAID OR RECONSTRUCTED TO THE ENGINEER'S SATISFACTION AT THE EXPENSE OF THE CONTRACTOR.

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UTILITY NOTE

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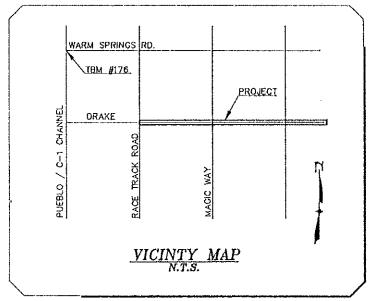
UNDERGROUND SERVICE (USA)

SHEET INDEX

1 .....COVER SHEET
2 .....TYPE I GABION STRUCTURE DETAIL
3 .....TYPE II GABION STRUCTURE DETAIL
4 .....ROAD CROSSING DETAILS
5 .....PLAN & PROFILE - STA 9+00 - 20+50
6 .....PLAN & PROFILE - STA 20+50 - 32+00
7 .....PLAN & PROFILE - STA 32+00 - 44+00
8 .....PLAN & PROFILE - STA 44+00 - 55+50
9 .....PLAN & PROFILE - STA 55+50 - 67+00
10 .....PLAN & PROFILE - STA 67+00 - 73+00
11 .....X-SECTIONS
12 .....X-SECTIONS
13 .....X-SECTIONS
14 .....X-SECTIONS
15 .....X-SECTIONS
16 .....X-SECTIONS
17 .....X-SECTIONS
18 .....X-SECTIONS
19 .....X-SECTIONS



VICINITY MAP
N.T.S.

APPROVALS

CENTRAL TELEPHONE – NEVADA — DATE

SOUTHWEST GAS — DATE

NEVADA POWER — DATE

MARK T. CALHOUN, P.E. — DATE
CITY ENGINEER
CITY OF HENDERSON

CURT CHANDLER — DATE
LAND DEVELOPMENT MANAGER
CITY OF HENDERSON

CITY APPROVAL OF THE IMPROVEMENT PLANS IS GRANTED FOR ONE (1) YEAR ONLY. PLANS MUST BE RESUBMITTED FOR REVIEW AND APPROVAL TO THE DEPARTMENT OF PUBLIC WORKS, CITY OF HENDERSON, IF WORK IS NOT COMPLETED BY _____ 19____

JUN 29 1994

NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER-STATE OF NEVADA
MARGARET C. BRAKE
No. 10193
CIVIL
21-JUNE-94

SUMMIT™ ENGINEERING CORPORATION
CONSULTING ENGINEERS AND SURVEYORS
3685 SOUTH PECOS, SUITE 140, LAS VEGAS, NEVADA 89121
PHONE (702) 433-3220 FAX (702) 433-3347

DESIGNED BY: C.G.T.
DRAWN BY: K.K.A.
CHECKED BY: C.G.T.
JUNE 28, 1994

IMPROVEMENT PLANS
DRAKE CHANNEL
COVER SHEET
CLARK COUNTY NEVADA
HENDERSON

NO.	REV. DATE	DESCRIPTION	BY APP'D

SCALE
HORIZ. NONE
VERT. NONE

JOB NO. 7081C.2
PLOTTED: 06/30/94 08:47A

SHEET 1 OF 19

CALL
BEFORE YOU
DIG
1-800-227-2600

CONSTRUCTION PLANS FOR DRAKE CHANNEL IMPROVEMENTS

PHASE I

CITY OF HENDERSON STANDARD GENERAL NOTES

1 ALL CONSTRUCTION SHALL CONFORM TO THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, OFFSITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, 1986, AND THE UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, OFFSITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, 1988.

2 APPLICATIONS FOR INSPECTION BY THE CITY OF HENDERSON PUBLIC WORKS SHALL BE MADE BY THE CONTRACTOR AT LEAST 24 HOURS BEFORE THE INSPECTION SERVICE WILL BE REQUIRED, 565-2136, OR 565-2140.

3 WORK IN THE PUBLIC STREETS, ONCE BEGUN, SHALL BE PROSECUTED UNTIL COMPLETION WITHOUT DELAY SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELLING PUBLIC.

4 THE CONTRACTOR SHALL TAKE ALL NECESSARY AND PROPER PRECAUTIONS TO PROTECT ADJACENT PROPERTIES FROM ANY AND ALL DAMAGE THAT MAY OCCUR FROM STORM WATER RUNOFF AND/OR DEPOSITION OF DEBRIS RESULTING FROM ANY AND ALL WORK IN CONNECTION WITH SUBDIVISION CONSTRUCTION.

5 PRIOR TO FINAL ACCEPTANCE, BOND RELEASES, AND A CERTIFICATE OF OCCUPANCY, A CERTIFIED LEGIBLE AS-BUILT DRAWING MUST BE SUBMITTED TO THE CITY OF HENDERSON. AS-BUILTS MUST SHOW ALL CHANGES AND ACTUAL FIELD LOCATIONS. IN THE ABSENCE OF CHANGES, A COPY OF APPROVED DRAWINGS WILL BE REQUIRED STATING "INSTALLED AS PER DRAWINGS" AND CERTIFIED AS SUCH BY THE DEVELOPER'S ENGINEER.

6 APPROVAL OF THESE PLANS IS FOR THE CONSTRUCTION OF THE OFFSITE IMPROVEMENTS ONLY. ALL ONSITE IMPROVEMENTS, AS DEFINED BY THE CITY OF HENDERSON, INCLUDING BLOCK WALLS, MUST BE APPROVED BY THE BUILDING AND PLANNING DIVISIONS OF THE CITY OF HENDERSON.

7 CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONAL AND VERTICAL TRANSITION BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND INGRESS AND EGRESS TO SAID CONSTRUCTION. EXTENT OF TRANSITIONS TO BE DETERMINED BY THE CITY ENGINEER.

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10 WHEELCHAIR RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING No. 235, EXACT LOCATION OF RAMPS SHALL BE DETERMINED IN THE FIELD BY A CITY INSPECTOR, OR AS SHOWN ON THE PLANS.

11 CURB AND GUTTER WITH A GRADE OF LESS THAN FOUR-TENTHS OF ONE PERCENT SHALL BE CONSTRUCTED BY FORMING. EACH JOINT SHALL BE CHECKED FOR GRADE PRIOR TO CONSTRUCTION AND WATER TESTED AS SOON AS POSSIBLE AFTER CONSTRUCTION.

12 ALL GRADING SHALL CONFORM TO THE SOILS REPORT:
ENGINEER: WESTERN TECHNOLOGIES
DATE: JULY 24, 1987
PROJECT NUMBER: 87-33282-01

13 EARTHWORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PRELIMINARY GEOTECHNICAL REPORT.

14 ALL STREET STRUCTURAL SECTIONS SHALL BE PER THE RECOMMENDATIONS OF THE SOILS ENGINEER, BASED ON CBR OR R VALUES. NO PAVING OR BASE WORK SHALL COMMENCE UNTIL A STREET STRUCTURAL SECTION IS APPROVED BY THE CITY ENGINEER, CITY OF HENDERSON.

15 BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNS FOR THE CONSTRUCTION ZONE. THE CONTRACTOR SHALL INSTALL TEMPORARY STOP SIGNS AT ALL NEW STREET ENCROACHMENTS INTO EXISTING PUBLIC STREETS IMMEDIATELY AFTER THE FIRST GRADING WORK IS ACCOMPLISHED AND SHALL MAINTAIN SAID SIGNS UNTIL PERMANENT SIGNS ARE INSTALLED. ALL CONSTRUCTION SIGNING, BARRICADING, AND TRAFFIC DELINEATION SHALL CONFORM TO THE "NEVADA TRAFFIC CONTROL MANUAL" - CURRENT EDITION AND TO THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" - CURRENT EDITION AND BE APPROVED BY THE CITY OF HENDERSON BEFORE CONSTRUCTION BEGINS.

16 WHERE EXISTING PAVEMENT IS CUT TO INSTALL UTILITY SERVICE LINES, BACKFILL AND PAVEMENT REPLACEMENT SHALL BE DONE PER STANDARD DRAWING 502 AND SECTION 208, 207, AND 208 OF THE STANDARD SPECIFICATION ISSUE, 1986.

17 ALL STATIONING IS REFERENCED TO CENTERLINE.

18 EXACT LOCATION OF ALL SAWCUT LINES SHALL BE DETERMINED IN THE FIELD BY A CITY OF HENDERSON INSPECTOR.

19 PROTECTION AND REPLACEMENT OF SURVEY MONUMENTS OR PROPERTY STAKES NOT DELINEATED ON THE CONTRACT DRAWINGS SHALL BE THE CONTRACTOR'S RESPONSIBILITY. REPLACEMENT OF SURVEY MONUMENTS OR PROPERTY STAKES SHALL BE DONE TO THE CITY OF HENDERSON'S SURVEY SECTION'S SATISFACTION.

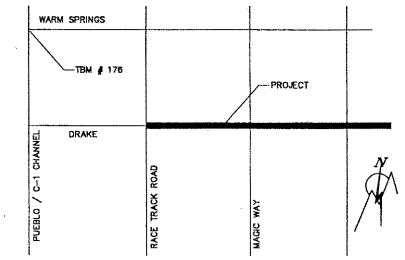
20 AFFECTED UTILITY COMPANIES SHALL BE NOTIFIED AT LEAST TWO (2) WORKING DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION.

21 CALL BEFORE YOU DIG, 1-800-227-2600.

22 MODIFICATIONS TO EXISTING UTILITIES SHALL CONFORM TO THE OWNER'S UTILITY STANDARDS AND SPECIFICATIONS.

23 THE CONTRACTOR SHALL TAKE RESPONSIBLE MEASURES TO PROTECT EXISTING IMPROVEMENTS FROM DAMAGE AND ALL SUCH IMPROVEMENTS DAMAGED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED OR RECONSTRUCTED TO THE ENGINEER'S SATISFACTION AT THE EXPENSE OF THE CONTRACTOR.

24 CITY APPROVAL OF THE IMPROVEMENT PLANS IS GRANTED FOR ONE (1) YEAR ONLY. PLANS MUST BE RESUBMITTED FOR REVIEW AND APPROVAL TO THE DEPARTMENT OF PUBLIC WORKS, CITY OF HENDERSON, IF WORK IS NOT COMPLETED BY THE DATE INDICATED ON THE APPROVAL BLOCK.



VICINITY MAP

NTS

SHEET INDEX

COVER SHEET	1
STA 10+00 TO 23+00	2
STA 23+00 TO 36+00	3
STA 36+00 TO 49+00	4
STA 49+00 TO 61+00	5
STA 61+00 TO 72+00	6
GABION DETAILS 50' CHANNEL	7
GABION DETAILS 30' CHANNEL	8
LOW WATER CROSSING	9
STA 10+00 TO 23+00 CURVED OPTION	10

TEMPORARY BENCHMARK

BENCH MARK
CITY OF HENDERSON TBM # 176 TOP OF EASTERLY MONUMENT IN WARM SPRINGS & PUEBLO INTERSECTION 30' EAST OF SECTION CORNER ELEV. = 1849.63

Curt Chandler 3-24-93
Curt Chandler Date
Land Development Manager
City of Henderson

Mark T Calhoun 4/5/93
MARK T CALHOUN PE DATE
CITY ENGINEER
CITY OF HENDERSON

CITY APPROVAL OF THE IMPROVEMENT PLANS IS GRANTED FOR ONE (1) YEAR ONLY. PLANS MUST BE RESUBMITTED FOR REVIEW AND APPROVAL TO THE DEPARTMENT OF PUBLIC WORKS, CITY OF HENDERSON, IF WORK IS NOT COMPLETED BY April 5 1994

APPROVALS

NEVADA POWER	3/5/93 DATE
CENTEL	3-5-93 DATE
SOUTHWEST GAS Joe Clement	3/4/93 DATE

QUANTITIES

EARTH WORK	70,000 CY EXCAVATION
GABIONS	6,084 CY BASKETS
TYPE II BASE (ROAD TO ACCESS HOME)	175 CY
TEMP BENCHMARKS (EACH END PROJECT)	2 EA

OWNER/DEVELOPER

ABSCO LIMITED PARTNERSHIP
5625 SO. VALLEY VIEW
LAS VEGAS, NEVADA 89118
(702) 736-8983

ENGINEER

CENTURY WEST ENGINEERING INC.
939 N. PECOS RD. #110
LAS VEGAS, NV 89101
(702) 642-4663
CIVIL ENGINEERS PLANNERS SURVEYORS

CALL BEFORE YOU DIG 1-800-227-2600

COPYRIGHT © 1993 CENTURY WEST ENGINEERING INC.

No.	REVISIONS	Date	Init.	App.
1	CITY COMMENTS	2/24/93	DRE	
2	5 YR. INTERIM	3/4/93	DRE	
3	LEGEND SHT.	3/4/93	DRE	
4	ADD SHT. 11 - EASTERN CROSS	3/4/93	DRE	
5	REMOVE 8" CROSS & 24" CMP	3/4/93	DRE	

Design by DHW
Checked by DHW
Date 8/92

NONE

COVER SHEET

DRAKE CHANNEL IMPROVEMENT PLANS

CENTURY WEST ENGINEERING INC.
939 N. PECOS RD. #110
LAS VEGAS, NV 89101
(702) 642-4663
CIVIL ENGINEERS PLANNERS SURVEYORS

Drawing Name
drakecov.dwg
Job Number
21.92
Sheet Number
1 OF 10

Q3918

CITY OF HENDERSON GENERAL NOTES:

1. ALL CONSTRUCTION SHALL CONFORM TO THE UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, OFFSITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, 1986, AND THE UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, OFFSITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, 1986.
2. APPLICATION FOR INSPECTION BY THE CITY OF HENDERSON PUBLIC WORKS SHALL BE MADE BY THE CONTRACTOR AT LEAST 24 HOURS BEFORE THE INSPECTION SERVICES WILL BE REQUIRED, 565-2136 OR 565-2140.
3. WORK IN PUBLIC STREETS, ONCE BEGUN, SHALL BE PROSECUTED TO COMPLETION WITHOUT DELAY SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.
4. THE CONTRACTOR SHALL TAKE ALL NECESSARY AND PROPER PRECAUTIONS TO PROTECT ADJACENT PROPERTIES FROM ANY AND ALL DAMAGE THAT MAY OCCUR FROM STORM WATER RUNOFF AND/OR DEPOSITION OF DEBRIS RESULTING FROM ANY AND ALL WORK IN CONNECTION WITH SUBDIVISION CONSTRUCTION.
5. PRIOR TO FINAL ACCEPTANCE, BOND RELEASES, AND A CERTIFICATE OF OCCUPANCY, A CERTIFIED LEGIBLE AS-BUILT DRAWING MUST BE SUBMITTED TO THE CITY OF HENDERSON. AS-BUILT MUST SHOW ALL CHANGES AND ACTUAL FIELD LOCATIONS. IN THE ABSENCE OF CHANGES, A COPY OF APPROVED DRAWINGS WILL BE REQUIRED STATING "INSTALLED AS PER DRAWINGS" AND CERTIFIED AS SUCH BY THE DEVELOPER.
6. APPROVAL OF THESE PLANS IS FOR THE CONSTRUCTION OF OFFSITE IMPROVEMENTS ONLY. ALL ONSITE IMPROVEMENTS, AS DEFINED BY CITY OF HENDERSON, INCLUDING BLOCK WALLS, MUST BE APPROVED BY THE BUILDING AND PLANNING DIVISIONS OF THE CITY OF HENDERSON.
7. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITION BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND OF INGRESS AND EGRESS TO SAID CONSTRUCTION. EXTENT OF TRANSITIONS TO BE DETERMINED BY THE CITY ENGINEER.
8. EXISTING UTILITIES ARE LOCATED ON PLANS FOR THE CONVENIENCE OF THE CONTRACTOR ONLY. THE CONTRACTOR SHALL BEAR FULL RESPONSIBILITY FOR THE PROTECTION OF UTILITIES AND THE ENGINEER BEARS NO RESPONSIBILITY FOR UTILITIES NOT SHOWN ON THE PLANS. THIS INCLUDES ALL SERVICE LATERALS OF ANY KIND.
9. POWER POLES AND/OR OTHER EXISTING FACILITIES NOT IN PROPER LOCATION BASED ON PROPOSED IMPROVEMENTS SHOWN HEREON WILL BE RELOCATED AT NO EXPENSE TO THE CITY OF HENDERSON.
10. WHEELCHAIR RAMPS SHALL BE CONSTRUCTED IN EACH QUADRANT OF AN INTERSECTION PER STANDARD DRAWING NO. 235. EXACT LOCATION OF RAMPS SHALL BE DETERMINED IN THE FIELD BY A CITY INSPECTOR, OR AS SHOWN ON PLAN.
11. CURB AND GUTTER WITH A GRADE OF LESS THAN FOUR-TENTHS OF ONE PERCENT SHALL BE CONSTRUCTED BY FORMING. EACH JOINT SHALL BE CHECKED FOR GRADE PRIOR TO CONSTRUCTION AND WATER TESTED AS SOON AS POSSIBLE AFTER CONSTRUCTION.
12. EARTHWORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PRELIMINARY GEOTECHNICAL REPORT.
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24. ALL OFFSITE AND ONSITE WATER AND SEWER FACILITIES UP TO WITHIN 5 FEET OF BUILDINGS SHALL BE CONSTRUCTED TO PUBLIC WORKS STANDARDS.
25. IF SEWER OR WATER LINES WITHIN THE PUBLIC UTILITY EASEMENTS REQUIRE REPAIRS, ALL SUCH REPAIRS WILL BE DONE IN ACCORDANCE WITH PUBLIC WORKS DEPARTMENT STANDARDS. CURBS AND GUTTERS AND SPECIAL PAVING REPAIRS SHALL BE THE RESPONSIBILITY OF THE HOMEOWNER'S ASSOCIATION.

ABBREVIATIONS

A.C.	ASPHALTIC CONCRETE
B.C.	BEGIN CURVE
B.V.C.	BEGIN VERTICAL CURVE
B.S.	BACK OF SIDEWALK
C.B.	CATCH BASIN
C	CENTERLINE
C.M.P.	CORRUGATED METAL PIPE
CONC.	CONCRETE
C.P.	CONCRETE PIPE
C.R.	CURB RETURN
DET.	DETAIL
E.	ELECTRICAL
ELEV.	ELEVATION
E.C.	END OF CURVE
E.V.C.	END OF VERTICAL CURVE
EXIST.	EXISTING
E.G.	EXISTING GRADE
F.F.	FINISHED FLOOR
F.G.	FINISHED GRADE
F.H.	FIRE HYDRANT
F	FLOW LINE
G.	GAS
G.B.	GRADE BREAK
HORIZ.	HORIZONTAL
H.S.	HOUSE SERVICE
INT.	INTERSECTION
I.E.	INVERT ELEVATION
LT.	LEFT
L	LENGTH
L.F.	LINEAL FEET
M.H.	MANHOLE
P.	PAD ELEVATION
PI.	POINT OF INTERSECTION
P.O.T.	POINT OF TANGENT
P.V.C.	POLYVINYL CHLORIDE PIPE
P	PROPERTY LINE
R	RADIUS
R.C.P.	REINFORCED CONCRETE PIPE
RT.	RIGHT
R/W	RIGHT OF WAY
S.S.	SANITARY SEWER
S.W.	SIDEWALK
S	SLOPE
SHT.	SHEET
STA.	STATION
S.D.	STORM DRAIN
T	TELEPHONE
T.B.C.	TOP BACK OF CURB
T.C.	TOP OF CURB
T.P.	TOP OF PAVEMENT
TYP.	TYPICAL
VERT.	VERTICAL
V.C.	VERTICAL CURVE
V.P.I.	VERTICAL POINT OF INTERSECTION
W	WATER

LEGEND

FG FINISH GRADE

TC TOP OF CURB

FL FLOW LINE

FLOW ARROW

PROPOSED A.C. PAVEMENT

PROPOSED CONCRETE

PAVEMENT TRANSITION AREA

SANITARY SEWER LINE W/SIZE

SANITARY SEWER MANHOLE W/NUMBER

WATER LINE (SIZE SHOWN)

FIRE HYDRANT ASSEMBLY W/GATE VALVE & TEE

GATE VALVE

2130 EXISTING CONTOUR LINES

2136 FINISH GRADE CONTOUR

GRADE BREAK

0.00 PROPOSED ELEVATION

(0.00) EXISTING ELEVATION

10% DRAINAGE SWALE W/FLOW DIRECTION & GRADE INDICATED

EXISTING CULVERT

EXISTING BRIDGE

INDEX OF DRAWINGS

SHEET NO.	TITLE
1	COVER SHEET
2	NOTES, ABBREVIATIONS, AND LEGEND
3	SITE PLAN
4	PLAN AND PROFILE CULVERT EXTENSION
5	CROSS SECTIONS & WEIR DETAIL
6	DETAIL SHEET

QUANTITIES

24 LF	24"ø CMP
220 CY'S	CONCRETE
53,700 LBS	REINFORCING STEEL
1000 SQ YDS	CLEARING AND GRUBBING
40 CY'S	TYPE A GABION WEIR
25 CY'S	6"ø RIPRAP

TRAFFIC REQUIREMENTS:

1. ANY EXISTING TRAFFIC CONTROL DEVICES AND/OR SIGNS SHALL BE MAINTAINED DURING THE PERIOD OF CONSTRUCTION, AND SHALL BE REPOSITIONED, AS REQUIRED, PER THE MUTCD, UPON COMPLETION OF THE PROJECT. DEVELOPERS/CONTRACTORS ARE RESPONSIBLE FOR SUBMITTING TRAFFIC CONTROL/BARRICADING PLANS NOT LESS THAN 3 WORKING DAYS BEFORE OBSTRUCTING A PUBLIC RIGHT OF WAY, INCLUDING SIDEWALKS.
2. LOCATION AND DESCRIPTION OF NEW TRAFFIC CONTROL DEVICES, STREET STRIPING, STREET NAME SIGNS, AND TRAFFIC SIGNALS MUST BE SHOWN ON PLANS SUBMITTED TO THE CITY FOR APPROVAL. STREET NAME SIGNS WILL COMPLY WITH CLARK COUNTY STANDARD DRAWINGS NO. 249, 250, AND 251. ALL TRAFFIC AND STREET NAME SIGNS MUST COMPLY WITH MUTCD STANDARDS AND SHALL BE FABRICATED WITH HIGH INTENSITY (TYPE III) REFLECTIVE SHEETING.
3. BLUE REFLECTORIZED PAVEMENT MARKERS MUST BE INSTALLED AT EVERY FIRE HYDRANT LOCATION, THEY WILL BE CENTERED IN THE DRIVING LANE CLOSEST TO THE FIRE HYDRANT.
4. WHERE STREETS END AT THE PROJECT BOUNDARY, THREE (3) 18" DIAMOND, REFLECTORIZED, RED PANELS SHALL BE INSTALLED AT THE END OF THE ROADWAY AND MAINTAINED UNTIL ADJOINING PROJECT IS BUILT.

LOST BENCHMARK

PROJECT BENCHMARK

CITY OF HENDERSON BM #254 BRASS CAP IN TOP OF THE CURB ON THE SOUTH SIDE OF WARM SPRINGS ROAD 400 FEET +/- E/O OF GIBSON STREET
ELEV = 1895.827 FEET OR 578.556 METERS

BASIS OF BEARING

N 89° 48' 00" EAST BEING THE SOUTH LINE OF THE SOUTHEAST 1/4 OF SECTION 9, T22S, R63W MDM, CLARK COUNTY NEVADA AS SHOWN ON BOOK 32 OF PLATS, PAGE 46, CLARK COUNTY NEVADA RECORDER'S CUMMULATIVE MAP INDEX

DATE PRINTED

JUN 24 1996

SUMMIT ENGINEERING CORP
LAS VEGAS

REGISTERED PROFESSIONAL ENGINEER STATE OF NEVADA MARGARET C. BRAKE No. 10193 CIVIL

6-24-96

SUMMIT™ ENGINEERING CORPORATION
CONSULTING ENGINEERS AND SURVEYORS
3684 SOUTH HIGHLAND, LAS VEGAS, NEVADA 89103
PHONE: (702) 252-3236 FAX: (702) 252-3247

DESIGNED BY: W.F.M.
DRAWN BY: W.F.M.
CHECKED BY: M.C.B.
JUNE 24, 1996

IMPROVEMENT PLANS
DRAKE CHANNEL CULVERT EXTENSION
NOTES, ABBREVIATIONS, AND LEGEND
CITY OF HENDERSON CLARK COUNTY NEVADA

REV.	DATE	DESCRIPTION	BY	APP'D

SHEET 2 OF 6
SCALE HORIZ. N/A VERT. N/A
JOB NO. 71153
PATHDISK:71153\CP71153.dgn VIEW: NOTES

IMPROVEMENT PLANS

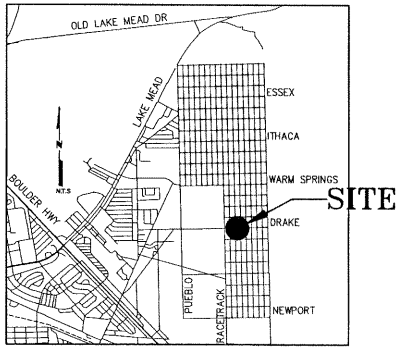
FOR

DRAKE CHANNEL

CITY OF HENDERSON
STATE OF NEVADA

ESTIMATE OF QUANTITIES

ITEM	QUANTITY
EARTHWORK	18,578 C.Y.
GROUTED RIP-RAP(16")	224 C.Y.
RIP-RAP(4",6",8-15")	2,110 C.Y.
8" REIN.CONC. PAVEMENT	24 C.Y.
TYPE I BASE	130 C.Y.
TYPE II BASE	117 C.Y.
GEOTEXTILE FABRIC	2,685 S.F.



VICINITY MAP

GENERAL NOTES

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12. ALL GRADING SHALL CONFORM TO THE SOILS REPORT:

    ENGINEER: WESTERN TECHNOLOGIES, INC.

    DATE: 3/23/84

    JOB NUMBER: 4124J015
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APPROVAL

Mark T. Calhoun — 10/19/93
MARK T. CALHOUN, P.E. — DATE
DIRECTOR OF PUBLIC WORKS

Jim V. Madden — 12-2-92
JIM MADDEN — DATE
FIRE PREVENTION

Joe Titus — 7 Dec 92
JOE TITUS — DATE
CITY BUILDING DEPARTMENT

N/A
KURT SEGLER, P.E. — DATE
UTILITIES SERVICES MANAGER

Lynn C. Mallory — 01/05/93
SOUTHWEST GAS COMPANY — DATE

Michael Brian — 11-19-92
NEVADA POWER COMPANY — DATE
This approval is only for the placement and clearance of streetlight and traffic signal installations.

S. Schum — 11.10.92
CENTEL — DATE

Curt Chandler — 10/18/93
CURT CHANDLER, P.E. — DATE
FLOOD CONTROL

SHEET INDEX

1. COVER SHEET
2. TYPICAL SECTIONS AND DETAILS
3. CHANNEL PLAN & PROFILE – STA. 0+00 TO STA. 5+50
4. CHANNEL PLAN & PROFILE – STA. 5+50 TO STA. 12+50
5. CHANNEL PLAN & PROFILE – STA. 12+50 TO STA. 19+00

EROSION PROTECTION NOTE

EROSION PROTECTION FOR THIS CHANNEL TO BE PROVIDED IN ACCORDANCE WITH CLARK COUNTY STANDARDS AS SPECIFIED BY THE SOILS ENGINEER.

BENCHMARK

CITY OF HENDERSON BENCH MARK # 38 – BOLT & WASHER IN THE TOP OF HEADWALL ON SOUTHEAST SIDE OF LAKE MEAD DR. WEST OF P.I. PUEBLO PLACE AND LAKE MEAD.

ELEVATION = 1732.033

LOST BENCHMARK

REV.	DATE	BY	REVISION

U.S. HOME
CITY OF HENDERSON, NEVADA

CONSULTING ENGINEERS • PLANNERS • LAND SURVEYORS
2727 SOUTH RAINBOW BOULEVARD
LAS VEGAS, NEVADA 89102-5148 PHONE (702) 873-7550 FAX (702) 362-2597

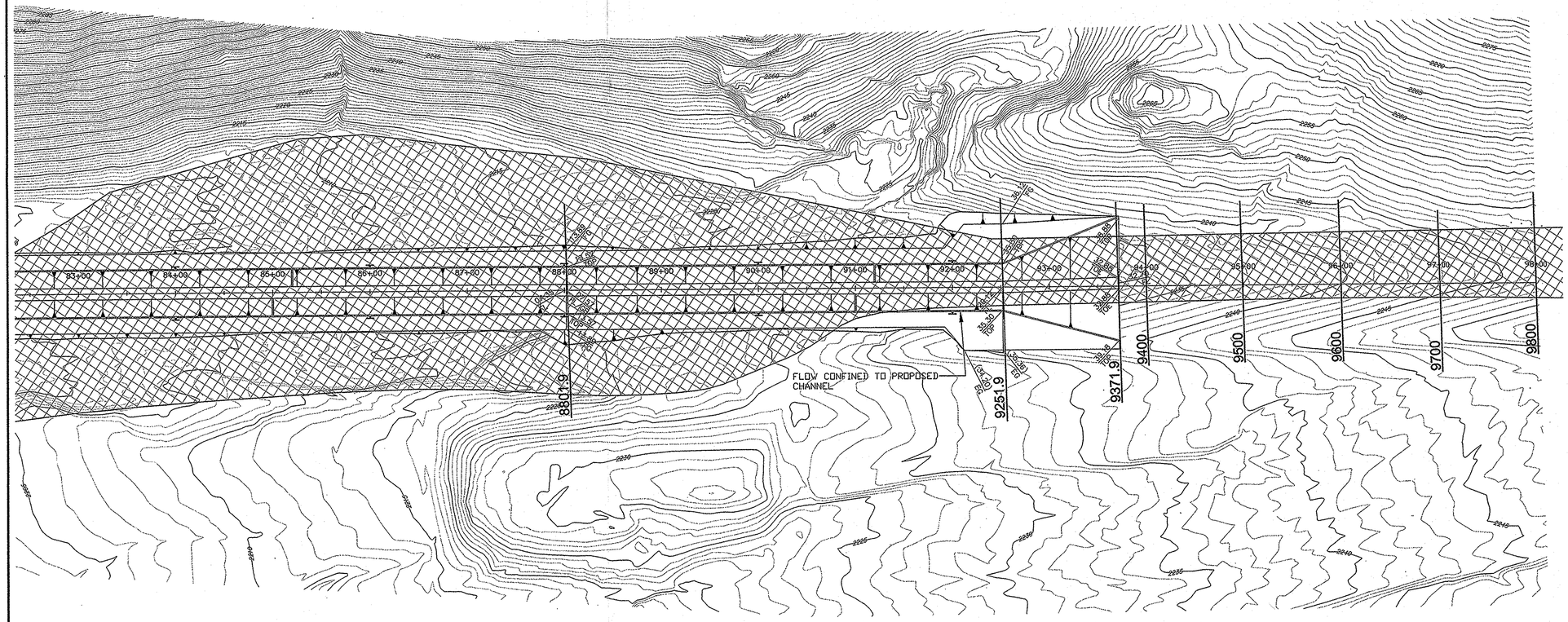
TITLE: COVER SHEET
PROJECT: DRAKE CHANNEL
CHANNEL IMPROVEMENTS

SEAL

J. Reilly
2/17/93

WO NO.	3523DC
BY	JPD/EMR
DATE	AUG '92
SCALE	NONE
SHEET	1 OF 5 SHEETS

Ø3159



NORTH

GRAPHIC SCALE

50 0 25 50

(IN FEET)

1 inch = 50 ft.

BENCHMARK:

COH BM# 324 *2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.*

NAVD 88 – 585.031 METERS
1919.389 U.S. SURVEY FEET

NOTE: ELEVATIONS BASED ON NAVD 88 DATUM

LEGEND

218 / 2227.67 — ELEVATION REFERENCE MARKER

9700 — HEC-RAS CROSS SECTION

EXISTING SFHA ZONE A

STATE OF NEVADA — PROFESSIONAL ENGINEER — JERRY L. PRUITT — No. 11902 — CIVIL — 6/15/2011 — DATE: 6-15-10

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 504-424

DESIGN:
DRAWN:
CHECK:
PLOT DATE: 06-15-10
PLOT TIME: 11:22:28

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Adam Block

CITY OF HENDERSON

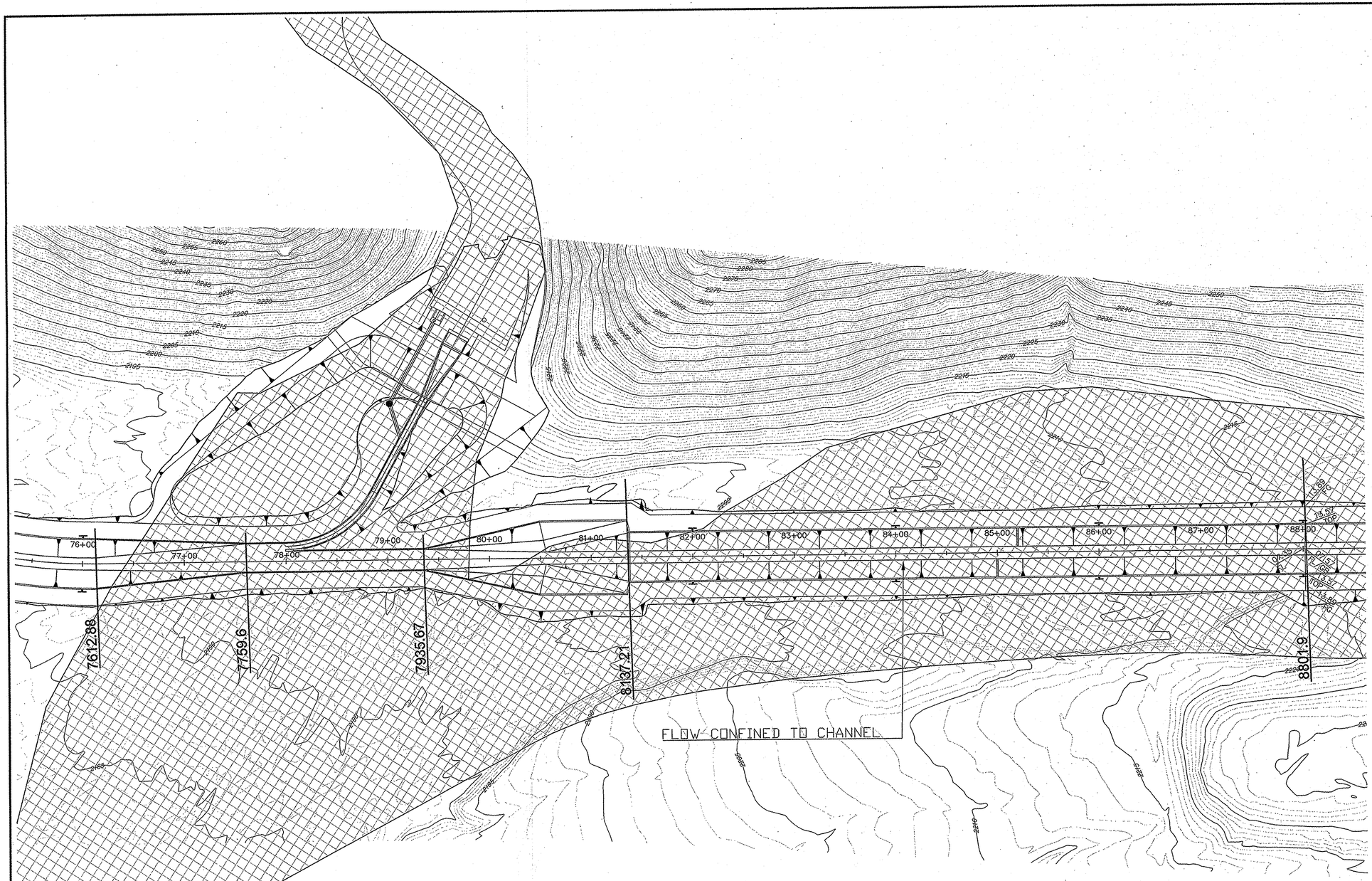
NORTHEAST C-1 DETENTION BASIN CLOMR

HEC-RAS WORK MAP

DRAWING WM-1

SHT OF SHTS

gpc2426.dwg 070203.jpv



NORTH

GRAPHIC SCALE

50 0 25 50

(IN FEET)

1 inch = 50 ft.

BENCHMARK:

COH BM# 324 *2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.*

NAVD 88 – 585.031 METERS
1919.389 U.S. SURVEY FEET

LEGEND

9700 HEC-RAS CROSS SECTION

EXISTING SFHA ZONE A

STATE OF NEVADA — ENGINEER — JERRY E. PRUITT — Exp. 12/31/2011 — CIVIL — No. 11902 — PROFESSIONAL

DATE: 6.14.10

REV	DATE	DESCRIPTION	DATE	JAGEN APP	DATE	GCW APP

PROJECT NO. 504-424

DESIGN:
DRAWN:
CHECK:
PLOT DATE: 06-10-10
PLOT TIME: 19:06:36

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Adam Block

CITY OF HENDERSON

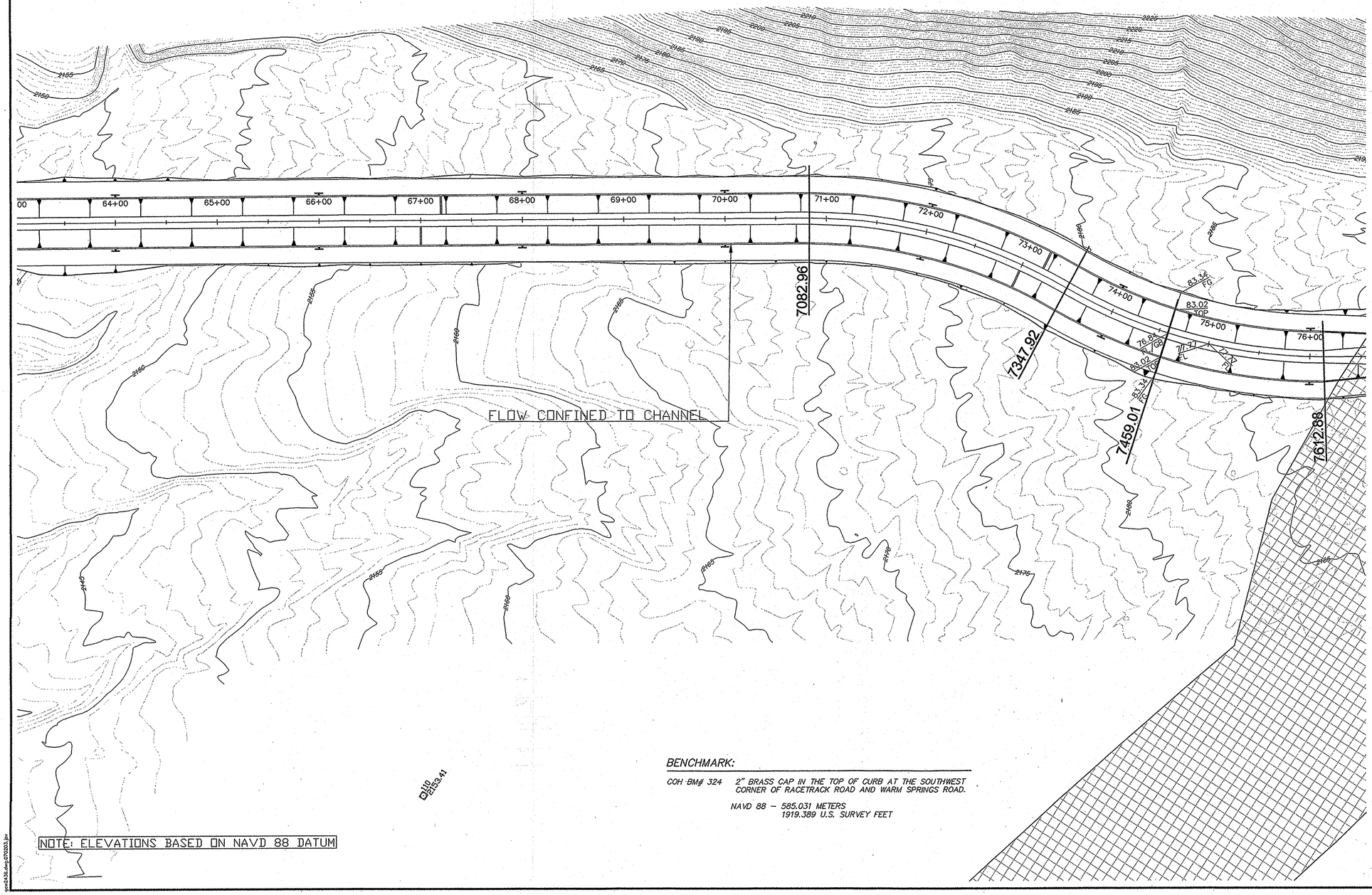
NORTHEAST C-1 DETENTION BASIN CLOMR

HEC-RAS WORK MAP

DRAWING WM-2

SHT OF SHTS

cpe2426.dwg,9/7/2010,Jer



NORTH

GRAPHIC SCALE

50 0 25 50

(IN FEET)

1 inch = 50 ft.

BENCHMARK:

COH BM# 324 2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS
1919.389 U.S. SURVEY FEET

LEGEND

- 110 2153.41 — ELEVATION REFERENCE MARKER
- 9700 — HEC-RAS CROSS SECTION
- EXISTING SFHA ZONE A

STATE OF NEVADA — PROFESSIONAL ENGINEER — JERRY E. PEUTT — Exp. 12/31/2011 — CIVIL — No. 11907

DATE:

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP

PROJECT NO. 504-424

DESIGN:
DRAWN:
CHECK:

PLOT DATE: 05-10-10
PLOT TIME: 19:11:45

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Adam Block

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

HEC-RAS WORK MAP

DRAWING WM-3

SHT OF SHTS

gsw2436.dwg 070203.jpr

BENCHMARK:

COH BM# 324 2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS
1919.389 U.S. SURVEY FEET

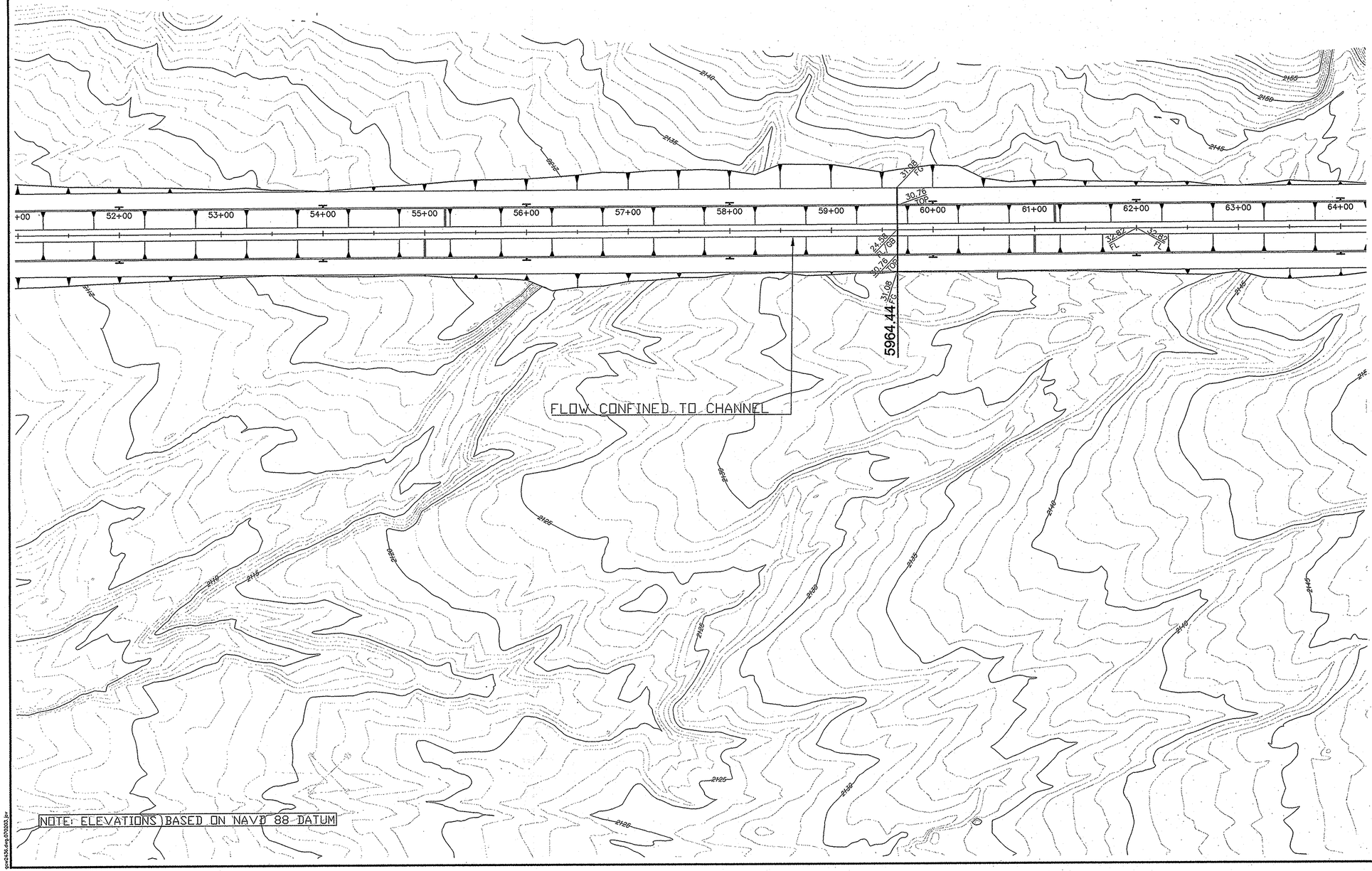
NORTH

GRAPHIC SCALE

50 0 25 50

(IN FEET)

1 inch = 50 ft.



LEGEND

9700 HEC-RAS CROSS SECTION

EXISTING SFHA ZONE A

STATE OF NEVADA PROFESSIONAL ENGINEER
JERRY L. PRUITT
No. 12281
CIVIL
6-14-11
DATE

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GOV APP

PROJECT NO. 504-424
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 06-10-10
PLOT TIME: 19:16:34

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Adam Block

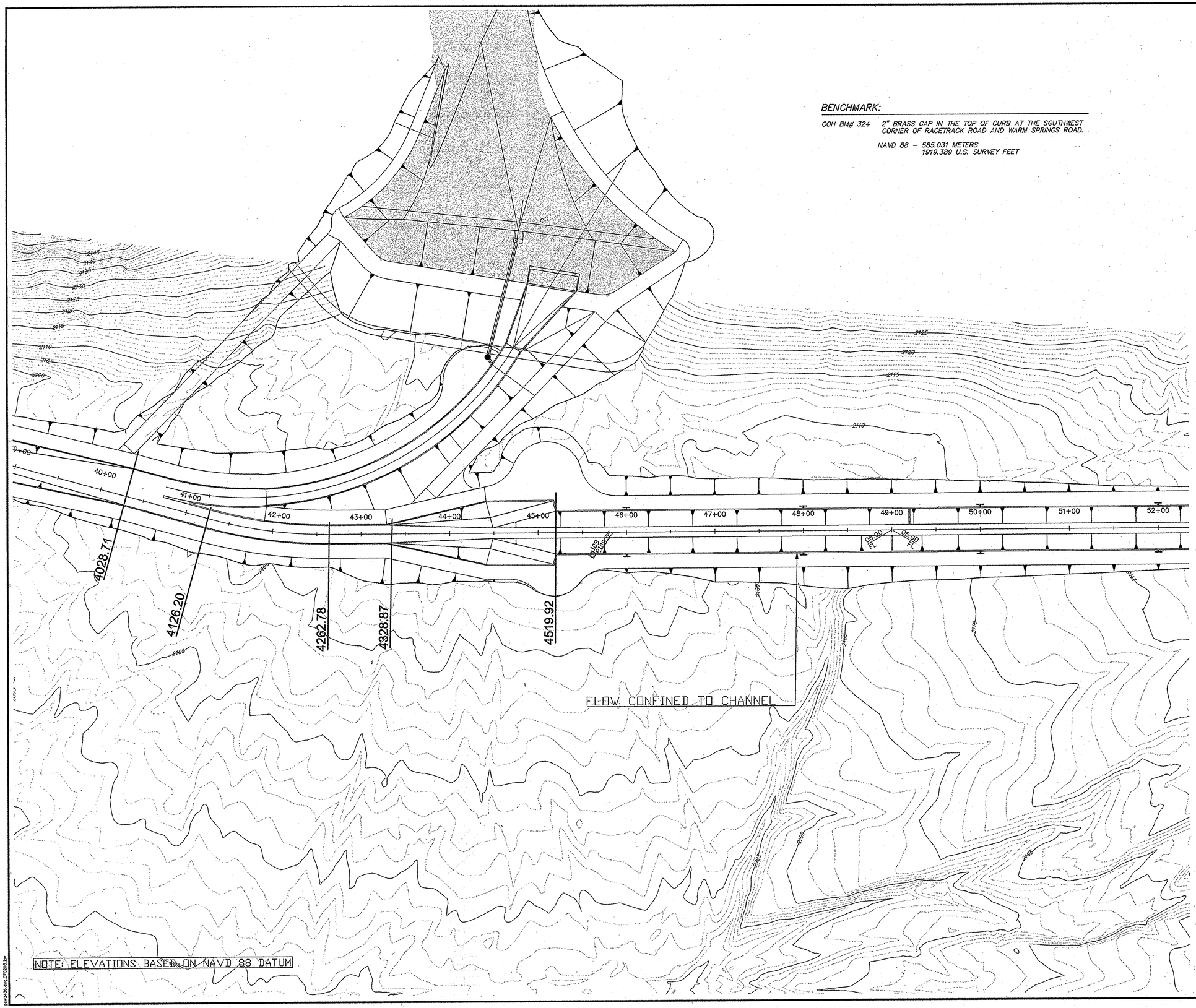
CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

HEC-RAS WORK MAP

DRAWING WM-4
SHT OF SHTS

mxd\636.mxd-070503.jpr



STATE OF NEVADA
PROFESSIONAL ENGINEER
JERRY L. PRUITT
No. 11901
CIVIL
Date: 12/31/2011
6-14-10
DATE:

REV	DATE	DESCRIPTION	AGEN APP	DATE	CCW APP	DATE

PROJECT NO. 504-424
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 06-10-10
PLOT TIME: 19:20:37

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Adam Black

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

HEC-RAS WORK MAP

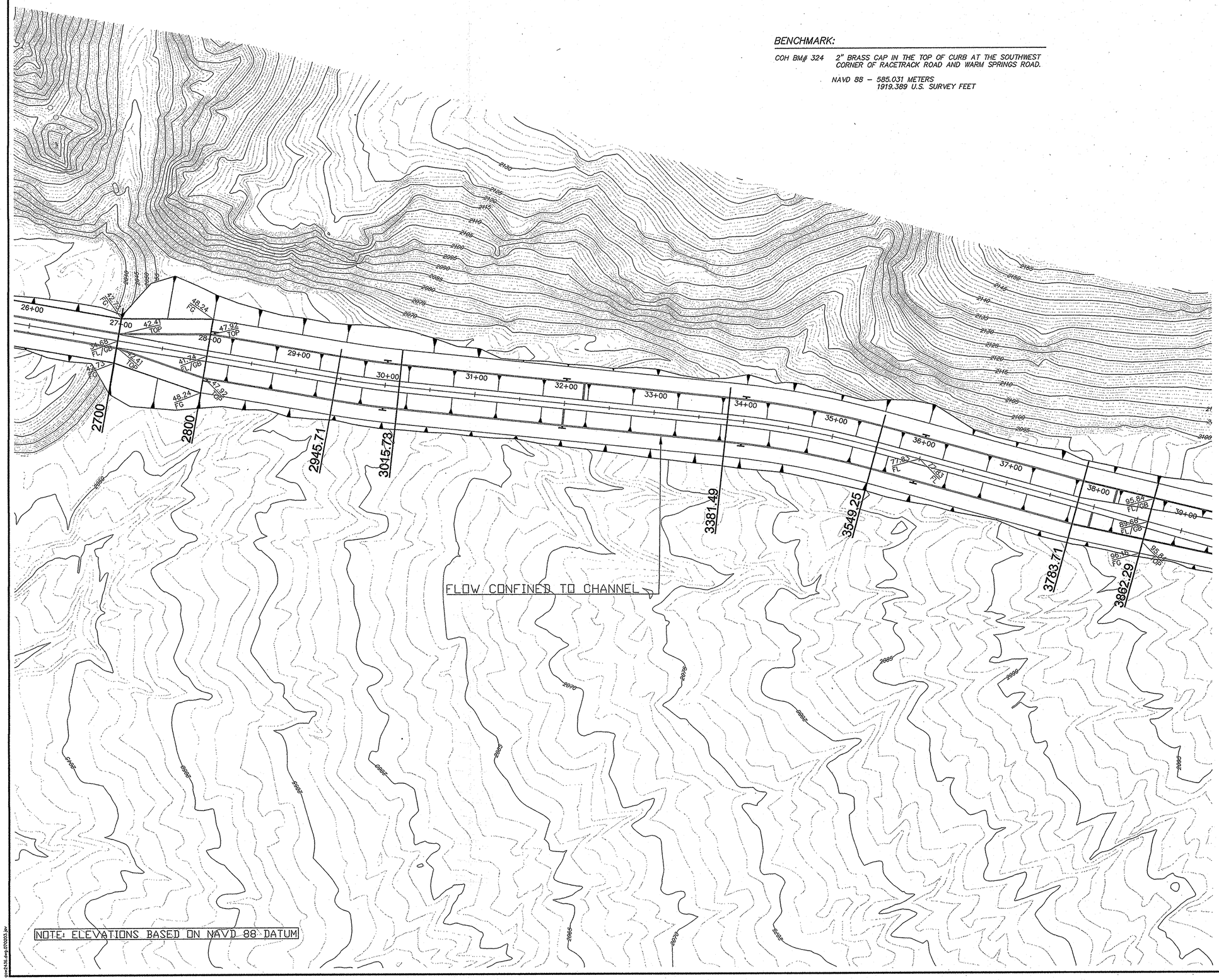
DRAWING WM-5
SHT OF SHTS

qcm2436.dwg 070203.jpv

BENCHMARK:

COH BM# 324 2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS
1919.389 U.S. SURVEY FEET



NORTH

GRAPHIC SCALE

50 0 25 50

(IN FEET)

1 inch = 50 ft.

LEGEND

9700 HEC-RAS CROSS SECTION

EXISTING SFHA ZONE A

STATE OF NEVADA
ENGINEER
JERRY C. BRUITT
No. 12701/2011
CIVIL
PROFESSIONAL
6-14-10
DATE

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	CCW APP

PROJECT NO. 504-424

DESIGN:
DRAWN:
CHECK:

PLOT DATE: 06-10-10
PLOT TIME: 18:22:37

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Adam Block

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

HEC-RAS WORK MAP

DRAWING WM-6

SHT OF SHTS

BENCHMARK:

COH BM# 324 2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS
1919.389 U.S. SURVEY FEET

NORTH

GRAPHIC SCALE

30 0 15 30

(IN FEET)

1 inch = 30 ft.

FLOW CONFINED TO CHANNEL

PT = 25+96.36

PC = 25+64.35

PT = 23+96.09

NOTE: ELEVATIONS BASED ON NAVD 88 DATUM

LEGEND

- 106 / 2021.32 — ELEVATION REFERENCE MARKER
- 9700 — HEC-RAS CROSS SECTION
- REVISED SFHA ZONE A
- EXISTING SFHA ZONE A

ENGINEER'S STATE OF NEVADA — JERRY A. PRATT — No. 11904 — PROFESSIONAL — CIVIL — 6-14-12

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GOW APP	DATE:

PROJECT NO. 504-424

DESIGN:
DRAWN:
CHECK:

PLOT DATE: 06-10-10
PLOT TIME: 19:26:43

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Adam Block

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

HEC-RAS WORK MAP

DRAWING WM-7

SHT OF SHTS

BENCHMARK:

COH BM# 324 — 2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS
1919.389 U.S. SURVEY FEET

NORTH

GRAPHIC SCALE

50 0 25 50

(IN FEET)
1 inch = 50 ft.

FLOW CONFINED TO CHANNEL

PT = 25+96.36

PC = 26+64.35

PT = 23+96.09

NOTE: ELEVATIONS BASED ON NAVD 88 DATUM

LEGEND

- 103 / 1995.15 — ELEVATION REFERENCE MARKER
- 9700 — HEC-RAS CROSS SECTION
- REVISED SFHA ZONE A
- EXISTING SFHA ZONE A

STATE OF NEVADA — ENGINEER — JERRY E. GRUITT — Exp. 12/31/2011 — CIVIL — No. 11902 — PROFESSIONAL

DATE: 6-14-10

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 504-424
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 05-10-10
PLOT TIME: 19:28:41

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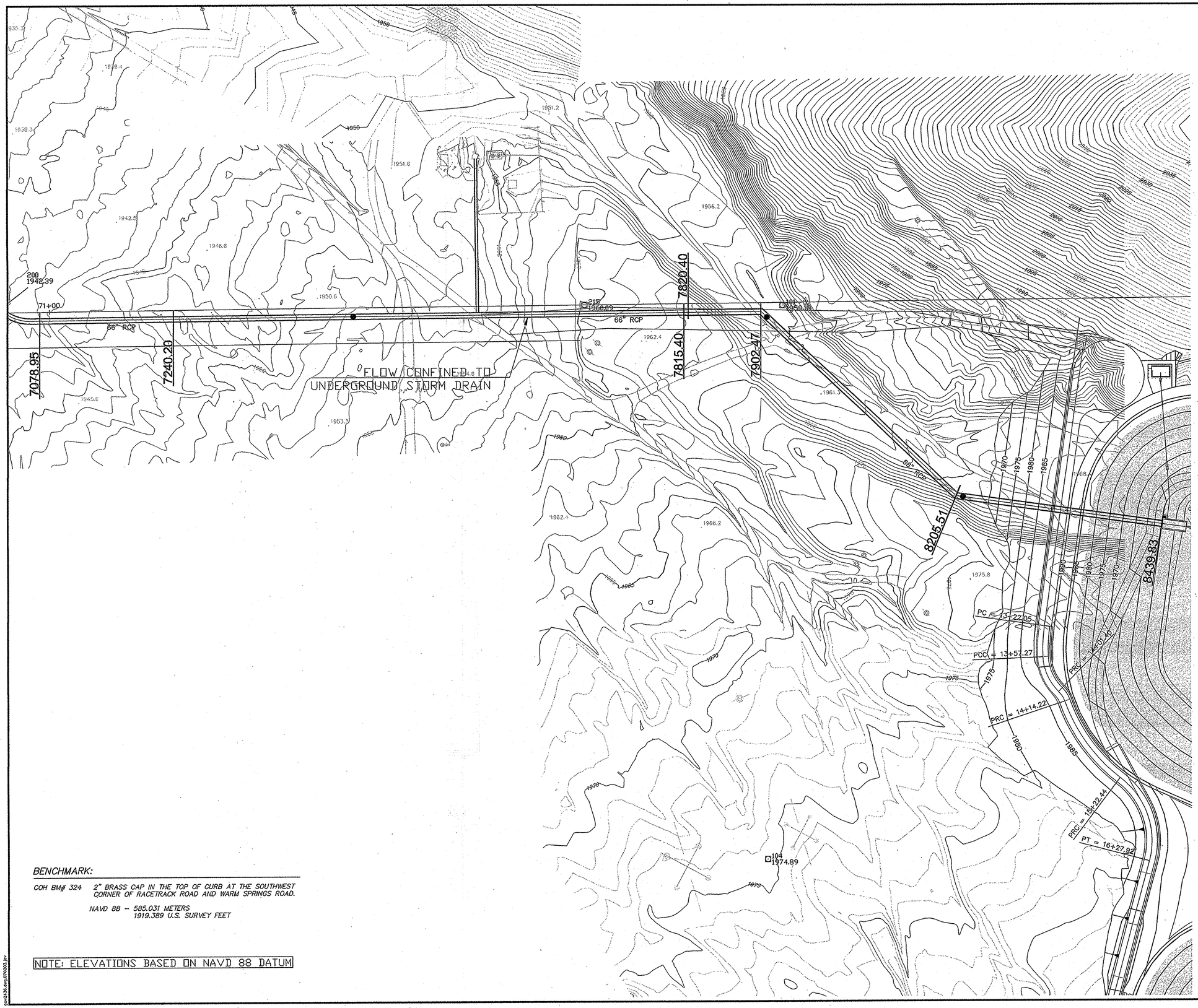
Adam Block

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

HEC-RAS WORK MAP

DRAWING WM-8
SHT OF SHTS



NORTH

GRAPHIC SCALE

50 0 25 50

(IN FEET)

1 inch = 50 ft.

LEGEND

- 101 1959.18 — ELEVATION REFERENCE MARKER
- 1078.98 — WSPG CROSS SECTION
- REVISED SFHA ZONE A
- EXISTING SFHA ZONE A

BENCHMARK:

COH BM# 324 — 2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS
1919.389 U.S. SURVEY FEET

NOTE: ELEVATIONS BASED ON NAVD 88 DATUM

STATE OF NEVADA — PROFESSIONAL ENGINEER — JERRY E. PRUITT — No. 10881 — CIVIL — 6/21/2011

DATE: 6.14.10

DESCRIPTION	DATE	REV	DATE	AGEN APP	DATE	GOV APP

PROJECT NO. 504-424

DESIGN:
DRAWN:
CHECK:
PLOT DATE: 06-10-10
PLOT TIME: 13:32:08

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Adam Block

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

WSPG WORK MAP

DRAWING WM-9

SHT OF SHTS

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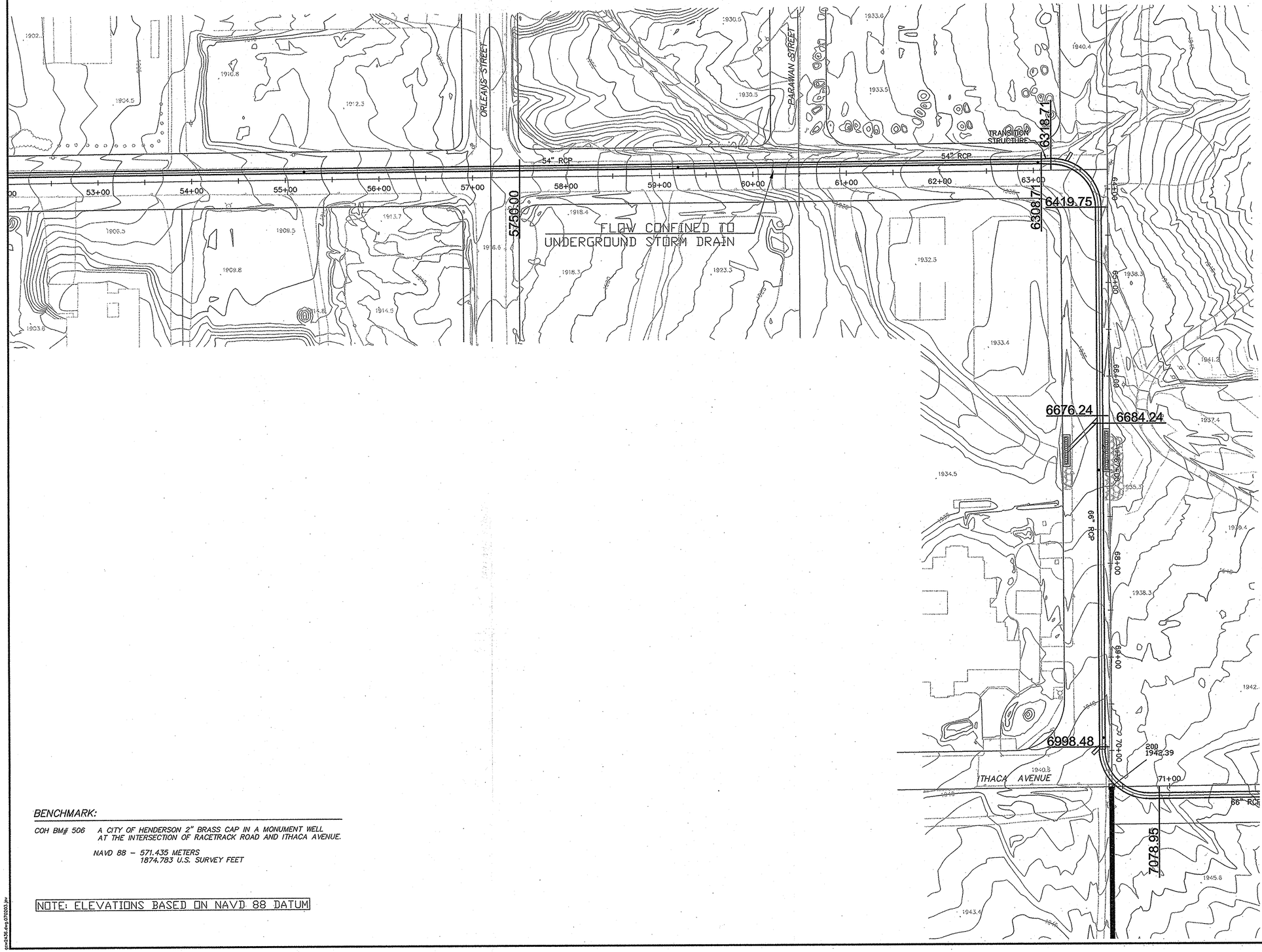

NORTH

GRAPHIC SCALE

50 0 25 50

(IN FEET)

1 inch = 50 ft.

LEGEND

- 200 / 1942.39 — ELEVATION REFERENCE MARKER
- 1078.98 — WSPG CROSS SECTION
- EXISTING SFHA ZONE A

BENCHMARK:

COH BM# 506 A CITY OF HENDERSON 2" BRASS CAP IN A MONUMENT WELL AT THE INTERSECTION OF RACETRACK ROAD AND ITHACA AVENUE.

NAVD 88 – 571.435 METERS
1874.783 U.S. SURVEY FEET

NOTE: ELEVATIONS BASED ON NAVD 88 DATUM

STATE OF NEVADA — PROFESSIONAL ENGINEER — JERRY E. PRUITT — No. 11902 — Exp. 12/31/2011 — CIVIL

DATE: 6-15-10

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 504-424

DESIGN:
DRAWN:
CHECK:

PLOT DATE: 06-15-10
PLOT TIME: 11:26:19

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Adam Block

CITY OF HENDERSON

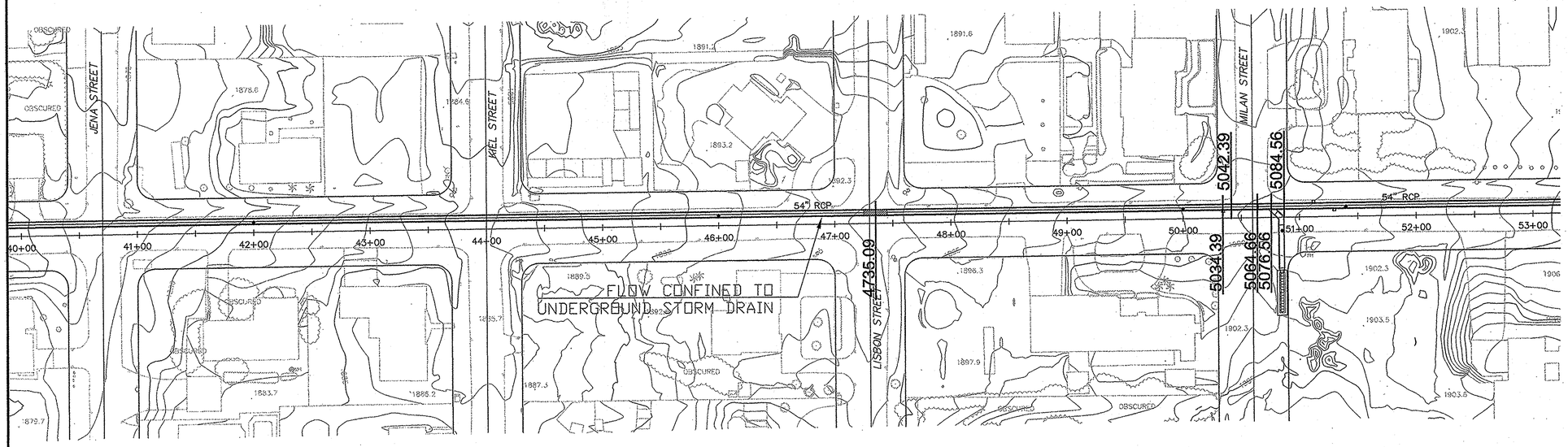
NORTHEAST C-1 DETENTION BASIN CLOMR

WSPG WORK MAP

DRAWING WM-10

SHT OF SHTS

cad\436.dwg 070303.prv



NORTH

GRAPHIC SCALE

50 0 25 50

(IN FEET)

1 inch = 50 ft.

BENCHMARK:

COH BM# 506 *A CITY OF HENDERSON 2" BRASS CAP IN A MONUMENT WELL AT THE INTERSECTION OF RACETRACK ROAD AND ITHACA AVENUE.*

NAVD 88 – 571.435 METERS
1874.783 U.S. SURVEY FEET

NOTE: ELEVATIONS BASED ON NAVD 88 DATUM

LEGEND

1078.98 WSPG CROSS SECTION

EXISTING SFHA ZONE A

STATE OF NEVADA PROFESSIONAL ENGINEER
JERRY E. BRUITT
Exp. 12/31/2011
CIVIL
No. 11902

DATE: 6-15-10

REV	DATE	DESCRIPTION	DATE	JAGEN APP	DATE	GCW APP

PROJECT NO. 504-424
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 06-15-10
PLOT TIME: 11:27:32

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Adam Block

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

WSPG WORK MAP

DRAWING WM-11

SHT OF SHTS

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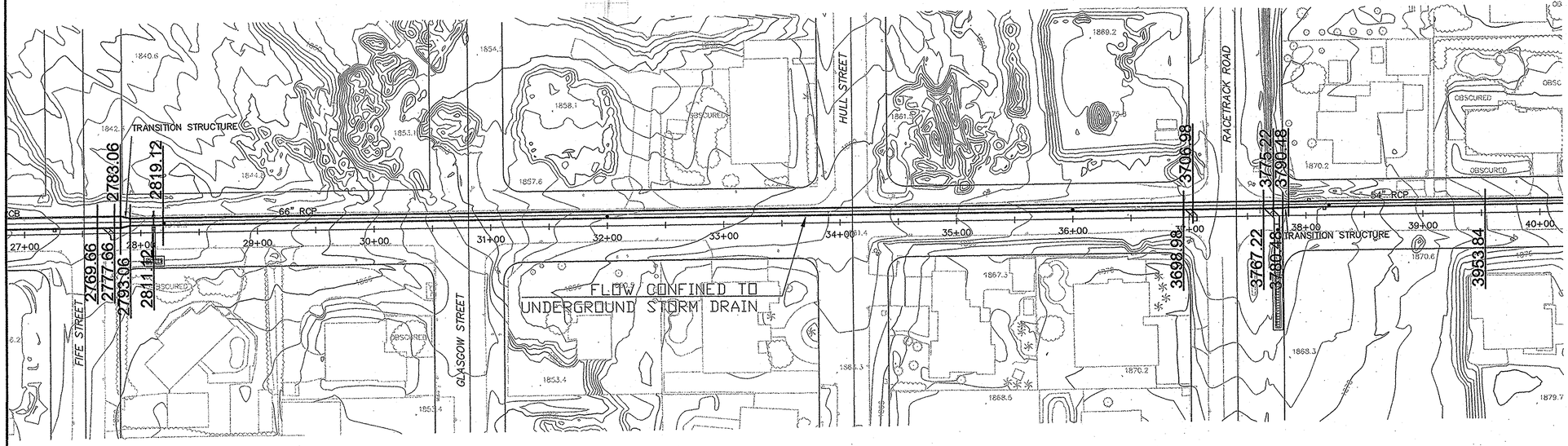

NORTH

GRAPHIC SCALE

50 0 25 50

(IN FEET)

1 inch = 50 ft.

BENCHMARK:

COH BM# 506 *A CITY OF HENDERSON 2" BRASS CAP IN A MONUMENT WELL AT THE INTERSECTION OF RACETRACK ROAD AND ITHACA AVENUE.*

NAVD 88 – 571.435 METERS
1874.783 U.S. SURVEY FEET

NOTE: ELEVATIONS BASED ON NAVD 88 DATUM

LEGEND

1078.98 WSPG CROSS SECTION

EXISTING SFHA ZONE A

STATE OF NEVADA PROFESSIONAL ENGINEER JERRY F. FRUITT Exp. 11/30/2011 CIVIL No. 11907

6-15-10

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 504-424

DESIGN:
DRAWN:
CHECK:
PLOT DATE_06-15-10
PLOT TIME_11:29:18

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Adam Block

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

WSPG WORK MAP

DRAWING WM-12

SHT OF SHTS

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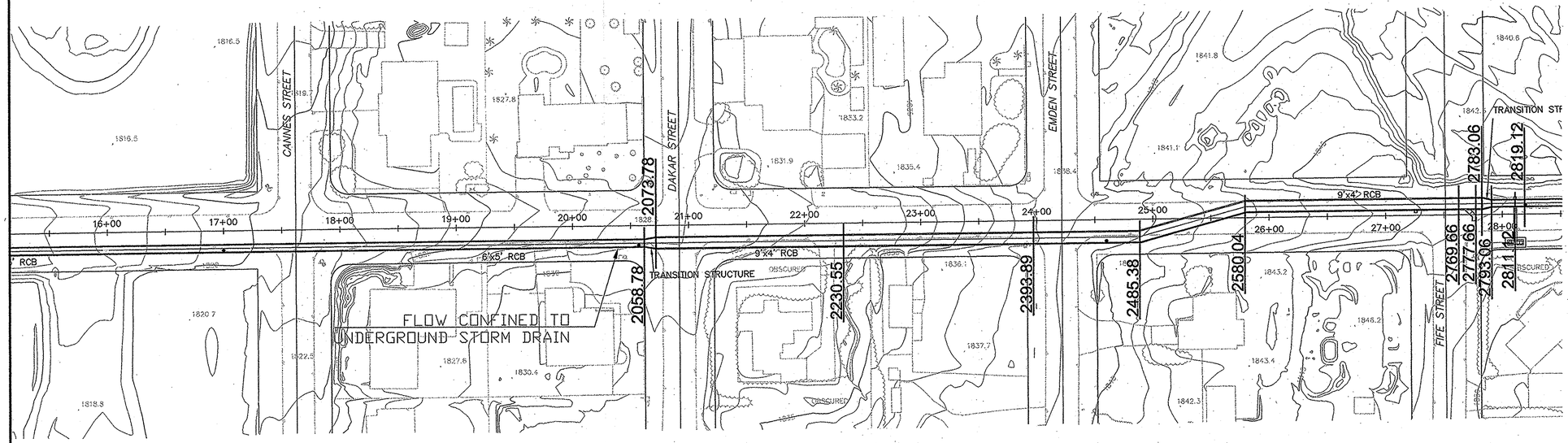

NORTH

GRAPHIC SCALE

50 0 25 50

(IN FEET)

1 inch = 50 ft.

BENCHMARK:

COH BM# 506 *A CITY OF HENDERSON 2" BRASS CAP IN A MONUMENT WELL AT THE INTERSECTION OF RACETRACK ROAD AND ITHACA AVENUE.*

NAVD 88 – 571.435 METERS
1874.783 U.S. SURVEY FEET

NOTE: ELEVATIONS BASED ON NAVD 88 DATUM

LEGEND

1078.98 WSPG CROSS SECTION

EXISTING SFHA ZONE A

ENGINEER: STATE OF NEVADA — JERRY L. BUTT — No. 11992 — PROFESSIONAL — Exp. 12/31/2011 — CIVIL

DATE: 6.15.10

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	CGW APP

PROJECT NO. 504-424

DESIGN:
DRAWN:
CHECK:
PLOT DATE: 06-15-10
PLOT TIME: 11:30:40

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Adam Block

CITY OF HENDERSON

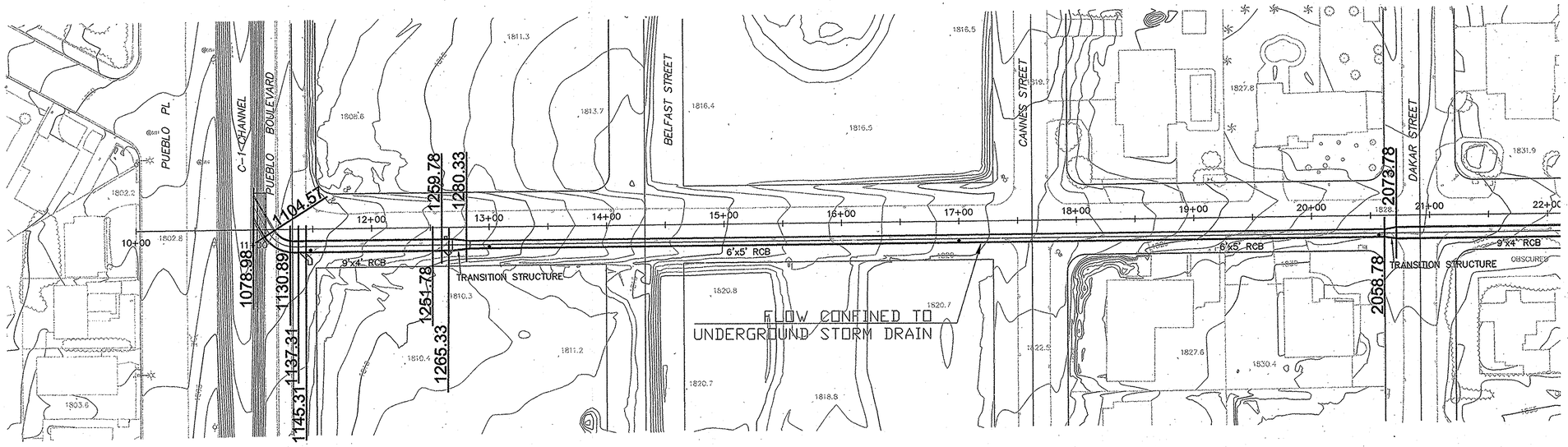
NORTHEAST C-1 DETENTION BASIN CLOMR

WSPG WORK MAP

DRAWING WM-13

SHT OF SHTS

ssn2435.dwg 070203.jpr



NORTH

GRAPHIC SCALE

50 0 25 50

(IN FEET)

1 inch = 50 ft.

BENCHMARK:

COH BM# 506 *A CITY OF HENDERSON 2" BRASS CAP IN A MONUMENT WELL AT THE INTERSECTION OF RACETRACK ROAD AND ITHACA AVENUE.*

NAVD 88 – 571.435 METERS
1874.783 U.S. SURVEY FEET

NOTE: ELEVATIONS BASED ON NAVD 88 DATUM

LEGEND

1078.98 WSPG CROSS SECTION

EXISTING SFHA ZONE A

STATE OF NEVADA — PROFESSIONAL ENGINEER — JERRY E. PIBUITT — No. 11000 — CIVIL — Exp. 12/31/2011 — DATE: 6-15-11

REV	DATE	DESCRIPTION	DATE	AGEN. APP	DATE	CCW APP

PROJECT NO. 504-424

DESIGN:
DRAWN:
CHECK:

PLOT DATE: 06-15-10
PLOT TIME: 11:32:10

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Adam Brock

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

WSPG WORK MAP

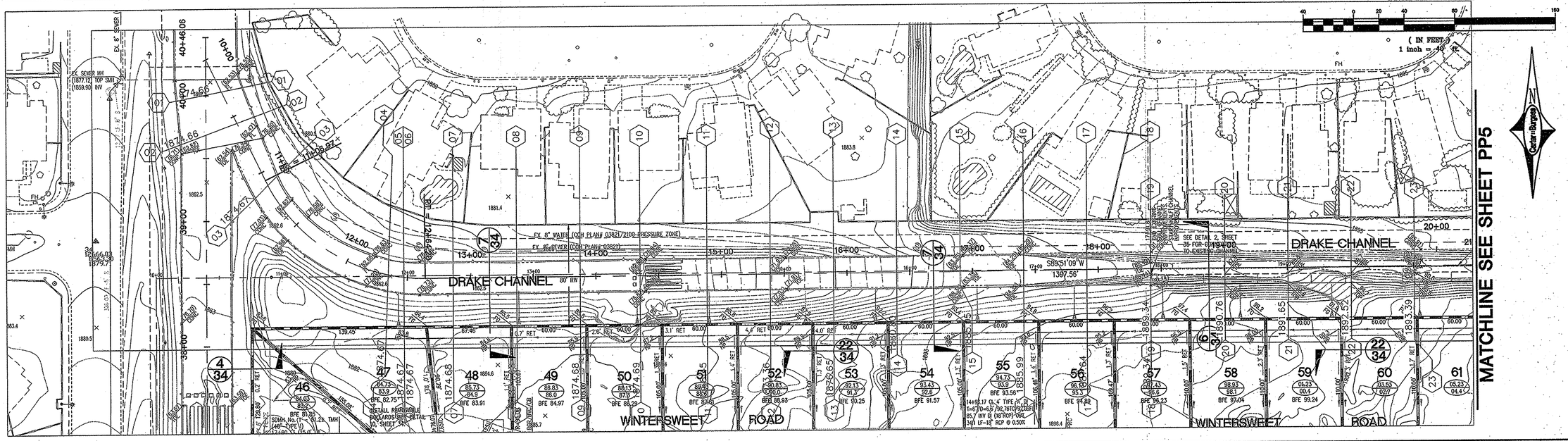
DRAWING WM-14

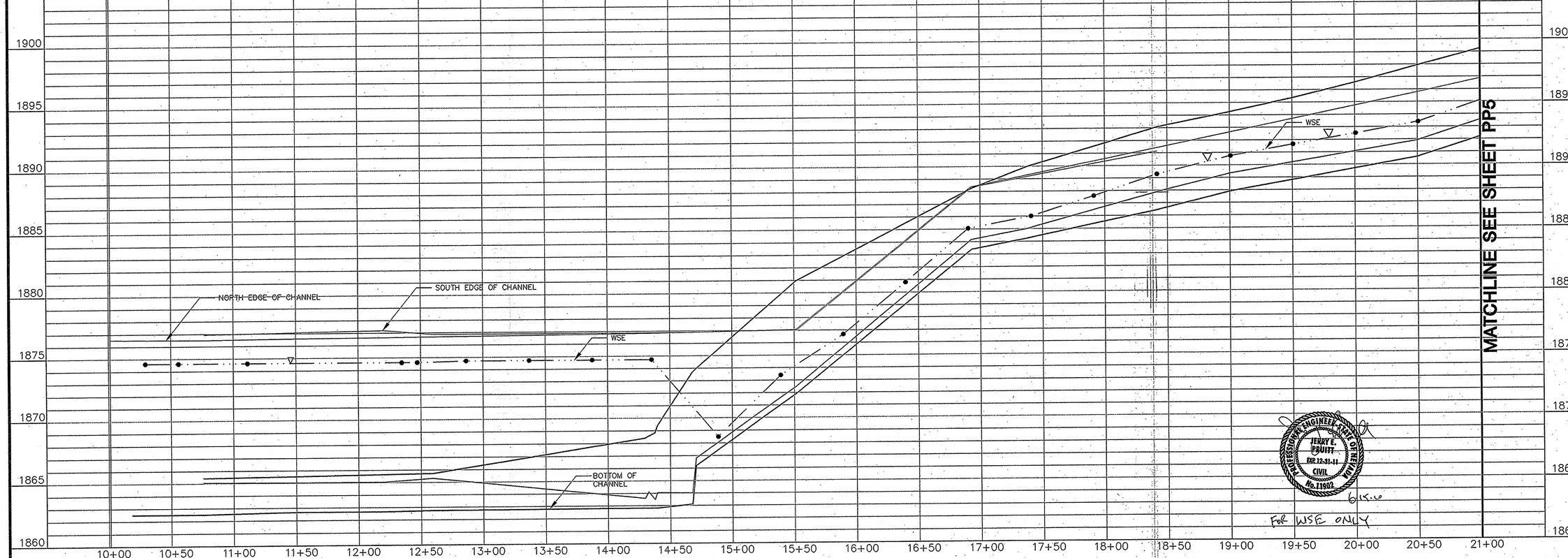
SHT OF SHTS

tpc2435.dwg,070003,pr

GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.





PROFESSIONAL ENGINEER, STATE OF NEVADA
JERRY E. PRUITT
EXP. 12-31-11
CIVIL
No. 11902

For WSE only

REVISIONS

No.	Date	CHKD	APPD

ENGINEER-STATE OF NEVADA
WILLIAM S. WONDERS
CIVIL
No. 13397
PROFESSIONAL

DESIGNED: SCC
DRAWN: KSW
CHECKED: 3/4/2011
JOB No:
SCALE:
HORIZ: 1"=40'
VERT: 1"=4'
DATE:

Carter Burgess
Consultants in Planning, Engineering, Construction Management, and Related Services
6655 Bermuda Road
Las Vegas, Nevada 89119
(702) 938-5400 Fax (702) 938-5454

PROJECT: CINNAMON RIDGE BY BEAZER HOMES

DESCRIPTION: DRAKE CHANNEL PROFILE STA 10+00 TO STA 21+00

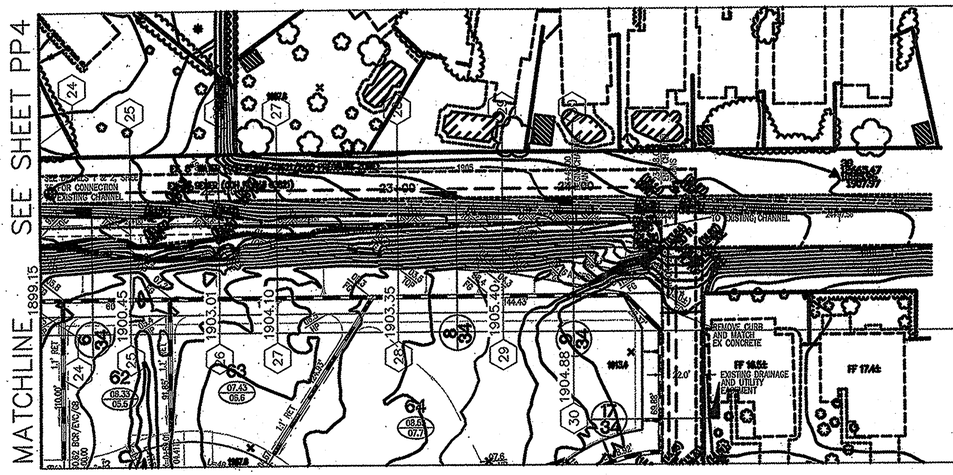
SHEET PP4
7 OF 10

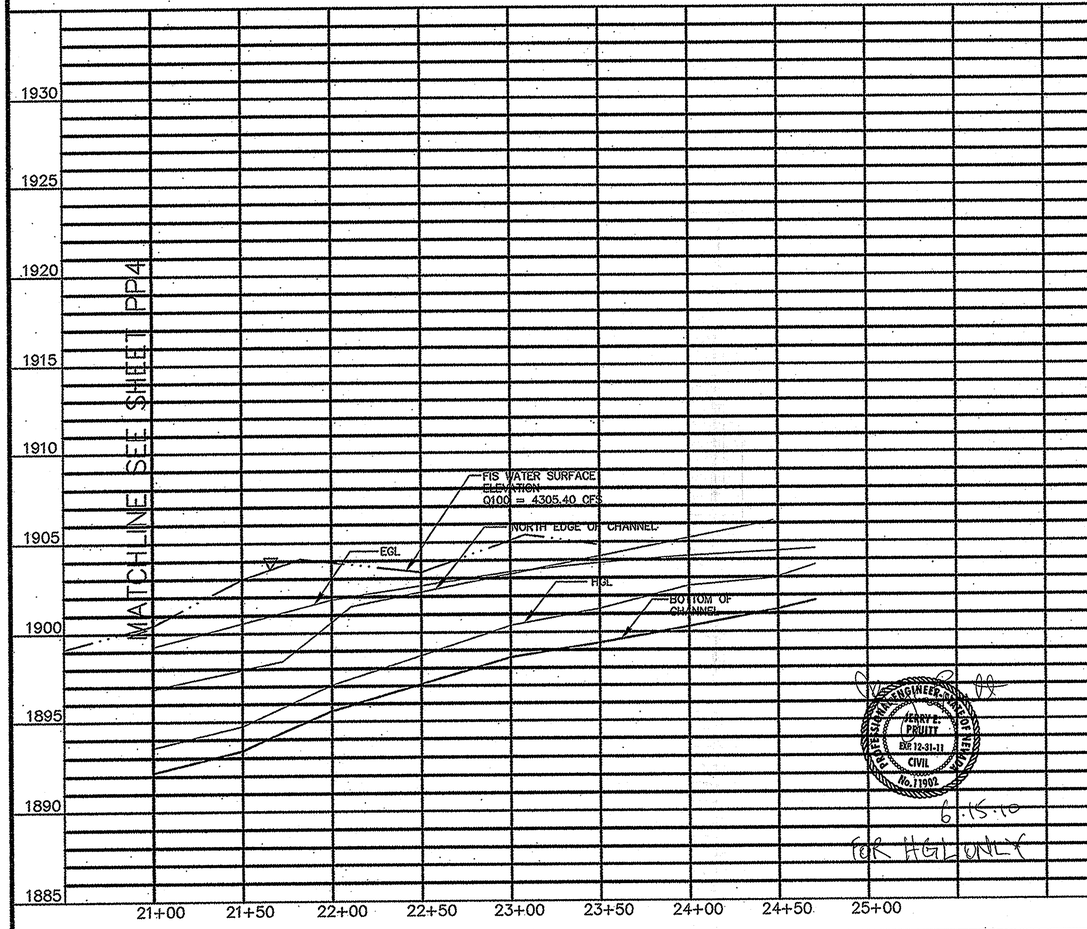
L:\34023\ESSDA\DRAWINGS\34PP4.DWG

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.





PROFESSIONAL ENGINEER STATE OF NEVADA
JERRY E. PRUITT
EXP 12-31-11
CIVIL
No. 11902

6.15.10
FOR HGL ONLY

REVISIONS

No.	Date	CHKD	APPD

PROFESSIONAL ENGINEER STATE OF NEVADA
WILLIAM S. WONDERS
CIVIL
No. 13597

DESIGNED: SCC
DRAWN: KSE
CHECKED: WSW
JOB No: 240851
HORIZ: 1"=40'
VERT: 1"=4'
DATE:

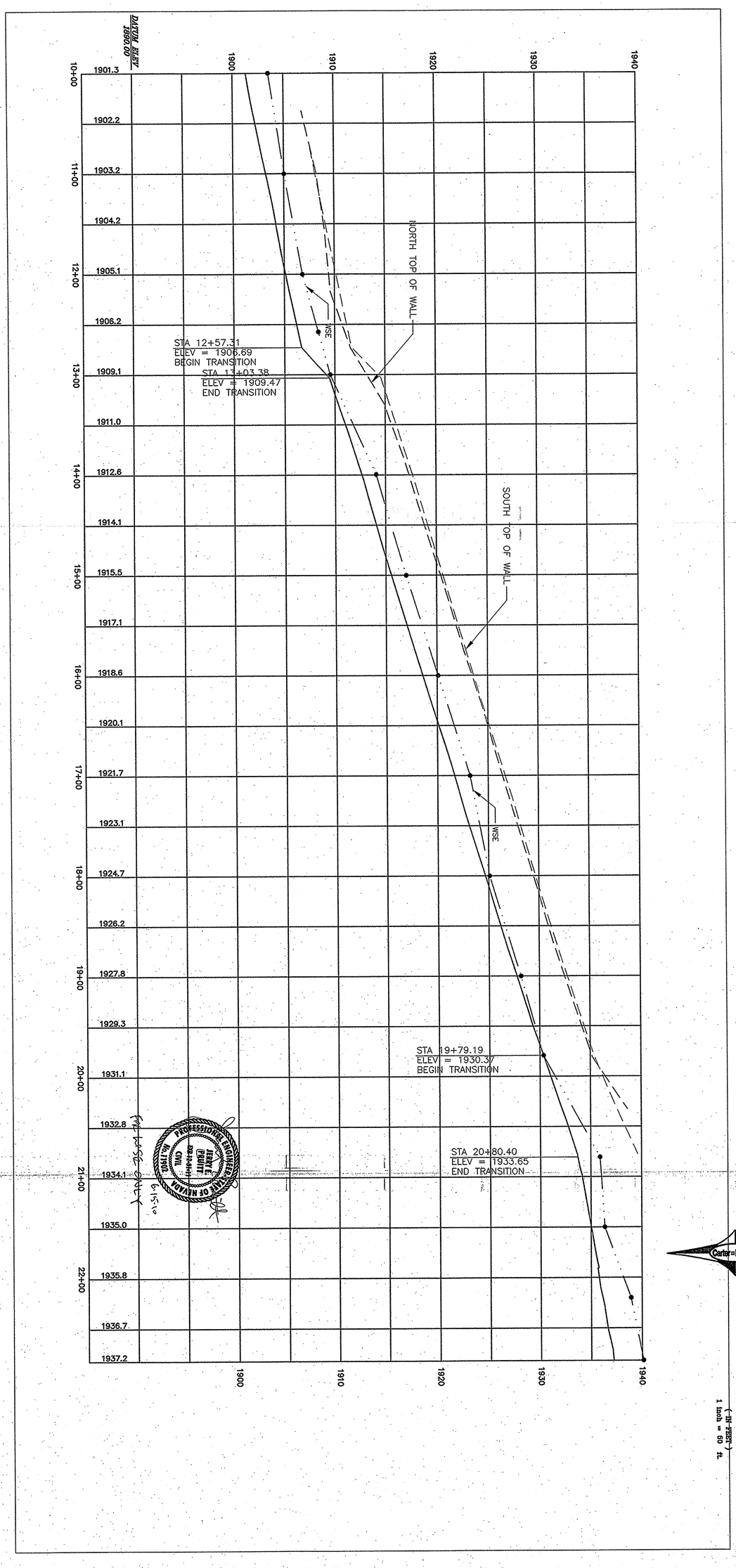
Carter Burgess
Consultants in Planning, Engineering, Construction Management, and Related Services
6655 Bermuda Road
Las Vegas, Nevada 89119
(702) 938-5400 Fax (702) 938-5454

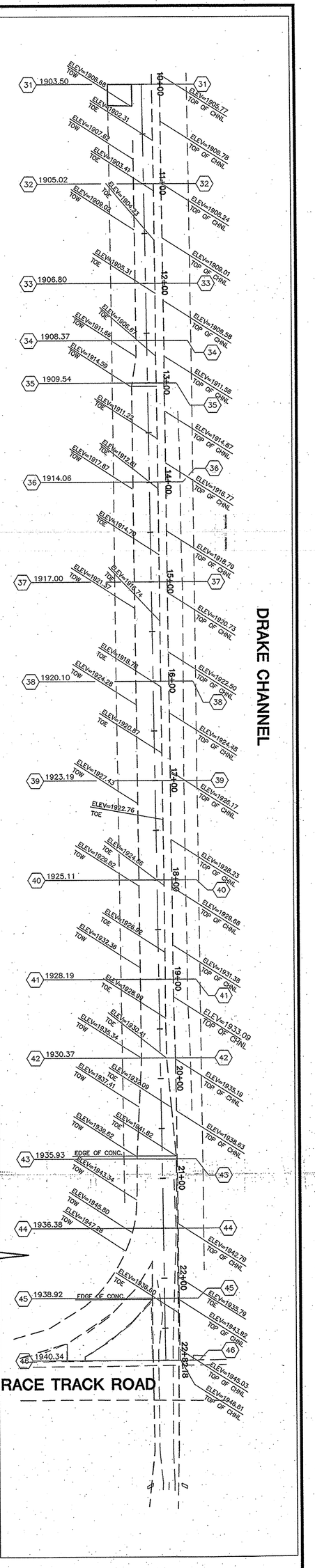
PROJECT: CINNAMON RIDGE BY BEAZER HOMES

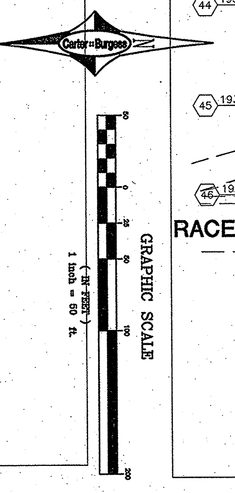
DESCRIPTION: DRAKE CHANNEL PROFILE STA 21+00 TO STA 24+53.03

SHEET PP5
8 OF 10

L:\240251\DESIGN\DRAINAGE\PDWT53.DWG







SHEET 1 OF 1

PROJECT: C-1 CHANNEL SYSTEM FIS RESTUDY

DESCRIPTION:
DRAKE CHANNEL PLAN AND PROFILE CINNAMON RIDGE TO RACE TRACK ROAD

Carter Burgess
Consultants in Planning, Engineering, Construction Management, and Related Services
6655 Bermuda Road
Las Vegas, Nevada 89119
(702) 938-5400 Fax (702) 938-5454

DESIGNED:	
DRAWN:	SCC
CHECKED:	DBR
JOB No:	240482
HORIZ:	50
VERT:	5
DATE:	SEPT. 2002

REVISIONS

No.	Date		CHKD	APPD

T:\240482 C1\DESIGN\DRAKEPOINTS4.DWG

RACE TRACK ROAD

RACE TRACK ROAD CROSSING TO BE CONSTRUCTED UNDER SEPARATE CONTRACT

NOTE: ACCESS TO BE MAINTAINED DURING CONSTRUCTION

EXISTING STRUCTURE

TYPE II BASE

SERVICE ROAD

EASEMENT LINE

2 - 'A' TYPE GABIONS

3 - 24" X 7' CMP CULVERTS FOR LOW FLOWS

2:1 MAX.

STA: 14+75.00 TRUCK SERVICE ROAD

STA: 18+00.00 BEGIN TRUCK SERVICE ROAD

STA: 20+00.00 END TRUCK SERVICE ROAD

NOTE: NOTES SHOWN ON THIS DETAIL ARE TYPICAL FOR ALL SIMILAR STRUCTURES.

STA: 20+50.00 MATCH LINE - SEE SHEET 6

APPROXIMATE EXISTING GROUND
℄ OF EASEMENT

APPROX. EXISTING GROUND AT CL OF R.O.W.

APPROX. EXISTING GROUND AT LEFT SIDE OF R.O.W.

APPROX. EXISTING GROUND AT RIGHT SIDE OF R.O.W.

RACE TRACK ROAD CROSSING TO BE COMPLETED UNDER SEPARATE CONTRACT.

WATER SURFACE ELEVATION
Q100 = 516.00 CFS

WATER SURFACE ELEV.

PROPOSED GRADE ℄ FL OF CHANNEL

WATER SURFACE ELEV.

D.S. STA = 13+50.00 DROP STRUCTURE 'A' TYPE I-MOD STRUCTURE

D.S. STA = 16+50.00 DROP STRUCTURE 'B' TYPE I-MOD STRUCTURE

D.S. STA = 19+50.00 DROP STRUCTURE 'C' TYPE I-MOD STRUCTURE

STA: 13+75.00
1948.65 TOP OF GABION
1944.65 BOTTOM OF GABION

STA: 13+81.00
1948.66 TOP OF GABION
1944.66 BOTTOM OF GABION

STA: 16+75.00
1956.45 TOP OF GABION
1954.45 BOTTOM OF GABION

STA: 16+81.00
1956.46 TOP OF GABION
1954.46 BOTTOM OF GABION

STA: 19+75.00
1960.25 TOP OF GABION
1964.25 BOTTOM OF GABION

STA: 19+81.00
1965.27 TOP OF GABION
1964.27 BOTTOM OF GABION

'A' TYPE GABION

24" CMP THRU GABION FOR LOW FLOW

'G' TYPE GABION

A' X 1' X FULL WIDTH RIP-RAP

6" RIP-RAP 1' DEEP FULL WIDTH

0.20%

1946.20 FL

1955.40 FL

1955.20 FL

1955.00 FL

1938.40 FL

1945.60 FL

STA: 10+40.00
1935.18 G.S.

1938.88 TOP OF GABION
1934.88 BOTTOM OF GABION
STA 10+83.00

6' X 6' BOX CULVERT

24" CMP THRU FOR LOW FLOW

1.00%

0.20%

6'X 1' X FULL WIDTH RIP-RAP

1938.85 TOP OF GABION
1934.85 BOTTOM OF GABION
STA 10+77.00

APPROX ELEV AT CENTERLINE R.O.W.

PROPOSED ELEV AT FL CHANNEL

WATER SURFACE ELEVATION AT FL OF CHANNEL

	(1936.6)	1934.92	(1944.3) 1935.40	(1937.4) 1935.68 1942.80	(1938.2) 1935.92 1943.77	(1947.1) 1936.01 1943.78	(1950.6) 1936.11 1943.79	(1952.2) 1936.21 1943.75	(1953.2) 1936.30 1943.70	(1954.7) 1936.40 1943.66	(1956.9) 1945.70 1953.27	(1958.8) 1945.80 1953.34	(1960.0) 1945.90 1953.33	(1961.3) 1946.00 1953.28	(1962.4) 1946.10 1953.14	(1962.9) 1946.20 1952.92	(1962.12) 1955.50 1952.75	(1964.0) 1955.60 1952.72	(1965.4) 1955.70 1962.45	(1966.9) 1955.80 1953.59	(1968.6) 1955.90 1963.94	(1970.2) 1956.00 1963.88	(1971.9) 1965.30 1972.21	(1973.8) 1965.40
	9	10		11			12	13		14		15		16		17		18		19		20		
LEFT APPROXIMATE EXISTING GROUND AT EDGE OF ROW	1944.5	1946.0	1948.3	1949.3	1950.1	1952.1	1953.1	1955.4	1956.7	1957.6	1959.0	1961.1	1961.5	1961.7	1963.1	1964.5	1965.7	1968.1	1969.6	1971.8	1973.1	1974.1		
RIGHT APPROXIMATE EXISTING GROUND AT EDGE OF ROW	1944.0	1947.1	1948.1	1949.4	1948.3	1952.6	1950.3	1952.7	1954.1	1956.2	1959.9	1962.0	1961.9	1964.9	1965.9	1967.4	1966.5	1965.9	1968.6	1969.6	1971.1	1971.8		

BASIS OF BEARING
N 89° 48' 00" E, BEING THE SOUTH LINE OF THE SW 1/4 OF SECTION 10, AS SHOWN ON BOOK 32 OF PLATS, PAGE 46, CLARK COUNTY, NEVADA RECORDER'S CUMULATIVE MAP INDEX.

PROFESSIONAL ENGINEER - STATE OF NEVADA
JERRY E. PRUITT
EXP. 12-31-11
CIVIL
No. 11902
6-15-10
FOR USE ONLY

PROFESSIONAL ENGINEER - STATE OF NEVADA
6-11-10
MARGARET C. BRAKE
CIVIL
No. 10133

SUMMIT™ ENGINEERING CORPORATION
CONSULTING ENGINEERS AND SURVEYORS
2645 SOUTH HIGHLAND, LAS VEGAS, NEVADA 89109
PHONE: (702) 252-3238 FAX: (702) 252-3247

DESIGNED BY: M.B.
DRAWN BY: C.S.S
CHECKED BY: C.G.T.
JULY 08,1994

IMPROVEMENT PLANS
DRAKE CHANNEL
STA: 9+00.00 - 20+50.00
CLARK COUNTY NEVADA
CITY OF HENDERSON

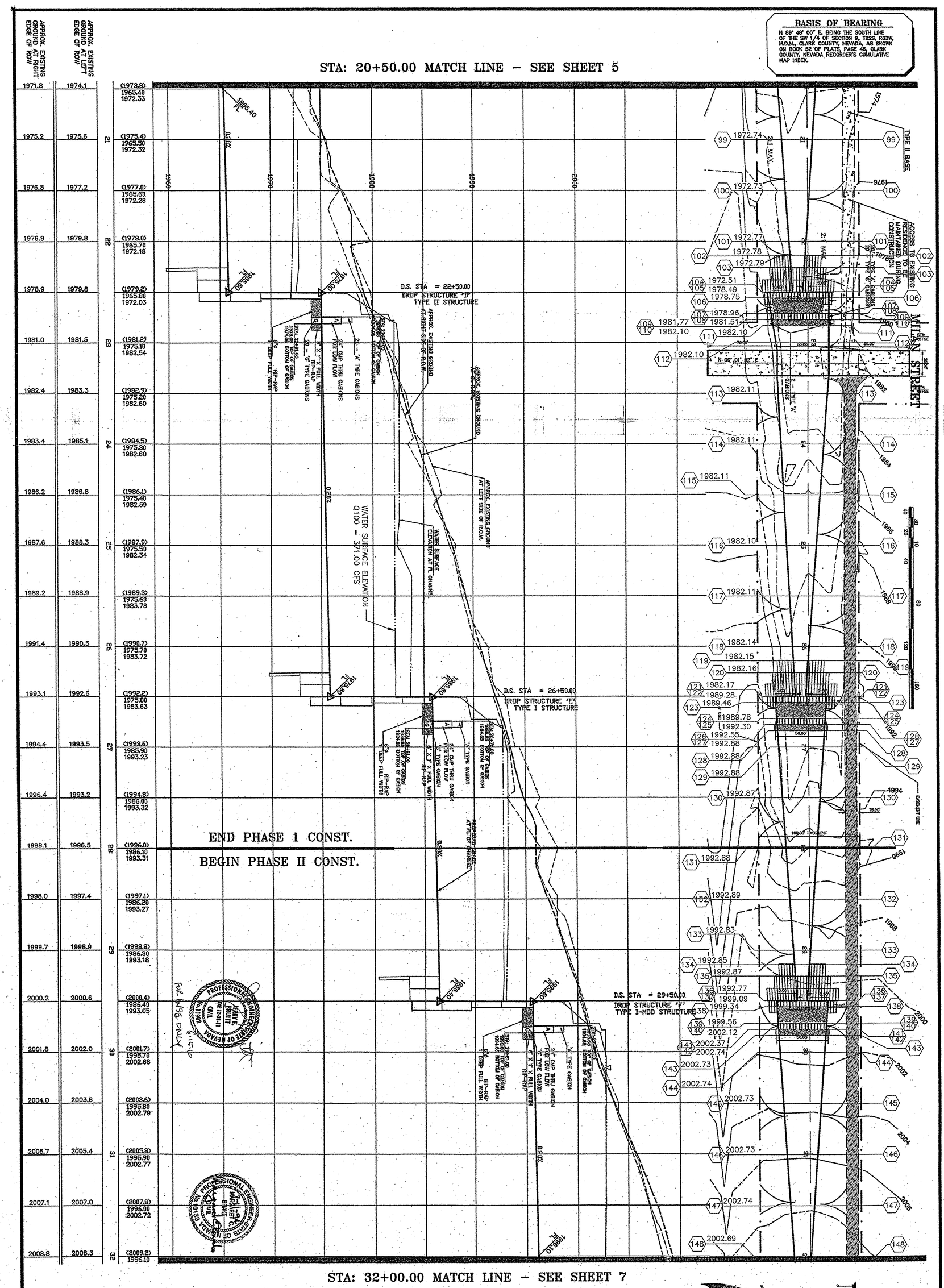
REV.	DATE	DESCRIPTION	BY	APP'D
1	2-21-95	WEIR ACCESS RAMP REVS.	M.C.B.	

SCALE
HORIZ. 1" = 40'
VERT. 1" = 4'

SHEET 5 OF 19

JOB NO. 70810.2
P:\DWGS\DASCO DT-CHAN.DWG VIEW SET-5

0405



SHEET	SCALE	REV.	DATE	DESCRIPTION	BY	APP'D
6 OF 19	HORIZ. 1"=40'					
	VERT. 1"=4'					
	JOB NO. 70810.2					
P:\DWGS\DASCO\DT-CHAN.DWG VIEW SHT-6						

IMPROVEMENT PLANS
DRAKE CHANNEL
STA: 20+50.00 - 32+00.00
CITY OF HENDERSON CLARK COUNTY NEVADA

DESIGNED BY: M.B.
DRAWN BY: C.S.S
CHECKED BY: C.G.T.
JUNE 27,1994

SUMMIT™ ENGINEERING CORPORATION
CONSULTING ENGINEERS AND SURVEYORS
5864 SOUTH HIGHLAND, LAS VEGAS, NEVADA 89120
PHONE: (702) 252-3238 FAX: (702) 252-3247

0052

STA: 32+00.00 MATCH LINE - SEE SHEET 6

STA: 44+00.00 MATCH LINE - SEE SHEET 8

MAGIC WAY

EASEMENT LINE

N 89° 48' 00" E

WATER SURFACE ELEVATION
Q100 = 255.00 CFS

WATER SURFACE ELEV.

APPROXIMATE EXISTING GROUND @ CENTERLINE

APPROX. EXISTING GROUND AT RIGHT SIDE OF EASEMENT

APPROX. EXISTING GROUND AT LEFT SIDE OF EASEMENT

D.S. STA = 35+50.00
DROP STRUCTURE "H"
TYPE II STRUCTURE

D.S. STA = 39+50.00
DROP STRUCTURE "J"
TYPE I STRUCTURE

D.S. STA = 43+50.00
DROP STRUCTURE "L"
TYPE I STRUCTURE

D.S. STA = 32+50.00
DROP STRUCTURE "G"
TYPE I-MOD STRUCTURE

WATER SURFACE ELEVATION
Q100 = 371.00 CFS

PROPOSED GRADE
@ FL CHANNEL

STA: 39+74.00
2029.05 TOP OF GABION
2025.65 BOTTOM OF GABION

STA: 39+81.00
2029.06 TOP OF GABION
2025.06 BOTTOM OF GABION

STA: 43+74.00
2039.85 TOP OF GABION
2035.85 BOTTOM OF GABION

STA: 43+81.00
2039.86 TOP OF GABION
2035.86 BOTTOM OF GABION

STA: 354+74.00
2018.25 TOP OF GABION
2014.25 BOTTOM OF GABION

STA: 354+81.00
2018.26 TOP OF GABION
2014.26 BOTTOM OF GABION

STA: 324+74.00
2008.45 TOP OF GABION
2004.45 BOTTOM OF GABION

STA: 324+81.00
2008.46 TOP OF GABION
2004.46 BOTTOM OF GABION

'A' TYPE GABION

24" CMP THRU GABION FOR LOW FLOW

20 — 'A' TYPE GABIONS

24" CMP THRU GABIONS FOR LOW FLOW

20 — 'G' TYPE GABIONS

6' X 1' X FULL WIDTH RIP-RAP

6"ø RIP-RAP 1' DEEP FULL WIDTH

0.80%

2040
2030
2020
2010
2000

	32	33	34	35	36	37	38	39	40	41	42	43	44
	(2009.82) 1996.10 2002.83	(2010.77) 1996.20 2002.50	(2012.00) 2005.50 2011.21	(2013.41) 2005.60 2011.34	(2014.69) 2005.70 2011.29	(2014.83) 2005.80 2011.29	(2017.92) 2005.90 2011.40	(2019.43) 2006.00 2011.62	(2020.52) 2015.30 2021.49	(2021.72) 2015.40 2021.67	(2024.00) 2015.50 2021.65	(2025.62) 2015.60 2021.64	(2026.72) 2015.70 2021.61	(2028.62) 2015.80 2021.55	(2030.57) 2015.90 2021.59	(2032.22) 2016.00 2021.70	(2033.00) 2026.10 2032.84	(2033.43) 2026.20 2032.89	(2035.11) 2026.30 2032.99	(2035.11) 2026.40 2032.98	(2037.22) 2026.50 2032.95	(2039.00) 2026.60 2032.92	(2040.92) 2026.70 2032.79	(2042.42) 2026.80 2032.65	(2043.43) 2026.90
APPROX. EXISTING GROUND AT LEFT EDGE OF ROW	2008.3	2009.6	2010.1	2010.3	2014.0	2015.4	2016.0	2017.0	2019.1	2021.7	2023.6	2024.9	2026.4	2027.7	2028.8	2030.0	2031.6	2032.3	2034.0	2035.3	2036.8	2038.4	2040.0	2041.8	2043.2	
APPROX. EXISTING GROUND AT RIGHT EDGE OF ROW	2008.8	2010.4	2011.8	2013.4	2014.3	2015.0	2017.7	2020.0	2021.7	2023.5	2024.0	2025.4	2026.0	2028.3	2030.6	2032.2	2034.0	2034.6	2036.0	2037.4	2038.5	2039.9	2041.4	2042.9	2044.8	

FOR WSE ONLY 6-15-10

SUMMIT™ ENGINEERING CORPORATION
CONSULTING ENGINEERS AND SURVEYORS
5404 SOUTH HIGHLAND, LAS VEGAS, NEVADA 89120
PHONE (702) 262-2038 FAX (702) 262-3247

DESIGNED BY: M.B.																										
DRAWN BY: C.S.S																										
CHECKED BY: C.G.T.																										
JUNE 27,1994																										
REV.	DATE	DESCRIPTION	BY	APP'D																						

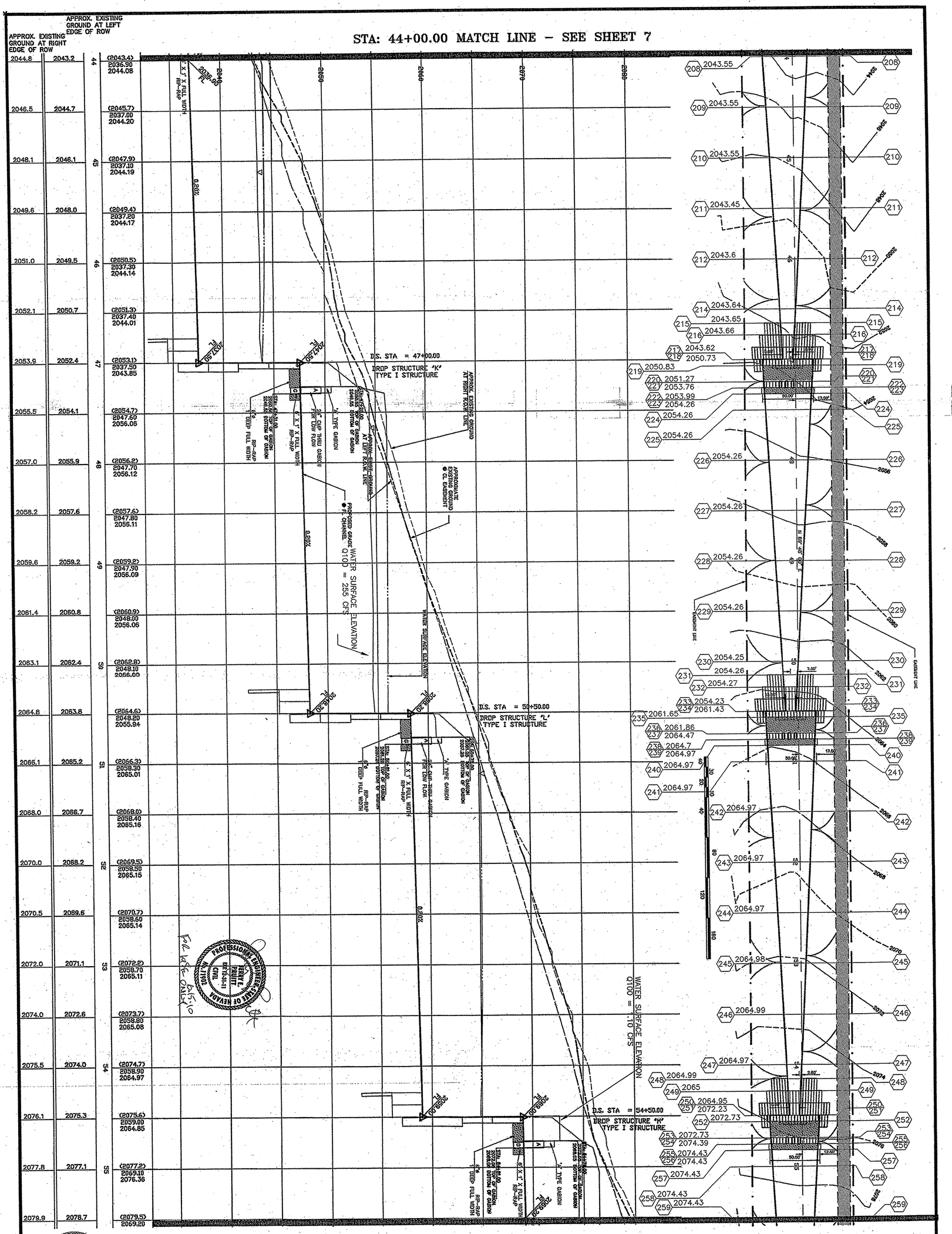
IMPROVEMENT PLANS
DRAKE CHANNEL
STA: 32+00.00 - 44+00.00
CITY OF HENDERSON
CLARK COUNTY NEVADA

SCALE
HORIZ. 1"=40'
VERT. 1"=4'

SHEET 7 OF 19

JOB NO. 70610.2
FA. DWGS \DASCO\DRAKTOPO.DWG VIEW SHT=4

04052



BASIS OF BEARING

N 89° 48' 00" E, BEING THE SOUTH LINE OF THE SW 1/4 OF SECTION 9, T22S, R63W, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN ON BOOK 32 OF PLATS, PAGE 45, CLARK COUNTY, NEVADA RECORDER'S CUMULATIVE MAP INDEX.

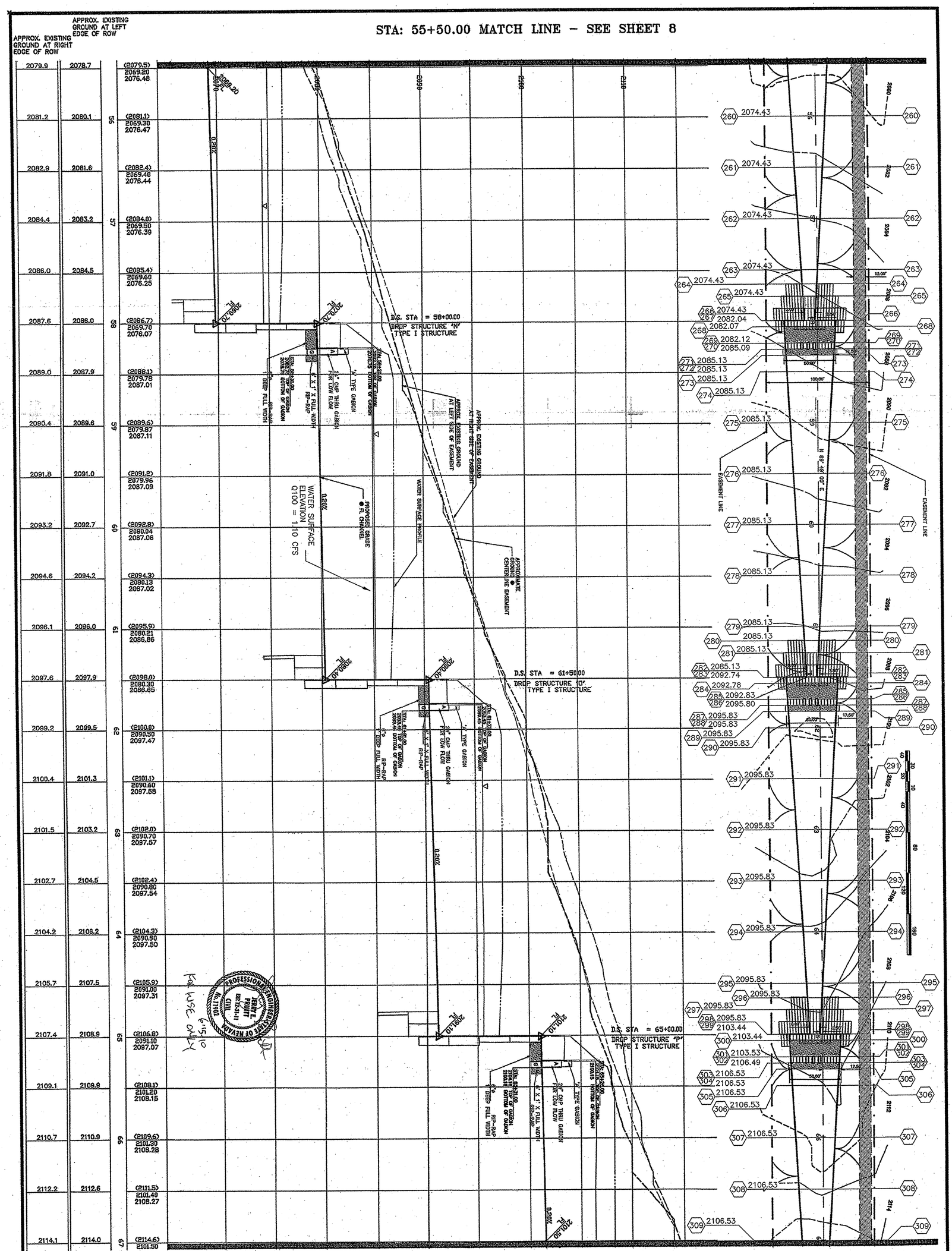
SHEET	SCALE	REV.	DATE	DESCRIPTION	BY	APP'D
8 OF 19	HORIZ. 1"=40'					
	VERT. 1"=4'					
	JOB NO. 70810.2					
	P:\DWGS\DASCO\DT-CHAN.DWG VIEW SHT-8					

IMPROVEMENT PLANS
DRAKE CHANNEL
STA: 44+00.00 – 55+50.00
CITY OF HENDERSON CLARK COUNTY NEVADA

DESIGNED BY: M.B.	
DRAWN BY: C.S.S	
CHECKED BY: C.G.T.	
JUNE 27,1994	

SUMMIT™ ENGINEERING CORPORATION
CONSULTING ENGINEERS AND SURVEYORS
3814 SOUTH HIGHLAND, LAS VEGAS, NEVADA 89103
PHONE: (702) 252-3238 FAX: (702) 252-3247

0852



BASIS OF BEARING

N 89° 48' 00" E, BEING THE SOUTH LINE OF THE SW 1/4 OF SECTION 9, T22S, R63W, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN ON BOOK 32 OF PLATS, PAGE 46, CLARK COUNTY, NEVADA RECORDER'S CUMULATIVE MAP INDEX.

SHEET	SCALE	REV.	DATE	DESCRIPTION	BY	APP'D
9 OF 19	HORIZ. 1"=40' VERT. 1"=4'					
	JOB NO. 70810.2					
	P:\DWGS\DASCO\DRAKTOPO.DWG VIEW D-1					

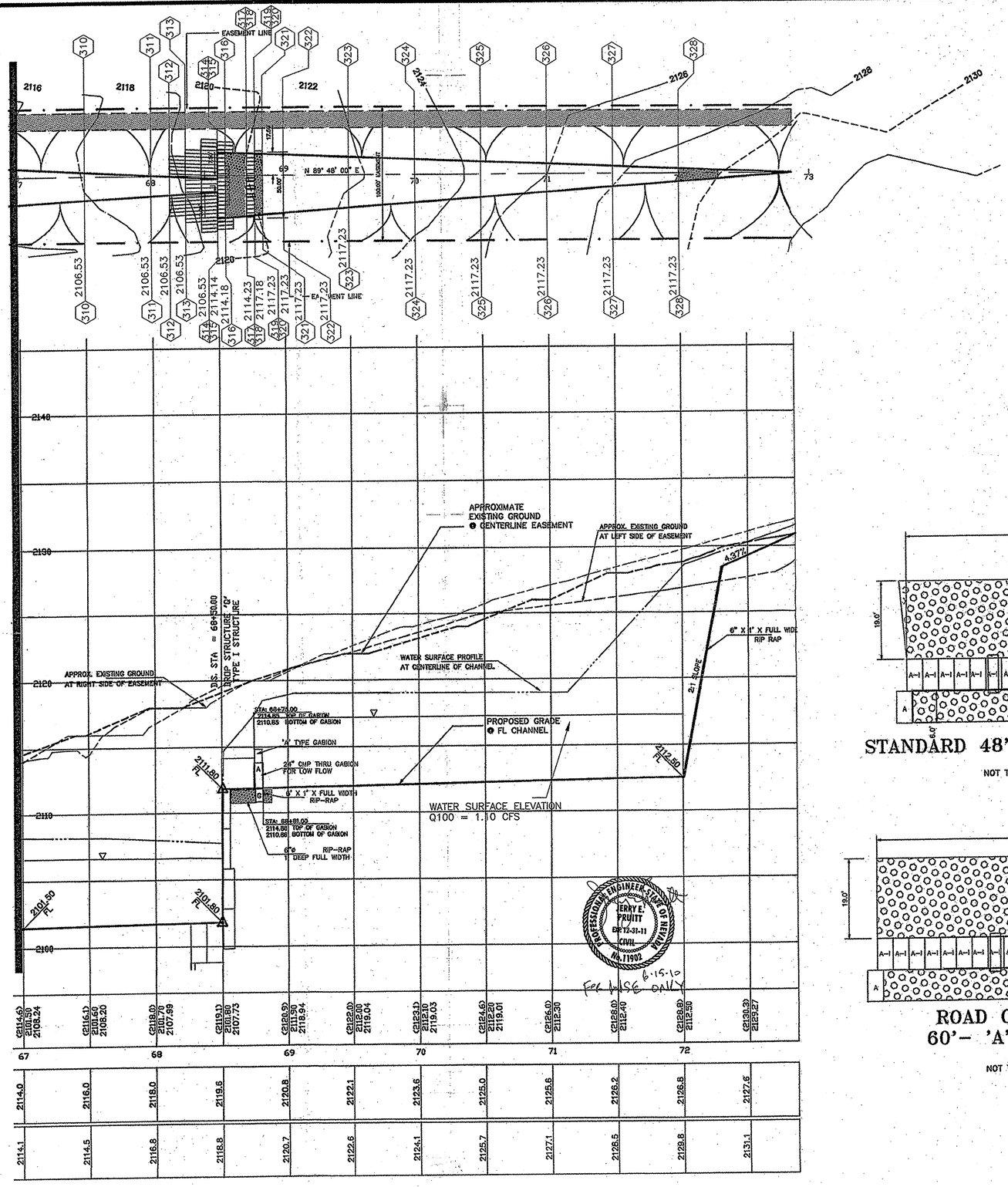
IMPROVEMENT PLANS
DRAKE CHANNEL
STA: 55+50.00 - 67+00.00

CITY OF HENDERSON CLARK COUNTY NEVADA

DESIGNED BY:	M.B.
DRAWN BY:	C.S.S
CHECKED BY:	C.G.T.
	JUNE 27,1994

SUMMIT™ ENGINEERING CORPORATION
CONSULTING ENGINEERS AND SURVEYORS
3984 SOUTH HIGHLAND, LAS VEGAS, NEVADA 89103
PHONE: (702) 252-3236 FAX: (702) 252-3247

0402


EASEMENT LINE
2116
2118
2120
2122
2124
2126
2128
2130
N 89° 48' 00" E
69
70
71
72
73
2106.53
2114.23
2114.14
2114.18
2117.18
2117.23
2117.23
2117.23

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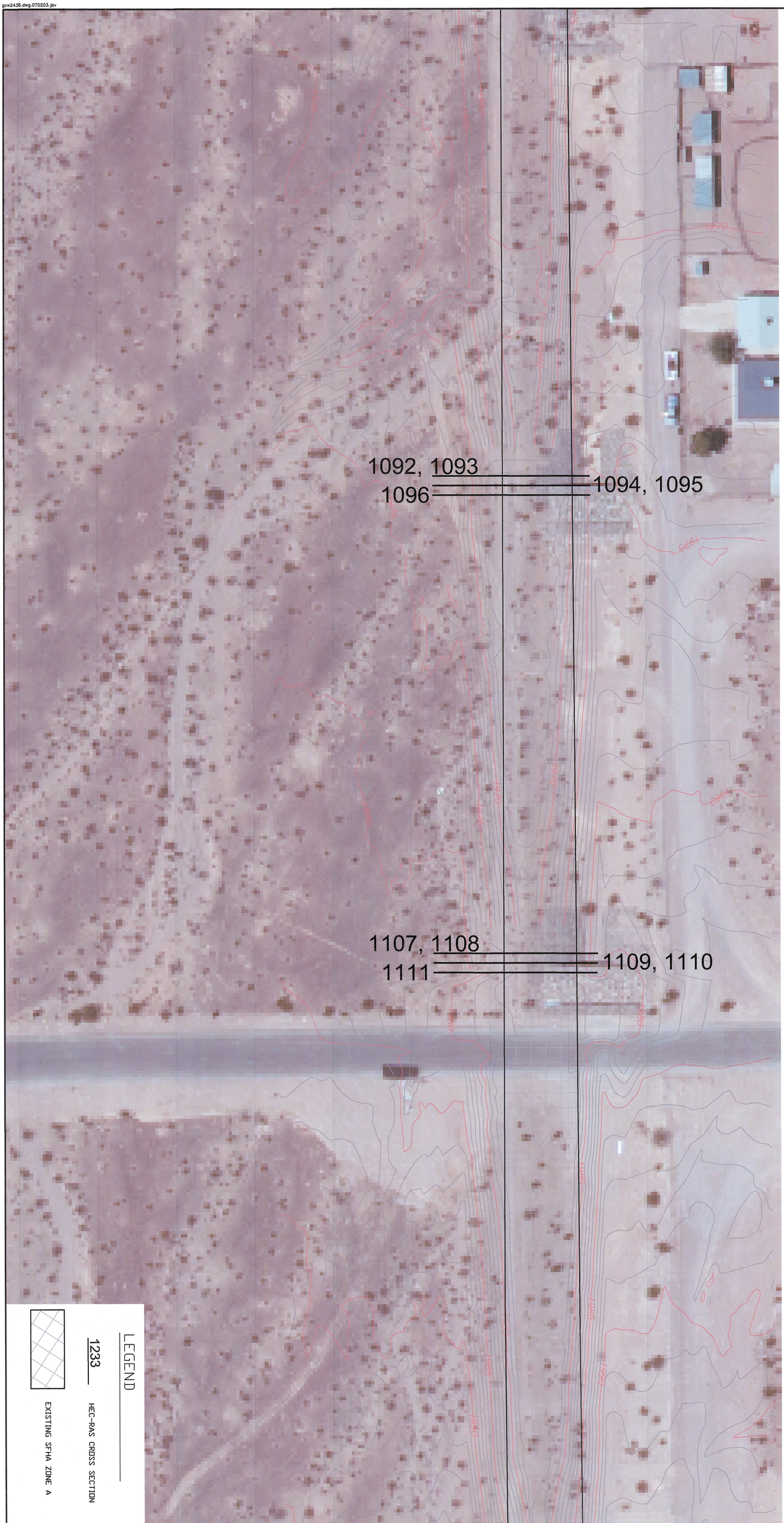


NOTE: ELEVATIONS BASED ON NAVD 88 DATUM

BENCHMARK:

COH BM# 324 2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS
1919.389 U.S. SURVEY FEET

GRAPHIC SCALE
(IN FEET)
1 inch = 80 ft.
0 40 80

NORTH

LEGEND

1233 HEC-RAS CROSS SECTION

EXISTING SFHA ZONE A

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

ADDITIONAL TOPO POINTS - DRAKE CHANNEL

DRAWING DR-1 SHT OF SHTS

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

LAS VEGAS · SACRAMENTO · RENO

F:\Projects\500\504-424\Drainage\LOMR\FEMA request\workmap3.dwg
Adam Black

PROJECT NO. 504-424

DESIGN:
DRAWN:
CHECK:
PLOT DATE: 06-11-10
PLOT TIME: 19:38:37

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROFESSIONAL ENGINEER STATE OF NEVADA
JERRY E. PRUITT
Exp. 12/31/2011
CIVIL
No. 11902

DATE: 6-15-10

BENCHMARK:

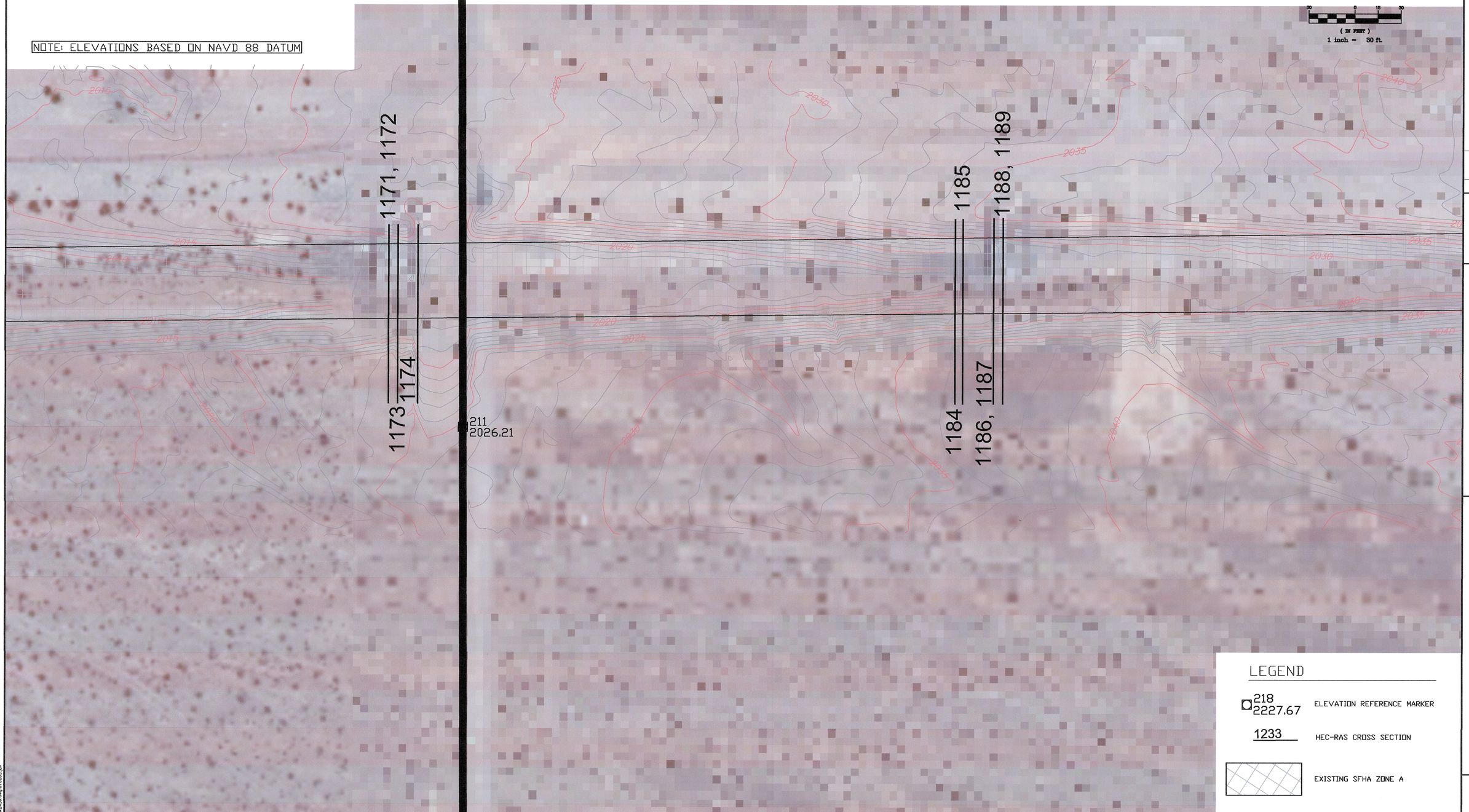
COH BM# 324 2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS
1919.389 U.S. SURVEY FEET

NOTE: ELEVATIONS BASED ON NAVD 88 DATUM

NORTH

GRAPHIC SCALE
30 0 15 30
(IN FEET)
1 inch = 30 ft.



LEGEND

218
2227.67 ELEVATION REFERENCE MARKER

1233 HEC-RAS CROSS SECTION

EXISTING SFHA ZONE A

STATE OF NEVADA PROFESSIONAL ENGINEER
JERRY E. PRUITT
No. 11900
Exp. 12/31/2011
CIVIL
DATE: 6-15-10

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 504-424
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 06-11-10
PLOT TIME: 19:40:03

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD - LAS VEGAS, NV 89146
T: 702.804.2000 - F: 702.804.2799 - GCWALLACE.COM
LAS VEGAS - SACRAMENTO - RENO

F:\Projects\500\504-424\Drainage\LOMR\FEMA request\workmap3.dwg
Adam Block

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

ADDITIONAL TOPO POINTS - DRAKE CHANNEL

DRAWING
DR-2
SHT OF SHTS

Plotted: 07/20/2010 - 7:40am By: Adam Block
File: F:\Projects\500\504-424\Drainage\LOMR\FEMA request\workmap3.dwg
Xrefs: xs-2438.dwg 070203.jpg

NORMAL DEPTH SUMMARY TABLE - UPPER BERM									
Cross Section	Elevation ft	Normal Depth ft	Discharge cfs	Flow Regime	Flow Area sq ft	Average Velocity ft/s	Hydraulic Radius	Wetted Perimeter	Wetted Top Width
1	2136.5	1.5	1527	Critical	217.0	7.0	1.5	146.9	146.5
2	2151.4	1.4	1527	Critical	228.8	6.7	1.34	170.5	170.2
3	2166.1	1.1	1527	Critical	261.7	5.9	1.05	248.9	248.7
3.1	2175.7	0.7	1527	Critical	313.7	4.8	0.69	455.8	455.7
4	2180.8	0.8	1527	Critical	296.2	5.2	0.83	357.1	356.8
5	2200.6	0.6	1527	Critical	346.6	4.4	0.59	592.0	591.8
6	2216.3	1.3	1527	Critical	239.1	6.4	0.99	240.9	240.8
7	2236.0	1.0	1527	Critical	268.1	5.7	0.99	270.5	270.0
8	2251.5	1.5	1527	Critical	223.8	6.8	1.42	158.1	157.5
9	2266.3	1.3	1527	Critical	237.7	6.5	1.19	199.1	198.8
10	2282.5	2.5	1527	Critical	167.5	9.0	1.28	131.3	130.8
11	2300.7	1.7	1527	Critical	194.3	7.9	0.93	208.1	206.9
11.1	2312.7	1.7	1527	Subcritical	231.9	6.6	0.74	313.2	312.9
12	2315.5	1.5	1527	Subcritical	239.0	6.4	0.69	347.0	346.6
12.1	2317.3	1.3	1527	Critical	237.8	6.5	0.66	359.5	358.6
12.11	2320.9	0.9	1527	Critical	291.6	5.3	0.79	368.4	368.1
12.12	2324.5	1.5	1527	Critical	227.7	6.6	0.76	297.7	297.6
12.2	2330.2	1.2	1527	Critical	246.3	6.2	0.73	336.2	335.8
13	2337.7	1.7	1527	Critical	206.7	7.4	1.08	190.6	190.4
14	2356.4	1.4	1527	Critical	226.1	6.7	0.99	227.3	227.3
15	2375.8	0.8	1527	Critical	298.7	5.2	0.8	375.7	375.6
16	2391.0	1.0	1527	Subcritical	294.4	5.3	1	294.2	293.9

GRAPHIC SCALE

250 0 125 250

(IN FEET)

1 inch = 250 ft.

NORTH

LEGEND

STA 10+00.00 (16) NORMAL DEPTH CROSS SECTION

REVISED SFHA ZONE A

EXISTING SFHA ZONE A

CITY OF HENDERSON

CLARK COUNTY

NOTE: ELEVATIONS BASED ON 1983 NORTH AMERICAN DATUM

STATE OF NEVADA
REGISTERED PROFESSIONAL ENGINEER
JERRY E. PRUITT
Date: 12/29/2011
CIVIL
No. 13997

DATE: 12/29/11

% COMPLETE

REV	DATE	DESCRIPTION	AGEN APP	DATE	CGW APP

PROJECT NO. 504-424

DESIGN: FAM
DRAWN: FAM
CHECK: DM
PLOT DATE: 08-15-10
PLOT TIME: 15:51:52

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LAS VEGAS · SACRAMENTO · RENO

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Adam Block

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

UPPER BERM WORK MAP

DRAWING FIG-8R2 OF SHTS

HTE: 00-00000

cn2435.dwg/070003.tif

EXCERPTS FROM THE APPROVED CLOMR FOR THE NORTHEAST C-1 DETENTION BASIN (CASE NO. 08-09-0093R)

Figure 7R - Drainage Map
Post-Project Conditions HEC-1 Models (6-hour)
Upper Berm Normal Depth Calculations
Post-Project Conditions HEC-RAS Model (Main Channel)
FEMA MT-2 Forms 1, 2, 3

NORTHEAST C-1 DETENTION BASIN
CONDITIONAL LETTER OF MAP REVISION
(CLOMR)

504-424

October 2007

Prepared for:

City of Henderson
Public Works Department
240 Water Street
Henderson, Nevada 89015
Phone: (702) 565-2140
Fax: (702) 565-5687

Prepared by:

G. C. Wallace, Inc.
1555 S. Rainbow Blvd.
Las Vegas, Nevada 89146
Phone: (702) 804-2000
Fax: (702) 804-2297

NORTHEAST C-1 DETENTION BASIN
CONDITIONAL LETTER OF MAP REVISION
(CLOMR)

504-424

October 2007

Prepared for:

City of Henderson
Public Works Department
240 Water Street
Henderson, Nevada 89015
Phone: (702) 565-2140
Fax: (702) 565-5687

G. C. WALLACE, INC.
ENGINEERS PLANNERS SURVEYORS

G. C. WALLACE, INC.

Writer's Contact Information:
(702) 804-2000

504-424

October 16, 2007

National LOMR Manager
FEMA Map Coordination Contractor
3601 Eisenhower Avenue
Suite 600
Alexandria, Virginia 22304

Re: CLOMR for the Northeast C-1 Detention Basin in the City of Henderson, Nevada

Dear LOMR Manager:

G. C. Wallace, Inc. (GCW) has been contracted by the City of Henderson, Nevada, to complete a Conditional Letter of Map Revision (CLOMR) for the Northeast C-1 Detention Basin (henceforth referred to as the NE C-1 Detention Basin) located within Henderson, Nevada. The purpose of this CLOMR is to lay the groundwork for a Letter of Map Revision (LOMR) in order to clarify and/or correct the existing Community Panel to reflect the proposed conditions within the watershed.

The project site is located in portions of Sections 10, 14, and 15; Township 22 South; Range 63 East. A vicinity map and location map showing the exact location of the project are included as Figure 1 and Figure 2.

FEMA FLOODPLAIN STATUS

Figure 3 shows the project site in relation to designated Federal Emergency Management Agency (FEMA) flood zones. According to Flood Insurance Rate Map (FIRM) Panel 32003C 2620 E, dated September 27, 2002, a portion of the project site lies within a FEMA-designated Special Flood Hazard Area (SFHA) Zone A, while the remaining area of the project site lies within FEMA-designated Zone X. The proposed NE C-1 Detention Basin is not located in a FEMA-designated Special Flood Hazard Area. However, a portion of the proposed collection channel system is located within a FEMA-designated Special Flood Hazard Area.

The following information supporting this request for a CLOMR is enclosed. This request is based on the proposed improvements consisting of the installation of a collection channel, a detention basin, and outfall storm drain facilities:

- A check in the amount of $4,400.00, payable to the National Flood Insurance Program, has been included with this submittal for review and processing fees.
- Payment Information Form (81-107).
- FEMA MT-2 Forms: 1, 2, and 3.
- Figure 1 - Vicinity Map.
- Figure 2 - Location Map.
- Figure 3 - Effective FIRM.
- Figure 4 - Proposed FIRM Revisions.

- Figure 5 - Annotated FIRM.
- Figure 6 – Modified Clark County Regional Flood Control District (CCRFCD) Master Plan Update (MPU) Figure F-22.
- Figure 7 – Ultimate Conditions Drainage Map.
- Exhibit A – Upper Berm Approximate Methods Analysis.

PROPOSED IMPROVEMENTS

The proposed improvements consist of an upper berm, a concrete-lined collection channel, the NE C-1 Detention Basin, and a storm drain outfall facility to convey flows to the existing C-1 Channel downstream.

Through visual inspection of digital topography and aerial photographs, the current FEMA SFHA Zone A within the River Mountains may not represent existing hydraulic conditions. The FEMA wash within the River Mountains splits off to the north and east at the proposed upper berm location. The upper berm is designed to prevent this flow split and direct 1527 cfs from Basin C1-65 north to the main confluence with the collection channel. The proposed berm is an 11-foot high embankment, with 4:1 sideslopes lined with roller compacted concrete on the upstream face, a 16-foot wide maintenance road at the top, and 10:1 earthern side slopes on the downstream face. Normal depth approximate methods calculations show the maximum depth of flow against the berm embankment is 1.3 feet, thus over 9 feet of freeboard is provided.

The proposed collection channel that connects to the existing soil cement levee just south of Burkholder Boulevard is a concrete-lined, 12-foot wide trapezoidal channel, with 3:1 sideslopes on either side. The lower portion of the channel is a 20-foot wide by 8-foot high rectangular concrete channel. The collection channel collects flows from Basins C1-55, C1-65, and C1-66 as well as the outflow from the existing East C-1 Detention Basin and conveys flows to the proposed NE C-1 Detention Basin. At two points along the length of the channel, washes exit the River Mountains foothills in concentrated points. Lateral structures have been designed to allow these flows to enter the channel without spilling over the top of the channel. The lateral structures include sediment/debris collection areas to remove larger sediment before the flow is conveyed into the collection channel.

The NE C-1 Detention Basin is designed to hold a volume of 353 Acre-feet, which includes an additional 10 percent volume to account for sedimentation, and is capable of containing the 100-year runoff. The NE C-1 Detention Basin is drained through a 72-inch storm drain at the northwest corner of the basin. The detention basin outfall, which consists of varying size storm drain, will convey flows westerly along Havre Avenue to the existing C-1 Channel at Pueblo Avenue.

HYDROLOGIC MODELING

Figure 7 presents the Drainage Map for the upper berm, NE C-1 Detention Basin, collection channel, outfall, and the existing Drake Channel. Hydrologic analyses for the upper berm, NE C-1 Detention Basin, and collection channel are referenced from the *Pre-Design Report for the Northeast C-1 Detention Basin* (henceforth referred to as the NE C-1 report), dated April 14, 2005, by G. C. Wallace Companies (GCW). The subject study was reviewed and accepted by the City of Henderson and the Clark County Regional Flood Control District. NE C-1 Model C1SDN3B-alt3.DAT from the NE C-1 report defines 100-year storm flows for the upper berm and collection channel. HEC-1 Model C1SDN4B-alt3.DAT from the NE C-1 report defines 100-year storm flows for the NE C-1 Detention Basin.

HYDRAULIC MODELING

Exhibit A presents the upper berm approximate methods analysis for the existing wash east of the upper berm within the River Mountains. The proposed berm will be constructed to eliminate the existing flow split within the River Mountains and direct all flows north to the NE C-1 collection channel. Normal depth calculations have been performed to delineate a proposed SFHA Zone A in the existing wash north of the berm to the proposed collection channel. Since flows in the existing wash are supercritical, the proposed SFHA Zone A is set at critical depth. Note that Figure 6, Modified Clark County Regional Flood Control District (CCRFCD) Master Plan Update (MPU) Figure F-22, indicates the proposed revised Zone A boundary will lay outside of the CCRFCD Ultimate Development Boundary.

Hydraulic analyses for the NE C-1 Detention Basin collection channel are based on referenced improvement plans from the NE C-1 Report. The HEC-RAS model "mainchannel.prj" shows 100-year storm flows are contained within the collection channel.

Hydraulic analyses for the NE C-1 Detention Basin outfall are based on referenced improvement plans from the *NE C-1 Detention Basin Outfall 90% Submittal.* The WSPGW model "outflow.wsw" shows 100-year storm flows are contained within the outfall storm system.

HEC-RAS and normal depth calculations have been provided in the Appendix. The modeling and calculations are consistent with the Clark County Regional Flood Control District (CCRFCD) *Hydrologic Criteria and Drainage Design Manual* (HCDDM), updated August 1999.

MAPPING

The effective FIRM is shown on Figure 3. The proposed FIRM revisions are shown on Figure 4. The revisions to the effective FIRM take into account proposed improvements for the NE C-1 Detention Basin and NE C-1 Detention Basin Outfall. Improvement plans for the NE C-1 Detention Basin and NE C-1 Detention Basin Outfall are included in the Appendix. The annotated FIRM is shown on Figure 5. The proposed NE C-1 Detention Basin, collection channel, and outfall storm drain system will eliminate a portion of the SFHA Zone A west of the NE C-1 Detention Basin and collection channel. The existing Drake Channel remains in an SFHA Zone A. The SFHA Zone A outside the banks of the existing Drake Channel is removed since the source of the break out flows was cut off by the proposed collection channel for the NE C-1 Detention Basin. The proposed upstream berm will revise a portion of the SFHA Zone A within an unnamed wash east of the upstream berm. The NE C-1 outfall storm drain system becomes an SFHA Zone A and ties in to the existing C-1 Channel at Pueblo Avenue.

If you have any questions or need additional information, please contact us at (702) 804-2000.

Very truly yours,

G. C. WALLACE, INC.

William E. Hunter III

Bill Hunter, PE
Vice President
Flood Control Division

DM/jj

Enclosures

c: Jerry E. Pruitt, GCW
Calvin L. Black, GCW
Lance Olson, COH

SUPPORTING DOCUMENTATION FOR CLOMR

1. FIGURES AND AFFECTED FIRM PANELS

- Figure 1: Vicinity Map
- Figure 2: Location Map
- Figure 3: Effective FIRM
- Figure 4: Proposed FIRM Revisions
- Figure 5: Annotated FIRM Panel
- Figure 6: Modified Clark County Regional Flood Control District (CCRFCD) Master Plan Update (MPU) Figure F-22

2. FEMA FORMS

- MT-2 Form 1: Overview & Concurrence Form
- MT-2 Form 2: Riverine Hydrology & Hydraulics Form
- MT-2 Form 3: Riverine Structures Form
- Payment Information Form (81-107)
- Additional Information for FEMA Forms
- RFCD Operations and Maintenance Manual

3. HYDROLOGIC MODELING COMPUTATIONS

- Figure 7: Drainage Map
- HEC-1 Design Parameters
- HEC-1 Model "C1SDN3B-alt3.OUT"
- HEC-1 Model "C1SDN4B-alt3.OUT"

4. HYDRAULIC MODELING COMPUTATIONS

- Exhibit A: Upper Berm Normal Depth Cross Sections
- Upper Berm Normal Depth Calculations
- HEC-RAS Model "mainchannel.prj"
- WSPGW Model "outfall.wsw"

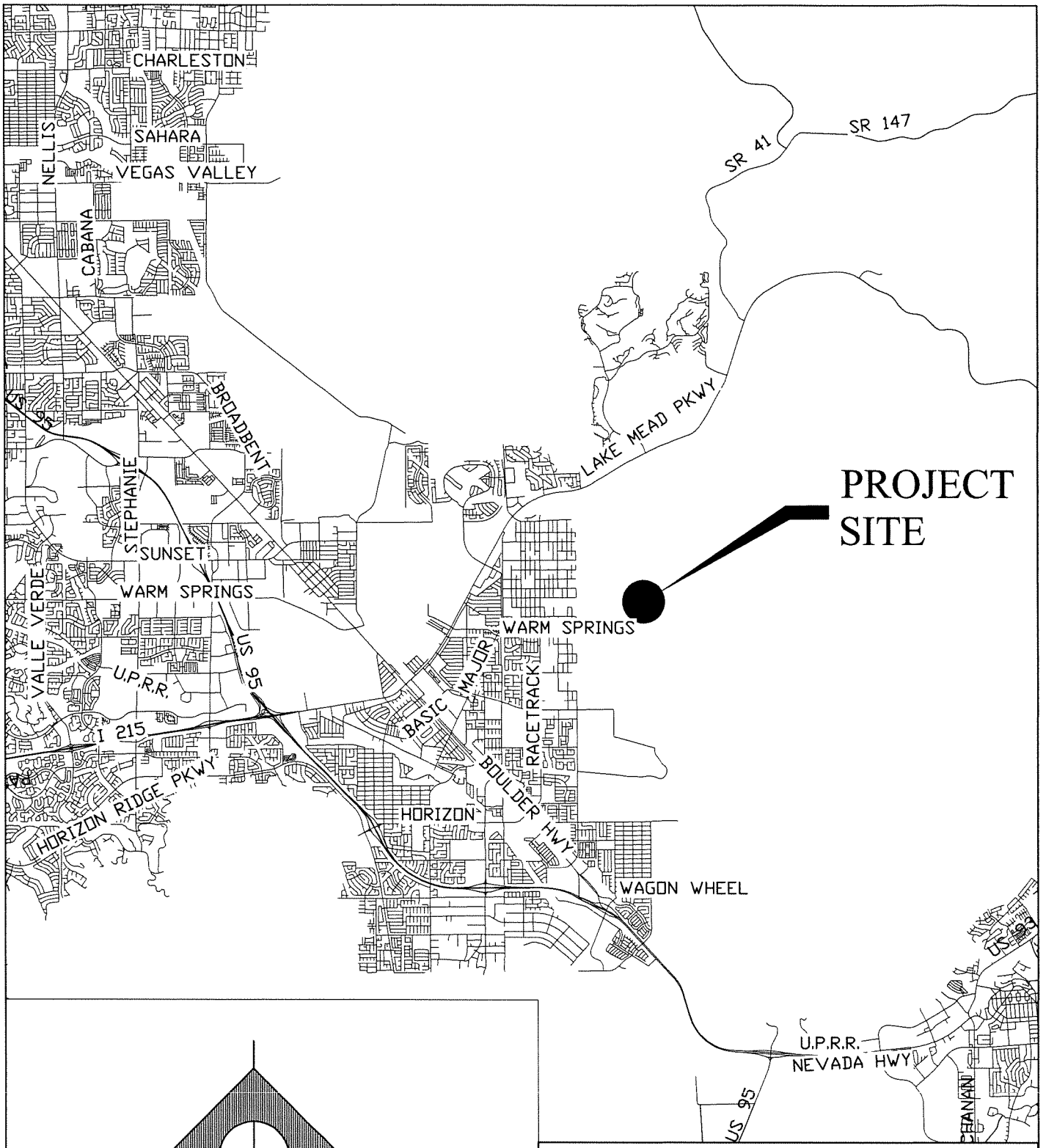
5. PROJECT GRADING PLANS AND DETAIL SHEETS

- Pre-Design Report for the Northeast C-1 Detention Basin
- Northeast C1 Detention Basin Outfall 90% Submittal

6. ELECTRONIC FILES

- HEC-1 Model "C1SDN3B-alt3.OUT"
- HEC-1 Model "C1SDN4B-alt3.OUT"
- HEC-RAS Model "mainchannel.prj"
- WSPGW Model "outfall.wsw"
- Figure 4: Proposed FIRM Revisions
- Figure 5: Annotated FIRM Panel

FIGURES AND AFFECTED FIRM PANELS



NORTH

GRAPHIC SCALE

10000 0 5000 10000

(IN FEET)

1 inch =10000 ft.

NORTHEAST C-1
DETENTION BASIN CLOMR

FIGURE 1

VICINITY MAP

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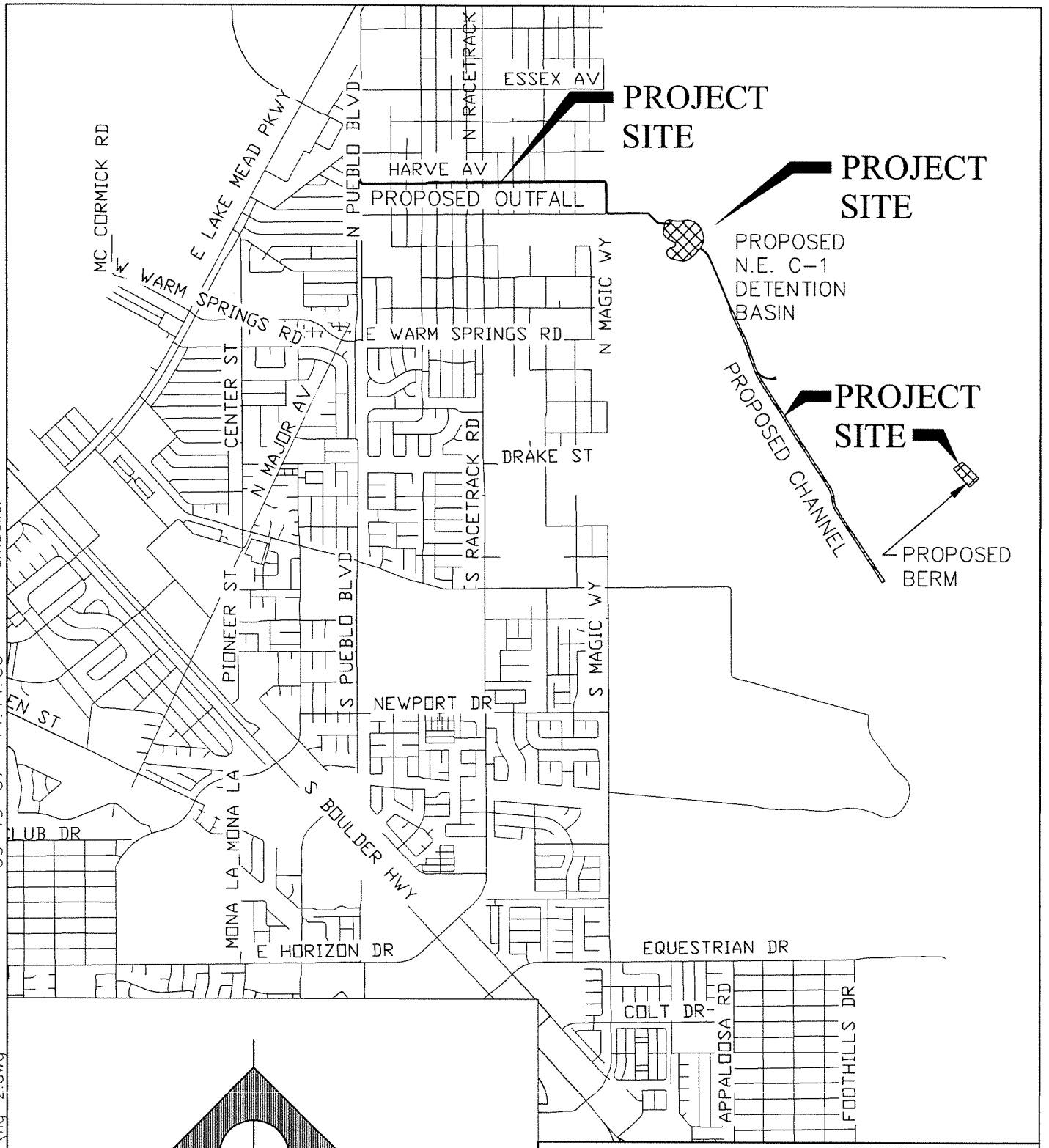

GRAPHIC SCALE

3000 0 1500 3000

(IN FEET)

1 inch = 3000 ft.

NORTHEAST C-1
DETENTION BASIN CLOMR

FIGURE 2

LOCATION MAP

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dmueller
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gcw1117.dwg,061215.jov
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10-02-07 14:31:48
David Mueller

PROJECT SITE

PROJECT SITE

PROJECT SITE

PROJECT SITE

PROPOSED N.E. C-1 DETENTION BASIN

PROPOSED BERM

PROPOSED CHANNEL

REVISED AREA (CASE # 03-09-0270P)

REVISED AREA

ZONE A

ZONE X

C-1 Channel

1% ANNUAL CHANCE FLOOD DISCHARGE CONTAINED IN CHANNEL

NOTE: THIS AREA SUBJECT TO ALLUVIAL FAN FLOODING.

NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCAT WITHIN TOWNSHIP 22 SOUTH, RANGE 63 1/2 EAST AND TOWNSHIP 22 SOUTH, RANGE 64 EAST.

Drake Channel

East C-1 Detention Basin

CITY OF HENDERSON
320005

CITY OF HENDERSON
CLARK COUNTY

MOHAWK DRIVE · HURON LANE · MEAD DRIVE · PAWNEE LANE · PLACE · AZTEC · APACHE · LANE · NAVAJO · DRIVE · PIUTE LANE · NAVAJO DRIVE · SHOSHONE LANE · MOJAVE LANE · MEYERS AVENUE · KIRK AVENUE · FULLERTON AVENUE · TONALEA AVENUE · CONCHO DRIVE · WINONA DRIVE · WINONA CIRCLE · WINONA TER · WINONA CT · VALLEY FORGE AVENUE · SHONTO PL · PALMETTO STREET · TAMI CIR · LEWIS CT · ELM STREET · PALO VERDE AVENUE · CINDY PL · FOREST ST · ASH STREET · PARK LANE · FAIRVIEW DRIVE · PUMPKIN WAY · CLIPPING TREE STREET · HIDDEN BROOK ST · LAKE STREET · FIFTH AVENUE · GLASGOW STREET · CANNES BOULEVARD · PUEBLO · ITHACA · DAKAR · JAKARTA · EMDEN · BELFAST STREET · MADRID · WARM SPRINGS · EMDEN DRIVE · LARISA AVE · PURPLE SAGE TER · MARIPOSA WAY · PRAIRIE ROSE ST · LILY LUM ST · DAHLIA · RED CLOUD TER · LONG SHADOW · TERRACE · NIGHT FALL · TERRACE · SUNSET · HERITAGE · RED HORIZON TER · ZINNIA CIRCLE · DAYS END AVE · ANCHOR DRIVE · SPINNAKER DRIVE · SKIPJACK DR · SCHOONER DR · CLIPPER DRIVE · LA MIRADA DRIVE · RIVER MOUNTAIN DRIVE · LISBON STREET · KIEL · OSLO AVENUE · PARIS AVE · ORLEANS ST · PARAWAN STREET · LONDON AVENUE · RACETRACK · HULL · GLASGOW · RIFE · JENA · MILAN ST · GENEVA · HAVRE · LISBON · WHITE · SAINT · MAGIC WAY · ROAD · 9 · 10 · 11 · 12 · 13 · 14 · 15 · 3 · 4

PANEL 2620E

FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY, NEVADA
AND INCORPORATED AREAS

PANEL 2620 OF 4090
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CLARK COUNTY, UNINCORPORATED AREAS	320033	2620	E
HENDERSON, CITY OF	320035	2620	E
BOULDER CITY, CITY OF	320124	2620	E

REVISED TO REFLECT LOMR DATED NOV 06 2003

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER 32003C2620E
MAP REVISED: SEPTEMBER 27, 2002

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 2615E

FIRM
FLOOD INSURANCE RATE MAP
CLARK COUNTY, NEVADA
AND INCORPORATED AREAS

PANEL 2615 OF 4090
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HENDERSON, CITY OF	320005	2615	E
CLARK COUNTY (UNINCORPORATED AREAS)	320033	2615	E

REVISED TO REFLECT LOMR DATED JAN 16 2004

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER 32003C2615E
MAP REVISED: SEPTEMBER 27, 2002

Federal Emergency Management Agency

NATIONAL FLOOD INSURANCE PROGRAM

GRAPHIC SCALE
1500 0 750 1500
(IN FEET)
1 inch = 1500 ft.

NORTH

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CITY OF HENDERSON
NORTHEAST C-1 DETENTION BASIN CLOMR

FIGURE 3
EFFECTIVE FIRM MAP

SHEET
FIG 3
OF 0 SHTS

HAVRE

ITHACA

1% ANNUAL CHANCE FLOOD DISCHARGE CONTAINED IN STORM DRAIN

ZONE A

NE C-1 DETENTION BASIN

1% ANNUAL CHANCE FLOOD DISCHARGE CONTAINED IN CHANNEL

SFHA ZONE A TO BE REMOVED

WARM SPRINGS

PUEBLO

NOTE: THIS AREA SUBJECT TO ALLUVIAL FAN FLOODING.

ZONE A

1% ANNUAL CHANCE FLOOD DISCHARGE CONTAINED IN CHANNEL

SFHA ZONE A TO BE REMOVED

ZONE A

DRAKE CHANNEL

DRAKE

SFHA ZONE A TO BE REMOVED

CITY OF HENDERSON

CLARK COUNTY

ZONE A

SFHA ZONE A TO BE REMOVED

MAGIC WY

ZONE A

BURKHOLDER BLVD

RACETRACK RD

LEVEE

ZONE A

NOTE: THIS AREA SUBJECT TO ALLUVIAL FAN FLOODING.

ZONE A

EAST C-1 DETENTION BASIN

GRAPHIC SCALE

1500 0 750 1500

(IN FEET)

1 inch = 1500 ft.

NORTH

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CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

FIGURE 4
PROPOSED F.I.R.M REVISIONS

SHEET

FIG-4

SHTOF 0 SHTS

10-02-07 14:23:20 P:\504-424 (Drainage)\CLOMR\Fig 4.dwg David Mueller

HAVRE

ITHACA

1% ANNUAL CHANCE FLOOD DISCHARGE CONTAINED IN STORM DRAIN

ZONE A

NE C-1 DETENTION BASIN

1% ANNUAL CHANCE FLOOD DISCHARGE CONTAINED IN CHANNEL

ZONE A

WARM SPRINGS

POLLOCK

NOTE: THIS AREA SUBJECT TO ALLUVIAL FAN FLOODING.

1% ANNUAL CHANCE FLOOD DISCHARGE CONTAINED IN CHANNEL

ZONE A

DRAKE CHANNEL

DRAKE

MAGIC WY

ZONE A

BURKHOLDER BLVD

RACETRACK RD

CITY OF HENDERSON

CLARK COUNTY

ZONE A

LEVEE

ZONE A

NOTE: THIS AREA SUBJECT TO ALLUVIAL FAN FLOODING.

ZONE A

EAST C-1 DETENTION BASIN

GRAPHIC SCALE

1500 0 750 1500

(IN FEET)

1 inch = 1500 ft.

NORTH

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CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

FIGURE 5
ANNOTATED F.I.R.M MAP

SHEET
FIG-5
SHT OF 0 SHTS

10-02-07 14:22:22 P:\304-424\Drainage\CLOMR\Fig_5.dwg
David Mueller

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
C1DC		**C-1 CHANNEL - DRAKE CHANNEL**						
0000	E	Conc Chnl 25'W 5'-14'D 0:1 SS	700	1778	CP55	C1SDN3	1.92	2.70
0013	E	Earth Chnl 10'W 5'D with Conc 2:1 SS	650	1778	CP55	C1SDN3	1.92	2.70
0013	P1	Conc Chnl 16'W 5'D 2:1 SS	650	1778	CP55	C1SDN3	1.92	2.70
0026	E	Conc Chnl 20.5'W 5'D 0:1 SS South Wall, 2:1 SS North Wall	300	1778	CP55	C1SDN3	1.92	2.70
0031	E	Conc Chnl 26'W 5'D 0:1 SS South Wall, 2:1 SS North Wall	750	1778	CP55	C1SDN3	1.92	2.70
0045	E	Junction Structure	200	1778	CP55	C1SDN3	1.92	
0049	E	2: 12' X 6' RCBC @ Racetrack Rd	92	1628	CP54	C1SDN3	1.69	0.50
0051	E	Earth Chnl 20'-50'W 20'-10'D 2:1 SS with 9'-12' Gabion Drop Structures	2640	1628	CP54	C1SDN3	1.69	0.50
0101	E	Earth Chnl 20'-50'W 20'-10'D 2:1 SS with 9'-12' Gabion Drop Structures	3660	1486	CP53	C1SDN3	1.44	0.50
0170	P1	Soil Cement Levee 7.5'	2950	1132	CP52	C1SDN3B	6.39	2.90
0226	E	Soil Cement Levee 5'	3800	1132	CP52	C1SDN3B	6.39	2.90
0298	E	48" RCPC Outlet	226	90	DB5	C1SDN3B	5.41	0.50
0302	E	20,789 cfs PMF Spillway		20789	C1-54	C1SDN3B	5.41	
0303	E	880 ac-ft East C-1 Detention Basin		3397	C1-54	C1SDN3B	5.41	
C1IT		**C-1 CHANNEL - ITHACA**						
0000	P1	72" RCP Outlet	6200	424	DB6	C1SDN3B	3.42	2.20
0117	P1	16,830 cfs PMF Spillway		16830	CP64	C1SDN3B	3.42	
0118	P1	310 ac-ft N.E. Detention Basin		1683	CP64	C1SDN3B	3.42	
0155	P1	Soil Cement Levee 11'	4000	1514	C1-65	C1SDN3B	2.54	3.00
0273	P1	Soil Cement Levee 11'	400	1514	C1-65	C1SDN3B	2.54	3.00

PROJECT SITE

PROJECT SITE

PROJECT SITE

PROJECT SITE

REGIONAL FLOOD CONTROL DISTRICT

2002 LAS VEGAS VALLEY FLOOD CONTROL MASTER PLAN UPDATE

LEGEND

- Ultimate Development Boundary
- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Local Existing Facilities
- Local Proposed Facilities
- Detention Basin
- Culvert
- Bridge
- Pipeline
- Lined Channel
- Unlined Channel
- Dike
- Natural Wash
- ID-Mile Separator

N W E S

0 1,000 2,000 3,000 4,000 5,000 Feet

SCALE: 1 inch = 3000 feet

US95 I-15 I-215

1	2			
3	4	5	6	
7	8	9	10	
11	12	13	14	
15	16	17	18	
19	20	21	22	
23	24	25	26	
27	28	29		

FLOOD CONTROL FACILITIES
FIGURE F-22

PBS&J

G.C. WALLACE, INC.

LPB

09-19-07 10:14:18 dmueller

F:\504-424\Drainage\CLOMR\fig-06.dwg

FIGURE 6

FEMA FORMS

FEDERAL EMERGENCY MANAGEMENT AGENCY

OVERVIEW & CONCURRENCE FORM

O.M.B No. 3067-0148
Expires September 30, 2005

PAPERWORK BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average 1 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (3067-0148). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

A. REQUESTED RESPONSE FROM FEMA

This request is for a (check one):

☒ CLOMR: A letter from FEMA commenting on whether a proposed project, if built as proposed, would justify a map revision, or proposed hydrology changes (See 44 CFR Ch. 1, Parts 60, 65 & 72).

☐ LOMR: A letter from FEMA officially revising the current NFIP map to show the changes to floodplains, regulatory floodway or flood elevations. (See Parts 60 & 65 of the NFIP Regulations.)

B. OVERVIEW

1. The NFIP map panel(s) affected for all impacted communities is (are):

Community No.	Community Name	State	Map No.	Panel No.	Effective Date
Ex: 480301 480287	City of Katy Harris County	TX TX	480301 48201C	0005D 0220G	02/08/83 09/28/90
320005	City of Henderson, Clark County, Nevada	NV	32003C	2620E	11/6/03
320005	City of Henderson, Clark County, Nevada	NV	32003C	2615E	1/16/04

2. Flooding Source: Unnamed Wash

3. Project Name/Identifier: Northeast C1 Detention Basin

4. FEMA zone designations affected: A (choices: A, AH, AO, A1-A30, A99, AE, AR, V, V1-V30, VE, B, C, D, X)

5. Basis for Request and Type of Revision:

a. The basis for this revision request is (check all that apply)

☒ Physical Change ☐ Improved Methodology/Data

☐ Regulatory Floodway Revision ☐ Other (Attach Description)

Note: A photograph and narrative description of the area of concern is not required, but is very helpful during review.

b. The area of revision encompasses the following types of flooding and structures (check all that apply)

Types of Flooding:	☒ Riverine	☐ Coastal	☐ Shallow Flooding (e.g., Zones AO and AH)
	☐ Alluvial fan	☐ Lakes	☐ Other (Attach Description)
Structures:	☒ Channelization	☐ Levee/Floodwall	☐ Bridge/Culvert
	☒ Dam	☐ Fill	☐ Other, Attach Description

C. REVIEW FEE

Has the review fee for the appropriate request category been included? ☒ Yes Fee amount: $4,000

☐ No, Attach Explanation

Please see the FEMA Web site at http://www.fema.gov/plan/prevent/fhm/frm_fees.shtm **for Fee Amounts and Exemptions.**

D. SIGNATURE

All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: Lance Olson	Company: City of Henderson	
Mailing Address: 240 Water St Henderson, NV 89009	Daytime Telephone No.: 702-267-3063	Fax No.: 702-267-3051
	E-Mail Address: lance.olson@cityofhenderson.com	
Signature of Requester (required):		Date: 9-26-07

As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the community floodplain management requirements, including the requirement that no fill be placed in the regulatory floodway, and that all necessary Federal, State, and local permits have been, or in the case of a conditional LOMR, will be obtained. In addition, we have determined that the land and any existing or proposed structures to be removed from the SFHA are or will be reasonably safe from flooding as defined in 44CFR 65.2(c), and that we have available upon request by FEMA, all analyses and documentation used to make this determination.

Community Official's Name and Title: Curt Chandler, Land Development Manager		Telephone No.: 702-267-3020
Community Name: City of Henderson Nevada	Community Official's Signature (required): Curt Chandler	Date: 9/26/07

CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR

This certification is to be signed and sealed by a licensed land surveyor, registered professional engineer, or architect authorized by law to certify elevation information. All documents submitted in support of this request are correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Certifier's Name: William E. Hunter, III P.E.	License No.: 8833	Expiration Date: 6/30/09
Company Name: G.C. Wallace Companies	Telephone No.: 702-804-2000	Fax No.: 702-804-2297
Signature: William E. Hunter III		Date: 10/16/07

Ensure the forms that are appropriate to your revision request are included in your submittal.

Form Name and (Number)	Required if ...
☒ Riverine Hydrology and Hydraulics Form (Form 2)	New or revised discharges or water-surface elevations
☒ Riverine Structures Form (Form 3)	Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam
☐ Coastal Analysis Form (Form 4)	New or revised coastal elevations
☐ Coastal Structures Form (Form 5)	Addition/revision of coastal structure
☐ Alluvial Fan Flooding Form (Form 6)	Flood control measures on alluvial fans

Seal (Optional)

FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 3067-0148
Expires September 30, 2005

PAPERWORK REDUCTION ACT

Public reporting burden for this form is estimated to average 3 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (3067-0148). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

Flooding Source: Unnamed wash east of C1 Channel system
Note: Fill out one form for each flooding source studied

A. HYDROLOGY

1. Reason for New Hydrologic Analysis (check all that apply)

☐ Not revised (skip to section 2) ☐ No existing analysis ☐ Improved data
☐ Alternative methodology ☒ Proposed Conditions (CLOMR) ☐ Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	FIS (cfs)	Revised (cfs)
Begin Collection Channel	0.98	NA	1230
Upper Collection Channel	3.54	NA	1923
Detention Basin Inflow	4.14	NA	2378

3. Methodology for New Hydrologic Analysis (check all that apply)

☐ Statistical Analysis of Gage Records ☒ Precipitation/Runoff Model HEC-1 [TR-20, HEC-1, HEC-HMS etc.]
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters) and documentation to support the new analysis. The document, "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by FEMA. This document can be found at: http://www.fema.gov/plan/prevent/fhm/en_modl.shtm.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Was sediment transport considered? ☐ Yes ☒ No If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.) Effective	Proposed/Revised
Downstream Limit	Inflow to NE C1 Detention Basin	1133	NA	NA
Upstream Limit	Existing Channel	9800	NA	NA

2. Hydraulic Method Used

Hydraulic Analysis HEC-RAS [HEC-2 , HEC-RAS, Other (Attach description)]

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. These review programs verify that the hydraulic estimates and assumptions in the model data are in accordance with NFIP requirements, and that the data are comparable with the assumptions and limitations of HEC-2/HEC-RAS. CHECK-2 and CHECK-RAS identify areas of potential error or concern. These tools do not replace engineering judgment. CHECK-2 and CHECK-RAS can be downloaded from http://www.fema.gov/plan/prevent/fhm/frm_soft.shtm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. If you disagree with a message, please attach an explanation of why the message is not valid in this case. Review of your submittal and resolution of valid modeling discrepancies will result in reduced review time.

HEC-2/HEC-RAS models reviewed with CHECK-2/CHECK-RAS? ☒ Yes ☐ No

4. Models Submitted

Duplicate Effective Model*	Natural File Name:	Floodway File Name:
Corrected Effective Model*	Natural File Name:	Floodway File Name:
Existing or Pre-Project Conditions Model	Natural File Name: NA	Floodway File Name:
Revised or Post-Project Conditions Model	Natural File Name: mainchannel.prj	Floodway File Name:
Other - (attach description)	Natural File Name:	Floodway File Name:

*Not required for revisions to approximate 1%-annual-chance floodplains (Zone A) – for details, refer to the corresponding section of the instructions.

The document "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by FEMA. This document can be found at: http://www.fema.gov/plan/prevent/fhm/en_modl.shtm.

C. MAPPING REQUIREMENTS

A **certified topographic map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).

Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM,** annotated to show the boundaries of the revised 1%- and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%- and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area of revision.

D. COMMON REGULATORY REQUIREMENTS

1. For CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ☒ No

For CLOMR requests, if either of the following is true, please submit evidence of compliance with Section 65.12 of the NFIP regulations:
- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot.
- The proposed project encroaches upon a SFHA with BFEs established and would result in increases above 1.00 foot.

2. Does the request involve the placement or proposed placement of fill? ☐ Yes ☒ No

If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(a)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR requests, is the regulatory floodway being revised? ☐ Yes ☒ No

If Yes, attach evidence of regulatory floodway revision notification. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☐ Yes ☒ No

If Yes, please attach proof of property owner notification and acceptance (if available). Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 3067-0148
Expires September 30, 2005

PAPERWORK REDUCTION ACT

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Flooding Source: Unnamed wash east of C1 Channel system
Note: Fill out one form for each flooding source studied

A. HYDROLOGY

1. Reason for New Hydrologic Analysis (check all that apply)

☐ Not revised (skip to section 2) ☐ No existing analysis ☐ Improved data
☐ Alternative methodology ☒ Proposed Conditions (CLOMR) ☐ Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	FIS (cfs)	Revised (cfs)
Detention Basin Outfall	9.80	NA	208

3. Methodology for New Hydrologic Analysis (check all that apply)

☐ Statistical Analysis of Gage Records ☒ Precipitation/Runoff Model HEC-1 [TR-20, HEC-1, HEC-HMS etc.]
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters) and documentation to support the new analysis. The document, "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by FEMA. This document can be found at: http://www.fema.gov/plan/prevent/fhm/en_modl.shtm.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Was sediment transport considered? ☐ Yes ☒ No If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.)	
			Effective	Proposed/Revised
Downstream Limit	Inflow to C-1 Channel	1000	NA	NA
Upstream Limit	NE C1 Detention Basin outfall	8339.54	NA	NA

2. Hydraulic Method Used

Hydraulic Analysis WSPGW [HEC-2 , HEC-RAS, Other (Attach description)]

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. These review programs verify that the hydraulic estimates and assumptions in the model data are in accordance with NFIP requirements, and that the data are comparable with the assumptions and limitations of HEC-2/HEC-RAS. CHECK-2 and CHECK-RAS identify areas of potential error or concern. These tools do not replace engineering judgment. CHECK-2 and CHECK-RAS can be downloaded from http://www.fema.gov/plan/prevent/fhm/frm_soft.shtm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. If you disagree with a message, please attach an explanation of why the message is not valid in this case. Review of your submittal and resolution of valid modeling discrepancies will result in reduced review time.

HEC-2/HEC-RAS models reviewed with CHECK-2/CHECK-RAS? ☐ Yes ☒ No

4. Models Submitted

Duplicate Effective Model*	Natural File Name:	Floodway File Name:
Corrected Effective Model*	Natural File Name:	Floodway File Name:
Existing or Pre-Project Conditions Model	Natural File Name:	Floodway File Name:
Revised or Post-Project Conditions Model	Natural File Name: outfall.wsw	Floodway File Name:
Other - (attach description)	Natural File Name:	Floodway File Name:

*Not required for revisions to approximate 1%-annual-chance floodplains (Zone A) – for details, refer to the corresponding section of the instructions.

The document "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by FEMA. This document can be found at: http://www.fema.gov/plan/prevent/fhm/en_modl.shtm.

C. MAPPING REQUIREMENTS

A **certified topographic map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).

Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM,** annotated to show the boundaries of the revised 1%- and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%- and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area of revision.

D. COMMON REGULATORY REQUIREMENTS

1. For CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ☒ No

For CLOMR requests, if either of the following is true, please submit evidence of compliance with Section 65.12 of the NFIP regulations:
- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot.
- The proposed project encroaches upon a SFHA with BFEs established and would result in increases above 1.00 foot.

2. Does the request involve the placement or proposed placement of fill? ☐ Yes ☒ No

If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(a)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR requests, is the regulatory floodway being revised? ☐ Yes ☒ No

If Yes, attach evidence of regulatory floodway revision notification. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☐ Yes ☒ No

If Yes, please attach proof of property owner notification and acceptance (if available). Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE STRUCTURES FORM

O.M.B. No. 3067-0148
Expires September 30, 2005

PAPERWORK REDUCTION ACT

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Flooding Source: Unnamed Wash East of C-1 Channel
Note: Fill out one form for each flooding source studied

A. GENERAL

Complete the appropriate section(s) for each Structure listed below:

Channelization ..... complete Section B
Bridge/Culvert ..... complete Section C
Dam ..... complete Section D
Levee/Floodwall ..... complete Section E
Sediment Transport..... complete Section F (if required)

Description Of Structure

1. Name of Structure: Collection Channel

Type (check one): ☒ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: South of Burkholder Boulevard to proposed NE C-1 Detention Basin

Downstream Limit/Cross Section: 93+71.90

Upstream Limit/Cross Section: 13+74.84

2. Name of Structure: NE C-1 Detention Basin

Type (check one): ☐ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☒ Dam

Location of Structure: Ithaca Avenue, east of Magic Way

Downstream Limit/Cross Section: NA

Upstream Limit/Cross Section: NA

3. Name of Structure: Upper Berm

Type (check one) ☐ Channelization ☐ Bridge/Culvert ☒ Levee/Floodwall ☐ Dam

Location of Structure: Approx. 3000 feet upstream of collection channel within the River Mountains

Downstream Limit/Cross Section: NA

Upstream Limit/Cross Section: NA

NOTE: For more structures, attach additional pages as needed.

FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE STRUCTURES FORM

O.M.B. No. 3067-0148
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Flooding Source: Unnamed wash east of C1 Channel system
Note: Fill out one form for each flooding source studied

A. GENERAL

Complete the appropriate section(s) for each Structure listed below:

Channelization ..... complete Section B
Bridge/Culvert ..... complete Section C
Dam ..... complete Section D
Levee/Floodwall ..... complete Section E
Sediment Transport..... complete Section F (if required)

Description Of Structure

1. Name of Structure: Outfall Stormdrain

Type (check one): ☒ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure: West of NE C1 Detention Basin to C-1 Channel at Pueblo Blvd

Downstream Limit/Cross Section:

Upstream Limit/Cross Section:

2. Name of Structure:

Type (check one): ☐ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure:

Downstream Limit/Cross Section:

Upstream Limit/Cross Section:

3. Name of Structure:

Type (check one) ☐ Channelization ☐ Bridge/Culvert ☐ Levee/Floodwall ☐ Dam

Location of Structure:

Downstream Limit/Cross Section:

Upstream Limit/Cross Section:

NOTE: For more structures, attach additional pages as needed.

B. CHANNELIZATION

Flooding Source: Unnamed Wash

Name of Structure: Collection Channel

1. Accessory Structures

The channelization includes (check one):

- ☐ Levees [Attach Section E (Levee/Floodwall)]
- ☐ Superelevated sections
- ☒ Debris basin/detention basin
- ☐ Other (Describe):
- ☐ Drop structures
- ☒ Transitions in cross sectional geometry
- ☒ Energy dissipator

2. Drawing Checklist

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Hydraulic Considerations

The channel was designed to carry 2378 (cfs) and/or the 100-year flood.

The design elevation in the channel is based on (check one):

☐ Subcritical flow ☐ Critical flow ☒ Supercritical flow ☐ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☐ Inlet to channel ☐ Outlet of channel ☐ At Drop Structures ☐ At Transitions
☒ Other locations (specify): Inlet to Detention Basin - controlled by stilling basin

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

C. BRIDGE/CULVERT

Flooding Source:

Name of Structure:

1. This revision reflects (check one):

- ☐ New bridge/culvert not modeled in the FIS
- ☐ Modified bridge/culvert previously modeled in the FIS
- ☐ New analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8):
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

- ☐ Dimensions (height, width, span, radius, length)
- ☐ Shape (culverts only)
- ☐ Material
- ☐ Beveling or Rounding
- ☐ Wing Wall Angle
- ☐ Skew Angle
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection
- ☐ Low Chord Elevations – Upstream and Downstream
- ☐ Top of Road Elevations – Upstream and Downstream
- ☐ Structure Invert Elevations – Upstream and Downstream
- ☐ Stream Invert Elevations – Upstream and Downstream
- ☐ Cross-Section Locations

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

B. CHANNELIZATION

Flooding Source: Unnamed Wash

Name of Structure: Outfall storm drain

1. Accessory Structures

The channelization includes (check one):

- ☐ Levees [Attach Section E (Levee/Floodwall)]
- ☐ Superelevated sections
- ☐ Debris basin/detention basin
- ☒ Other (Describe): storm drain
- ☐ Drop structures
- ☒ Transitions in cross sectional geometry
- ☐ Energy dissipator

2. Drawing Checklist

Attach the plans of the channelization certified by a registered professional engineer, as described in the instructions.

3. Hydraulic Considerations

The channel was designed to carry 540 (cfs) and/or the 100-year flood.

The design elevation in the channel is based on (check one):

☐ Subcritical flow ☐ Critical flow ☒ Supercritical flow ☐ Energy grade line

If there is the potential for a hydraulic jump at the following locations, check all that apply and attach an explanation of how the hydraulic jump is controlled without affecting the stability of the channel.

☐ Inlet to channel ☐ Outlet of channel ☐ At Drop Structures ☐ At Transitions
☒ Other locations (specify): within storm drain as necessitated by geometry

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☒ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

C. BRIDGE/CULVERT

Flooding Source:

Name of Structure:

1. This revision reflects (check one):

- ☐ New bridge/culvert not modeled in the FIS
- ☐ Modified bridge/culvert previously modeled in the FIS
- ☐ New analysis of bridge/culvert previously modeled in the FIS

2. Hydraulic model used to analyze the structure (e.g., HEC-2 with special bridge routine, WSPRO, HY8):
If different than hydraulic analysis for the flooding source, justify why the hydraulic analysis used for the flooding source could not analyze the structures. Attach justification.

3. Attach plans of the structures certified by a registered professional engineer. The plan detail and information should include the following (check the information that has been provided):

- ☐ Dimensions (height, width, span, radius, length)
- ☐ Shape (culverts only)
- ☐ Material
- ☐ Beveling or Rounding
- ☐ Wing Wall Angle
- ☐ Skew Angle
- ☐ Distances Between Cross Sections
- ☐ Erosion Protection
- ☐ Low Chord Elevations – Upstream and Downstream
- ☐ Top of Road Elevations – Upstream and Downstream
- ☐ Structure Invert Elevations – Upstream and Downstream
- ☐ Stream Invert Elevations – Upstream and Downstream
- ☐ Cross-Section Locations

4. Sediment Transport Considerations

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

D. DAM

Flooding Source: Unnamed Wash

Name of Structure: Northeast C1 Detention Basin

1. This request is for (check one): ☐ Existing dam ☒ New dam ☐ Modification of existing dam

2. The dam was designed by (check one): ☐ Federal agency ☐ State agency ☐ Local government agency

   ☒ Private organization Name of the agency or organization: G.C. Wallace Companies

3. Does the project involve revised hydrology? ☒ Yes ☐ No

   If Yes, complete the Riverine Hydrology & Hydraulics Form (Form 2).

4. Does the submittal include debris/sediment yield analysis? ☒ Yes ☐ No

   If yes, then fill out Section F (Sediment Transport).
   If No, then attach your explanation for why debris/sediment analysis was not considered.

5. Does the Base Flood Elevation behind the dam or downstream of the dam change?

   ☐ Yes ☒ No If Yes, complete the Riverine Hydrology & Hydraulics Form (Form 2) and complete the table below.

Stillwater Elevation Behind the Dam

FREQUENCY (% annual chance)	FIS	REVISED
10-year (10%)		
50-year (2%)		
100-year (1%)		
500-year (0.2%)		
Normal Pool Elevation		

6. Please attach a copy of the formal Operation and Maintenance Plan

E. LEVEE/FLOODWALL

1. System Elements

a. This Levee/Floodwall analysis is based on (check one):

- ☐ upgrading of an existing levee/floodwall system
- ☒ a newly constructed levee/floodwall system
- ☐ reanalysis of an existing levee/floodwall system

b. Levee elements and locations are (check one):

☐ earthen embankment, dike, berm, etc.	Station to
☐ structural floodwall	Station to
☒ Other (describe): Roller Compacted Concrete	Station NA to NA

c. Structural Type (check one):

- ☐ monolithic cast-in place reinforced concrete
- ☐ reinforced concrete masonry block
- ☐ sheet piling
- ☒ Other (describe): Roller Compacted Concrete

d. Has this levee/floodwall system been certified by a Federal agency to provide protection from the base flood?

☐ Yes ☒ No

If Yes, by which agency?

e. Attach certified drawings containing the following information (indicate drawing sheet numbers):

1. Plan of the levee embankment and floodwall structures.	Sheet Numbers: C-3
2. A profile of the levee/floodwall system showing the Base Flood Elevation (BFE), levee and/or wall crest and foundation, and closure locations for the total levee system.	Sheet Numbers: C-21
3. A profile of the BFE, closure opening outlet and inlet invert elevations, type and size of opening, and kind of closure.	Sheet Numbers: NA
4. A layout detail for the embankment protection measures.	Sheet Numbers: C-21
5. Location, layout, and size and shape of the levee embankment features, foundation treatment, floodwall structure, closure structures, and pump stations.	Sheet Numbers: C-3

2. Freeboard

a. The minimum freeboard provided above the BFE is:

Riverine

3.0 feet or more at the downstream end and throughout	☒ Yes	☐ No
3.5 feet or more at the upstream end	☒ Yes	☐ No
4.0 feet within 100 feet upstream of all structures and/or constrictions	☒ Yes	☐ No

Coastal

1.0 foot above the height of the one percent wave associated with the 1%-annual-chance stillwater surge elevation or maximum wave runup (whichever is greater).	☐ Yes	☐ No
2.0 feet above the 1%-annual-chance stillwater surge elevation	☐ Yes	☐ No

2. Freeboard (continued)

Please note, occasionally exceptions are made to the minimum freeboard requirement. If an exception is requested, attach documentation addressing Paragraph 65.10(b)(1)(ii) of the NFIP Regulations.

If No is answered to any of the above, please attach an explanation.

b. Is there an indication from historical records that ice-jamming can affect the BFE? ☐ Yes ☒ No

If Yes, provide ice-jam analysis profile and evidence that the minimum freeboard discussed above still exists.

3. Closures

a. Openings through the levee system (check one): ☐ exists ☒ does not exist

If opening exists, list all closures:

Channel Station	Left or Right Bank	Opening Type	Highest Elevation for Opening Invert	Type of Closure Device

(Extend table on an added sheet as needed and reference)

Note: Geotechnical and geologic data

In addition to the required detailed analysis reports, data obtained during field and laboratory investigations and used in the design analysis for the following system features should be submitted in a tabulated summary form. (Reference U.S. Army Corps of Engineers [USACE] EM-1110-2-1906 Form 2086.)

4. Embankment Protection

a. The maximum levee slope landside is: 10:1

b. The maximum levee slope floodside is: 4:1

c. The range of velocities along the levee during the base flood is: 6.3 (min.) to 8.6 (max.)

d. Embankment material is protected by (describe what kind): Roller Compacted Concrete

e. Riprap Design Parameters (check one): ☐ Velocity ☐ Tractive stress
Attach references

Reach	Sideslope	Flow Depth	Velocity	Curve or Straight	Stone Riprap			Depth of Toedown
					D_{100}	D_{50}	Thickness	
Sta to								
Sta to								
Sta to								
Sta to								
Sta to								
Sta to								

(Extend table on an added sheet as needed and reference each entry)

4. Embankment Protection (continued)

f. Is a bedding/filter analysis and design attached? ☐ Yes ☒ No

g. Describe the analysis used for other kinds of protection used (include copies of the design analysis):

Attach engineering analysis to support construction plans.

5. Embankment And Foundation Stability

a. Identify locations and describe the basis for selection of critical location for analysis:
NA

☐ Overall height: Sta. ; height ft.

☐ Limiting foundation soil strength:

Sta. , depth to

strength ϕ = degrees, c = psf

slope: SS = (h) to (v)

(Repeat as needed on an added sheet for additional locations)

b. Specify the embankment stability analysis methodology used (e.g., circular arc, sliding block, infinite slope, etc.):

NA

c. Summary of stability analysis results:

Case	Loading Conditions	Critical Safety Factor	Criteria (Min.)
I	End of construction		1.3
II	Sudden drawdown		1.0
III	Critical flood stage		1.4
IV	Steady seepage at flood stage		1.4
VI	Earthquake (Case I)		1.0

(Reference: USACE EM-1110-2-1913 Table 6-1)

d. Was a seepage analysis for the embankment performed? ☐ Yes ☒ No

If Yes, describe methodology used:

e. Was a seepage analysis for the foundation performed? ☐ Yes ☒ No

f. Were uplift pressures at the embankment landside toe checked? ☐ Yes ☒ No

g. Were seepage exit gradients checked for piping potential? ☐ Yes ☒ No

h. The duration of the base flood hydrograph against the embankment is 3.5 hours.

Attach engineering analysis to support construction plans.

E. LEVEE/FLOODWALL (CONTINUED)

6. Floodwall And Foundation Stability

a. Describe analysis submittal based on Code (check one):

☐ UBC (1988) or ☒ Other (specify): NA

b. Stability analysis submitted provides for:

☐ Overturning ☐ Sliding If not, explain: No Floodwall

c. Loading included in the analyses were:

☐ Lateral earth @ P_A = psf; P_p = psf

☐ Surcharge-Slope @ , ☐ surface psf

☐ Wind @ P_w = psf

☐ Seepage (Uplift); ☐ Earthquake @ P_{eq} = %g

☐ 1%-annual-chance significant wave height: ft.

☐ 1%-annual-chance significant wave period: sec.

d. Summary of Stability Analysis Results: Factors of Safety.

Itemize for each range in site layout dimension and loading condition limitation for each respective reach.

Loading Condition	Criteria (Min)		Sta	To	Sta	To
	Overturn	Sliding	Overturn	Sliding	Overturn	Sliding
Dead & Wind	1.5	1.5				
Dead & Soil	1.5	1.5				
Dead, Soil, Flood, & Impact	1.5	1.5				
Dead, Soil, & Seismic	1.3	1.3				

(Ref: FEMA 114 Sept 1986; USACE EM 1110-2-2502)

(Note: Extend table on an added sheet as needed and reference)

e. Foundation bearing strength for each soil type:

Bearing Pressure	Sustained Load (psf)	Short Term Load (psf)
Computed design maximum		
Maximum allowable		

f. Foundation scour protection ☐ is, ☒ is not provided. If provided, attach explanation and supporting documentation:

Attach engineering analysis to support construction plans.

7. Settlement

a. Has anticipated potential settlement been determined and incorporated into the specified construction elevations to maintain the established freeboard margin? ☐ Yes ☒ No

b. The computed range of settlement is ft. to ft.

c. Settlement of the levee crest is determined to be primarily from :

☐ Foundation consolidation
☐ Embankment compression
☐ Other (Describe):

d. Differential settlement of floodwalls ☐ has ☒ has not been accommodated in the structural design and construction.

Attach engineering analysis to support construction plans.

8. Interior Drainage

a. Specify size of each interior watershed:

Draining to pressure conduit: NA acres
Draining to ponding area: NA acres

b. Relationships Established

Ponding elevation vs. storage	☐ Yes	☐ No
Ponding elevation vs. gravity flow	☐ Yes	☐ No
Differential head vs. gravity flow	☐ Yes	☐ No

c. The river flow duration curve is enclosed: ☐ Yes ☐ No

d. Specify the discharge capacity of the head pressure conduit: cfs

e. Which flooding conditions were analyzed?

• Gravity flow (Interior Watershed)	☐ Yes	☐ No
• Common storm (River Watershed)	☐ Yes	☐ No
• Historical ponding probability	☐ Yes	☐ No
• Coastal wave overtopping	☐ Yes	☐ No

If No for any of the above, attach explanation.

f. Interior drainage has been analyzed based on joint probability of interior and exterior flooding and the capacities of pumping and outlet facilities to provide the established level of flood protection. ☐ Yes ☐ No

If No, attach explanation.

g. The rate of seepage through the levee system for the base flood is cfs

h. The length of levee system used to drive this seepage rate in item g: ft.

E. LEVEE/FLOODWALL (CONTINUED)

8. Interior Drainage (continued)

i. Will pumping plants be used for interior drainage? ☐ Yes ☐ No

If Yes, include the number of pumping plants:
For each pumping plant, list:

	Plant #1	Plant #2
The number of pumps		
The ponding storage capacity		
The maximum pumping rate		
The maximum pumping head		
The pumping starting elevation		
The pumping stopping elevation		
Is the discharge facility protected?		
Is there a flood warning plan?		
How much time is available between warning and flooding?		

Will the operation be automatic? ☐ Yes ☐ No

If the pumps are electric, are there backup power sources? ☐ Yes ☐ No

(Reference: USACE EM-1110-2-3101, 3102, 3103, 3104, and 3105)

Include a copy of supporting documentation of data and analysis. Provide a map showing the flooded area and maximum ponding elevations for all interior watersheds that result in flooding.

9. Other Design Criteria

a. The following items have been addressed as stated:

Liquefaction ☐ is ☒ is not a problem
Hydrocompaction ☐ is ☒ is not a problem
Heave differential movement due to soils of high shrink/swell ☐ is ☒ is not a problem

b. For each of these problems, state the basic facts and corrective action taken:

Attach supporting documentation

c. If the levee/floodwall is new or enlarged, will the structure adversely impact flood levels and/or flow velocities floodside of the structure?
☐ Yes ☒ No

Attach supporting documentation

d. Sediment Transport Considerations:

Was sediment transport considered? ☐ Yes ☒ No If Yes, then fill out Section F (Sediment Transport).
If No, then attach your explanation for why sediment transport was not considered.

E. LEVEE/FLOODWALL (CONTINUED)

10. Operational Plan And Criteria

a. Are the planned/installed works in full compliance with Part 65.10 of the NFIP Regulations? ☒ Yes ☐ No

b. Does the operation plan incorporate all the provisions for closure devices as required in Paragraph 65.10(c)(1) of the NFIP regulations?
☐ Yes ☒ No

c. Does the operation plan incorporate all the provisions for interior drainage as required in Paragraph 65.10(c)(2) of the NFIP regulations?
☐ Yes ☒ No

If the answer is No to any of the above, please attach supporting documentation.

11. Maintenance Plan

a. Are the planned/installed works in full compliance with Part 65.10 of the NFIP Regulations? ☒ Yes ☐ No
If No, please attach supporting documentation.

12. Operations and Maintenance Plan

Please attach a copy of the formal Operations and Maintenance Plan for the levee/floodwall.

F. SEDIMENT TRANSPORT

Flooding Source: Unnamed Wash

Name of Structure: Northeast C-1 Detention Basin

If there is any indication from historical records that sediment transport (including scour and deposition) can affect the Base Flood Elevation (BFE); and/or based on the stream morphology, vegetative cover, development of the watershed and bank conditions, there is a potential for debris and sediment transport (including scour and deposition) to affect the BFEs, then provide the following information along with the supporting documentation:

Sediment load associated with the base flood discharge: Volume 14.2 acre-feet

Debris load associated with the base flood discharge: Volume N/A acre-feet

Sediment transport rate N/A (percent concentration by volume)

Method used to estimate sediment transport: Universal Soil Loss Equation, Meyer-Peter Equation

Most sediment transport formulas are intended for a range of hydraulic conditions and sediment sizes; attach a detailed explanation for using the selected method.

Method used to estimate scour and/or deposition: Universal Soil Loss Equation, Meyer-Pater Equation

Method used to revise hydraulic or hydrologic analysis (model) to account for sediment transport:
Please note that bulked flows are used to evaluate the performance of a structure during the base flood; however, FEMA does not map BFEs based on bulked flows.

N/A

If a sediment analysis has not been performed, an explanation as to why sediment transport (including scour and deposition) will not affect the BFEs or structures must be provided.

FEDERAL EMERGENCY MANAGEMENT AGENCY

PAYMENT INFORMATION FORM

Community Name: 320005 - City of Henderson, Clark County, Nevada

Project Identifier: Northeast C1 Detention Basin

THIS FORM MUST BE MAILED, ALONG WITH THE APPROPRIATE FEE, TO THE ADDRESS BELOW OR FAXED TO THE FAX NUMBER BELOW.

Type of Request:

☐ MT-1 application
☒ MT-2 application

FEMA
Fee Charge System Administrator
P.O. Box 22787
Alexandria, VA 22304
FAX (703) 317-3076

☐ EDR application

FEMA Project Library
3601 Eisenhower Avenue
Alexandria, VA 22304
FAX (703) 751-7391

Request No.: _____ (if known)

Amount: $4,000.00

☐ INITIAL FEE* ☒ FINAL FEE ☐ FEE BALANCE** ☐ MASTER CARD ☐ VISA ☒ CHECK ☐ MONEY ORDER

*Note: Check only for EDR and/or Alluvial Fan requests (as appropriate).

**Note: Check only if submitting a corrected fee for an ongoing request.

COMPLETE THIS SECTION ONLY IF PAYING BY CREDIT CARD

CARD NUMBER

☐☐☐☐ — ☐☐☐☐ — ☐☐☐☐ — ☐☐☐☐

1 2 3 4 — 5 6 7 8 — 9 10 11 12 — 13 14 15 16

EXP. DATE

☐☐ — ☐☐

Month — Year

_____ _____

Date Signature

NAME *(AS IT APPEARS ON CARD)*: _____
(please print or type)

ADDRESS: _____
(for your credit card receipt-please print or type) _____

DAYTIME PHONE: _____

ADDITIONAL INFORMATION

FORM 2 MT_2 RIVERINE HYDROLOGY HYDRAULICS FORM

A.HYDROLOGY

5. Impacts of Sediment Transport on Hydrology

Two lateral structures along the length of the NEC-1 Detention Basin collection channel are designed to remove larger sediment before runoff is conveyed into the collection channel. Therefore the impacts of sediment transport on hydrology were not considered.

FORM 3 MT_2 RIVERINE STRUCTURES FORM

B. CHANNELIZATION

4. Sediment Transport Considerations

Two lateral structures along the length of the NEC-1 Detention Basin collection channel are designed to remove larger sediment before runoff is conveyed into the collection channel. Therefore the impacts of sediment transport on the collection channel were not considered.

E. LEVEE/FLOODWALL

1. System Elements

The upper berm is an 11-foot high Roller Compacted Concrete (RCC) lined structure with 4:1 side slopes on the floodside and 10:1 side slopes on the landslide.

2. Freeboard

A normal depth analysis was performed for the unnamed wash adjacent to the upper berm. The depth of flow in the wash was set at critical depth, since 100-year storm flow in the wash is supercritical. The maximum depth of flow in the wash adjacent to the berm is 1.3 feet at cross section 12.1 on Exhibit A, Upper Berm Normal Depth Cross Sections. The corresponding berm height at section 12.1 is approximately 11 feet, thus 9.7 feet of freeboard is provided.

3. Closures

The upper berm does not include any closures.

4. Embankment Protection

Embankment protection calculations were not performed since the berm is lined with RCC.

5. Embankment and Foundation Stability

The upper berm is designed to prevent a flow split within the River Mountains and will be affected by storm runoff only. The duration of the base hydrograph against the embankment is 3.5 hours. Runoff does not pond up against the embankment. Since the berm is designed to direct storm flows for a limited duration, and the depth of flow against the embankment is only 1.3 feet and the berm design provides 9.7 feet of freeboard, embankment and foundation stability analyses were not performed for the upper berm.

6. Floodwall and Foundation Stability

The upper berm does not include a floodwall.

7. Settlement

A settlement analysis was not performed for the upper berm, since the berm provides adequate freeboard to protect against settlement impacts.

8. Interior Drainage

No interior drainage affects the upper berm.

9.Other Design Criteria

d. A sediment analysis was not provided for the upper berm since the berm is lined with Roller Compacted Concrete and is designed with 9.7 feet of freeboard.

F. SEDIMENT TRANSPORT

Hydrologic and hydraulic models related to the NEC-1 Detention Basin, collection channel, outfall, and upstream berm are not revised to account for debris load and sediment transport. Sediment removal structures are to be constructed along the collection channel. The NEC-1 Detention Basin was designed with extra volume to accommodate sediment load and with trash racks to control clogging from debris. The Universal Soil Loss Equation and Meyer-Peter Equation were used to estimate sediment transport for the NEC-1 Detention Basin. The Detention Basin Sedimentation Analysis has been included with this CLOMR.

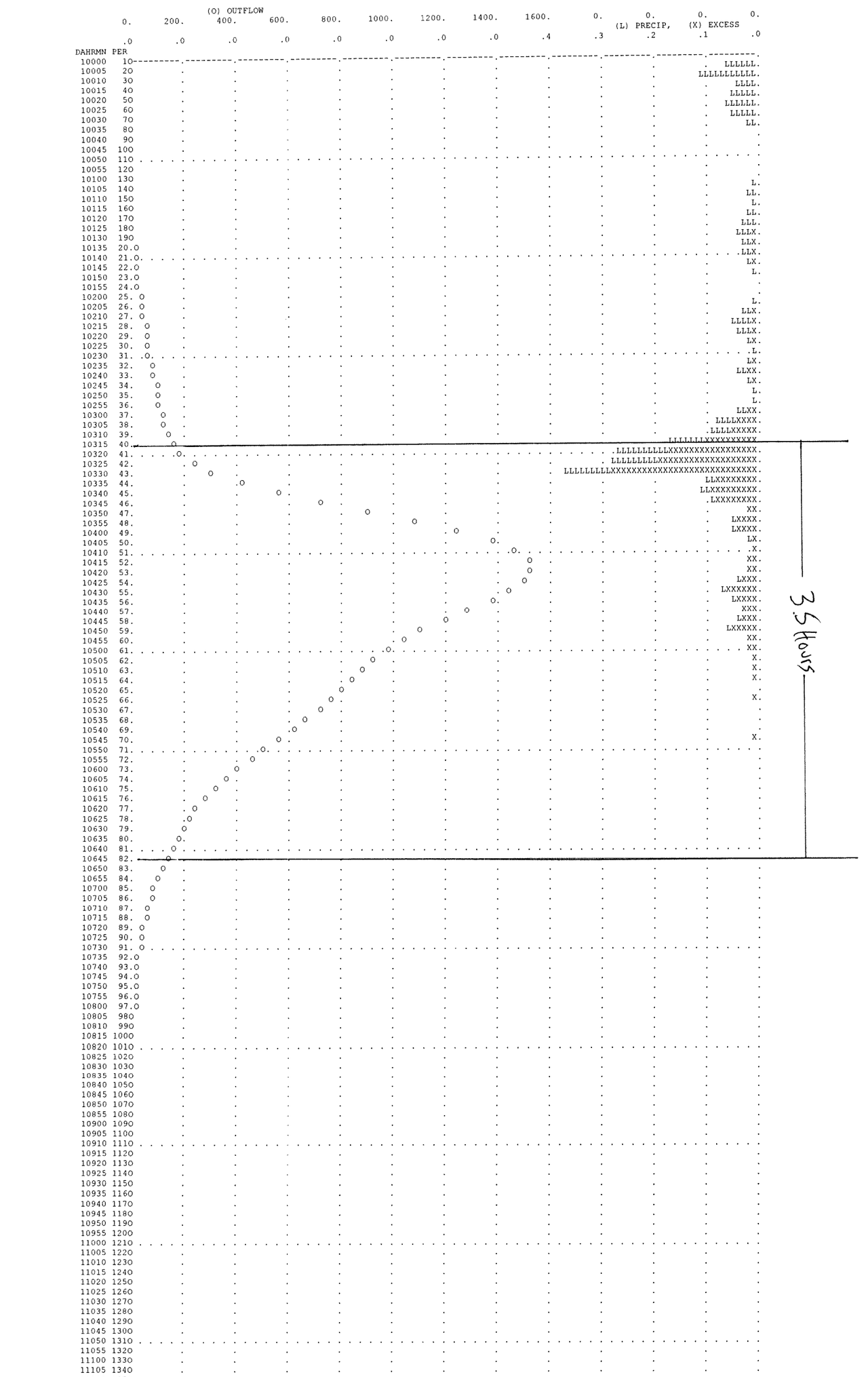
HYDROGRAPH AT STATION C1-65
FOR PLAN 1, RATIO = .93

TOTAL RAINFALL = 3.04, TOTAL LOSS = 1.34, TOTAL EXCESS = 1.71

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
(CFS)	(HR)				
		(CFS)			
1527.	4.33	468.	118.	113.	113.
		(INCHES) 1.696	1.707	1.707	1.707
		(AC-FT) 232.	233.	233.	233.

CUMULATIVE AREA = 2.56 SQ MI

1 STATION C1-65



DETENTION BASIN SEDIMENTATION ANALYSIS

PROJECT: NORTHEAST C-1 DETENTION BASIN
CALCULATED BY: CLB DATE: 1/7/05

MEYER-PETER EQUATION

SOIL WT.	110	(lbs./c.f.) (estimated)
S	0.040	(ft/ft)
dm	0.02	(ft)
TIME	5.00	(min) (from hydrograph)
DELIVERY RATIO	1.00	
TRAP EFFICIENCY	1.00	

Vtotal 5.2 **ACRE-FEET**

SEGMENT	Q	Y	T	q	qb	VOL. SED.
	(cfs)	(ft)	(ft)	(cfs)	(lbs/sec)	(acre-ft)
1	0	0.00	0.00	0.00	0.00	0.000
2	2	0.09	1.73	0.16	0.18	0.000
3	5	0.13	2.08	0.28	0.38	0.000
4	8	0.16	2.28	0.37	0.54	0.001
5	7	0.15	2.22	0.34	0.49	0.001
6	6	0.14	2.16	0.31	0.43	0.001
7	4	0.12	1.99	0.24	0.32	0.000
8	4	0.12	1.99	0.24	0.32	0.000
9	4	0.12	1.99	0.24	0.32	0.000
10	7	0.15	2.22	0.34	0.49	0.001
11	10	0.18	2.39	0.42	0.63	0.001
12	13	0.20	2.52	0.50	0.76	0.001
13	17	0.22	2.66	0.58	0.92	0.002
14	26	0.26	2.89	0.75	1.23	0.003
15	38	0.30	3.12	0.94	1.59	0.004
16	49	0.33	3.28	1.10	1.88	0.005
17	57	0.36	3.38	1.20	2.07	0.006
18	61	0.37	3.43	1.25	2.17	0.007
19	60	0.36	3.42	1.24	2.14	0.006
20	58	0.36	3.39	1.22	2.10	0.006
21	57	0.36	3.38	1.20	2.07	0.006
22	63	0.37	3.45	1.28	2.21	0.007
23	81	0.41	3.63	1.48	2.61	0.009
24	105	0.45	3.82	1.74	3.08	0.012
25	125	0.49	3.96	1.93	3.45	0.014
26	132	0.50	4.00	1.99	3.57	0.015
27	128	0.49	3.98	1.95	3.50	0.014
28	131	0.50	3.99	1.98	3.55	0.015
29	148	0.52	4.09	2.13	3.84	0.017
30	162	0.54	4.17	2.25	4.06	0.018
31	163	0.54	4.17	2.26	4.08	0.018
32	163	0.54	4.17	2.26	4.08	0.018
33	188	0.57	4.29	2.46	4.47	0.021
34	250	0.64	4.55	2.92	5.35	0.029
35	350	0.73	4.86	3.57	6.60	0.041
36	528	0.87	5.28	4.57	8.53	0.062
37	800	1.02	5.74	5.87	11.04	0.094
38	1144	1.18	6.16	7.27	13.77	0.136
39	1457	1.30	6.47	8.41	15.97	0.173
40	1576	1.34	6.57	8.81	16.76	0.188
41	1592	1.35	6.58	8.87	16.87	0.190
42	1583	1.34	6.58	8.84	16.81	0.189

DETENTION BASIN SEDIMENTATION ANALYSIS

PROJECT: NORTHEAST C-1 DETENTION BASIN
CALCULATED BY: CLB DATE: 1/7/05

MEYER-PETER EQUATION

SOIL WT.	110	(lbs./c.f.)
S	0.040	(ft/ft)
dm	0.02	(ft)
TIME	5.00	(min)
DELIVERY RATIO	1.00	
TRAP EFFICIENCY	1.00	

Vtotal 5.2 **ACRE-FEET**

SEGMENT	Q	Y	T	q	qb	VOL. SED.
43	1597	1.35	6.59	8.88	16.90	0.190
44	1630	1.36	6.61	8.99	17.11	0.194
45	1674	1.37	6.65	9.14	17.39	0.199
46	1693	1.38	6.66	9.20	17.51	0.202
47	1678	1.38	6.65	9.15	17.42	0.200
48	1651	1.37	6.63	9.06	17.25	0.197
49	1618	1.36	6.60	8.95	17.03	0.193
50	1586	1.34	6.58	8.85	16.83	0.189
51	1556	1.33	6.55	8.75	16.63	0.185
52	1499	1.31	6.50	8.55	16.25	0.178
53	1407	1.28	6.42	8.23	15.63	0.167
54	1316	1.25	6.34	7.91	15.00	0.156
55	1247	1.22	6.27	7.66	14.52	0.148
56	1168	1.19	6.19	7.36	13.94	0.138
57	1079	1.15	6.09	7.02	13.28	0.128
58	992	1.11	5.99	6.68	12.61	0.117
59	919	1.08	5.90	6.38	12.03	0.109
60	853	1.05	5.81	6.10	11.49	0.101
61	796	1.02	5.73	5.85	11.01	0.094
62	742	0.99	5.65	5.61	10.54	0.087
63	685	0.96	5.56	5.35	10.03	0.080
64	628	0.93	5.47	5.07	9.50	0.074
65	574	0.90	5.37	4.81	8.99	0.067
66	523	0.86	5.27	4.55	8.48	0.061
67	470	0.83	5.16	4.26	7.94	0.055
68	419	0.79	5.04	3.98	7.39	0.049
69	371	0.75	4.92	3.70	6.85	0.043
70	326	0.71	4.79	3.42	6.32	0.038
71	285	0.68	4.67	3.16	5.81	0.033
72	250	0.64	4.55	2.92	5.35	0.029
73	219	0.61	4.43	2.70	4.92	0.025
74	193	0.58	4.32	2.50	4.54	0.022
75	170	0.55	4.21	2.32	4.19	0.019
76	149	0.52	4.10	2.14	3.85	0.017
77	130	0.49	3.99	1.97	3.53	0.015
78	113	0.47	3.88	1.81	3.23	0.013
79	98	0.44	3.77	1.66	2.95	0.011
80	85	0.42	3.66	1.53	2.69	0.009
81	73	0.39	3.55	1.40	2.44	0.008
82	63	0.37	3.45	1.28	2.21	0.007
83	54	0.35	3.35	1.16	2.00	0.006
84	46	0.33	3.24	1.06	1.80	0.005
85	39	0.31	3.14	0.96	1.61	0.004

DETENTION BASIN SEDIMENTATION ANALYSIS

PROJECT: NORTHEAST C-1 DETENTION BASIN
CALCULATED BY: CLB DATE: 1/7/05

MEYER-PETER EQUATION

SOIL WT.	110	(lbs./c.f.)
S	0.040	(ft/ft)
dm	0.02	(ft)
TIME	5.00	(min)
DELIVERY RATIO	1.00	
TRAP EFFICIENCY	1.00	

Vtotal 5.2 **ACRE-FEET**

SEGMENT	Q	Y	T	q	qb	VOL. SED.
86	33	0.29	3.03	0.87	1.44	0.003
87	28	0.27	2.93	0.79	1.29	0.003
89	20	0.23	2.74	0.64	1.03	0.002
90	16	0.21	2.62	0.56	0.88	0.002
91	14	0.20	2.55	0.52	0.80	0.001
92	11	0.18	2.43	0.45	0.68	0.001
93	10	0.18	2.39	0.42	0.63	0.001
94	8	0.16	2.28	0.37	0.54	0.001
95	7	0.15	2.22	0.34	0.49	0.001
96	6	0.14	2.16	0.31	0.43	0.001
97	5	0.13	2.08	0.28	0.38	0.000
98	4	0.12	1.99	0.24	0.32	0.000
99	4	0.12	1.99	0.24	0.32	0.000
100	3	0.11	1.88	0.21	0.25	0.000
101	2	0.09	1.73	0.16	0.18	0.000
102	2	0.09	1.73	0.16	0.18	0.000
103	1	0.07	1.51	0.11	0.09	0.000
104	1	0.07	1.51	0.11	0.09	0.000
105	1	0.07	1.51	0.11	0.09	0.000
106	1	0.07	1.51	0.11	0.09	0.000

DETENTION BASIN SEDIMENTATION ANALYSIS

PROJECT: C-1 NORTHEAST DETENTION BASIN
CALCULATED BY: CLB DATE: 1/7/05

UNIVERSAL SOIL LOSS EQUATION

A=RKLSCP

6 HR. RAINFALL		3.230	IN. SDN3 STORM
SOIL WT.	95		
R	43		
K	0.10		
LS	13.90		
C	0.35		
P	1.00		
A	**20.92**	**TONS/ACRE**	
DELIVERY RATIO		0.45	
TRAP EFFICIENCY		0.90	
AREA	3.44	SQ.MI.	
Vtotal	**9.0**	**ACRE-FEET**	

MIN.	DIST.	RAINFALL	INTENSITY	K.E.	E
0	0.00	0.000	0.00	0	0.00
5	2.00	0.065	0.78	879	56.81
10	5.70	0.120	1.43	968	115.67
15	7.00	0.042	0.50	817	34.33
20	8.70	0.055	0.66	856	47.00
25	10.80	0.068	0.81	886	60.13
30	12.40	0.052	0.62	847	43.79
35	13.00	0.019	0.23	706	13.69
40	13.00	0.000	0.00	0	0.00
45	13.00	0.000	0.00	0	0.00
50	13.00	0.000	0.00	0	0.00
55	13.00	0.000	0.00	0	0.00
60	13.00	0.000	0.00	0	0.00
65	13.30	0.010	0.12	607	5.88
70	14.00	0.023	0.27	728	16.47
75	14.20	0.006	0.08	548	3.54
80	14.80	0.019	0.23	706	13.69
85	15.80	0.032	0.39	780	25.19
90	17.20	0.045	0.54	828	37.45
95	18.10	0.029	0.35	765	22.23
100	19.00	0.029	0.35	765	22.23
105	19.70	0.023	0.27	728	16.47
110	19.90	0.006	0.08	548	3.54
115	20.00	0.003	0.04	449	1.45
120	20.10	0.003	0.04	449	1.45
125	20.40	0.010	0.12	607	5.88
130	21.40	0.032	0.39	780	25.19
135	22.90	0.048	0.58	838	40.60
140	24.10	0.039	0.47	806	31.24
145	24.90	0.026	0.31	748	19.32
150	25.10	0.006	0.08	548	3.54
155	25.60	0.016	0.19	680	10.98
160	27.00	0.045	0.54	828	37.45
165	27.80	0.026	0.31	748	19.32
170	28.10	0.010	0.12	607	5.88
175	28.30	0.006	0.08	548	3.54
180	29.50	0.039	0.47	806	31.24

DETENTION BASIN SEDIMENTATION ANALYSIS

PROJECT: C-1 NORTHEAST DETENTION BASIN
CALCULATED BY: CLB DATE: 1/7/05

UNIVERSAL SOIL LOSS EQUATION

A=RKLSCP

6 HR. RAINFALL		3.230	IN.
SOIL WT.	95	(estimated)	
R	43		
K	0.10		
LS	13.90		
C	0.35		
P	1.00		
A	**20.92**	**TONS/ACRE**	
DELIVERY RATIO		0.45	
TRAP EFFICIENCY		0.90	
AREA	3.44	SQ.MI.	
Vtotal	**9.0**	**ACRE-FEET**	

SDN3 STORM

MIN.	DIST.	RAINFALL	INTENSITY	K.E.	E
185	32.20	0.087	1.05	923	80.45
190	35.20	0.097	1.16	938	90.86
195	40.90	0.184	2.21	1030	189.62
200	49.90	0.291	3.00	1074	312.19
205	59.00	0.294	3.00	1074	315.66
210	71.00	0.388	3.00	1074	416.25
215	74.40	0.110	1.32	956	104.95
220	78.10	0.120	1.43	968	115.67
225	81.20	0.100	1.20	942	94.36
230	81.90	0.023	0.27	728	16.47
235	83.50	0.052	0.62	847	43.79
240	85.10	0.052	0.62	847	43.79
245	85.60	0.016	0.19	680	10.98
250	86.00	0.013	0.16	648	8.37
255	86.80	0.026	0.31	748	19.32
260	87.60	0.026	0.31	748	19.32
265	88.80	0.039	0.47	806	31.24
270	91.00	0.071	0.85	893	63.46
275	92.60	0.052	0.62	847	43.79
280	93.70	0.036	0.43	793	28.19
285	95.00	0.042	0.50	817	34.33
290	97.00	0.065	0.78	879	56.81
295	97.60	0.019	0.23	706	13.69
300	98.20	0.019	0.23	706	13.69
305	98.50	0.010	0.12	607	5.88
310	98.70	0.006	0.08	548	3.54
315	98.90	0.006	0.08	548	3.54
320	99.00	0.003	0.04	449	1.45
325	99.30	0.010	0.12	607	5.88
330	99.30	0.000	0.00	0	0.00
335	99.40	0.003	0.04	449	1.45
340	99.50	0.003	0.04	449	1.45
345	99.80	0.010	0.12	607	5.88
350	99.80	0.000	0.00	0	0.00
355	99.90	0.003	0.04	449	1.45
360	100.00	0.003	0.04	449	1.45
				TOTAL	2974.41

From USDA "Predicting Rainfall Erosion Losses"

Typical Overland Length: 500 ft

Typical Overland Slope: 25%

$$LS = \left(\frac{\lambda}{72.6}\right)^{m}\left(\frac{430x^2 + 30x + 0.43}{6.57415}\right)$$

λ = field slope length = 500 ft in ft.

$x = \sin\theta$ = slope = 0.25 ft/ft in ft/ft

$m = 0.5$ for $s \geq 5\%$

$$\Rightarrow LS = \left(\frac{500}{72.6}\right)^{0.5}\left(\frac{430(0.25)^2 + 30(0.25) + 0.43}{6.57415}\right)$$

$$= (2.62)(5.29) = 13.9$$

$$R = \frac{E}{100}\, i_{30}$$

Find i_{30}, 100-yr, 30 min. depth

$$I_{100} = 0.494 + 0.7555\left[(x_3)\left(\frac{x_3}{x_4}\right)\right] \qquad \text{EQ 502 from CCRFCD Manual}$$

where

I_{100} = 100 yr - 1 hr depth

x_3 = 100 yr - 6 hr depth = 2.26 in (unadjusted)

x_4 = 100 yr - 24 hr depth = 3.0 in

$$\Rightarrow I_{100} = 0.494 + 0.755\left(2.26\,\frac{2.26}{3}\right) = 1.78$$

Table 501 CCRFCD Adjustment Factor ⇓ $1.78 \times \underline{1.43} = 2.55$ in

Table 504 CCRFCD 30 min. Ratio = 0.79

$\Rightarrow$ 100 yr - 30 min Depth = 2.55 (0.79) = 2.01 in.

$$\Rightarrow i_{30} = \frac{2.01\text{ in}}{0.5\text{ hr}} = 4.02\ ^{\text{in}}/_{\text{hr}}$$

Rainfall Erosion Index: from USDA "Predicting Rainfall Erosion Losses"

$$E = 916 + 331 \log_{10} I$$

where I = intensity in $^{\text{in}}/_{\text{hr}}$ with max value = $3\ ^{\text{in}}/_{\text{hr}}$

$$\Rightarrow E = 916 + 331 \log_{10}(3) = 1074$$

$$\Rightarrow R = \frac{1074}{100}(4.02) \approx \underline{43}$$

Component Legend

Clark County Area, Nevada

Map Unit Symbol and Map Unit Name	% Composition	Component	Component Kind	Slope		
				Low	RV	High
541: SUNROCK-HALEBURU-ROCK OUTCROP ASSOCIATION	40	Sunrock	Series	30	53	75
	25	Haleburu	Series	30	53	75
	20	Rock Outcrop	Miscellaneous area	30	50	75
	6	Sunrock	Series	30	40	50
	4	Huevi	Series	8	19	30
	3	Haleburu	Series	30	53	75
	2	Haleburu	Series	30	30	50

Table J1a. - Physical Properties of the Soils

Clark County Area, Nevada

Entries under "Erosion Factors--T" apply to the entire profile. Entries under "Wind Erodibility Group" and "Wind Erodibility Index" apply only to the surface layer. Absence of an entry indicates that data were not estimated.

Map Symbol and Soil Name	Depth	Sand	Silt	Clay	Moist Bulk Density	Saturated Hydraulic Conductivity	Available Water Capacity	Linear Extensibility	Organic Matter	Erosion Factors			Wind Erodibility Group	Wind Erodibility Index
										Kw	Kf	T		
	In	Pct	Pct	Pct	g/cc	micro m/sec	In/In	Pct	Pct					
541:														
Sunrock	0-2	---	---	5-15	1.55-1.70	14.00-42.00	0.03-0.05	0.0-2.9	0.0-0.5	.10	.28	1	6	48
	2-9	---	---	5-15	1.55-1.75	14.00-42.00	0.05-0.09	0.0-2.9	0.0-0.5	.15	.28			
	9-19	---	---	---	---	0.00-0.01	---	---	---	---	---			
Haleburu	0-2	---	---	6-12	1.50-1.70	14.00-42.00	0.03-0.05	0.0-2.9	0.0-0.5	.02	.24	1	7	38
	2-9	---	---	6-18	1.50-1.70	14.00-42.00	0.05-0.07	0.0-2.9	0.0-0.5	.05	.20			
	9-13	---	---	---	---	0.00-0.01	---	---	---	---	---			
Rock Outcrop	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Sunrock	0-2	---	---	5-15	1.55-1.70	14.00-42.00	0.03-0.05	0.0-2.9	0.0-0.5	.10	.28	1	6	48
	2-9	---	---	5-15	1.55-1.75	14.00-42.00	0.05-0.09	0.0-2.9	0.0-0.5	.15	.28			
	9-19	---	---	---	---	0.00-0.01	---	---	---	---	---			
Huevi	0-6	---	---	8-18	1.40-1.60	14.00-42.00	0.06-0.08	0.0-2.9	0.0-0.5	.05	.24	5	5	56
	6-60	---	---	8-18	1.40-1.60	14.00-42.00	0.06-0.08	0.0-2.9	0.0-0.5	.05	.24			
Haleburu	0-2	---	---	6-12	1.50-1.70	14.00-42.00	0.03-0.05	0.0-2.9	0.0-0.5	.02	.24	1	7	38
	2-9	---	---	6-18	1.50-1.70	14.00-42.00	0.05-0.07	0.0-2.9	0.0-0.5	.05	.20			
	9-13	---	---	---	---	0.00-0.01	---	---	---	---	---			
Haleburu	0-2	---	---	6-12	1.50-1.70	14.00-42.00	0.03-0.05	0.0-2.9	0.0-0.5	.02	.24	1	8	0
	2-9	---	---	6-18	1.50-1.70	14.00-42.00	0.05-0.07	0.0-2.9	0.0-0.5	.05	.20			
	9-13	---	---	---	---	0.00-0.01	---	---	---	---	---			

type, and the results will be only as good as the assumptions.

Source Deposition

Another method of determining the sediment delivery ratio is to make a field study of a watershed and estimate the amount of deposition that can be traced to any one source. The difference in the volume of such deposition and the volume of sediment produced by the source gives an estimate of the delivery ratio from that source.

Table 6–2.—Sediment source and the delivery ratio

Sediment source	Erosion[1]		Sediment yield[2]		Delivery ratio
	Sand	Fines	Sand	Fines	
	tons/yr	*tons/yr*	*tons/yr*	*tons/yr*	*Pct.*
Sheet erosion	—	900,000	—	[3]300,000	33
Channel erosion					
Gullies	350,000	—	280,000	—	[4]80
Roadbanks	150,000	—	120,000	—	[4]80
Streambanks	—	900,000	—	900,000	100
Total	500,000	1,800,000	[5]400,000	[6]1,200,000	70

[1]Determine by standard SCS procedures.
[2]Assume that all fines are from sheet erosion and streambanks and all sand is from gullies and roadbanks.
[3]Difference between total yield of fines and yield of fines from streambanks.
[4]Compute as ratio of total sand yield to total sand available; assume equal delivery ratio for gullies and roadbanks.
[5]Estimate bedload as a percentage of the suspended load.
[6]Determine from suspended-load measurements.

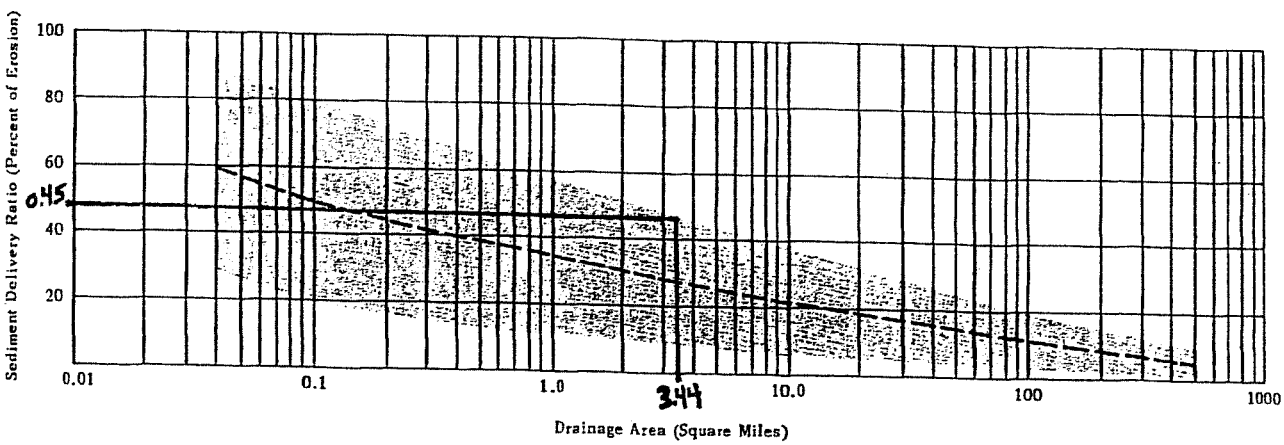


Figure 6–2.—Relationship between drainage area and sediment delivery ratio.

The amount of sediment accumulation in a reservoir depends on the sediment yield to the reservoir and the trap efficiency. How the accumulated sediment is distributed within the reservoir depends on the character of the inflowing sediment, the operation of the reservoir, and other factors.

Trap Efficiency

Trap efficiency is the amount (percentage) of the sediment delivered to a reservoir that remains in it. It is a function of detention storage time, character of the sediment, nature of the inflow, and other factors. Trap efficiency can be readily estimated on the basis of the ratio of the capacity of the reservoir to the average annual inflow (Brune 1953, Gottschalk 1965) by using the following procedure:

1. Estimate the total capacity required of the reservoir in watershed inches (see page 8–13), including the total capacity allocated to floodwater detention, sediment storage, and other uses. Since an actual value cannot be obtained until final design is completed, estimate the total capacity as follows:
   a. Assume, for the particular physiographic area, a reasonable sediment-storage volume that might be required for the design life of the structure; e.g., 1.5 in.
   b. Obtain from the hydrologist an estimate of the required floodwater-detention storage; e.g., 4.5 in.
   c. Add the values for 1a and 1b to get an estimate of the total capacity of the reservoir; i.e., 1.5 + 4.5 = 6.0 in. Include any additional storage for water supply, recreation, and other uses in the total. If an estimate of the total required storage in acre-feet is available, convert this value to watershed inches to simplify the calculation.
2. Determine the average annual runoff in inches. This value can be determined from the hydrologic analysis of the watershed, from Hydrologic Investigation Atlas HA–212 (Busby 1966) or from other available information. In this example, the average annual runoff is 17.5 in.
3. Divide the aproximate total capacity in inches (item 1c) by the average annual runoff in inches (item 2) to obtain the capacity-inflow ratio (C/I); i.e., C/I = 6.0 ÷ 17.5 = 0.343.
4. Obtain the trap efficiency for a given C/I fro the vertical scale of figure 8–2. To do so, estimate the texture of the incoming sediment on the basis of the character of watershed soils and the principal sediment sources. If the incoming sediment is predominantly bedload or coarse material or is highly flocculated, use the upper curve of figure 8–2 to determine trap efficiency. If the incoming sediment is primarily colloids, dispersed clays, and fine silts, use the lower curve. If the incoming sediment consists of various grain sizes widely distributed, use the median curve. The texure also affects the distribution and allocation of the sediment in various pools.

The curves in figure 8–2 cannot be applied directly to dry reservoirs. If water flows through ungated outlets below the crest of the principal spillway, trap efficiency is likely to be lowered. If the inflowing sediment is predominantly sand, reduce the trap efficiency by about 5 percent; if the sediment is chiefly fine textured, reduce the trap efficiency by about 10 percent.

If the incoming sediment is composed essentially of equal parts of clay, silt, and fine sand and the proposed structure is to have a submerged sediment pool, use the median curve of figure 8–2 without adjustment. In the example (C/I = 0.343) trap efficiency would be 95 percent. In a situation similar except that the structure is designed as a dry reservoir, trap efficiency would be 85 percent.

Design Life

The design life of a reservoir is the period required for the reservoir to fulfill its intended purpose. Structures designed by SCS in the watershed protection and flood prevention programs usually are designed for a life of 50 or 100 years. Provision must be made to ensure the full design storage capacity for the planned design life. This may mean cleaning out deposited sediment at predetermined intervals during the design life or, as is generally the situation, providing enough capacity to store all the accumulated sediment for the reservoir's design life without dimininshing the design water storage.

Land treatment (conservation) measures seldom are fully effective in reducing erosion and sediment yield in less than 5 years. Often a longer time is required. This delay in effectiveness during the

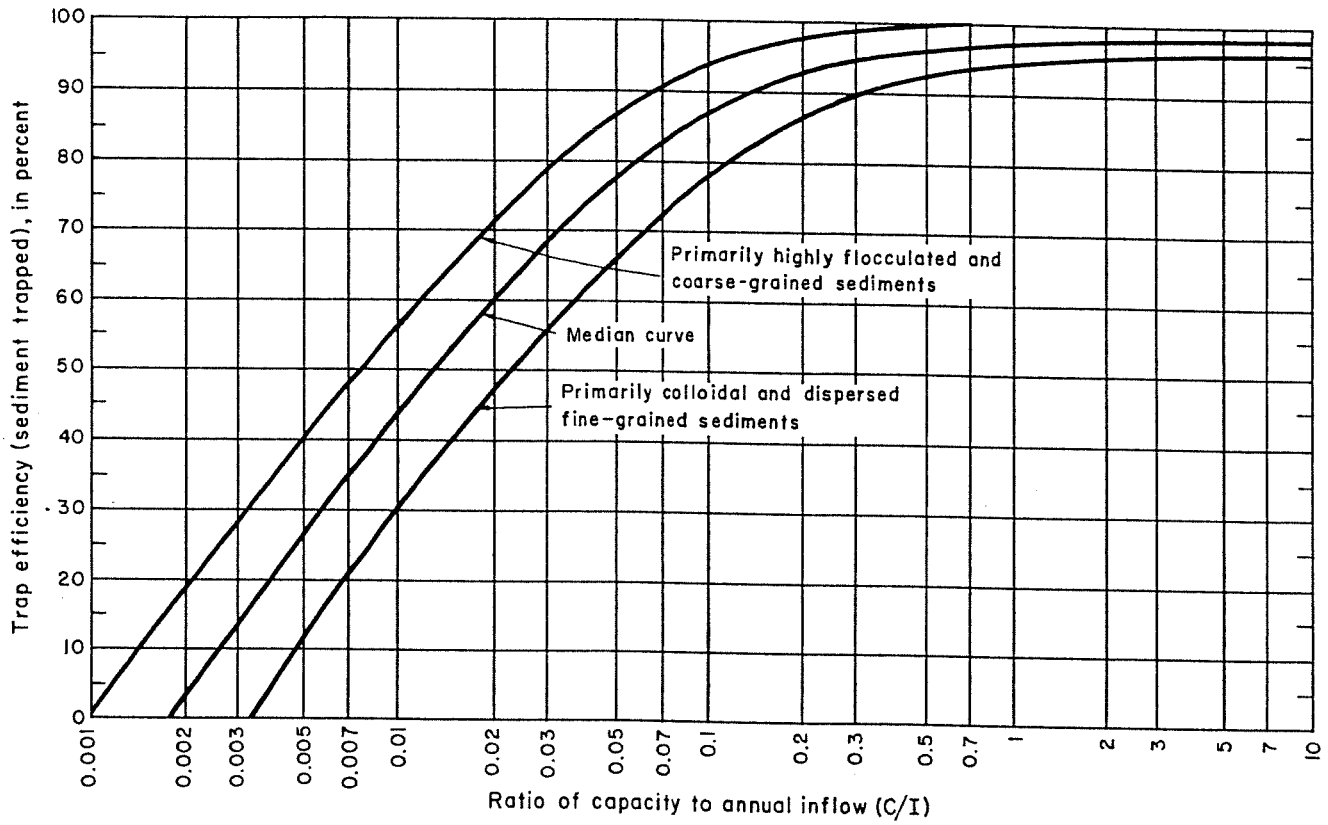


Figure 8–2.—Trap efficiency of reservoirs.

early part of a reservoir's life (Present Conditions on SCS–ENG–309) must be recognized in design. Determine, in consultation with the state program staff and the area and district conservationists, how many years will be required for the proposed land-treatment measures to be installed and become effective.

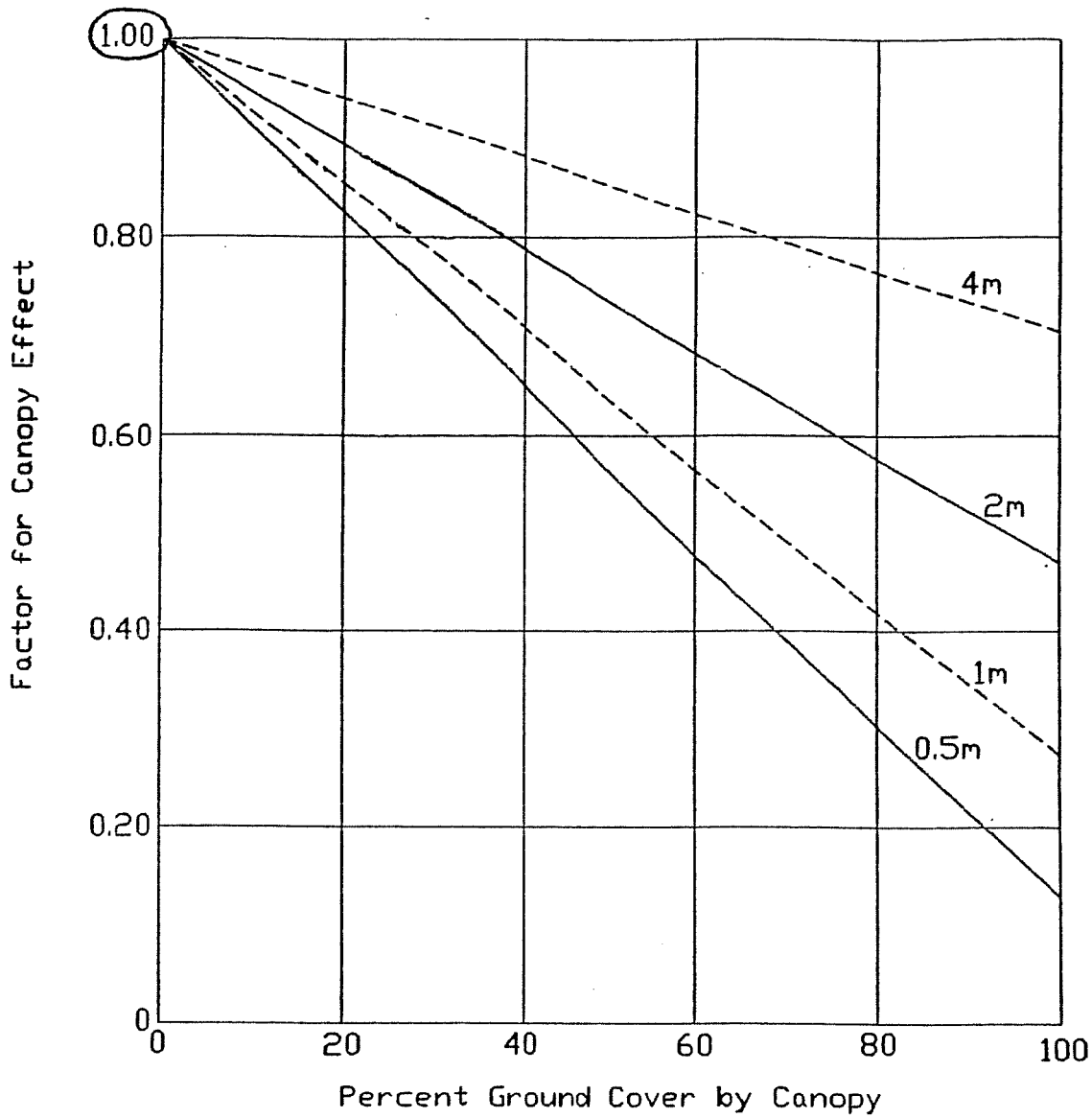
Distribution of Sediment

The total storage capacity of a reservoir must include capacity for all water storage plus capacity for the sediment expected to accumulate during the reservoir's design life. Consequently, the amount of sediment that will be deposited above the elevation designated for the sediment pool must be estimated. Such deposits may materially affect the proper functioning of the structure.

The amount of sediment that will be deposited above the principal spillway varies with the nature of the sediment, shape of the reservoir, topography of the reservoir floor, nature of the approach channel, detention time, and purpose of the reserovir. The coarse sediment settles quickly as the velocity of the water decreases. Generally, sediment inflow is greatest when detention capacity is being used and some sediment is deposited at elevations above the principal spillway. Usually, more coarse material than fine material is deposited above this elevation. The texture of the incoming sediment is the basis for estimating the percentage of incoming sediment that will be deposited above the elevation of the principal spillway. Use the following guidelines for estimating this percentage.

1. For watersheds of low to moderate relief in which the predominant sources of sediment are silty and clayey soils, sheet flow is the principal eroding agent, and the sediment is transported primarily in suspension: 10 percent.
2. For watersheds of low to moderate relief in which the incoming sediment consists of nearly equal amounts of medium to fine sands, silts, and clays; sheet flow and channel erosion are the principal agents; and the coarser material is

INFLUENCE OF VEGETAL CANOPY



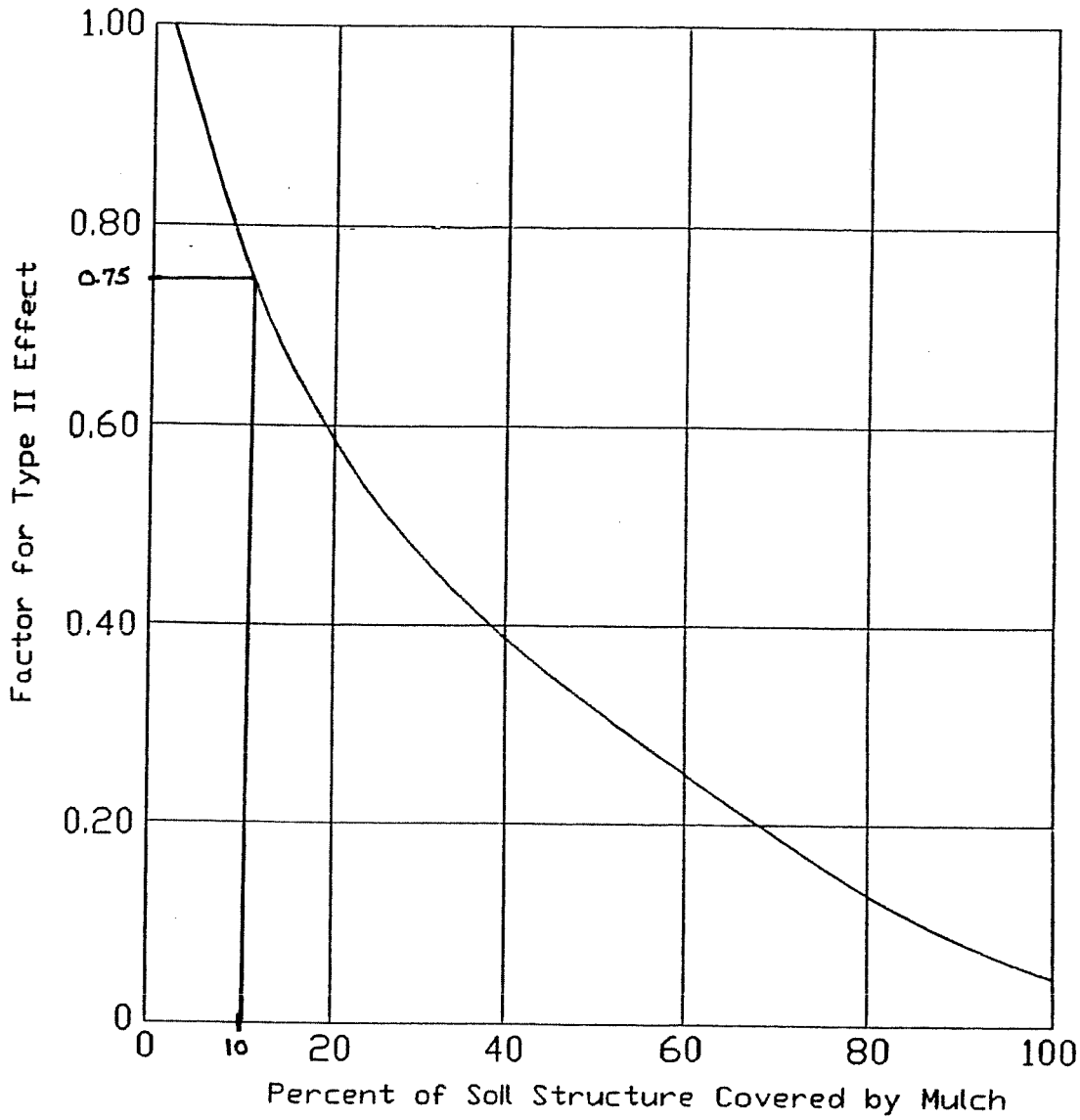
No Canopy $\Rightarrow C_1 = 1.00$

Revision	Date

REFERENCE: A Soil-Erodibility Nomograph for Farmland and Construction Sites, 1971

FIGURE 1303b

EFFECT OF PLANT RESIDUES OR CLOSE-GROWING STEMS AT THE SOIL SURFACE



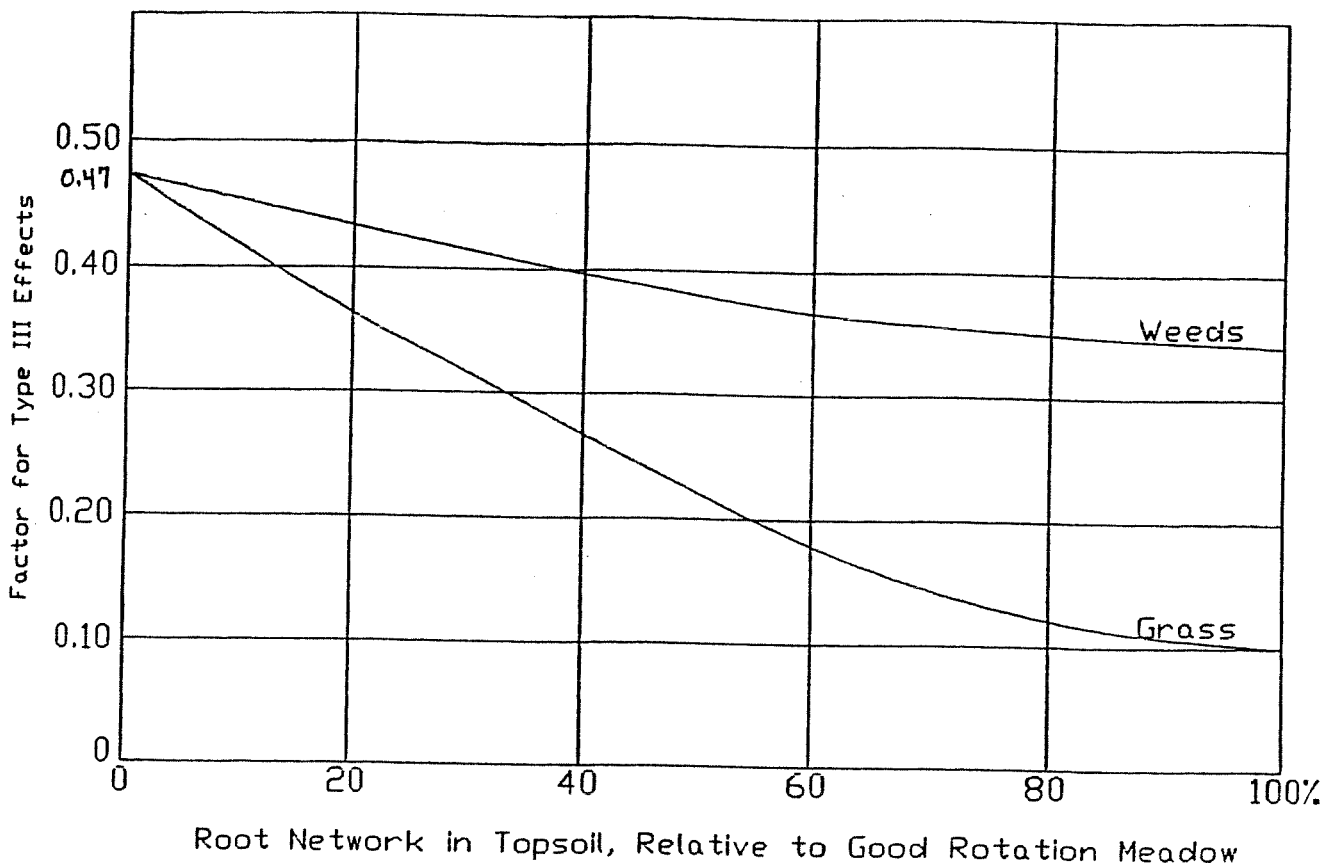
Assume 10% mulch $\Rightarrow C_2 = 0.75$

Revision	Date

REFERENCE: Estimating the Cover and Management Factor for Undisturbed Areas, 1972

FIGURE 1303c

TYPE III EFFECTS ON UNDISTURBED LAND AREAS



Assume near 0% root network $\Rightarrow C_3 = 0.47$

$C = C_1 C_2 C_3 = (1.00)(0.75)(0.47) = 0.35$

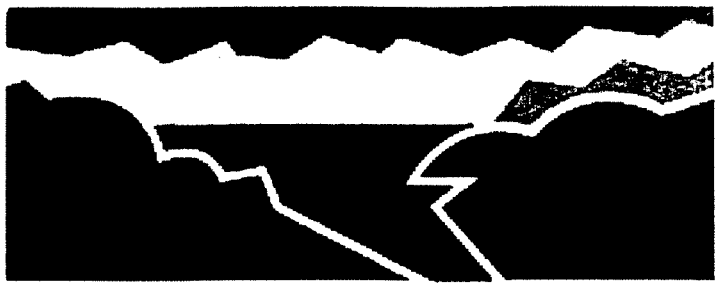
Revision	Date

REFERENCE: Estimating the Cover and Management Factor for Undisturbed Areas, 1972

FIGURE 1303d

RFCD OPERATIONS AND MAINTENANCE MANUAL

REGIONAL FLOOD CONTROL DISTRICT



OPERATIONS AND MAINTENANCE MANUAL

Adopted
January 11, 2007

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

OPERATIONS AND MAINTENANCE MANUAL

GALE WM. FRASER, II, P.E.
GENERAL MANAGER / CHIEF ENGINEER

www.regionalflood.org

The Operations and Maintenance Manual has been updated in accordance with Regional Flood Control District Board action on January 11, 2007. The Board adopted amendments to Chapter 1, Section 1.10 - Executive Summary, Chapter 2, Section 2.20 – Authority and Section 2.50 - Definitions, Chapter 3, Section 3.20 - Policies, Chapter 4, Section 4.11 - Purpose, 4.12 - Payment Procedures, Section 4.22 - Annual Work Plans, Section 4.25 - Certification of Compliance, 4.26 - Interlocal Contract Document, 4.27 - Contract for Maintenance Performance, Performance Standards, 4.35 - Reporting, and Appendix B.

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT
OPERATIONS AND MAINTENANCE MANUAL

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CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT
OPERATIONS AND MAINTENANCE MANUAL

CHAPTER 1
EXECUTIVE SUMMARY

1.10 EXECUTIVE SUMMARY

The Clark County Regional Flood Control District (District) was created under NRS 543 with responsibility to plan, construct and maintain drainage and flood control facilities throughout Clark County. In order to comply with NRS 543.340(4), this **Operations and Maintenance Manual** has been prepared through the cooperation and support of all of the affected member entities, which include Clark County and the incorporated cities within Clark County. The document sets forth both policies and procedures by which the maintenance of the drainage and flood control facilities will be achieved to assure their proper working order at the time of need. The overall goal of the maintenance program as adopted by the District Board is as follows:

> COMPLY WITH THE PROVISIONS OF NRS 543.340(4) AND ASSURE THAT FACILITIES IN THE MASTER PLAN ARE MAINTAINED IN A MANNER THAT MAXIMIZES THEIR USEFUL LIFE AND ENSURES THEIR OPERATION AT DESIGN CAPACITY DURING A STORM EVENT.

Nineteen policy statements have been adopted to support the above goal.

In order to achieve the goal, and to comply with the adopted policies, the following procedures have been developed in an open and very participatory manner.

Funding Procedure – Provides for a means by which the member entities can be paid for activities associated with maintenance of drainage and flood control facilities on the Master Plan provided they meet criteria as set forth in the manual.

Administrative Procedure – Provides for establishing standards and levels of service by which maintenance will be achieved. This procedure includes the steps and schedule by which an annual work plan is established and adopted by the District Board. It also provides for the certification of performance by each member entity in accordance with the annual interlocal contract. The ability for the member entity to contract maintenance activities to private contractors is also authorized under this procedure.

Maintenance Procedures – This procedure provides the specific activities under which the maintenance program is to be carried out as listed below:

ACTIVITY NUMBER	ACTIVITY NAME	WORK MEASURE UNIT
05	Inspect Channels	Miles
10	Clean and Reshape Channels	Cubic Yards
15	Repair Lined Channel	Each
20	Provide/Maintain Erosion Control	Square Feet
21	Provide/Maintain Dust Control	Acres
25	Clean and Inspect Detention/Debris Basins	Cubic Yards
30	Erosion Repair	Cubic Yards
35	Fence Repair	Linear Feet
40	Vegetation Control - Chemical	Acres
45	Vegetation Control - Mechanical	Acres
50	Maintain Access Road	Miles
55	Clean and Inspect Inlet/Outlet Structures	Each
60	Repair Inlet/Outlet Structures	Each
65	Clean Storm Sewer Lines	Linear Feet
70	Storm Sewer Repair	Repairs
75	Clean/Flush Culverts & Bridges	Each
80	Miscellaneous Work Activities	Labor Hours
85	Engineering	Labor Hours

A specific performance standard has been developed for each activity setting forth the following elements:

- The most effective crew size.
- The kinds and number of equipment required.
- The major types of material that should be used.
- Recommended procedures for performing the work.
- An estimate of expected average daily accomplishment with standard crew size, equipment, and procedures.
- Authorization and scheduling criteria.

Inventory Procedures – A critical element of any maintenance program is the identification and condition of the overall drainage and flood control system. In the case of this program, the inventory also identifies those facilities that are "eligible" for payment of maintenance activities, provided the work is a part of the annual plan. Facilities eligible are those identified in the Regional Flood Control District's Master Plan and any revisions, amendments, and/or changes subsequently approved. Only those facilities that exist as Master Plan facilities, or exist in the same alignment as a proposed Master Plan facility and appurtenant facilities are eligible.

Maintenance is an ongoing and very dynamic function of a successful drainage and flood control program. This **Operations and Maintenance Manual** sets forth an initial set of policies and procedures, including the various actions required to achieve the maintenance goal. The manual will need to be updated on a regular basis to reflect fiscal implications and the experience gained as the District continues to grow and to serve the citizens and taxpayers of Clark County.

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT
OPERATIONS AND MAINTENANCE MANUAL

CHAPTER 2
INTRODUCTION

2.10 BACKGROUND

The Clark County Regional Flood Control District (District) was established in 1986 to plan, construct, and maintain drainage and flood control facilities throughout Clark County. These responsibilities focus on alleviating the potential for flooding and protecting the lives and property of existing residents, future residents and visitors within the District's Service Area. The initial phases of the District's program succeeded in preparing a Master Plan, uniform design criteria, regulatory standards, and constructing facilities. As these areas have progressed, the District, along with other agencies and member entities in the County, has oriented its efforts towards assuring adequate maintenance of flood control facilities and conveyance systems. This orientation is consistent with the vital role maintenance plays in all comprehensive flood control programs. This **Operations and Maintenance Manual** has been prepared through the District with the support and cooperation of each affected member entity. It represents a commitment to uniform flood control system standards and establishes a blueprint for a cost effective and consistent maintenance program throughout the District's service area.

2.20 AUTHORITY

Nevada Revised Statute (NRS) 543 mandates that the District shall undertake programs for both construction and maintenance of flood control facilities. A commitment to building and maintaining flood control facilities within Clark County is reiterated in the District's **Uniform Regulations for the Control of Drainage** (Uniform Regulations) which states that capital improvements, operation, and maintenance are all interrelated parts of the District's overall flood control program. In accordance with NRS 543.340(4) and the Uniform Regulations, the District prepared an **Operations and Maintenance Manual**, which was adopted by the District Board on November 8, 1990. To reflect fiscal implications and experience gained, the manual was updated in 1995, 1999, 2003, 2005, and 2007.

2.30 RESPONSIBILITY

The District was formed, in part, to fund and coordinate the construction and maintenance of facilities to alleviate flooding and protect the life and property of citizens within the boundaries of the District. It is the responsibility of the District to prepare and update the Master Plan for the control of floods, and manage the Regional Fund for the Control of Floods in a manner consistent with NRS 543.

2.40 APPROACH

The maintenance program must assure that the flood control projects funded by the District are maintained at a level which maximizes their useful life and assures that facilities operate to design capacity. As an interconnected network of conveyances and structures, failure of any flood control facility to operate properly may affect the performance of the overall system within a specific watershed.

Flood control facilities require regular maintenance if they are to be functional, visually attractive, and last through their design life. Accordingly, the development of a maintenance program is just as critical to the overall success of a comprehensive flood control effort as basin planning and regulation enforcement. As stormwater and flood control programs begin to address nonpoint pollution/water quality issues, the maintenance program will play an even greater role by enabling cost effective reductions in pollutant loadings to receiving waters. Finally, visibility of the program to the public, which a comprehensive maintenance program affords, is an important factor in demonstrating that flood control management is truly a full-time commitment and not simply a priority only after a storm event. The primary objectives of the District's maintenance program are:

- To develop a complete physical feature inventory for the system.
- To establish overall policies and levels of service.
- To develop operating procedures.

It is also critical that ongoing inspection and reporting procedures continue to assure all systems are ready when needed.

Due to the multiple jurisdictions involved with maintenance of the flood control system, a commitment to this program from all member entities within the service area of the Regional Flood Control District was essential. This commitment was made through the Maintenance Technical Committee during the development of the manual in 1990. It was also recognized that coordination of this maintenance program with state transportation programs was critical. The level and consistency of the long range commitment has a direct impact on how effective the resulting maintenance system becomes. This commitment begins with a credible **Operations and Maintenance Manual**.

An essential building block for a successful flood control maintenance program in Clark County is a complete physical feature inventory of the system. It is also important to note that no maintenance program is ever truly "complete". Rather, these programs are constantly evolving as inventories are defined and standards/costs are further refined. A similar evolution is anticipated for this program. The flexibility to adjust to this evolutionary process has been built into this manual.

2.50 DEFINITIONS

In addition to the definitions of terms and phrases set forth in other District documents, the following apply to operation and maintenance:

Acceptance for Maintenance: "Acceptance for Maintenance" means that a project funded by the District, member entity, or other public/private funds is a part of the Master Plan and has been constructed in accordance with District standards and therefore eligible for maintenance funding by the District.

Annual Budget: "Annual Budget" means the anticipated costs associated with completion of each activity outlined within the annual work plan submitted by each of the member entities, and ultimately approved by the District Board of Directors prior to the start of each fiscal year.

Annual Work Plan: "Annual Work Plan" means a plan submitted by each of the member entities setting forth the type and quantity of maintenance to be performed during the ensuing budget year in a form prescribed by the District specifically requesting funds for budgeting purposes.

Certification: "Certification" means the documentation which evidences that required maintenance by a member entity has been completed in accordance with established standards.

Maintenance Program: The "Maintenance Program" has been established by the Board to provide funding of, and establish performance standards and guidelines for, the maintenance of flood control facilities located throughout Clark County and the incorporated areas. The Program provides funding to member entities to perform maintenance of eligible flood control facilities. Projects eligible for District maintenance funding are those identified in the Regional Flood Control District's Master Plan and any revisions, amendments, and/or changes subsequently approved. Only those facilities that exist as Master Plan Facilities or exist in the same alignment as a proposed Master Plan facility, and appurtenant facilities are eligible. Subsequently, the District works with the member entities annually to develop Maintenance Work Plans. The work plans undertaken through the Maintenance Program and budgets are funded through the annual interlocal contracts between each member entity and the District. No matching funds are required, except in those cases where an arrangement has been made to cooperatively fund a particular field activity. Work is performed using a combination of private contractors and member entity maintenance staff. The Maintenance Program contains three broad categories of work:

1. Routine and/or Preventive Maintenance: "Routine and/or Preventive Maintenance" means work on existing facilities to keep them in proper working condition, including but not limited to, debris/sedimentation removal, vegetative control, and reshaping.

2. Restoration: "Restoration" means the repair to existing facilities after a storm event including erosion repair, fence replacement, repairing/replacing trash racks, inlets, storm sewer systems, major debris removal, and similar "one time" work activities.

3. Rehabilitation: "Rehabilitation" means rebuilding a facility and/or conveyance system after it is destroyed by an event or it has been determined that it is not operating according to the intent of the design documents on file at the District causing a safety or maintenance problem or it has deteriorated to the extent that it must be replaced "in kind" including replacing or modifying drop structures, reshaping channels, bank protection restoration, inlets, etc. In general, the rehabilitative projects are designed by consultants and the construction contracts are awarded through a bid process.

Maintenance Program Exclusions: "Exclusions" typically include local drainageway maintenance such as curb and gutter work, inlet maintenance, and repairs to small piped storm sewer systems, unless otherwise constructed as part of a regional facility and landscaping, irrigation systems, trails, bike paths, and other recreational or multi-use features that do not have a direct flood control or drainage function. Maintenance work exclusions also include repair or replacement of existing flood control Master Plan facilities which undergo catastrophic damage of more than one-half (1/2) mile. These types of catastrophic damages will generally be classified as capital improvements, and requests for capital improvement funds must be reprogrammed as a capital improvement project in accordance with District Policies and Procedures.

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT
OPERATIONS AND MAINTENANCE MANUAL

CHAPTER 3
POLICY STATEMENT

It is important that a maintenance policy statement be adopted which reflects the objectives of both the elected officials and the operations staff charged with its implementation. The initial policy document was prepared and reviewed by District staff and the Maintenance Committee. Following input from the group, it was reviewed by the respective Public Works Directors of all member entities and further revised to reflect their input. The document was then reviewed by the Technical Advisory Committee (TAC) and the Citizens Advisory Committee (CAC) before final adoption by the Board on November 8, 1990. To reflect fiscal implications and experience gained, the document is updated on a regular basis. The final adopted policy statement is as follows:

3.10 GOAL

Comply with the provisions of NRS 543.340 (4) and assure that facilities in the Master Plan are maintained in a manner that maximizes their useful life and ensures their operation at design capacity during a storm event.

3.20 POLICIES

1. Flood control facilities identified in the Master Plan are eligible for District maintenance funding.

2. Facilities funded through the District shall be inspected on an annual basis, as a minimum, to assure proper maintenance has been provided.

3. In cases where funded maintenance by the lead member entity is not performed to the standards specified, the District shall perform or cause to be performed the maintenance necessary to assure proper operations of the facility. Costs incurred by the District shall be deducted from the amount authorized in the maintenance agreement between the lead member entity and the District.

4. Flood control facilities improved or constructed after adoption of this policy, must be designed in accordance with District criteria and standards to be eligible for maintenance funding.

5. Access to the facility must be guaranteed to the lead member entity and the District in order to be eligible for maintenance funding.

6. Maintenance and repairs to flood control facilities will be performed in a manner that will minimize the degradation of water quality.

7. The maintenance requirements applied to these facilities shall be based on the standards contained in the District's **Operations and Maintenance Manual**.

8. The lead member entity must develop an annual work plan to be eligible for maintenance funds. Upon completion of the work, the member entity must certify that the work was completed in accordance with the standards contained in the District's **Operations and Maintenance Manual**.

9. Maintenance funding is available only for repair, restoration, rehabilitation, or maintenance of existing facilities and is not intended to supplement the District's capital improvement program. For example, if the intent of the field activity is to increase the designed capacity of a facility or conveyance, then that function is capital in nature.

10. Copies of plans and specifications must be furnished to the District for review and approval prior to finalizing design when maintenance projects are awarded through a bid process. This review will be for the purpose of ensuring compliance with the District's Master Plan and regional objectives and will be used to update the inventory of existing facilities. As-built plans or record drawings will be provided to the District upon project completion and prior to project closeout.

11. Expenditures for repair and replacement of existing flood control Master Plan facilities which undergo catastrophic damage of one-half (1/2) mile or less will be classified as maintenance. These expenditures will be made from funds budgeted in the Facilities Maintenance Fund.

12. Expenditures for repair and replacement of existing flood control Master Plan facilities which undergo catastrophic damage of more than one-half (1/2) mile will generally be classified as capital improvements. Requests for capital improvement funds must be programmed as a capital improvement project in accordance with District Policies and Procedures.

13. Expenditures for removal of debris and sediment captured or deposited in a debris basin, detention basin or a linear flood control facility will be classified as maintenance. Necessary repairs to a debris or detention basin will also be classified as maintenance. These expenditures will be made from funds budgeted in the Facilities Maintenance Fund.

14. Expenditures for repair and replacement of non-improved or "earth lined" flood control facilities and features will be classified as maintenance. These expenditures will be made from funds budgeted in the Facilities Maintenance Fund.

15. A member entity may consider another option in lieu of repairing or rehabilitating facilities that have not been improved to Master Plan design specifications. This option is to build/implement the long-term solution for the damaged facility. Expediting the implementation of the Master Plan may be a viable alternative that maximizes the use of available resources. This should be considered as an alternative if the long-term solution can be implemented in a timely manner. Requests for capital improvement funds to implement a Master Plan project must be programmed as a capital improvement project in accordance with District Policies and Procedures.

16. Funds may be provided by the District for maintenance of Master Plan facilities by outside contractors under conditions when the use of such an approach is deemed the most efficient and cost effective by the lead member entity.

17. If a member entity receives funds from other sources for maintenance and repair of drainage and flood control facilities paid for by the District, the funds will be paid to the District. Examples of other sources include, but are not limited to, Federal Emergency Management Agency (FEMA) funds for repairs resulting from a designated disaster, and funding from developers for maintenance and repair of District facilities.

18. The District will not be responsible for any fines and/or penalties caused by the actions or inactions of the member entity's employees, consultants, contractors, or agents.

19. Bridge structures, generally speaking, are not eligible for District funding unless it can be shown that the flood carrying aspects of the regional facility causes a safety or maintenance problem.

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT
OPERATIONS AND MAINTENANCE MANUAL

CHAPTER 4
PROCEDURES

4.10 FUNDING PROCEDURES

4.11 Purpose

This element of the **Operations and Maintenance Manual** provides the member entities with procedures for the appropriation, expenditure and payment of funds to perform maintenance activities. A principle role of the District shall be to manage and disburse payments to the member entities for maintenance that is performed in compliance with the approved plans. (See Funding Flow Diagram.)

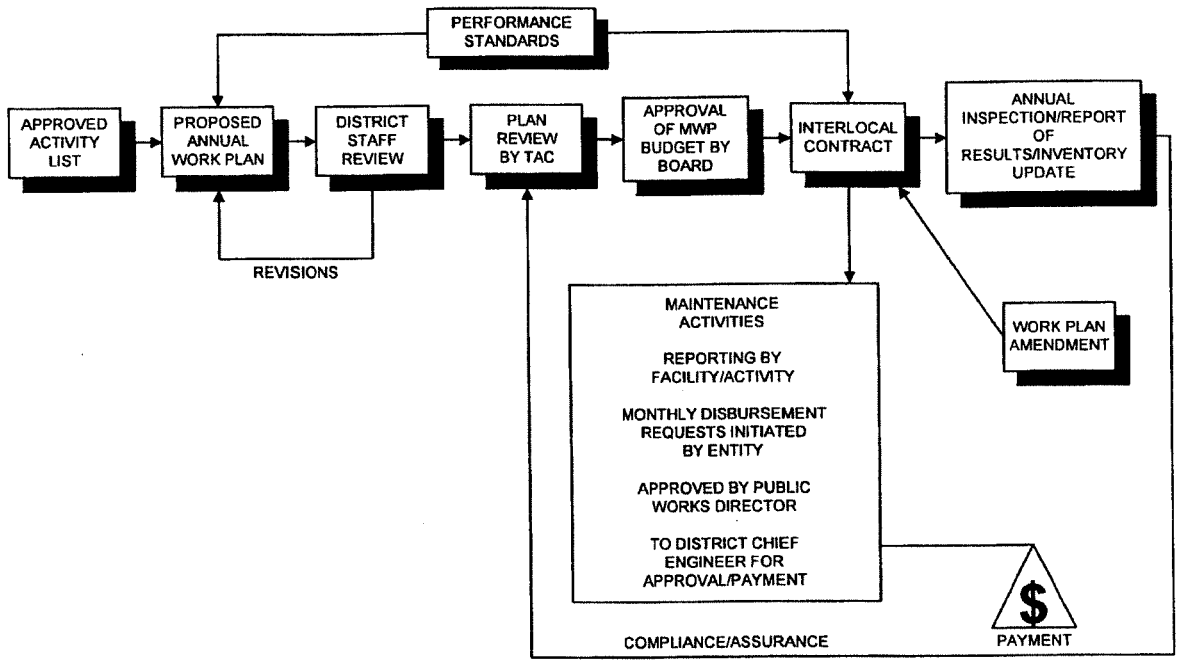
The District has authorized funding to assist the member entities with major drainageway maintenance in accordance with the priorities listed below:

- First priority: District owned facilities.
- Second priority: Facilities owned by member entities.
- Third priority: Facilities owned by other public agencies.
- Fourth priority: Facilities owned by others in which access has been guaranteed to the lead member entity and the District.
- Fifth priority: Unimproved drainageways.

4.12 Payment Procedures

Payment for work performed will be made in accordance with the annual interlocal contract executed as part of the approved work plan and the payment procedures outlined herein. The primary mechanism for payments shall occur through a purchase order established between the District and each member entity. In cases where the member entity directs the District to make payments to a contractor or supplier directly, the purchase orders will be established between the District and the contractor, consultant, or supplier, at the member entity's request. Unless otherwise contained within this manual, all District Policies and Procedures relating to disbursement of funds and payment to member entities apply.

Funding Flow Diagram



Disbursement requests (invoices) must be accompanied by a verification statement from the member entity that the work for which payment is due has been completed in accordance with the standards contained in this manual. The disbursement request must identify the Master Plan facility maintained, specific plan activity or activities for which payment is sought, and separately identify personnel, equipment, and other related costs. (See Disbursement / Amended Annual Budget Request Form, which can be obtained electronically from the District.) Administrative costs incurred by the member entity in the management of the interlocal contract are not payable to the member entity. Examples include cost accounting work, secretarial/clerical work, the preparation of requests for payment, and certification statements for work performed under the contract.

All invoices from the member entity requesting payment to the member entity or direct payment to the member entity contractor or vendor must first be submitted to and approved by the member entity's Public Works Director or other designated responsible person in charge of the project. The Chief Engineer or designated District staff will process and approve such payments within 30 days providing all invoices have appropriate backup, and the required approval has been obtained and terms of the interlocal contract have been satisfied.

Direct payments to contractors must originate from the member entity and include the following:

1. Invoice to the member entity from the contractor.
2. Certification of work performed by the contractor signed by the member entity, if applicable.
3. Disbursement / Amended Annual Budget Request Form.

Monthly and annual summaries of purchase order balances, budget status, and facility expenditures shall be prepared by the District as a part of the routine financial reporting procedures to the Board.

REGIONAL FLOOD CONTROL DISTRICT
MAINTENANCE WORK PROGRAM - FISCAL YEAR 20XX-XX

ENTITY: _____

[ ] **Disbursement Request**

Vendor Name: _____

Invoice Number: _____

Amount Requested: _____

RFCD Purchase Order #:

[ ] **Amended Annual Budget Request**

Approved: _____

General Manager/Chief Engineer Date

Clark County Regional Flood Control District

MWP Facility #:											
Facility Name:											
Master Plan Facility ID:											**ACTIVITY TOTAL**
05-Chnl Insp											0.00
10-Reshape Chnl											0.00
15-Chnl Repair											0.00
20-Erosion Control											0.00
21-Dust Control											0.00
25-Clean DB											0.00
30-Erosion Repair											0.00
35-Fence Repair											0.00
40-Vege Control - C											0.00
45-Vege Control - M											0.00
50-Access Rd											0.00
55-Clean In/Outlet											0.00
60-Repair In/Out											0.00
65-Clean Storm Drn											0.00
70-Sewer Repair											0.00
75-Clean Culverts											0.00
80-Misc Maint											0.00
85-Engr											0.00
Facility Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

I certify that the above described maintenance was/will be performed in accordance with the criteria/standards contained in the District's Operations and Maintenance Manual. Further, the information contained in this Request accurately reflects those costs incurred/to be incurred during the performance of this work.

_____

Project Manager Date

4.20 ADMINISTRATIVE PROCEDURES

4.21 Purpose

The purpose of this element of the **Operations and Maintenance Manual** is to provide specific procedures for establishing standards and levels of service, preparing the annual work plan, administrating the planning, approval and enforcement elements, and updating the manual over time. The principal role of the District shall be to review and approve annual maintenance work plans and monitor the performance of work activities. The principal role of the member entities shall be development of annual work plans that are consistent with the District's approved maintenance activity list; performance of the maintenance work set forth in the approved work plans; and the submittal of quarterly reports that summarize work performance while certifying compliance with maintenance activity performance standards as set forth in the **Operations and Maintenance Manual**.

4.22 Annual Work Plans

In accordance with the schedule on the following page, each member entity shall submit a proposed annual maintenance work plan to the Chief Engineer containing the following components:

Part I:	Maintenance Work Plan Summary – Summary of overall work plan listing specific projects (physical system inventory) and associated costs attributable to each. (See Appendix B, Exhibit A.)
Part II:	Facility map(s) which identify location of projects (physical system inventory) and planned maintenance work by project.
Part III:	Maintenance Work Program Annual Budget – Individual maintenance projects (physical system inventory) broken into maintenance activities to be completed, including narrative, and associated budgeted costs for all projects identified in Part I. (See Appendix B, Exhibit A.)

District staff shall review the proposed plans and work with the member entities to resolve any discrepancies found with District maintenance standards and policy objectives. After the initial staff review, the plans shall be forwarded to the Technical Advisory Committee (TAC) and Citizens Advisory Committee (CAC). Lastly, the plans will be submitted to the Board for final approval.

The activities in the work plan shall be consistent with the District's approved activity list for maintenance of flood control and drainage facilities. Work plans should also describe locally funded work activities that may be linked to the District maintenance work activities to show overlapping areas of responsibility for personnel and equipment. Where local personnel and equipment are going to be used to perform both District funded activities and locally funded

activities, the member entity will describe how these resources are to be managed and the procedures for tracking costs related to both sets of activities.

Member entities may contract for the performance of maintenance work activities. The proposed work plan must specify that a contractor is to be utilized and the time frame for selection of a contractor. In the event that maintenance work is performed under contract, the contract must specify that the District has the authority to inspect all work performed under the contract and approve or deny payments to contractors based on inspection findings.

All work performed must comply with District approved maintenance activity performance standards as set forth in subsequent sections of this Manual. The member entity is required, as a minimum, to inspect Master Plan facilities annually; including any maintenance work performed by member entities on Master Plan Facilities, and shall notify the District prior to the annual inspection of completed maintenance work. Member entities shall facilitate the inspection of maintenance work by the District. The District may withhold funding, require additional maintenance work, or seek repayment of disbursed funds when an inspection reveals that work activities were not performed in conformance with activity performance standards. The annual maintenance work plan schedule follows:

February 1	-	Submittal of preliminary work plan proposal and tentative budget to District staff for review, recommendations, and coordination with member entities. This is important for the following reasons: 1) Fiscal Year Budget Authority submittal and approval. 2) Prioritization of maintenance funding activities.
April 1	-	Submittal of tentative annual work plans, budgets, and interlocal contracts to District staff for review, recommendations, and coordination with member entities.
May (TAC deadline)	-	Submittal of the member entity's final annual work plans, budgets, and interlocal contracts to the TAC and CAC for approval.
June (Board meeting)	-	After receiving approval from the TAC and CAC, member entities' final annual work plans, budgets, and interlocal contracts are submitted to the Board of Directors for approval.
July 1	-	Beginning of maintenance plan contract period, which ends June 30.

Each member entity will submit quarterly reports indicating the status of the work completed under the current fiscal year's program. (See Quarterly Status Report Form.) The reports are due 30 days after the close of the quarter, and will be submitted to the Board for review. Also, each member entity shall submit an annual certification to the District stating that all work contained in the work plan and paid through the interlocal contract has been performed to the specifications established in this manual.

Quarterly Status Report

REGIONAL FLOOD CONTROL DISTRICT
MAINTENANCE WORK PROGRAM
QUARTERLY STATUS REPORT - FY 20XX-XX

MWP Facility #: _____ Entity: _____

Facility Name: _____ Date Prepared: _____

MP Facility ID: _____ Quarter: _____

Force Account/ Contract	Activity	Approved Work Plan Amount ($)	Amended Work Plan Amount ($)	Expended To Date ($)	Percent Complete	Scheduled Completion Date
	5 Inspect Channels					
	10 Clean and Reshape Channels					
	15 Repair Lined Channel					
	20 Provide/Maintain Erosion Control					
	21 Provide/Maintain Dust Control					
	25 Clean & Inspect Detention Debris Basins					
	30 Erosion Repair					
	35 Fence Repair					
	40 Vegetation Control - Chemical					
	45 Vegetation Control - Mechanical					
	50 Maintain Access Road					
	55 Clean & Inspect Inlet/Outlet Structures					
	60 Repair Inlet/Outlet Structures					
	65 Clean Storm Sewer Lines					
	70 Storm Sewer Repair					
	75 Clean/Flush Culverts & Bridges					
	80 Miscellaneous Work Activities					
	85 Engineering					
	TOTALS	$0.00	$0.00	$0.00	0%	

Delays or problem areas:

Work completed during current quarter:

Work to be completed during next quarter:

Consultant/
Contractor: _____

Project
Manager: _____ Phone Number: _____

4.23 Approval of Annual Work Plan

The work plans received by the District will be reviewed and budget requests compiled into a summary showing the dollar amount by member entity for each of the priority areas set forth in Section 4.11. The Chief Engineer shall review the total maintenance budget requests against the District's proposed annual total budget for facility maintenance and make a recommendation to the District Board as to the amount of maintenance funds to be disbursed to each respective member entity based upon equity and need.

Once the Technical Advisory Committee has reviewed the maintenance work plans and budget appropriation recommendation, the Chief Engineer will forward the compiled summary to the Board for consideration and approval as a key element of the Annual District Budget.

The Chief Engineer's report to the District Board shall show both the budget requested by the member entity and the recommended amount to be appropriated, the report will also make comments on any adjustments made to the initial request.

4.24 Work Plan and Budget Amendments

Requests for amendments to approved work plans and budgets must be submitted to the Chief Engineer in writing. The amendment request must specify the work elements affected, describe the reasons for the amendment request, and describe the impact of the proposed amendment on the affected work plan objectives.

Formal approval of work plan and/or budget amendments requiring a reallocation of funds between facilities must be obtained from the Chief Engineer prior to submittal of payment requests. (See Disbursement / Amended Annual Budget Request Form.) The member entity shall also notify District staff of work plan and/or budget amendments within a facility. Requests requiring an increase in the overall work plan budget must be submitted to the Board for approval with a supplemental interlocal contract for the amended work in accordance with Chapter VI.A.2 of the District's **Policies and Procedures Manual.**

Amendment requests shall be reviewed by District staff and responded to in writing within 15 days of receipt of the original request.

4.25 Certification of Compliance

It is the intent of the District to rely to the maximum extent possible on the member entities to carry out the maintenance activities and comply "voluntarily" with the procedures and standards set forth in this manual. The District shall from time to time inspect facilities funded by the District or those on the Master Plan to assure compliance with the interlocal contract. Each member entity shall submit an annual certification to the District stating that all work contained in the work plan and paid through the interlocal contract has been performed to the specifications established in this manual. This certification shall be signed by the person executing the interlocal contract or their designee. The certification should summarize proposed and actual plan accomplishments. It should also describe any major maintenance problems that have implications for the District as a whole, such as significant deterioration of major conveyance system components or the failure of system components to perform as intended, and suggest revisions to the activity list provisions.

The certification and final payment requests shall be submitted to the District within 30 calendar days of the termination of the annual interlocal contract for maintenance funding.

Final Accounting Report

(ENTITY)
MAINTENANCE WORK PROGRAM
FINAL ACCOUNTING REPORT - FY 20XX-XX
As of (Current Date)

VENDOR	P.O. NUMBER	P.O. AMOUNT	TOTAL EXPENDED	P.O. BALANCE
Sample Vendor 1	123456 01	1,000.00	1,000.00	0.00
Sample Vendor 2	123456 02	1,000.00	500.00	500.00
Sample Vendor 3	123456 03	1,000.00	200.00	800.00
	Total	$3,000	$1,700	$1,300

FY XX-XX INTERLOCAL AMOUNT/BUDGET	4,000.00	Total Encumbered	3,000.00
Total Encumbered	3,000.00	Total Expended	1,700.00
Total Unencumbered	$1,000.00	Total Unexpended	$1,300.00

Total Authorized	**$4,000.00**
Expended	**$1,700.00**
REPROGRAM FOR MWP	**$2,300.00**

Regional Flood Control District **(Entity)**

RFCD Date Project Manager Date

I certify that the above described maintenance was performed in accordance with the criteria/standards contained in the District's Operations and Maintenance Manual. Further, the information contained in this Final Accounting Report accurately reflects those costs incurred during the performance of this work. If there are any maintenance problems that have implications for the District as a whole, such as significant deterioration of major conveyance system components or failure of system components to perform as intended, a detailed description will accompany this report as an attachment.

4.26 Interlocal Contract Document

The performance of work outlined in the approved maintenance plan shall be guided by an interlocal contract entered into annually between the District and each member entity. A sample contract is contained in Appendix B. Major provisions of the contract include: the adoption of the Board approved work plan as the document outlining the work to be performed; references to the performance standards, payment procedures, and plan amendment procedures outlined in this manual for governing maintenance work performance evaluations, and contract amendments; and a requirement for submittal of an annual certification of results.

4.27 Contract for Maintenance Performance

If, in the opinion of the member entity, it appears to be most cost effective (or due to an emergency) to utilize the services of private contractors to perform maintenance functions, the member entity shall solicit bids from qualified contractors in compliance with their statutory procedures for the necessary work. All contracts for maintenance services shall be bid on an annual basis or for a specific project location. The member entity will provide the District with copies of bid specifications and bid tabulations as well as copies of the respective contract documents. The member entity shall advise the District in advance that they intend to utilize a private contractor (may be included as part of annual work plan). They shall also provide a summary of work performed and a statement of inspection as part of the request for payment to the member entity or directly by the District to the contractor. All expenditures must comply with NRS 332, Local Government Purchasing Act, NRS 338, the Public Works Act, and all relevant statutes, rules, regulations, and policies.

4.30 MAINTENANCE PROCEDURES

4.31 Purpose

As a part of the overall operations and maintenance procedures adopted by the District, an outline for specific maintenance procedures has been developed. The accepted maintenance procedures are centered around specific elements of a management system for field maintenance, and include defined maintenance activities, standards, scheduling, and reporting procedures.

Due to the diversity in physical features among the various agencies involved, and the varied resources employed in maintenance activities, it is essential to treat these procedures as general guidelines which must be tailored to meet the situation at hand. It is also essential that these procedures remain dynamic, be actively reviewed, and periodically updated. An annual review is recommended.

4.32 Activities

Maintenance work activities identify all major maintenance work and include all activities which are performed frequently and in amounts that make them a significant part of the total work program. Each activity must be clearly defined so maintenance personnel at all levels of management uniformly understand the operation to be performed and the type of deficiency to be corrected.

Personnel who plan, schedule, perform, report, or evaluate maintenance work must know what each work activity means. Work activities are used for the following purposes:

- Planned maintenance work is identified in the annual maintenance work plan by activity name and number.
- Activity names and numbers are used for authorizing, assigning, and reporting work.
- Activity names and numbers are used on work scheduling guides and work performance summaries.

Work measurement units are established for the major maintenance activities. For example, "Acres Covered" is the work measurement unit for vegetation control while "Cubic Yards Removed" is the work unit for cleaning and reshaping channels. These measurement units are used to describe how much work is planned and to report how much work is accomplished for each activity.

For some activities, specific work measurement units--other than labor hours--would not be meaningful. For example, the miscellaneous maintenance activity includes a number of different operations. This activity cannot be measured by a common unit other than labor hours.

Following is the accepted maintenance Activity List for the District including work measure units.

ACTIVITY NUMBER	ACTIVITY NAME	WORK MEASURE UNIT
05	Inspect Channels	Miles
10	Clean and Reshape Channels	Cubic Yards
15	Repair Lined Channel	Each
20	Provide/Maintain Erosion Control	Square Feet
21	Provide/Maintain Dust Control	Acres
25	Clean and Inspect Detention/Debris Basins	Cubic Yards
30	Erosion Repair	Cubic Yards
35	Fence Repair	Linear Feet
40	Vegetation Control - Chemical	Acres
45	Vegetation Control - Mechanical	Acres
50	Maintain Access Road	Miles
55	Clean and Inspect Inlet/Outlet Structures	Each
60	Repair Inlet/Outlet Structures	Each
65	Clean Storm Sewer Lines	Linear Feet
70	Storm Sewer Repair	Repairs
75	Clean/Flush Culverts & Bridges	Each
80	Miscellaneous Work Activities	Labor Hours
85	Engineering	Labor Hours

4.33 Standards

"Performance Standards" have been established for each of the major maintenance work activities. These performance standards specify:

- The most effective crew size.
- The kinds and number of equipment required.
- The major types of material that should be used.
- Recommended procedures for performing the work.
- An estimate of expected average daily accomplishment with standard crew size, equipment and procedures.
- Authorization and scheduling criteria.

Following is an item-by-item description of the format of the performance standards.

1. Activity Identification/Date – The activity number and name are shown as well as the "effective date" of the performance standard--to be used when updating or replacing performance standards.

2. Description and Purpose – The Description and Purpose section of the performance standard explains the work activity and the kinds of defects to be corrected or reasons for doing the work.

3. Authorized By and Work Control Category – The level of management responsible for authorizing the work is identified. Certain activities requiring special equipment, coordination, or expertise are Engineer-authorized activities and should not be scheduled or performed without the Engineer's approval. The type of control to be placed on the quantity of work performed is identified. This control is unlimited or limited in terms of the amount of work done (accomplishment) or the amount of labor input (crew-day).

4. Performance Criteria – This section includes important information for the "scheduler" about when to schedule the work and for the crew leader to identify the work to be done.

5. Crew Size – The crew size outlines the numbers of personnel needed to do the work. The crew size is based on average conditions. Sometimes, there will be a need to add or delete people to satisfy special traffic safety conditions or hauling requirements.

6. Equipment – The basic requirements for major pieces of equipment are listed. Situations such as the breakdown or unavailability of equipment or special materials hauling requirements may require the addition, deletion or substitution of equipment.

7. Materials – The materials section includes a list of the major materials to be used for the activity.

8. Work Method – The work method outlines, step-by-step, the recommended procedures for performing the work. Each step should be performed in order to correctly maintain the feature as well as provide the quality of work desired.

9. Average Daily Production – The average daily production is an estimate of the amount of work a crew can accomplish during a day using the recommended crew size, equipment, materials and work method. This estimate is shown as a range and should be attainable over a period of time. Some days the accomplishment may be more or less than the estimate, but eventually, the average should fall in line.

10. Notes – Any other relevant, helpful information or instructions.

Use of Performance Standards

Maintenance supervisory personnel should become thoroughly familiar with these performance standards. It is important that the performance standards be used when making assignments and performing work. Some situations will require deviation from the performance standards--such as more or less flagmen or additional haul trucks. These situations are recognized, and crew leaders are expected to consider such situations when organizing and managing their activities.

Haul truck needs should be determined using factors such as haul distance and time estimates (spot, dump, load, and cycle times).

The performance standards also provide guidance and a measure for supervisors to use when evaluating work in progress and completed.

Field personnel are in the best position to identify new or better work methods or difficulties with the current performance standards. These suggestions for improvements or questions should be directed to the crew leader or supervisor.

The performance standards should be reviewed and updated annually. If other changes occur that require more frequent review and update or development, the performance standards can be changed to suit these needs.

4.34 Scheduling

The objectives of work scheduling are:

- To do the planned amount of work.
- To perform the work when it should be done.
- To do the work where it should be done.
- To use the proper people, equipment and supplies to do the work.
- To ensure to the extent possible that all flood control facilities are functioning at design capacity during a storm event, noting that Flash Flood Season is July through September.

Three tools are available to help supervisors meet these objectives. The WORK PROGRAM defines the estimated amount of work and the estimated labor-days required for each activity to provide the desired levels of service; a WORK CALENDAR helps to establish when the various activities should be done; and the PERFORMANCE STANDARDS provide information about quantity standards, personnel requirements and how much work can be done in a given time.

The annual work program establishes the kinds and amount of work to be done during the year and the resources that will be required to do that work. This annual plan needs to be broken into a monthly plan for effective scheduling of work and to permit timely evaluations of work program performance.

The process of "distributing" the annual work load throughout the year is done by allocating a part of the work (in labor-hours, by activity) to specific months. Some types of work -- emergency or service activities -- must be done throughout the year as the need arises. Other types of work must be done on a regularly scheduled basis -- such as preventive maintenance work. Finally, some types of work can be done during certain periods but can be shifted from one month to the other, and still other work can be done almost any time during the year.

These factors must be considered when distributing the different types of work. Preventive maintenance and other types of work which must be performed on a regularly scheduled basis are distributed so as to level labor power needs as much as possible. Finally, work which can be performed any time is distributed to those months with the fewest labor-days. In this way, staffing needs are kept as uniform as possible resulting in more efficient use of available labor power.

A work calendar lists -- activity by activity -- the labor-hours for each month. These labor-hours are used in conjunction with the work program annual work quantities for work scheduling and the preparation of periodic Activity Status Reports. (See Work Calendar Form.)

Once the work program and staffing levels have been set, the work load distribution can be finalized and the calendar prepared to summarize/communicate the planned monthly distribution of the work program.

Work scheduling is the process of using the work calendar and specific scheduling procedures to plan ahead, establish work priorities and accomplish the work.

The performance standards outlined in the previous sections apply to corrective and preventive maintenance activities. These procedures are not as rigid or foolproof as implied by the description. Equipment breakdowns, emergencies, or bad weather will disrupt a schedule -- but part of the scheduling process is to be aware that these situations will occur and to be prepared to respond with little or no difficulty. Because of these situations, supervisors should not expect to accomplish all of the work as scheduled. Generally, a supervisor can consider his/her scheduling efforts to be successful if 75 to 80 percent of the scheduled work is completed as planned.

REGIONAL FLOOD CONTROL DISTRICT
MAINTENANCE WORK PROGRAM
WORK CALENDAR

MWP Facility #: _____ Entity: _____
Facility Name: _____ Fiscal Year: _____
MP Facility ID: _____ Date Prepared: _____

ACTIVITY No.	Description	Monthly Distribution of Time (in hours) JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Total Per Activity
5	Inspect Channels													-
10	Clean and Reshape Channels													-
15	Repair Lined Channel													-
20	Provide/Maintain Erosion Control													-
21	Provide/Maintain Dust Control													
25	Clean & Inspect Detention/Debris Basins													-
30	Erosion Repair													-
35	Fence Repair													-
40	Vegetation Control - Chemical													-
45	Vegetation Control - Mechanical													-
50	Maintain Access Road													-
55	Clean & Inspect Inlet/Outlet Structures													-
60	Repair Inlet/Outlet Structures													-
65	Clean Storm Sewer Lines													-
70	Storm Sewer Repair													-
75	Clean/Flush Culverts & Bridges													-
80	Miscellaneous Work Activities													-
85	Engineering													-
	Total Per Month	-	-	-	-	-	-	-	-	-	-	-	-	-

I certify that the above described maintenance will be performed in accordance with the criteria/standards contained in the District's Operations and Maintenance Manual. Further the information contained in this Work Calendar accurately reflects the time expected to be incurred during the performance of this work.

_____
Project Manager Date

Following are some additional hints or techniques to consider:

- It is not necessary to "formally schedule" the daily, routine activities. It is necessary, however, to regularly check the work reports and accomplishments to verify the distribution of work assignments. A periodic review and adjustment of the work assignments may be necessary to maintain a "balanced work load".
- It is usually best to prepare a schedule (and work assignments) assuming everything will work as planned -- no equipment breakdowns, no emergencies, etc. But make sure a backlog of "alternate" work is available so that little time is wasted when adjustments to the schedule must be made.
- Some guidelines for identifying alternate work:
    - Low priority work that needs to be done, but not necessarily during the next week or so.
    - Work that does not require special equipment or a lot of preparation time.
    - Preventive maintenance on light equipment.

Take time to estimate the amount of work needed and the number of hours required to do the work. Good estimates will improve the scheduling process significantly. The performance standards, inspections and sound judgment based on experience all help the estimating process.

PERFORMANCE STANDARD

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

ACTIVITY NUMBER	NAME	DATE
05	**INSPECT CHANNELS**	01/11/07

DESCRIPTION & PURPOSE

Inspect both improved and unimproved flood channels for proper cross-section, sedimentation, debris and erosion damage, in order to schedule cleaning or repairs as needed.

AUTHORIZED BY	LIMITS ON WORK
Maintenance Supervisor	

PERFORMANCE CRITERIA

Perform complete inspection of channels on an annual basis and after major storm events.

CREW SIZE	WORK METHOD
• 1 Crew Supervisor • • • 1 **TOTAL**	1. Use safety devices, as required. 2. Visually inspect channels for cross-section, sediment, debris, erosion, and vegetation. 3. Prioritize a list of channels requiring maintenance. 4. Schedule cleaning of channels referring to prioritized list.
EQUIPMENT	
• 1 Pickup • • •	
MATERIAL	**AVERAGE DAILY PRODUCTION**
• • • •	8 miles/day

NOTES:

PERFORMANCE STANDARD

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

ACTIVITY NUMBER	NAME	DATE
10	**CLEAN & RESHAPE CHANNELS**	01/11/07

DESCRIPTION & PURPOSE

Mechanical silt, vegetation, and debris removal, and reshaping of unlined channels to restore adequate flow.

AUTHORIZED BY	LIMITS ON WORK
Maintenance Supervisor	

PERFORMANCE CRITERIA

Improved earth channels should be scheduled for cleaning and re-profiling on an annual schedule, or as appropriate following a flood event. Natural channels on a 3-year cycle.

CREW SIZE	WORK METHOD
• 2 Equipment Operators • 1 Truck Driver • .5 Foreman • • 3.5 **TOTAL**	1. Set up safety devices as required. 2. Remove silt and vegetation. 3. Load and haul removed material to proper disposal site. 4. Reshape channel. 5. Clean up work site as necessary. 6. Remove safety devices.
EQUIPMENT	
• 1* 10 Wheel Dump Truck • 1 Scraper • 1 Gradall •	
MATERIAL	**AVERAGE DAILY PRODUCTION**
• Disposal Fees • • •	300 Cubic Yards/day

NOTES:

*Schedule sufficient trucks to insure maximum utilization of excavation equipment.

PERFORMANCE STANDARD

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

ACTIVITY NUMBER	NAME	DATE
15	**REPAIR LINED CHANNELS**	01/11/07

DESCRIPTION & PURPOSE

Repair of damaged concrete, rip rap, gabion, or other channel linings, retaining walls, etc., to restore to original condition and prevent further deterioration.

AUTHORIZED BY	LIMITS ON WORK
Maintenance Supervisor	

PERFORMANCE CRITERIA

Repairs of channel linings, retaining walls, and other structures critical to the protection of a facility are to be scheduled immediately upon detection of damage.

CREW SIZE

- 1 Maintenance Foreman
- 2 Maintenance Workers
-
- 3 **TOTAL**

EQUIPMENT

- Pickup
- Flatbed Dump
- Concrete Mixer
-

WORK METHOD

1. Obtain safety equipment, materials, tools necessary for the day's work.
2. Begin applicable safety procedures and/or traffic control.
3. Clean and prepare damaged area.
4. Build and place forms as necessary.
5. Place and finish concrete.
6. Remove forms and back fill.
7. Clean up work site as necessary.

MATERIAL

- Assorted lumber
- 6-30 bags sacked concrete
- 3-15 tons concrete gravel mix
- 2-10 CY ready-mix concrete

AVERAGE DAILY PRODUCTION

1Each/Day

NOTES:

Crew size and equipment may vary significantly depending on urgency, extent and complexity of repair.

PERFORMANCE STANDARD

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

ACTIVITY NUMBER	NAME	DATE
20	**PROVIDE / MAINTAIN EROSION CONTROL**	01/11/07

DESCRIPTION & PURPOSE

Placement of rip rap, sand bags, or other erosion control materials and repair of damaged areas of erosion protection to restore material to original condition. This work is done to prevent further deterioration and eliminate potential erosion problems.

AUTHORIZED BY	LIMITS ON WORK
Maintenance Supervisor	

PERFORMANCE CRITERIA

Work is to be scheduled when damage or deterioration is severe enough to present potential erosion problems. Erosion undercutting roadways, sidewalks, or prepared embankments/improvements shall be repaired immediately. Repair of undermined stabilizers shall be scheduled immediately.

CREW SIZE	WORK METHOD
• 1 Foreman • 2 Equipment Operators • 2 Maintenance Workers • • 5 **TOTAL**	1. Obtain safety equipment, materials and tools necessary for the day's work. 2. Begin applicable safety procedures and/or traffic control. 3. Shape work area to receive riprap, or other erosion control materials. 4. Place material and grout where applicable. 5. Back fill as necessary. 6. Clean up work site as necessary.
EQUIPMENT	
• 1 Truck Crane • - or - • Backhoe • 1 Dump Truck • 1 Pickup	
MATERIAL	**AVERAGE DAILY PRODUCTION**
• 20-50 Tons Rock for riprap (delivered) • 5-12 yards ready mix concrete (if needed) • 5,000-15,000 gal Water	1300 Square Feet/day

NOTES:

PERFORMANCE STANDARD

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

ACTIVITY NUMBER	NAME	DATE
21	**PROVIDE / MAINTAIN DUST CONTROL**	01/11/07

DESCRIPTION & PURPOSE

Uniform application and maintenance of surface gravel, dust palliatives, or other alternative dust control measures to limit the emission of particulate matter into the ambient air.

AUTHORIZED BY	LIMITS ON WORK
Maintenance Supervisor	

PERFORMANCE CRITERIA

Work is to be scheduled when loose sand, dust, or dust particles are found to exist in excess of acceptable limits. Select and apply approved dust control measure in a manner that will minimize the degradation of water quality.

CREW SIZE

- 1 Foreman – Part-time
- 1 Driver
- 1 Nozzle operator
- 1 – 2 laborers to protect surrounding area from overspray
- 4 – 5 **TOTAL**

EQUIPMENT

- 1 Spray Truck
- 1 Flatbed truck for delivery of bulk materials
- 1 Forklift to load bulk materials into tank on spray truck
- 1 Motor grader
- 1 Compactor

WORK METHOD

1. Obtain safety equipment, materials and tools necessary for the day's work.
2. Begin applicable safety procedures and/or traffic control.
3. Prepare surface area to receive palliative or other dust control measures with motor grader and compactor if required.
4. Palliative with pre-emergent herbicide requires preparation of soil surface.
5. Apply dust palliative to prepared surface.
6. Clean up work site as necessary.

MATERIAL

- Gravel
- Dust palliative (i.e. gypsum, fiber mulch)
- Water source
- Other alternative dust control measure

AVERAGE DAILY PRODUCTION

6 acres/day – open areas (i.e. detention basin)
3 acres/day – strip areas with fence (i.e. channel)

NOTES:

Control measures shall be implemented to limit the disturbance of open areas.

PERFORMANCE STANDARD

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

ACTIVITY NUMBER	NAME	DATE
25	**CLEAN & INSPECT DETENTION/DEBRIS BASINS**	01/11/07

DESCRIPTION & PURPOSE

Inspection and removal, by loader (including hauling and disposal), of sediment and debris deposited in detention and debris basins to restore full capacity and original shape.

AUTHORIZED BY	LIMITS ON WORK
Maintenance Supervisor	

PERFORMANCE CRITERIA

Remove sediment bi-annually or when debris basins or dams detention capacity is significantly reduced. Clean out is normally justified when the sedimentation reaches 1 to 2 feet in depth or as established by the design.

CREW SIZE	WORK METHOD
• 1 Foreman • 3 Equipment Operators • 1 Maintenance Worker • • 5 **TOTAL**	1. Obtain safety equipment, materials and tools necessary for the day's work. 2. Begin applicable safety procedures and/or traffic control. 3. Prepare removal and disposal sites for access. 4. Stockpile material for removal. 5. Load material and haul to proper disposal site. 6. Shape dam or basin to desired line and grade. 7. Grade disposal site as necessary. 8. Clean up work site as necessary.
EQUIPMENT	
• 1 Pickup • 1 Loader • 2* Dump Trucks •	
MATERIAL	**AVERAGE DAILY PRODUCTION**
• Disposal Fees • • •	1000 Cubic Yards/day

NOTES:

*Schedule sufficient trucks to insure maximum utilization of excavation equipment.

PERFORMANCE STANDARD

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

ACTIVITY NUMBER	NAME	DATE
30	**EROSION REPAIR**	01/11/07

DESCRIPTION & PURPOSE

The replacement and compaction of material removed by erosion, using hand tools or other methods, to restore flood control channels, supporting embankments, levees or access roads.

AUTHORIZED BY	LIMITS ON WORK
Maintenance Supervisor	

PERFORMANCE CRITERIA

As needed when damage has occurred which has affected or will affect the structural integrity of a channel embankment, levee, or access road, at a location where mechanical methods cannot be used.

CREW SIZE	WORK METHOD
• 1 Foreman • 2 Maintenance Workers • • • 3 **TOTAL**	1. Obtain safety equipment, materials, and tools necessary for the day's work. 2. Begin applicable safety procedures and/or traffic control. 3. Remove debris and growth from damage location. 4. Haul fill material from pre-determined source. 5. Place and compact fill material in lifts. 6. Shape repair area to conform to adjacent areas. 7. Clean up work site as necessary.
EQUIPMENT	
• 1 1-Ton Dump -or- Flatbed Truck • 1 Air Compressor w/compactor • 1 Pickup w/Water Tank • -or- Auxiliary Spray Truck	
MATERIAL	AVERAGE DAILY PRODUCTION
• 15-30 Tons Select Fill Material • • •	15 Cubic Yards

NOTES:

PERFORMANCE STANDARD

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

ACTIVITY NUMBER	NAME	DATE
35	**FENCE REPAIR**	01/11/07

DESCRIPTION & PURPOSE

The repair and/or re-establishment of downed or damaged fences to restore fence to proper condition and to provide right-of-way control.

AUTHORIZED BY	LIMITS ON WORK
Maintenance Supervisor	

PERFORMANCE CRITERIA

Repair of downed or open fence areas to be performed upon detection. Repairs to damaged locations that remain partially functional are to be scheduled in priority with other work.

CREW SIZE	WORK METHOD
• 2 Maintenance Workers • • • 2 **TOTAL**	1. Obtain safety equipment, materials and tools necessary for the day's work. 2. Begin applicable safety procedures and/or traffic control. 3. Perform necessary repairs to: • Posts • Fabric • Top rail 4. Clean up work site as necessary.
EQUIPMENT	
• 1 Fence Truck • 1 Concrete Mixer (if needed) • •	
MATERIAL	**AVERAGE DAILY PRODUCTION**
• 40-50 Linear Ft Fence Fabric • Miscellaneous Hardware • 5 bags "Ready Crete" •	100 Linear Feet/day

NOTES:

PERFORMANCE STANDARD

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

ACTIVITY NUMBER	NAME	DATE
40	**VEGETATION CONTROL - CHEMICAL**	01/11/07

DESCRIPTION & PURPOSE

The application of herbicides, to designated areas, with a boom-mounted spray bar to prevent new growth and/or control existing vegetation, for the purpose of insuring the capacity and integrity of flood control facilities.

AUTHORIZED BY	LIMITS ON WORK
Maintenance Supervisor	

PERFORMANCE CRITERIA

Spray pre-emergent herbicide and post-emergent herbicide annually to designated areas combining applications where possible. Select and apply herbicides in a manner to minimize the degradation of water quality.

CREW SIZE	WORK METHOD
• 2 Maintenance Workers • • • 2 **TOTAL**	1. Set up safety devices as required. 2. Treat channel areas as required. 3. Remove safety devices. 4. Clean up work site as necessary.
EQUIPMENT	
• 1 Truck-mounted chemical tank with spray bar and hand sprayer • •	
MATERIAL	**AVERAGE DAILY PRODUCTION**
• Pre 12.5-25 lb/Ac • Emerge Contact: 12.5-25 lb/Ac • Post Brush: 120 lb/Ac • Emerge Grass: 30 lb/Ac • Waterweed: 1 gal/Ac • Spreader: 1 gal/Ac • Water 200 gal/Ac	Acres

NOTES:

PERFORMANCE STANDARD

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

ACTIVITY NUMBER	NAME	DATE
45	**VEGETATION CONTROL - MECHANICAL**	01/11/07

DESCRIPTION & PURPOSE

The mechanical removal of brush and weeds to maintain detention, debris basins, and channels free of vegetation.

AUTHORIZED BY	LIMITS ON WORK
Maintenance Supervisor	

PERFORMANCE CRITERIA

Work to be scheduled when weeds and willows grow up at unsprayable locations, or when growth is too high for effective spraying.

CREW SIZE	WORK METHOD
• 1 Equipment Operator • • • 1 **TOTAL**	1. Obtain safety equipment, materials, and tools necessary for the day's work. 2. Begin applicable safety procedures and/or traffic control. 3. Mow, blade down, or turn under unwanted vegetation. 4. Clean up work site as necessary.
EQUIPMENT	
• 1 Mower or Grader • 1 Tilt Trailer (if needed) • 1 Pickup •	
MATERIAL	**AVERAGE DAILY PRODUCTION**
• • • •	4 Acres/day

NOTES:

PERFORMANCE STANDARD

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

ACTIVITY NUMBER	NAME	DATE
50	**MAINTAIN ACCESS ROADS**	01/11/07

DESCRIPTION & PURPOSE

Mechanical grading of access roads to remove minor ruts and erosion, and restore normal shape and cross slope, for access to flood control facilities.

AUTHORIZED BY	LIMITS ON WORK
Maintenance Supervisor	

PERFORMANCE CRITERIA

As needed prior to rainy season, or when the weather affects the road condition. Plan to re-profile access roads on a bi-annual (two year) frequency.

CREW SIZE	WORK METHOD
• 2 Equipment Operators • 1 Maintenance Workers • • 3 **TOTAL**	1. Obtain equipment and tools necessary for the day's work. 2. Begin applicable safety procedures and/or traffic control. 3. Grade access roads: • Restoring X-section shape • Filling potholes • Grading out ruts • Restoring ditches and drainage. 4. Roll and compact regraded. 5. Clean up work site as necessary.
EQUIPMENT	
• 1 Grader • 0-1 Water Truck • 0-1 Roller • 1 Pickup	
MATERIAL	**AVERAGE DAILY PRODUCTION**
• 10,000 Gal Water (if needed) • • •	.5 Mile/day

NOTES:

PERFORMANCE STANDARD

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

ACTIVITY NUMBER	NAME	DATE
55	**CLEAN & INSPECT INLET/OUTLET STRUCTURES**	01/11/07

DESCRIPTION & PURPOSE

Cleaning and inspection of catch basins, inlets, sumps, grates, outflow and other structures to remove silt and debris and to inspect for structural integrity and proper functioning.

AUTHORIZED BY	LIMITS ON WORK
Maintenance Supervisor	

PERFORMANCE CRITERIA

Plan for structures to be inspected and cleaned a minimum of once per year. Annual cleaning shall be the major effort to allow thorough inspection of structure in order to schedule repairs.

CREW SIZE	WORK METHOD
• .25 Foreman • 2 Maintenance Workers • • 2.25 **TOTAL**	1. Perform daily vehicle P.M. check and check equipment. 2. Place signs/traffic control devices as required. 3. Locate truck in the best working position and as far off roadway as practical. 4. Remove grate. Then remove debris, trash & sediment from grate. 5. Loosen solids with spade if necessary. 6. Flush/vacuum basin. 7. Inspect structure visually to determine if further cleaning or repair is necessary. 8. Dispose of debris at proper disposal site. 9. Check and clean equipment after use. 10. Clean up work site as necessary.
EQUIPMENT	
• 1 1-Ton Truck • 1 Water Tanker (1500 gal) • -or- High Pressure Vacuum (Vactor) • Appropriate Hand Tools	
MATERIAL	AVERAGE DAILY PRODUCTION
• Water • •	15 Each/day

NOTES:

Structures that cannot be cleaned shall be reported to the Maintenance Supervisor for initiation of corrective action.

PERFORMANCE STANDARD

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

ACTIVITY NUMBER	NAME	DATE
60	**REPAIR INLET / OUTLET STRUCTURES**	01/11/07

DESCRIPTION & PURPOSE

Repair of catch basins, grates, inlets, control gates, outfalls, weirs, manholes, sumps, and other spot structures to restore elements to their original operational condition.

AUTHORIZED BY	LIMITS ON WORK
Maintenance Supervisor	

PERFORMANCE CRITERIA

Based on detailed inspection of repair, replace components, or entire structure as conditions warrant. Plan repair of five percent (5%) of system structures per year.

CREW SIZE	WORK METHOD
• 1 Foreman • 2 Maintenance Workers • • • 3 **TOTAL**	1. Obtain necessary safety equipment, tools, and materials. 2. Initiate applicable safety procedures and traffic control. 3. Remove and clean area of damage/failure. 4. Repair as necessary to original condition and test operation as appropriate. 5. Clean up work site as necessary.
EQUIPMENT	
• 1 Pickup • 1 Compressor w/accessories • •	
MATERIAL	**AVERAGE DAILY PRODUCTION**
• Concrete • Aggregates • Miscellaneous parts, as required •	1 Each/day

NOTES:

PERFORMANCE STANDARD

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

ACTIVITY NUMBER	NAME	DATE
65	**CLEAN STORM SEWER LINES**	01/11/07

DESCRIPTION & PURPOSE

The removal of debris of any type from within conduits by: flushing with water; the use of a sewer cleaning machine; or by physically entering the conduit and manually removing debris, to restore full capacity.

AUTHORIZED BY	LIMITS ON WORK
Maintenance Supervisor	

PERFORMANCE CRITERIA

Plan cleaning of storm sewer lines on an average 5-year cycle. Specific areas may require annual cleaning while others will require less than 5-year cleaning.

CREW SIZE	WORK METHOD
• 1 Maintenance Foreman • 2 Maintenance Workers • • 3 **TOTAL**	1. Obtain safety equipment and tools necessary for the day's work. 2. Begin applicable safety procedures and/or traffic control. 3. Remove debris from conduit. 4. Load debris and haul to designated disposal site if necessary. 5. Clean up work area as necessary.
EQUIPMENT	
• 1 Sewer Cleaner • • •	
MATERIAL	**AVERAGE DAILY PRODUCTION**
• 0-5,000 Gallons Water • • •	1500 linear feet/day

NOTES:

Work should be scheduled whenever possible, in conjunction with annual cleaning of adjacent structures.

PERFORMANCE STANDARD

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

ACTIVITY NUMBER	NAME	DATE
70	**STORM SEWER LINE REPAIR**	01/11/07

DESCRIPTION & PURPOSE

Excavation and repair of storm sewer lines to eliminate blockages and repair failed pipes.

AUTHORIZED BY	LIMITS ON WORK
Maintenance Supervisor	

PERFORMANCE CRITERIA

Priority of repairs:
1. eliminate blockages and hazards to public safety;
2. remove flow restrictions and repair damaged/failed pipe sections.

CREW SIZE	WORK METHOD
• 1 Foreman • 1 Equipment Operator • 2 Maintenance Workers • • 4 **TOTAL**	1. Set up warning signs and traffic control devices. 2. Take necessary measures to control flow -- providing uninterrupted service whenever possible. 3. Cut pavement and/or excavate to the extent required to determine necessary scope of repairs. 4. Remove flow restrictions, as necessary. 5. Back fill and compact in lifts to within 10 inches of surface. 6. Place select material (rock or shell) and compact to within 2 inches of surface* (See Note below.) 7. Coordinate density test and request repaving as required. 8. Remove signs and warning devices. 9. Clean up work site as necessary. 10. Record work accomplishment.
EQUIPMENT	
• 1 Dump Truck • 1 Backhoe/Util Tractor • Air Compressor w/accessories • Appropriate Hand Tools	
MATERIAL	**AVERAGE DAILY PRODUCTION**
• Pipe/fittings • Sand • Cement • Rock • Asphalt, as required	1 Repair/day

NOTES:

Verify location of other utilities prior to excavation. *Back fill specifications apply to paved areas. In easements and other unpaved areas, back fill and compact in 2-foot lifts to grade; re-sod as necessary. Install safety fence and secure job site at end of workday as required.

PERFORMANCE STANDARD

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

ACTIVITY NUMBER	NAME	DATE
75	**CLEAN / FLUSH CULVERTS & BRIDGES**	01/11/07

DESCRIPTION & PURPOSE

Cleaning/flushing of culverts and bridges to remove silt and debris, and eliminate restriction to flow.

AUTHORIZED BY	LIMITS ON WORK
Maintenance Supervisor	

PERFORMANCE CRITERIA

Plan for all culverts to be cleaned/flushed annually.

CREW SIZE

- 1 Maintenance Supervisor
- 1 Maintenance Worker
-
- 2 **TOTAL**

EQUIPMENT

- 1 1-Ton Dump Truck
- 1 Water Tanker (1500 gal)
- -or- High Pressure/Vacuum cleaner/Vactor
- Safety Equipment
- Appropriate Hand Tools

WORK METHOD

1. Place signs and safety devices.
2. Locate truck in best working position and as far off roadway as possible.
3. Clean out ends of culvert.
4. Flush culverts until flow is unrestricted.
5. Load excess material/debris into truck for disposal at proper disposal site.
6. Pick up signs and safety devices.
7. Clean up work site as necessary.

MATERIAL

- Water
-
-
-

AVERAGE DAILY PRODUCTION

5-7 Each/Day

NOTES:

1. Inform Maintenance Supervisor of any non-cleanable culverts or those that can only be partially cleaned.
2. Avoid damaging downstream property when flushing culverts.
3. Work should be scheduled, whenever possible, in conjunction with annual cleaning of adjacent structures.

PERFORMANCE STANDARD

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

ACTIVITY NUMBER	NAME	DATE
80	**MISCELLANEOUS WORK ACTIVITIES**	01/11/07

DESCRIPTION & PURPOSE

All work performed that is not described in previous activities. This includes, among others, activities such as catwalk repair, rodent control, pump maintenance, concrete spalled area repair, painting, trash pickup*, graffiti abatement, sign installation and maintenance.

AUTHORIZED BY	LIMITS ON WORK
Maintenance Supervisor	

PERFORMANCE CRITERIA

Plan 8 labor hours per channel mile per year for miscellaneous maintenance work.

CREW SIZE	WORK METHOD
• 1 Maintenance Worker • • • 1 **TOTAL**	1. Obtain safety equipment, materials, and tools necessary for the day's work. 2. Begin applicable safety procedures and/or traffic control. 3. Clean up work site as necessary.
EQUIPMENT	
• 1 Pickup • Hand tools • •	
MATERIAL	**AVERAGE DAILY PRODUCTION**
• As required • • •	8 Labor Hours

NOTES:

*Includes appliances, tires, car bodies, and other large objects dumped in channels/basins.

PERFORMANCE STANDARD

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

ACTIVITY NUMBER	NAME	DATE
85	**ENGINEERING**	01/11/07

DESCRIPTION & PURPOSE

All work that is by nature engineering. This includes, among others, surveying, preparation of plans and specifications, as well as preparing and updating Emergency Action Plans.

AUTHORIZED BY	LIMITS ON WORK
Director of Public Works or designee	

PERFORMANCE CRITERIA

CREW SIZE	WORK METHOD
• N/A • • • **TOTAL**	1. As deemed most cost effective.
EQUIPMENT	
• N/A • • •	
MATERIAL	**AVERAGE DAILY PRODUCTION**
• N/A • • •	8 Hours/Day

NOTES:

4.35 Reporting

Comprehensive maintenance programs include procedures for reporting and summarizing work accomplished and labor-hours used for maintenance activities. This information enables managers and supervisors to compare actual performance with the planned work program. These planned-actual comparisons -- on a regular basis -- are essential for effective management and control of the work program.

The reporting procedures provide specific information:

- What Master Plan facility required work.
- What work was done by activity.
- How much of each activity was done.
- The labor-hours used to accomplish the work.

This information is used by managers in their effort to:

- Make sure the right kinds and amounts of maintenance work are done.
- Identify the problem areas and related corrective actions.
- Develop future work programs and budgets.
- Identify opportunities for improved productivity.

The work reporting process can consist of a simple form as outlined in the following section.

Daily Work Activity Report

The Daily Work Activity Report may be used to record and summarize: (1) the kinds and amounts of work performed by maintenance personnel, and (2) the number of labor-hours used to do that work. The report can be used to summarize all work activities. Each member entity may use its standard accounting/reporting procedures for the Daily Work Activity Report.

The Maintenance Supervisor or crew leader usually prepares the Daily Work Activity Report. The following are instructions for the completion of the sample report. (See Daily Work Activity Report Form.)

1. Identification Data – Fill in all blanks: the member entity, date, name of person preparing the report, and the names and employee numbers of all persons to perform work to be reported for the day. (The form provides for several combinations of activities and employees. If additional pages are needed, number the pages accordingly).

2. Master Plan Facility ID/Name – Enter the specific 4 letter-4 digit Master Plan Facility number and reach, which indicates the "from" and "to", if applicable. This number directly corresponds to the specific Master Plan location as identified on current Master Plan maps. Also, indicate the Facility Name.

3. MWP Facility Number – Enter the identifying Maintenance Work Plan facility number. (This number directly corresponds to the budget approved for the facility and will typically include a range of Master Plan facilities and reach.)

4. Activity Number – Enter the number of each activity performed. Use the Work Activity Directory or Performance Standards to complete the blank.

5. Employee Number – Enter the employee number of the person working a specific activity at the specific facility.

6. Hours Worked by Each Employee – Record the number of hours worked by each employee, by the appropriate activity. Record the time spent to the nearest quarter-hour. For example, record 1 hour and 45 minutes as 1.75 hours and 3 hours and 20 minutes as 3.25 hours.

7. Equipment Number – Enter the assigned equipment number for any mechanical equipment on which work was performed for preventive and corrective maintenance only.

8. Work Performed – Enter the location and a brief description of the work performed.

9. Accomplishment – Measure and record the amount of work done for each activity. Use the correct measurement unit for each activity. (See the Activity List in Section 4.32.) Record the amount of work done to the nearest whole unit. Record labor-hours to the nearest hour. For activities with labor-hours as the unit of measure, the "quantity" will be exactly the same as "total hours" for the activity.

10. Notes/Comments – Record any additional relevant information that may be of use in summarizing and analyzing work activity data.

The completed reports can be used for monthly summarization and report preparation, and serve as completion certification backup for the monthly force account payment billings.

REGIONAL FLOOD CONTROL DISTRICT
DAILY WORK ACTIVITY REPORT

ENTITY:_____

Date Work Performed:_____ 20____

Supervisor Name:_____

Employee Name:_____ No._____

Employee Name:_____ No._____

Employee Name:_____ No._____

Employee Name:_____ No._____

MWP Facility Number	Master Plan Facility ID/Facility Name	Activity Number Worked	Employee Number	Hours Worked by Activity	Equip. Number Used	Work Performance (Location, Brief Description, Materials Used, Etc.)	Accomplishment	
							Amount	Unit of Measure

NOTES/COMMENTS:_____

The undersigned hereby certifies that the above described maintenance was performed in accordance with the criteria/standards contained in the District's Operations and Maintenance Manual. Further, the information contained herein accurately reflects the time and accomplishments reported during the performance of this work.

Supervisor's Signature _____ Date _____ Title _____

Page____ of___

4.40 INVENTORY PROCEDURES

4.41 Purpose

The purpose of this element of the **Operations and Maintenance Manual** is to provide a record of the existing physical flood control system that is eligible for maintenance funding assistance by the District. The physical facilities that make up the collection and conveyance system have in many instances been paid for in whole or in part by the District, however, they are not owned, operated, or maintained by the District. If, however, the total flood control system does not function properly when needed, it is ultimately the responsibility of the District to determine why and to take corrective action. A critical key in assuring the system functions properly is an up-to-date inventory of the physical system.

4.42 Physical System

The member entities shall submit annual updates of the physical system inventory on the forms required by the District (See Appendix B, Exhibit A – Maintenance Work Plan Summary and Maintenance Work Program Annual Budget Form.) Facilities eligible for maintenance funding are those identified in the Regional Flood Control District's Master Plan and any revisions, amendments, and/or changes subsequently approved. Only those facilities that exist as Master Plan facilities, or exist in the same alignment as a proposed Master Plan facility and appurtenant facilities are eligible.

4.43 Physical System Maps

The individual member entities shall submit to the District a physical system map(s) as part of the Annual Work Plan as discussed in Section 4.22, or more frequently as project completion dictates, reflecting the size, location and material elements of their drainage and flood control system. The map(s) shall reflect that portion that is on the Master Plan and also those systems that are eligible for Regional Flood Control District funding under the categories shown in Section 4.11 of this manual. Physical system maps shall be provided to the District in a form that is readily reproducible.

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT
OPERATIONS AND MAINTENANCE MANUAL

CHAPTER 5
EMERGENCY FUNDING PROCEDURES

5.10 EMERGENCY FUNDING PROCEDURES

5.11 Purpose

This element of the **Operations and Maintenance Manual** provides the member entities with procedures to perform emergency restoration and rehabilitation immediately following a flood event. A principal role of the District shall be to support the member entities efforts to: (1) secure funding from state, federal, member entity reserves and private sources; and (2) facilitate required immediate repairs to regional flood control facilities without delay.

Projects eligible for District emergency restoration and rehabilitation funding are those included in the member entity's approved or amended Maintenance Work Program.

5.12 Procedures

If the governing body elects to declare an emergency, then the District, in accordance with NRS 332.112 (Emergency Contracts) will authorize and process emergency purchase orders to the maximum limit of unexpended funds upon written request by the member entity.

APPENDIX A

KEY STATUTORY, REGULATORY, AND POLICY REFERENCES

NEVADA REVISED STATUTES

1. CHAPTER 332 – PURCHASING: LOCAL GOVERNMENTS
2. CHAPTER 338 – PUBLIC WORKS PROJECTS
3. CHAPTER 543 – CONTROL OF FLOODS

UNIFORM REGULATIONS FOR THE CONTROL OF DRAINAGE

1. SECTION 12 – DESIGN/IMPROVEMENT STANDARDS
   a. 12.050 – Construction/Operation/Maintenance

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

1. SECTION 300 – DRAINAGE POLICY
   a. 303.10 – Drainage Facilities Maintenance
   b. 304.8 – Multiple Use Facilities

REGIONAL FLOOD CONTROL DISTRICT POLICIES AND PROCEDURES MANUAL

1. CHAPTER XI – FACILITY MAINTENANCE

APPENDIX B

INTERLOCAL CONTRACT
ANNUAL MAINTENANCE WORK PROGRAM

THIS CONTRACT, made and entered into this ___ day of _____, 20____, by and between the [legal name of CITY or COUNTY], a political subdivision of the State of Nevada, hereinafter referred to as "CITY" (or "COUNTY"), and the CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT, hereinafter referred to as "DISTRICT".

W I T N E S S E T H:

WHEREAS, pursuant to Chapter 543 of the Nevada Revised Statutes, the DISTRICT may approve and fund projects to maintain flood control improvements; and

WHEREAS, the CITY (or COUNTY) desires to maintain flood control improvements within the CITY (or COUNTY) in accordance with the maintenance program set forth herein, and hereinafter referred to as "Project"; and

WHEREAS, the facilities upon which maintenance will be done are facilities described in the DISTRICT'S Master Plan.

NOW, THEREFORE, in consideration of the covenants, conditions, agreements, and promises of the parties hereto, the DISTRICT authorizes the Project as it is mutually understood and agreed as follows:

SECTION I - SCOPE OF PROJECT

This Interlocal Contract applies to the maintenance of flood control facilities, which are identified in the DISTRICT'S Master Plan facilities including updates and amendments subsequently approved. The basic maintenance to the facilities will be in accordance with performance standards set forth in the current DISTRICT *Operations and Maintenance Manual.*

The Project is more specifically described in Exhibit "A" which is attached hereto and by this reference incorporated herein.

SECTION II - PROJECT COSTS

The DISTRICT agrees to make payment for Project costs within the limits specified below:

1. The Project costs shall not exceed $_____.

The amounts allocated to each individual facility within the Project must be specified in Exhibit "A". Any changes to said allocated amounts must be approved by the DISTRICT'S Chief Engineer in accordance with Section 4.24 of the DISTRICT *Operations and Maintenance Manual.*

A written request must be made to the DISTRICT and a Supplemental Interlocal Contract approved to increase the amount noted above prior to payment of any additional funds.

2. The CITY (or COUNTY) and DISTRICT will comply with Section 4.12 of the *Operations and Maintenance Manual.* In accordance with said manual the CITY (or COUNTY) shall submit invoices together with a detailed summary report of the maintenance service performed. The CITY (or COUNTY) shall submit an invoice voucher in the manner prescribed by the DISTRICT. The vouchers shall include such information as is necessary for the DISTRICT to determine the nature of all expenditures. Each voucher will clearly indicate that it is for services rendered in performance under this contract. Each voucher will also be accompanied by a written certification from the CITY (or COUNTY) stating that it is for performance of maintenance activities under this contract and is composed of completed elements set forth in the annual work program.

All invoices must be submitted for payment to:

Clark County Regional Flood Control District
Accounts Payable
600 S. Grand Central Parkway, Suite 300
Las Vegas, Nevada 89106-4511

Payment shall be considered timely if made by the DISTRICT within 30 days. Pursuant to Section IV, Paragraph 8, the DISTRICT may, in its sole discretion, withhold payments to the CITY (or COUNTY) for services rendered if the CITY (or COUNTY) fails to satisfactorily comply with any term or condition of this contract and/or the DISTRICT *Operations and Maintenance Manual.*

SECTION III - PROJECT TIME

The CITY (or COUNTY) agrees to perform the Project to the satisfaction of the DISTRICT between July 1, 20_____ and June 30, 20_____. The DISTRICT may grant extensions or terminate this contract and require all sums advanced to the CITY (or COUNTY) to be repaid if the CITY (or COUNTY) fails to perform by said date.

SECTION IV - GENERAL

1. The CITY (or COUNTY) will complete the Project as set forth in Exhibit "A". The CITY (or COUNTY) staff personnel responsible for coordination of work under this contract are as listed below:

(list names and titles of CITY or COUNTY staff)

It is understood that staff named above will be responsible for work coordination throughout the period of this contract unless the DISTRICT is informed in writing of changes in these personnel assignments.

2. The CITY (or COUNTY) will comply with Local Purchasing Act, Chapter 332 and Public Works Projects, Chapter 338, of the Nevada Revised Statutes.

3. Applicable portions of the current editions of the *Operations and Maintenance Manual, Policies and Procedures Manual, Hydrologic Criteria and Drainage Design Manual,* and *Uniform Regulations for the Control of Drainage* adopted by the DISTRICT will apply unless specifically superseded by this CONTRACT.

4. It is the intent of the DISTRICT that scheduling of maintenance and repair of drainage and flood control facilities in general and Master Plan Facilities specifically be coordinated among member entities. Therefore, in those cases where Master Plan approved, and DISTRICT-funded projects have regional flood control significance impacting more than one member entity, the CITY (or COUNTY) will allow all impacted member entities an opportunity to review the maintenance schedule in order to coordinate maintenance efforts.

5. The Chief Engineer or designee of the DISTRICT shall be responsible for monitoring the performance of the CITY (or COUNTY), approval for payment of billings and expenses submitted by the CITY (or COUNTY) and the acceptance of any report provided by

the CITY (or COUNTY). The CITY (or COUNTY) shall be responsible for monitoring performance of CITY (or COUNTY) staff or private contractors.

6. Accurate documentation of all work performed and payments made will be maintained by the CITY (or COUNTY) for a period of three (3) years in hard copy form after final project approval and payments. Following the three year period, the CITY (or COUNTY) shall keep records for permanent storage in original form, in microfilm/fiche media, or an electronic format.

7. The CITY (or COUNTY) shall provide right of access to its facilities to the DISTRICT or Chief Engineer at all reasonable times, in order to monitor and evaluate performance, compliance, and/or quality assurance under this contract.

8. In the event the CITY (or COUNTY) fails to perform the maintenance according to the standards specified in this contract and in the DISTRICT *Operations and Maintenance Manual,* the DISTRICT may perform or cause to be performed the maintenance necessary to assure proper operation of the facility. Costs incurred by the DISTRICT shall be reimbursed by the CITY (or COUNTY) or be deducted from the amount authorized by this contract. The DISTRICT may not exercise this right without giving the CITY (or COUNTY) specific written notice of the maintenance required and allowing the CITY (or COUNTY) 60 days within which to perform said maintenance. The notice required by this provision must be sent to:

insert name of City or County staff)_

(insert title)_____

(insert title)_____

9. The records of the CITY (or COUNTY) and/or private contractors pertaining to the subject matter of this contract shall at all reasonable times be subject to inspection and audit by the DISTRICT or an Agent of the DISTRICT.

10. If any provision of this contract shall be deemed in conflict with any statute or rule of law, such provision shall be deemed modified to be in conformance with said statute or rule of law.

11. The CITY (or COUNTY), its employees, and representative shall at all times comply with all applicable laws, ordinances, statutes, rules, and regulations in effect at the time work is performed.

12. The CITY (or COUNTY) hereby agrees to reimburse the DISTRICT if funds are received from other sources for maintenance and repair of drainage and flood control facilities paid for by the DISTRICT.

13. The DISTRICT will not be responsible for any fines and/or penalties caused by the actions or inactions of CITY (or COUNTY) employees, consultants, contractors, or agents.

14. Any costs found to be improperly allocated to the Project will be refunded by the CITY (or COUNTY) to the DISTRICT.

15. It is specifically understood and agreed to by and between the parties hereto that it is not intended by any of the provisions of any part of this contract to create in the public or any member thereof a third party beneficiary hereunder, or to authorize anyone not a party to this contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of this contract.

16. Up to the limits set forth in NRS Chapter 41, the CITY (or COUNTY) will indemnify and defend the DISTRICT against and from any and all claims and demands of whatsoever nature which arises out of allegations of negligence or misconduct of CITY (or COUNTY) officers, employees or agents, related to or under this Contract which results from injury to or death of any persons whomsoever, or against and from damage to or loss or destruction of property.

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IN WITNESS WHEREOF, the parties have caused this contract to be executed the day and year first above written.

Date of District Action:

REGIONAL FLOOD CONTROL DISTRICT

_____

BY:_____
(Insert Chairman's Name), Chairman

ATTEST:

_____
(Insert Board Secretary's Name)
Secretary to the Board

Approved as to Form:

BY:_____
(Insert Chief Deputy District Attorney's Name)
Chief Deputy District Attorney

****

Date of Council Action:
(or Commission Action)

(CITY or COUNTY) OF _____

BY:_____
(Insert Mayor/Board Chairman's Name), Title

ATTEST:

_____
(Insert Name), (City or County Clerk)

EXHIBIT A

PART I

Maintenance Work Plan Summary – Summary of overall work plan listing specific projects (physical system inventory) and associated costs attributable to each. (See Maintenance Work Plan Summary.)

PART II

Facility map(s) which identify location of projects (physical system inventory) and planned maintenance work by project.

PART III

Maintenance Work Program Annual Budget – Individual maintenance projects (physical system inventory) broken into maintenance activities to be completed, including narrative and associated budgeted costs for all projects identified in Part I. (See Maintenance Work Program Annual Budget.)

(MEMBER ENTITY)
MAINTENANCE WORK PLAN SUMMARY
FISCAL YEAR 20XX-XX

Master Plan Facility ID	MWP Facility Number	Facility Description	Cost
		TOTAL	$ 0.00

REGIONAL FLOOD CONTROL DISTRICT
MAINTENANCE WORK PROGRAM
ANNUAL BUDGET - FY 20XX-XX

MWP Facility #: _____ Entity: _____

Facility Name: _____ Date Prepared: _____

MP Facility ID: _____

Force Account/ Contract	Activity	Requested Work Plan Amount ($)	Amended Work Plan Amount ($)	Percent Complete	Scheduled Completion Date
	5 Inspect Channels				
	10 Clean and Reshape Channels				
	15 Repair Lined Channel				
	20 Provide/Maintain Erosion Control				
	21 Provide/Maintain Dust Control				
	25 Clean & Inspect Detention/Debris Basins				
	30 Erosion Repair				
	35 Fence Repair				
	40 Vegetation Control - Chemical				
	45 Vegetation Control - Mechanical				
	50 Maintain Access Road				
	55 Clean & Inspect Inlet/Outlet Structures				
	60 Repair Inlet/Outlet Structures				
	65 Clean Storm Sewer Lines				
	70 Storm Sewer Repair				
	75 Clean/Flush Culverts & Bridges				
	80 Miscellaneous Work Activities				
	85 Engineering				
	TOTALS	$0.00	$0.00		

Delays or problem areas:

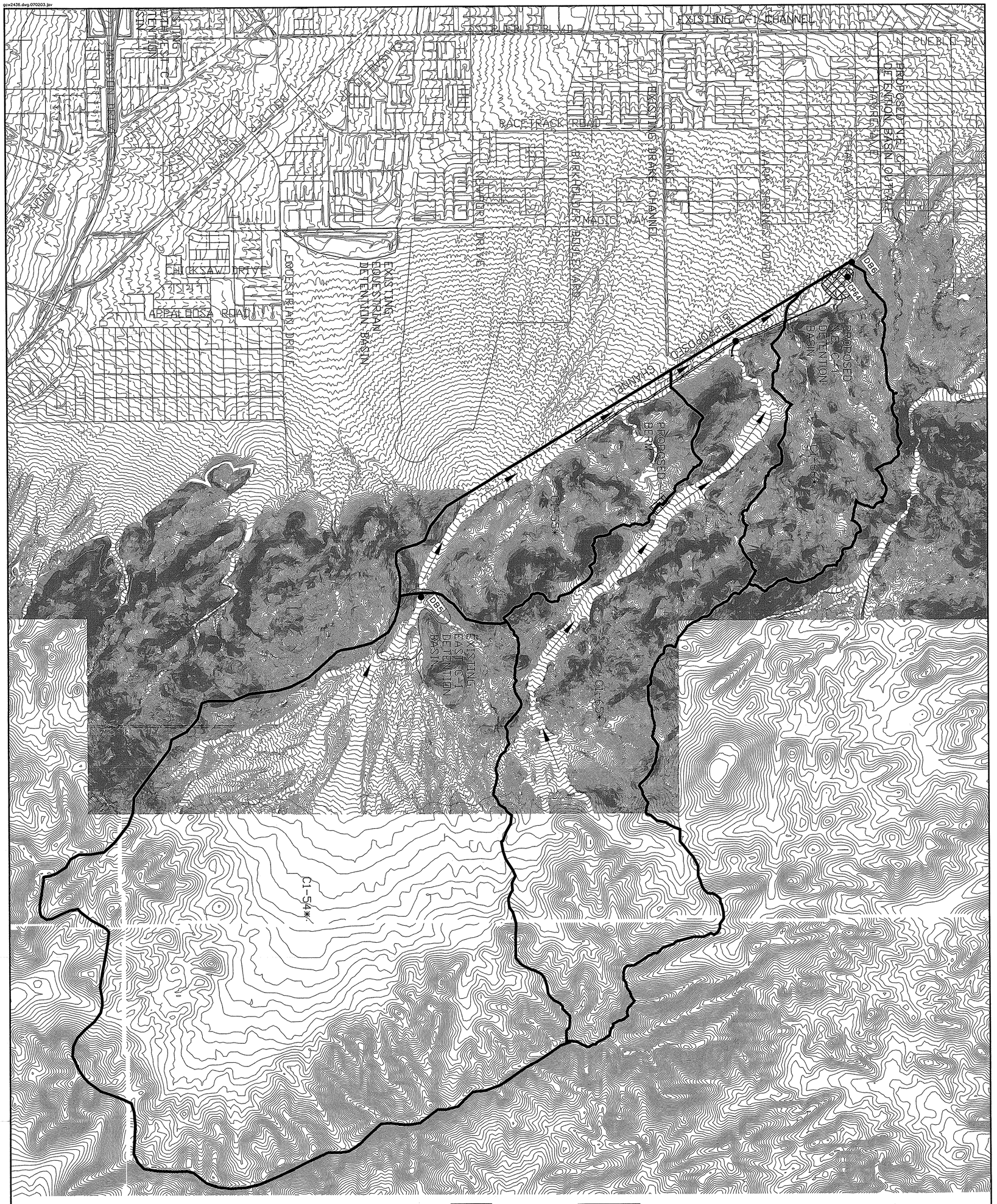
Work completed during prior fiscal year:

Work to be completed during current fiscal year:

Consultant/
Contractor: _____

Project
Manager: _____ Phone Number: _____

HYDROLOGIC MODELING COMPUTATIONS



LEGEND

CP4A ● CONCENTRATION POINT

BASIN BOUNDARY

FLOW/ROUTING DIRECTION

REFERENCED INFORMATION - NEC-1 REPORT		
HEC-1 MODEL C1SPKMB-AR3.OUT		
	CP	AREA (MI²)	100 YR FLOW
C1-55*	0.98	1230
CP52A	3.54	1923
CP54	4.14	2378

REFERENCED INFORMATION - NEC-1 REPORT		
HEC-1 MODEL C1SPKSB-AR3.OUT		
	CP	AREA (MI²)	100 YR FLOW
DB6	6.83	208

GRAPHIC SCALE
1500 0 600 1500
(IN FEET)
1 inch = 1250 ft.

NORTH

CITY OF HENDERSON	G. C. WALLACE COMPANIES ENGINEERS | PLANNERS | SURVEYORS 1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146 T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM	PROJECT NO. 504-424
NORTHEAST C-1 DETENTION BASIN CLOMR	LAS VEGAS · SACRAMENTO · RENO	DESIGN:
DRAINAGE MAP	F:\504-424\Drainage\CLOMR\fig-07R.DWG David Mueller	DRAWN: CHECK: PLOT DATE: 10-05-07 PLOT TIME: 10:31:06

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

DATE:

DRAWING FIG-7R
SHT OF SHTS

ALTERNATIVES 1F

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

TIME OF CONCENTRATION

The Louis Berger Group — Las Vegas Valley Master Plan Update
File: FORM4.XLS — C-1 WATERSHED — BY: MJH
Revised By: G.C. Wallace, Inc. — Ultimate Conditions — DATE: Revised 10/6/04

SUB-BASIN DATA						INITIAL / OVERLAND TIME (Ti)			TRAVEL TIME (Tt)					Tc	Tc Check	Tlag	REMARKS
DESIG: (1)	DEV./EX. (D or E)	CN	K (2)	AREA Ac (3)	AREA MI^2	INITIAL LENGTH Feet (4)	SLOPE % (5)	Ti Min (6)	TRAVEL LENGTH Feet (7)	SLOPE % (8)	V1 VELOCITY FPS (9a)	V2 VELOCITY FPS (9b)	Tt Min (10)	Min (13)	Min (14)	Tlag= 0.6Tc/60 Hours	RAINFALL Q100/Q10 Inches
C1-2	D	85.2	0.7349	288.00	0.45	100	4.0	4.1	8700	9.1	6.1	9.2	16.2	20.3	58.9	0.203	
C1-3	D	86.6	0.7525	174.72	0.27	100	11.3	2.8	5800	15.2	7.9	11.9	8.5	11.2	42.8	0.112	
C1-4	D	86.3	0.7495	382.08	0.60	100	0.9	6.5	8000	11.2	6.8	10.2	13.4	20.0	55.0	0.200	
C1-5	D	87.8	0.7692	81.92	0.13	100	21.8	2.1	3600	2.8	3.4	5.1	12.6	14.7	30.6	0.147	
C1-7	D	86.0	0.7453	540.16	0.84	100	0.2	10.9	10000	7.0	5.3	8.1	21.1	32.0	66.1	0.320	
C1-8	U	82.5	0.6988	536.96	0.84	500	3.0	11.2	7500	13.5	5.4	10.6	12.3	23.5	N/A	0.235	
C1-10	D	83.8	0.7162	259.20	0.41	100	2.7	5.0	9800	3.8	4.0	6.0	28.0	33.0	65.0	0.330	
C1-11	D	79.7	0.6620	145.28	0.23	100	0.3	11.8	5950	2.7	3.3	5.0	20.7	32.4	43.6	0.324	
C1-12	D	83.3	0.7089	243.84	0.38	100	2.1	5.5	5600	3.4	3.7	5.6	17.3	22.8	41.7	0.228	
C1-13	D	78.2	0.6420	266.24	0.42	100	0.9	8.5	5100	3.0	3.5	5.3	16.8	25.4	38.9	0.254	
C1-14	D	84.0	0.7184	264.96	0.41	100	1.0	6.9	5750	2.4	3.1	4.8	21.0	27.9	42.5	0.279	
C1-15	D	82.4	0.6972	150.40	0.24	100	1.9	5.9	5725	2.2	3.0	4.5	22.1	27.9	42.4	0.279	
C1-16	D	86.1	0.7470	332.16	0.52	100	0.9	6.6	6500	11.8	6.9	10.5	10.7	17.3	46.7	0.173	
C1-17	D	90.2	0.8006	362.88	0.57	100	0.8	5.6	7200	1.8	2.7	4.1	30.3	36.1	50.6	0.361	
C1-18	D	93.6	0.8454	213.12	0.33	100	1.2	4.3	5000	1.8	2.7	4.1	21.3	25.7	38.3	0.257	
C1-19	D	93.3	0.8418	68.48	0.11	100	0.9	4.8	2000	2.9	3.4	5.2	7.2	12.0	21.7	0.120	
C1-20	D	75.4	0.6053	395.52	0.62	100	0.9	9.2	5000	2.9	3.4	5.2	16.8	26.0	38.3	0.260	
C1-21	D	77.9	0.6396	253.44	0.40	100	1.0	6.3	5450	2.4	3.1	4.7	20.2	26.5	40.8	0.265	
C1-22	D	92.1	0.8260	150.40	0.24	100	1.0	4.9	3400	2.2	3.0	4.5	13.4	18.4	29.4	0.184	
C1-23	D	90.5	0.8049	216.32	0.34	100	0.6	6.3	5300	2.2	3.0	4.5	20.5	26.8	40.0	0.268	
C1-24	D	92.1	0.8257	46.72	0.07	100	2.0	3.9	2250	1.8	2.6	3.9	10.8	14.7	23.1	0.147	
C1-25	D	92.6	0.8328	39.68	0.06	100	0.5	6.1	2300	1.8	2.7	4.1	10.4	16.4	23.3	0.164	
C1-26	D	86.0	0.7448	256.00	0.40	100	1.3	5.9	7000	2.5	3.2	4.8	25.0	30.9	49.4	0.309	
C1-27	D	73.7	0.5830	147.84	0.23	100	0.9	9.5	2950	3.3	3.7	5.6	9.6	19.3	26.9	0.193	
C1-28	D	87.7	0.7676	241.28	0.38	100	0.6	7.1	3700	2.8	3.4	5.1	12.9	20.0	31.1	0.200	
C1-29	D	84.0	0.7189	93.44	0.15	100	0.1	14.8	3200	1.9	2.8	4.2	13.7	28.4	26.3	0.283	
C1-30	D	86.4	0.7499	190.08	0.30	100	1.8	5.2	5700	3.1	3.6	5.4	18.4	23.6	42.2	0.236	
C1-31	D	59.1	0.3897	209.72	0.32	100	2.0	10.1	5800	2.2	3.0	4.6	22.0	32.2	42.8	0.322	
C1-32	D	58.6	0.3832	208.00	0.33	100	0.9	13.4	9800	2.1	2.9	4.4	22.3	35.6	41.7	0.356	
C1-33	D	79.0	0.6524	170.88	0.27	100	0.6	9.6	5750	1.3	2.3	3.5	28.7	38.2	42.5	0.382	
C1-34	D	84.1	0.7202	214.40	0.34	100	0.7	7.7	4800	1.4	2.4	3.6	22.3	30.0	36.1	0.300	
C1-35	U	86.2	0.7479	347.52	0.54	500	2.0	11.2	6600	9.9	4.7	9.3	12.6	24.0	N/A	0.240	
C1-36	D	62.6	0.4367	156.08	0.25	100	0.8	12.9	4500	5.8	4.9	7.4	11.0	23.8	36.1	0.238	
C1-37	D	58.2	0.5102	142.08	0.22	100	1.2	10.0	5000	7.4	5.5	8.3	10.5	20.5	38.3	0.205	
C1-38	D	79.8	0.6632	315.52	0.49	100	0.5	9.9	9200	10.8	6.6	10.1	15.7	25.6	61.7	0.256	
C1-39	U	87.9	0.7707	391.04	0.61	500	1.1	12.8	9400	9.5	4.6	9.1	18.2	31.0	N/A	0.310	
C1-40	D	67.3	0.4976	140.80	0.22	100	0.6	12.9	4950	10.1	5.4	9.7	8.9	21.8	38.1	0.218	
C1-41	D	76.7	0.6225	103.68	0.16	100	6.1	4.7	5900	8.7	6.0	9.0	11.4	16.1	43.3	0.161	
C1-42	U	85.2	0.7341	632.32	0.99	500	13.3	6.2	13600	7.9	4.2	8.3	26.4	34.6	N/A	0.346	
C1-43	U	85.5	0.7344	349.44	0.54	500	2.9	10.3	8000	7.3	4.0	7.9	17.8	28.1	N/A	0.281	
C1-44	D	84.2	0.6784	250.24	0.32	100	1.1	7.4	6200	5.6	4.8	7.2	14.9	22.2	45.0	0.222	
C1-45	D	86.0	0.7458	141.44	0.22	100	0.5	9.0	3700	3.7	3.8	5.7	11.5	19.5	31.1	0.195	
C1-46	D	81.0	0.6792	177.92	0.28	100	3.2	5.2	3140	2.2	3.0	4.6	12.4	17.6	28.0	0.176	
C1-47	D	75.2	0.6026	335.36	0.52	100	1.2	8.5	6200	3.0	3.5	5.3	20.4	28.9	45.0	0.289	
C1-47A	D	76.2	0.6158	90.24	0.14	100	1.0	8.7	5700	2.5	3.2	4.8	20.7	29.4	42.2	0.294	
C1-48	D	78.5	0.6462	153.60	0.24	100	0.7	9.2	3350	3.4	3.7	5.6	10.7	19.9	29.2	0.199	
C1-49	D	82.7	0.7017	332.80	0.52	100	0.5	9.4	6300	1.4	2.4	3.6	30.6	40.0	45.6	0.400	
C1-50	D	83.5	0.7128	223.36	0.35	100	0.9	7.2	4250	2.3	3.1	4.7	16.2	23.3	34.2	0.233	
C1-51	D	85.2	0.7343	266.24	0.42	100	0.3	9.4	6700	3.3	3.7	5.5	20.9	30.3	47.8	0.303	
C1-52	D	83.8	0.7163	160.00	0.25	100	0.1	14.9	2700	3.2	3.6	5.5	9.0	23.9	25.6	0.239	
C1-53	D	81.5	0.6859	170.24	0.27	100	0.1	16.1	4200	1.6	2.6	3.9	19.2	35.3	33.9	0.339	
C1-55*	D	86.9	0.7571	627.84	0.98	100	11.9	2.7	7400	3.3	3.7	5.6	23.0	25.7	51.7	0.257	
C1-56	D	83.1	0.7069	289.92	0.45	100	2.2	5.4	7900	1.3	2.3	3.5	38.5	44.0	54.4	0.440	
C1-57	D	84.0	0.7184	158.72	0.25	100	1.1	6.7	2600	3.0	3.5	5.3	9.5	16.3	26.1	0.163	
C1-58	D	82.3	0.6958	149.76	0.23	100	0.4	9.9	3400	2.9	3.4	5.2	11.7	21.6	29.4	0.216	
C1-59	D	81.1	0.6805	198.40	0.31	100	2.3	5.7	5200	0.9	1.9	2.8	32.1	37.8	39.4	0.378	
C1-60	D	70.6	0.5422	157.44	0.25	100	0.9	10.4	5100	1.9	2.8	4.2	21.2	31.6	38.9	0.316	
C1-61	D	83.7	0.7152	160.00	0.25	100	0.7	7.8	5100	1.9	2.8	4.2	21.4	29.2	38.9	0.292	
C1-62	D	73.3	0.5778	266.88	0.42	100	1.7	7.9	6450	2.9	3.4	5.2	21.6	29.4	46.4	0.294	
C1-63	D	72.5	0.5672	160.64	0.25	100	1.5	8.4	5200	2.0	2.9	4.3	20.9	29.3	39.4	0.293	
C1-64	D	70.2	0.5372	240.64	0.38	100	1.6	8.7	6450	2.1	2.9	4.4	25.3	33.9	46.4	0.339	
C1-66*	D	87.6	0.7684	558.72	0.87	100	3.9	3.6	7500	6.9	5.3	8.0	16.1	19.9	52.2	0.199	
C1-67*	D	77.9	0.6387	252.16	0.39	100	1.2	7.8	10250	4.2	4.2	6.3	27.8	35.6	67.5	0.356	
C1-68	D	85.1	0.7333	227.84	0.36	100	1.8	5.4	6500	2.2	3.0	4.5	24.8	30.2	46.7	0.302	
C1-69	D	86.9	0.7574	118.40	0.19	100	1.0	6.2	3250	2.2	3.0	4.5	12.9	19.0	28.6	0.190	
C1-70	D	86.6	0.7531	220.16	0.34	100	0.1	13.5	7200	2.4	3.1	4.7	26.2	39.7	50.6	0.397	
C1-71	D	80.7	0.6756	185.60	0.29	100	0.3	11.4	6500	2.1	2.9	4.4	25.4	36.8	46.7	0.368	
C1-72	D	82.0	0.6921	288.64	0.45	100	0.6	8.7	4500	2.5	3.2	4.8	16.4	25.1	35.6	0.251	
C1-73	D	84.8	0.7294	208.00	0.33	100	1.0	6.7	5600	1.5	2.5	3.7	25.0	32.7	41.7	0.327	
C1-74	D	87.1	0.7597	124.80	0.20	100	0.9	6.3	2150	2.6	3.3	4.9	8.1	14.5	22.5	0.145	
C1-75	D	83.4	0.7109	234.24	0.37	100	7.7	3.5	3000	3.3	3.7	5.6	9.8	13.3	27.2	0.133	
C1-76	D	85.2	0.7348	222.08	0.35	100	1.6	5.6	7000	5.0	4.5	6.8	17.7	23.3	49.4	0.233	
C1-77	D	79.2	0.6555	277.76	0.43	100	1.5	7.0	4000	5.1	4.6	6.9	10.3	17.3	32.6	0.173	
C1-78	D	89.9	0.7965	137.60	0.22	100	1.6	4.7	2950	3.0	3.5	5.3	10.1	14.8	26.9	0.148	
C1-79	D	89.5	0.7914	243.84	0.38	100	2.4	4.1	6200	3.4	3.7	5.6	19.1	23.2	45.0	0.232	
C1-80	D	65.4	0.4733	133.76	0.21	100	0.6	13.2	4500	1.4	2.4	3.7	21.6	34.8	35.6	0.348	
C1-81	D	88.2	0.7742	179.84	0.28	100	2.6	4.3	5600	1.3	2.3	3.4	28.5	32.8	41.7	0.328	
C1-82	D	72.6	0.5683	448.64	0.70	100	1.3	8.7	5300	2.3	3.0	4.6	20.1	28.9	40.0	0.289	
C1-83	D	78.4	0.6449	168.96	0.26	100	19.7	3.0	2800	13.9	7.5	11.4	4.5	7.5	26.1	0.075	
C1-84	D	86.4	0.7505	308.48	0.48	100	1.8	5.2	7500	4.0	4.0	6.1	21.1	26.3	52.2	0.263	
C1-86	D	80.2	0.6686	152.32	0.24	100	4.1	4.9	6500	4.8	4.4	6.7	16.8	21.7	46.7	0.217	
C1-87	D	87.3	0.4984	307.84	0.48	100	17.2	4.2	7500	3.1	3.8	5.4	23.9	28.1	52.2	0.281	
C1-87A	D	76.6	0.6211	133.12	0.21	100	15.0	3.5	3500	12.0	7.0	10.6	5.9	9.4	30.0	0.094	
C1-89	D	85.7	0.7407	170.24	0.27	100	9.6	3.0	4200	10.6	6.6	10.0	7.5	10.5	33.9	0.105	
C1-90	D	84.4	0.7241	165.76	0.26	100	2.9	4.7	5500	3.6	3.9	5.8	16.4	21.2	41.1	0.212	

Tc = Ti + Tt Tlag = 0.6 Tc
Ti = 1.8 (1.1 - K) L^1/2 / S^1/3
K = 0.0132 (CN) - 0.39
Tc Check = U180+10

For the travel time (Tt) calculations,
V1 applies to the first 500 feet of travel distance;
V2 applies to the remaining travel distance

Existing V1 = 14.8*(S/100)^1/2 Developed V1 = 20.2*(S/100)^1/2
Existing V2 = 29.4*(S/100)^1/2 Developed V2 = 30.6*(S/100)^1/2

REFERENCE : STANDARD FORM 4

C-1 WATERSHED

Lag Time Calculations for Subbasins with an Area Greater than 1 mi^2

Basin	Slope (ave.) ft/ft	Length (total) ft.	Length (Centroid) ft.	n	$TLAG_{USBR}$
C1-1	0.093	14,600	7,600.00	0.050	0.567
C1-6	0.071	12,700	8,800.00	0.050	0.595
C1-9	0.136	11,000	16,400.00	0.050	0.626
C1-54*	0.052	17,600	9,700.00	0.050	0.720
C1-65*	0.056	26,100	11,200.00	0.050	0.849
C1-85*	0.051	18,000	8,600.00	0.050	0.699
C1-88	0.066	11,500	5,500.00	0.050	0.499
C1-91	0.035	6,500	3,200.00	0.050	0.384

HEC-1 MODEL C1SDN3B-ALT3.OUT

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1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              JUN   1998               *
*            VERSION 4.1                *
*                                       *
*  RUN DATE   13SEP05  TIME  14:21:57   *
*                                       *
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*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*        DAVIS, CALIFORNIA 95616        *
*            (916) 756-1104             *
*                                       *
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X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX          XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

              *DIAGRAM
    1         ID    CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN UPDATE
    2         ID    C-1 WATERSHED
    3         ID    RECOMMENDED DRAINAGE SYSTEM WITH ULTIMATE DEVELOPMENT
    4         ID    INPUT FILE = C1SDN3B.DAT
    5         ID    INPUT FILE DATE = APRIL 18, 2002
    6         ID    DESIGN STORM = 100-YEAR 6-HR STORM
    7         ID    STORM DISTRIBUTION = SDN #3
    8         ID    MODELED BY = LOUIS BERGER GROUP (RYAN R. BELSICK, P.E. and SYNDI DUDLEY,
    9         ID    PHD, P.E.)
   10         ID    STORM CENTERING = NO STORM CENTERING
   11         ID
   12         ID    REFERENCED HYDROLOGIC MODELS:
   13         ID    PREDESIGN REPORT FOR THE BLACK MOUNTAIN AND MISSION HILLS DETENTION BASINS
   14         ID    AND OUTFALL STRUCTURES (VTN 1992)
   15         ID    SNWA RIVER MOUNTAINS WATER TREATMENT FACILITY DRAFT TECHNICAL DRAINAGE STUDY
   16         ID    (MONTGOMERY WATSON/CH2MHILL 1997)
   17         ID    EAST C-1 DETENTION BASIN FINAL DESIGN (VTN 1998)
   18         ID    DESIGN MEMORANDUM FOR THE EQUESTRIAN DETENTION BASIN (POGGEMEYER 1994)
   19         ID    DESIGN CALCULATION NOTEBOOK FOR THE BLACK MOUNTAIN DETENTION BASIN
   20         ID    (VTN 1998)
   21         ID
   22         ID    **REVISED C1 BASINS BY G.C. WALLACE, INC.
   23         ID    **REVISED NORTHEAST C-1 DETENTION BASIN STAGE/STORAGE BY G.C. WALLACE, INC.
   24         ID    **INPUT FILE = C1SDN3B-ALT3.DAT
   25         ID    **INPUT FILE DATE = DECEMBER 23, 2004
   26         ID
   27         ID    JR CARDS CONTAIN DARFS BASED ON THE FOLLOWING VALUES:
   28         ID
   29         ID                      AREA     DARF
   30         ID                      SQ.MI.
   31         ID
   32         ID                        0 - 0.5  0.99
   33         ID                      0.5 - 1    0.975
   34         ID                        1 - 2    0.95
   35         ID                        2 - 3    0.925
   36         ID                        3 - 4    0.915
   37         ID                        4 - 5    0.908
   38         ID
   39         ID
   40         ID
   41         IT      5       0       0     300
   42         IN      5       0       0
   43         IO      5
   44         JR    PREC    0.99   0.975    0.95   0.925   0.915   0.908

   45         KK    C1-62
   46         BA    0.417
   47         PB     2.92
   48         PC     .000    .020    .057    .070    .087    .108    .124    .130    .130    .130
   49         PC     .130    .130    .130    .133    .140    .142    .148    .158    .172    .181
   50         PC     .190    .197    .199    .200    .201    .204    .214    .229    .241    .249
   51         PC     .251    .256    .270    .278    .281    .283    .295    .322    .352    .409
   52         PC     .499    .590    .710    .744    .781    .812    .819    .835    .851    .856
   53         PC     .860    .868    .876    .888    .910    .926    .937    .950    .970    .976
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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   54         PC    .982    .985    .987    .989    .990    .993    .993    .994    .995    .998
   55         PC    .998    .999   1.00
   56         LS       0   73.3
   57         UD   0.294
              *

   58         KK  RC1-62
   59         KM   ROUTE C1-62 TO C1-63
   60         KM   ITHACA AVENUE
   61         RD    2640   0.025    .016       0    TRAP       0      50
              *

   62         KK   C1-63
   63         BA   0.251
   64         PB    2.85
   65         LS       0    72.5
   66         UD   0.293
              *

   67         KK    CP60
   68         KM   COMBINE C1-62 AND C1-63
   69         KM   PUEBLO BOULEVARD @ ITHACA AVENUE
   70         HC       2
              *

   71         KK   C1-55
   72         KM   REVISED BASIN AREA TO MATCH TOPOGRAPHY
   73         KM   REVISED LAG TIME TO MATCH NEW BASIN AREA
   74         BA   0.981
   75         PB    3.20
   76         LS       0    86.9
   77         UD   0.257
              *

   78         KK   RC155
   79         KM   ROUTE C1-55 TO DB6
   80         KM   FACILITY = LEVEE TO NEC1DB
   81         KM   FACILITY # = C1IT 0155
   82         KM   LINING = CONCRETE
   83         RD    3830   0.025    .025       0    TRAP       5       2
              *

   84         KK   C1-65
   85         KM   REVISED BASIN AREA TO MATCH TOPOGRAPHY
   86         KM   REVISED LAG TIME TO MATCH NEW BASIN AREA
   87         BA   2.564
   88         PB    3.29
   89         LS       0    86.1
   90         UD   0.849
              *
1                                        HEC-1 INPUT                                                    PAGE  3

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   91         KK   CP52A
   92         KM   COMBINE RCP52 AND C1-65
   93         HC       2
              *

   94         KK   C1-66
   95         KM   REVISED BASIN AREA TO MATCH TOPOGRAPHY
   96         KM   REVISED LAG TIME TO MATCH NEW BASIN AREA
   97         KM   REVISED AREA TO REMOVE AREAS TRIBUTARY TO BET BASIN
   98         BA   0.592
   99         PB    3.06
  100         LS       0    87.6
  101         UD   0.199
              *

  102         KK    CP64
  103         KM   COMBINE C1-66, AND RCP52
  104         KM   NORTHEAST C-1 DETENTION BASIN
  105         HC       2
              *

  106         KK     DB6
  107         KM   FACILITY = NORTHEAST C-1 DETENTION BASIN
  108         KM   FACILITY # = C1IT 0118
  109         KM   STORAGE VOLUME = 310 ACRE-FEET
  110         KM   OUTLET = 36" RCP
  111         KM   REVISED PER GCW DESIGN
  112         KO       3
  113         RS       1    STOR      -1
  114         SV       0   11.92   20.04   54.96  103.23  156.48  214.92  278.69  333.63  348.25
  115         SE    1952    1956    1957    1961    1966    1971    1976    1981    1985    1986
  116         SQ       0   73.74   82.45  110.61  137.96  160.72  180.63  198.56  211.81  214.99
              *

  117         KK    RDB6
  118         KM   ROUTE DB6 TO C1-67
  119         KM   FACILITY = C-1 CHANNEL - ITHACA
  120         KM   FACILITY # = C1IT 0000
```

```
            121           KM   LINING = RCP
            122           RD    6200   0.022   0.013       0    CIRC     6.0
                          *
            123           KK   CP60A
            124           KM   COMBINE CP60 AND RDB6
            125           KM   C-1 CHANNEL @ CADIZ AVENUE
            126           HC       2
                          *
            127           ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    45       C1-62
                 V
                 V
    58      RC1-62
             .
             .
    62       .       C1-63
             .          .
             .          .
    67        CP60.............
             .
             .
    71       .       C1-55
             .          V
             .          V
    78       .       RC155
             .          .
             .          .
    84       .          .       C1-65
             .          .          .
             .          .          .
    91       .       CP52A.............
             .          .
             .          .
    94       .          .       C1-66
             .          .          .
             .          .          .
   102       .        CP64.............
             .          V
             .          V
   106       .         DB6
             .          V
             .          V
   117       .        RDB6
             .          .
             .          .
   123      CP60A.............

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************                    ****************************************
 *                                      *                    *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *                    *    U.S. ARMY CORPS OF ENGINEERS      *
 *               JUN   1998             *                    *    HYDROLOGIC ENGINEERING CENTER     *
 *            VERSION 4.1               *                    *          609 SECOND STREET           *
 *                                      *                    *       DAVIS, CALIFORNIA 95616        *
 *  RUN DATE   13SEP05  TIME  14:21:57  *                    *           (916) 756-1104             *
 *                                      *                    *                                      *
 ****************************************                    ****************************************
```

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN UPDATE
C-1 WATERSHED
RECOMMENDED DRAINAGE SYSTEM WITH ULTIMATE DEVELOPMENT
INPUT FILE = C1SDN3B.DAT
INPUT FILE DATE = APRIL 18, 2002
DESIGN STORM = 100-YEAR 6-HR STORM
STORM DISTRIBUTION = SDN #3
MODELED BY = LOUIS BERGER GROUP (RYAN R. BELSICK, P.E. and SYNDI DUDLEY, PHD, P.E.)
STORM CENTERING = NO STORM CENTERING

REFERENCED HYDROLOGIC MODELS:
PREDESIGN REPORT FOR THE BLACK MOUNTAIN AND MISSION HILLS DETENTION BASINS AND OUTFALL STRUCTURES (VTN 1992)
SNWA RIVER MOUNTAINS WATER TREATMENT FACILITY DRAFT TECHNICAL DRAINAGE STUDY (MONTGOMERY WATSON/CH2MHILL 1997)
EAST C-1 DETENTION BASIN FINAL DESIGN (VTN 1998)
DESIGN MEMORANDUM FOR THE EQUESTRIAN DETENTION BASIN (POGGEMEYER 1994)
DESIGN CALCULATION NOTEBOOK FOR THE BLACK MOUNTAIN DETENTION BASIN (VTN 1998)

**REVISED C1 BASINS BY G.C. WALLACE, INC.
**REVISED NORTHEAST C-1 DETENTION BASIN STAGE/STORAGE BY G.C. WALLACE, INC.
**INPUT FILE = C1SDN3B-ALT3.DAT
**INPUT FILE DATE = DECEMBER 23, 2004

JR CARDS CONTAIN DARFS BASED ON THE FOLLOWING VALUES:

AREA SQ.MI.	DARF
0 - 0.5	0.99
0.5 - 1	0.975
1 - 2	0.95
2 - 3	0.925
3 - 4	0.915
4 - 5	0.908

```
 43 IO          OUTPUT CONTROL VARIABLES
                     IPRNT           5  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                      NMIN           5  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1    0  STARTING DATE
                     ITIME         0000  STARTING TIME
                        NQ          300  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      2    0  ENDING DATE
                    NDTIME         0055  ENDING TIME
                     ICENT           19  CENTURY MARK

                  COMPUTATION INTERVAL      .08 HOURS
                       TOTAL TIME BASE   24.92 HOURS

         ENGLISH UNITS
              DRAINAGE AREA         SQUARE MILES
              PRECIPITATION DEPTH   INCHES
              LENGTH, ELEVATION     FEET
              FLOW                  CUBIC FEET PER SECOND
              STORAGE VOLUME        ACRE-FEET
              SURFACE AREA          ACRES
              TEMPERATURE           DEGREES FAHRENHEIT

    JP          MULTI-PLAN OPTION
                     NPLAN           1  NUMBER OF PLANS

    JR          MULTI-RATIO OPTION
                    RATIOS OF PRECIPITATION
                    .99       .98       .95       .93       .92       .91


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


           **************
           *            *
 106 KK    *       DB6  *
           *            *
           **************

 112 KO          OUTPUT CONTROL VARIABLES
                     IPRNT           3  PRINT CONTROL
                     IPLOT           0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

              HYDROGRAPH ROUTING DATA

 113 RS          STORAGE ROUTING
                     NSTPS           1  NUMBER OF SUBREACHES
                      ITYP        STOR  TYPE OF INITIAL CONDITION
                     RSVRIC      -1.00  INITIAL CONDITION
                          X         .00 WORKING R AND D COEFFICIENT

 114 SV            STORAGE          .0      11.9      20.0      55.0     103.2     156.5     214.9     278.7     333.6     348.3

 115 SE          ELEVATION     1952.00   1956.00   1957.00   1961.00   1966.00   1971.00   1976.00   1981.00   1985.00   1986.00

 116 SQ          DISCHARGE          0.       74.       82.      111.      138.      161.      181.      199.      212.      215.

                                                          ***

WARNING --- ROUTED OUTFLOW (    215.) IS GREATER THAN MAXIMUM OUTFLOW (    215.) IN STORAGE-OUTFLOW TABLE

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WARNING --- ROUTED OUTFLOW (    215.) IS GREATER THAN MAXIMUM OUTFLOW (    215.) IN STORAGE-OUTFLOW TABLE
```

*** *** *** *** ***

HYDROGRAPH AT STATION DB6
FOR PLAN 1, RATIO = .99

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 215.	6.50		209.	163.	157.	157.
		(INCHES)	.469	1.469	1.469	1.469
		(AC-FT)	104.	324.	324.	324.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
349.	6.50	322.	196.	189.	189.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
1986.06	6.50	1984.11	1973.58	1972.79	1972.79

CUMULATIVE AREA = 4.14 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION DB6
FOR PLAN 1, RATIO = .98

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 213.	6.50		207.	161.	155.	155.
		(INCHES)	.465	1.450	1.450	1.450
		(AC-FT)	103.	320.	320.	320.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
341.	6.50	313.	190.	183.	183.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
1985.48	6.50	1983.53	1973.07	1972.29	1972.29

CUMULATIVE AREA = 4.14 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION DB6
FOR PLAN 1, RATIO = .95

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 210.	6.50		204.	158.	152.	152.
		(INCHES)	.458	1.418	1.418	1.418
		(AC-FT)	101.	313.	313.	313.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
327.	6.50	300.	180.	173.	173.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
1984.49	6.50	1982.53	1972.21	1971.46	1971.46

CUMULATIVE AREA = 4.14 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION DB6
FOR PLAN 1, RATIO = .93

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 207.	6.50		200.	154.	148.	148.
		(INCHES)	.450	1.385	1.385	1.385
		(AC-FT)	99.	305.	305.	305.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				

```
      313.      6.50                  286.        170.        163.         163.

  PEAK STAGE    TIME                                MAXIMUM AVERAGE STAGE
                                     6-HR        24-HR       72-HR      24.92-HR
+   (FEET)      (HR)
    1983.48     6.50               1981.53     1971.35     1970.64      1970.64

                          CUMULATIVE AREA =    4.14 SQ MI


       ***            ***             ***             ***             ***

                          HYDROGRAPH AT STATION      DB6
                            FOR PLAN 1, RATIO =  .92

  PEAK FLOW     TIME                                MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR       72-HR      24.92-HR
+   (CFS)       (HR)
                          (CFS)
+     205.      6.50                199.        153.        147.         147.
                        (INCHES)     .447       1.371       1.371        1.371
                        (AC-FT)       99.        303.        303.         303.

 PEAK STORAGE   TIME                              MAXIMUM AVERAGE STORAGE
                                     6-HR        24-HR       72-HR      24.92-HR
+  (AC-FT)      (HR)
       307.     6.50                281.        166.        160.         160.

  PEAK STAGE    TIME                                MAXIMUM AVERAGE STAGE
                                     6-HR        24-HR       72-HR      24.92-HR
+   (FEET)      (HR)
    1983.07     6.50               1981.13     1971.00     1970.30      1970.30

                          CUMULATIVE AREA =    4.14 SQ MI


       ***            ***             ***             ***             ***

                          HYDROGRAPH AT STATION      DB6
                            FOR PLAN 1, RATIO =  .91

  PEAK FLOW     TIME                                MAXIMUM AVERAGE FLOW
                                     6-HR        24-HR       72-HR      24.92-HR
+   (CFS)       (HR)
                          (CFS)
+     204.      6.50                198.        151.        146.         146.
                        (INCHES)     .445       1.362       1.362        1.362
                        (AC-FT)       98.        300.        300.         300.

 PEAK STORAGE   TIME                              MAXIMUM AVERAGE STORAGE
                                     6-HR        24-HR       72-HR      24.92-HR
+  (AC-FT)      (HR)
       303.     6.50                277.        163.        157.         157.

  PEAK STAGE    TIME                                MAXIMUM AVERAGE STAGE
                                     6-HR        24-HR       72-HR      24.92-HR
+   (FEET)      (HR)
    1982.79     6.50               1980.85     1970.76     1970.07      1970.07

                          CUMULATIVE AREA =    4.14 SQ MI

1

                PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
                              FLOWS IN CUBIC FEET PER SECOND,  AREA IN SQUARE MILES
                                        TIME TO PEAK IN HOURS

                                                                    RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN              RATIO 1  RATIO 2  RATIO 3  RATIO 4  RATIO 5  RATIO 6
                                                          .99      .98      .95      .93      .92      .91

 HYDROGRAPH AT
+                  C1-62      .42     1   FLOW          218.     210.     198.     185.     181.     177.
                                           TIME          3.75     3.75     3.75     3.75     3.75     3.75

 ROUTED TO
+                 RC1-62      .42     1   FLOW          216.     208.     195.     183.     179.     176.
                                           TIME          3.83     3.83     3.83     3.83     3.83     3.83

 HYDROGRAPH AT
+                  C1-63      .25     1   FLOW          117.     113.     106.      99.      96.      95.
                                           TIME          3.75     3.75     3.75     3.75     3.75     3.75

   2 COMBINED AT
+                   CP60      .67     1   FLOW          330.     318.     299.     280.     273.     268.
                                           TIME          3.83     3.83     3.83     3.83     3.83     3.83

 HYDROGRAPH AT
+                  C1-55      .98     1   FLOW         1257.    1230.    1185.    1140.    1122.    1109.
                                           TIME          3.67     3.67     3.67     3.67     3.67     3.67

 ROUTED TO
+                 RC155       .98     1   FLOW         1233.    1205.    1160.    1121.    1098.    1088.
                                           TIME          3.75     3.75     3.75     3.75     3.75     3.75
```

Col action Usanne

HYDROGRAPH AT											
+	C1-65	2.56	1	FLOW	1688.	1650.	1588.	1527.	1502.	1485.	
				TIME	4.33	4.33	4.33	4.33	4.33	4.33	
2 COMBINED AT											
+	CP52A	3.54	1	FLOW	2158.	2109.	2034.	1954.	1923.	1897.	Collection Channel
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	
HYDROGRAPH AT											
+	C1-66	.59	1	FLOW	798.	780.	751.	723.	711.	703.	
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	
2 COMBINED AT											
+	CP64	4.14	1	FLOW	2707.	2645.	2544.	2449.	2404.	2378.	Collection Channel
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	
ROUTED TO											
+	DB6	4.14	1	FLOW	215.	213.	210.	207.	205.	204.	
				TIME	6.50	6.50	6.50	6.50	6.50	6.50	
			** PEAK STAGES IN FEET **								
			1	STAGE	1986.06	1985.48	1984.49	1983.48	1983.07	1982.79	
				TIME	6.50	6.50	6.50	6.50	6.50	6.50	
ROUTED TO											
+	RDB6	4.14	1	FLOW	215.	213.	210.	207.	205.	204.	
				TIME	6.58	6.58	6.58	6.58	6.58	6.58	
2 COMBINED AT											
+	CP60A	4.81	1	FLOW	459.	446.	424.	403.	395.	390.	
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	

1

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= .00									
	RC1-62 MANE	3.75	216.14	228.75	.81	5.00	215.84	230.00	.81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1791E+02 EXCESS= .0000E+00 OUTFLOW= .1792E+02 BASIN STORAGE= .1254E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00									
	RC1-62 MANE	3.75	208.52	228.75	.78	5.00	208.39	230.00	.78

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1732E+02 EXCESS= .0000E+00 OUTFLOW= .1733E+02 BASIN STORAGE= .1233E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00									
	RC1-62 MANE	3.50	196.50	231.00	.74	5.00	195.47	230.00	.74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1636E+02 EXCESS= .0000E+00 OUTFLOW= .1636E+02 BASIN STORAGE= .9711E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00									
	RC1-62 MANE	3.50	184.62	231.00	.69	5.00	183.42	230.00	.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1541E+02 EXCESS= .0000E+00 OUTFLOW= .1542E+02 BASIN STORAGE= .1320E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00									
	RC1-62 MANE	3.25	180.24	230.75	.68	5.00	178.97	230.00	.68

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1503E+02 EXCESS= .0000E+00 OUTFLOW= .1504E+02 BASIN STORAGE= .1201E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00									
	RC1-62 MANE	3.25	176.92	230.75	.66	5.00	175.64	230.00	.66

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1477E+02 EXCESS= .0000E+00 OUTFLOW= .1478E+02 BASIN STORAGE= .1190E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00									
	RC155 MANE	3.10	1244.94	223.47	1.88	5.00	1233.48	225.00	1.88

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9828E+02 EXCESS= .0000E+00 OUTFLOW= .9830E+02 BASIN STORAGE= .1663E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00									
	RC155 MANE	3.12	1206.81	221.72	1.84	5.00	1204.76	225.00	1.84

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9608E+02 EXCESS= .0000E+00 OUTFLOW= .9609E+02 BASIN STORAGE= .1726E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC155	MANE	3.16	1167.08	224.08	1.77	5.00	1159.76	225.00	1.77

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9240E+02 EXCESS= .0000E+00 OUTFLOW= .9241E+02 BASIN STORAGE= .1399E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC155	MANE	3.19	1132.42	223.35	1.70	5.00	1121.21	225.00	1.70

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8878E+02 EXCESS= .0000E+00 OUTFLOW= .8879E+02 BASIN STORAGE= .1668E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC155	MANE	3.21	1103.13	224.36	1.67	5.00	1098.04	225.00	1.67

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8730E+02 EXCESS= .0000E+00 OUTFLOW= .8731E+02 BASIN STORAGE= .2045E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC155	MANE	3.22	1088.50	221.86	1.65	5.00	1087.69	225.00	1.65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8630E+02 EXCESS= .0000E+00 OUTFLOW= .8631E+02 BASIN STORAGE= .1615E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB6	MANE	4.34	215.19	394.67	1.46	5.00	215.19	395.00	1.46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3240E+03 EXCESS= .0000E+00 OUTFLOW= .3231E+03 BASIN STORAGE= .9418E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB6	MANE	4.34	213.35	395.35	1.45	5.00	213.35	395.00	1.45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3203E+03 EXCESS= .0000E+00 OUTFLOW= .3193E+03 BASIN STORAGE= .9238E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB6	MANE	4.36	210.12	392.20	1.41	5.00	210.11	395.00	1.41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3131E+03 EXCESS= .0000E+00 OUTFLOW= .3122E+03 BASIN STORAGE= .8960E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB6	MANE	4.37	206.77	393.47	1.38	5.00	206.76	395.00	1.38

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3052E+03 EXCESS= .0000E+00 OUTFLOW= .3043E+03 BASIN STORAGE= .8706E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB6	MANE	4.38	205.42	393.98	1.37	5.00	205.42	395.00	1.37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3025E+03 EXCESS= .0000E+00 OUTFLOW= .3017E+03 BASIN STORAGE= .8591E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB6	MANE	4.38	204.49	394.34	1.36	5.00	204.49	395.00	1.36

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3006E+03 EXCESS= .0000E+00 OUTFLOW= .2998E+03 BASIN STORAGE= .8511E+00 PERCENT ERROR= .0

*** NORMAL END OF HEC-1 ***

HEC-1 MODEL C1SDN4B-ALT3.OUT

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*              JUN   1998               *
*            VERSION 4.1                *
*                                       *
*  RUN DATE   12SEP05  TIME  15:38:41   *
*                                       *
*****************************************
```

MODEL C1SDN4B-ALT3.DAT

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*        DAVIS, CALIFORNIA 95616        *
*          (916) 756-1104               *
*                                       *
*****************************************
```

```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX           XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

              *DIAGRAM
    1         ID    CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN UPDATE
    2         ID    C-1 WATERSHED
    3         ID    RECOMMENDED DRAINAGE SYSTEM WITH ULTIMATE DEVELOPMENT
    4         ID    INPUT FILE = C1SDN4B.DAT
    5         ID    INPUT FILE DATE = APRIL 18, 2002
    6         ID    DESIGN STORM = 100-YEAR 6-HR STORM
    7         ID    STORM DISTRIBUTION = SDN #4
    8         ID    MODELED BY = LOUIS BERGER GROUP (RYAN R. BELSICK, P.E. and SYNDI DUDLEY,
    9         ID    PHD, P.E.)
   10         ID    STORM CENTERING = NO STORM CENTERING
   11         ID
   12         ID    REFERENCED HYDROLOGIC MODELS:
   13         ID    PREDESIGN REPORT FOR THE BLACK MOUNTAIN AND MISSION HILLS DETENTION BASINS
   14         ID    AND OUTFALL STRUCTURES (VTN 1992)
   15         ID    SNWA RIVER MOUNTAINS WATER TREATMENT FACILITY DRAFT TECHNICAL DRAINAGE STUDY
   16         ID    (MONTGOMERY WATSON/CH2MHILL 1997)
   17         ID    EAST C-1 DETENTION BASIN FINAL DESIGN (VTN 1998)
   18         ID    DESIGN MEMORANDUM FOR THE EQUESTRIAN DETENTION BASIN (POGGEMEYER 1994)
   19         ID    DESIGN CALCULATION NOTEBOOK FOR THE BLACK MOUNTAIN DETENTION BASIN
   20         ID    (VTN 1998)
   21         ID
   22         ID    **REVISED C1 BASINS BY G.C. WALLACE, INC.
   23         ID    **REVISED NORTHEAST C-1 DETENTION BASIN STAGE/STORAGE BY G.C. WALLACE, INC.
   24         ID    **INPUT FILE = C1SDN4B-ALT3.DAT
   25         ID    **INPUT FILE DATE = DECEMBER 23, 2004
   26         ID
   27         ID    JR CARDS CONTAIN DARFS BASED ON THE FOLLOWING VALUES:
   28         ID
   29         ID                          AREA     DARF
   30         ID                          SQ.MI.
   31         ID
   32         ID                           8 - 9    0.875
   33         ID                           9 - 10   0.865
   34         ID                          10 - 11   0.857
   35         ID                          11 - 12   0.85
   36         ID
   37         ID
   38         ID
   39         IT      5       0       0      300
   40         IN      5       0       0
   41         IO      5
   42         JR    PREC   0.875   0.865   0.857    0.85

   43         KK    C1-1
   44         BA   3.773
   45         PB    3.15
   46         PC    .000    .020    .058    .075    .099    .126    .137    .145    .149    .151
   47         PC    .155    .156    .159    .162    .169    .172    .179    .189    .201    .211
   48         PC    .220    .228    .232    .240    .246    .252    .260    .269    .276    .283
   49         PC    .286    .292    .302    .312    .321    .332    .352    .376    .415    .462
   50         PC    .530    .610    .710    .732    .756    .782    .799    .813    .823    .830
   51         PC    .835    .844    .851    .864    .885    .908    .924    .944    .968    .973
   52         PC    .978    .982    .984    .986    .988    .991    .992    .993    .994    .997
   53         PC    .998    .999   1.00
```

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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  54          LS       0    86.1
  55          UD   0.564
              *

  56          KK     DB1
  57          KM   FACILITY = BLACK MOUNTAIN DETENTION BASIN
  58          KM   FACILITY # = C1CH 1095
  59          KM   STORAGE VOLUME = 366 ACRE-FEET
  60          KM   OUTLET = 36" ORIFICE OPENING ON A 54" RCP
  61          KO       3
  62          RS       1    STOR      -1
  63          SV       0    0.60    6.48   18.65   31.64   45.46   60.12   75.70   92.37  110.20
  64          SV  129.25  149.55  171.13  194.02  218.30  244.08  271.52  300.83  332.35  366.33
  65          SE    2553    2554    2556    2558    2560    2562    2564    2566    2568    2570
  66          SE    2572    2574    2576    2578    2580    2582    2584    2586    2588    2590
  67          SQ       0    6.53   45.16   68.98   86.47  100.98  113.65  125.04  135.47  145.16
  68          SQ  154.24  162.82  170.97  178.74  186.19  193.35  200.26  206.94  213.41  219.69
  69          SE    2553    2554    2556    2558    2560    2562    2564    2566    2568    2570
  70          SE    2572    2574    2576    2578    2580    2582    2584    2586    2588    2590
              *

  71          KK    RDB1
  72          KM   ROUTE DB1 TO C1-2
  73          KM   FACILITY = C-1 CHANNEL
  74          KM   FACILITY # = C1CH 1012
  75          KM   LINING = RCP
  76          RD    4300   0.015   0.013       0    CIRC     4.5
              *

  77          KK    C1-2
  78          BA   0.450
  79          PB    3.18
  80          LS       0    85.2
  81          UD   0.203
              *

  82          KK     CP1
  83          KM   COMBINE RDB1 AND C1-2
  84          HC       2
              *

  85          KK    RCP1
  86          KM   ROUTE CP1 TO C1-3
  87          KM   FACILITY = C-1 CHANNEL
  88          KM   FACILITY # = C1CH 0972
  89          KM   LINING = RCB
  90          RD    2122   0.015   0.015       0    TRAP       8     0
              *

  91          KK    C1-3
  92          BA   0.273
  93          PB    3.19
  94          LS       0   86.6
  95          UD   0.112
              *
```



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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  96          KK     CP2
  97          KM   COMBINE RCP1 AND C1-3
  98          HC       2
              *

  99          KK    RCP2
 100          KM   ROUTE CP2 TO C1-4
 101          KM   FACILTIY = C-1 CHANNEL
 102          KM   FACILITY # = C1CH 0930
 103          KM   LINING = RCB
 104          RD    2207   0.010   0.015       0    TRAP      12     0
              *

 105          KK    C1-4
 106          BA   0.597
 107          PB    3.21
 108          LS       0    86.3
 109          UD   0.200
              *

 110          KK     CP3
 111          KM   COMBINE RCP2 AND C1-4
 112          HC       2
              *

 113          KK    RCP3
 114          KM   ROUTE CP3 TO C1-5
 115          KM   FACILITY = C-1 CHANNEL
 116          KM   FACILITY # = C1CH 0905
 117          KM   TYPE OF FACILTY = RCB
 118          RD    1312   0.011   0.015       0    TRAP      12     0
              *
```

```
119          KK    C1-5
120          BA   0.128
121          PB    3.24
122          LS       0    87.8
123          UD   0.147
             *

124          KK     CP4
125          KM   COMBINE RCP3 AND C1-5
126          HC       2
             *

127          KK    RCP4
128          KM   ROUTE CP4 TO C1-6
129          KM   FACILITY = C-1 CHANNEL
130          KM   FACILITY # = C1CH 0871
131          KM   LINING = RCB
132          RD    1830   0.013    0.015      0    TRAP      12     0
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

133          KK    C1-6
134          BA   1.044
135          PB    3.24
136          LS       0    86.6
137          UD   0.592
             *

138          KK     CP5
139          KM   COMBINE RCP4 AND C1-6
140          HC       2
             *

141          KK    C1-7
142          BA   0.844
143          PB    3.28
144          LS       0    86.0
145          UD   0.320
             *

146          KK     CP6
147          KM   COMBINE CP5 AND C1-7
148          HC       2
             *

149          KK    C1-8
150          BA   0.839
151          PB    3.37
152          LS       0    82.5
153          UD   0.235
             *

154          KK   RC1-8
155          KM   ROUTE C1-8 TO MISSION HILLS DETENTION BASIN
156          KM   FACILITY = C-1 CHANNEL
157          KM   FACILITY # = C1CH 0882
158          KM   LINING = RIPRAP
159          RD    2350   0.024   0.040       0    TRAP      50       2
             *

160          KK    C1-9
161          BA   1.384
162          PB    3.33
163          LS       0    80.2
164          UD   0.623
             *

165          KK     CP7
166          KM   COMBINE RC1-8 AND C1-9
167          HC       2
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

168          KK     CP8
169          KM   COMBINE CP6 AND CP7
170          KM   MISSION HILLS DETENTION BASIN
171          HC       2
             *

172          KK     DB2
173          KM   FACILITY = MISSION HILLS DETENTION BASIN
174          KM   FACILITY # = C1CH 0854
175          KM   STORAGE VOLUME = 402 ACRE-FEET
176          KM   OUTLET = 84" RCP
177          KO       3
178          RS       1    STOR       -1
179          SV       0    2.55   15.85   40.23   72.34   107.2   185.2   273.0   371.6   480.1
180          SV   598.5   630.2
181          SE    2323    2326    2328    2330    2332    2334    2338    2342    2346    2350
```

```
182          SE    2354    2355
183          SQ       0   56.78   108.7   142.9   170.4   193.9   234.1   268.4   298.7   326.1
184          SQ   351.6   357.6
185          SE    2323    2326    2328    2330    2332    2334    2338    2342    2346    2350
186          SE    2354    2355
             *

187          KK    RDB2
188          KM   ROUTE DB2 TO C1-13
189          KM   FACILITY = C-1 CHANNEL
190          KM   FACILITY # = C1CH 0757
191          KM   LINING = RCP
192          RD    5070   0.009   0.013       0    CIRC     7.0
             *

193          KK   C1-13
194          BA   0.416
195          PB    3.23
196          LS       0    78.2
197          UD   0.254
             *

198          KK     CP9
199          KM   COMBINE RDB2 AND C1-13
200          KM   NDOT DETENTION BASIN @ US95
201          HC       2
             *

202          KK   C1-10
203          BA   0.405
204          PB    3.17
205          LS       0    83.8
206          UD   0.330
             *
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

207          KK  RC1-10
208          KM   ROUTE C1-10 TO C1-11
209          KM   FACILITY = C-1 CHANNEL - US 95 TRIBUTARY 1
210          KM   FACILITY # = C1U1 0000
211          KM   LINING = RCP
212          RD    2950   0.020    .013       0    CIRC     6.0
             *

213          KK   C1-11
214          BA   0.227
215          PB    3.16
216          LS       0    79.7
217          UD   0.324
             *

218          KK    CP10
219          KM   COMBINE RC1-10 AND C1-11
220          KM   DOWNSTREAM OF FACILITY C1US 0064
221          HC       2
             *

222          KK   RCP10
223          KM   ROUTE CP10 TO C1-12
224          KM   FACILITY = C-1 CHANNEL - US 95
225          KM   FACILITY # = C1US 0003
226          KM   LINING = CONCRETE
227          RD    3225   0.021    .015       0    TRAP      20       2
             *

228          KK   C1-12
229          BA   0.381
230          PB    3.20
231          LS       0    83.3
232          UD   0.228
             *

233          KK    CP11
234          KM   COMBINE RCP10 AND C1-12
235          KM   COLLEGE DRIVE @ MISSION DRIVE
236          HC       2
             *

237          KK    CP12
238          KM   COMBINE CP9 AND CP11
239          KM   NDOT DETENTION BASIN @ US 95
240          HC       2
             *

241          KK   RCP12
242          KM   ROUTE CP12 TO VERMILLION
243          KM   FACILITY = C-1 CHANNEL
244          KM   FACILITY # = C1CH 0674
245          KM   LINING = CONCRETE
246          RD     630   0.007    .015       0    TRAP      25       2
             *
```

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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  247     KK   RCP12
  248     KM   ROUTE CP12 TO C1-14
  249     KM   FACILITY = C-1 CHANNEL
  250     KM   FACILITY # = C1CH 0641
  251     KM   LINING = CONCRETE
  252     RD    1645   0.027    .015       0    TRAP    12.5       2
                *

  253     KK   C1-14
  254     BA   0.414
  255     PB    3.18
  256     LS       0    84.0
  257     UD   0.279
                *

  258     KK    CP13
  259     KM   COMBINE RCP12 AND C1-14
  260     HC       2
                *

  261     KK   RCP13
  262     KM   ROUTE CP13 TO C1-15
  263     KM   FACILITY = C-1 CHANNEL
  264     KM   FACILITY # = C1CH 0613
  265     KM   LINING = CONCRETE
  266     RD    1470   0.024    .015       0    TRAP    12.5       2
                *

  267     KK   RCP13
  268     KM   ROUTE CP13 TO C1-15
  269     KM   FACILITY = C-1 CHANNEL
  270     KM   FACILITY # = C1CH 0603
  271     KM   LINING = CONCRETE
  272     RD     520   0.010    .015       0    TRAP      30       0
                *

  273     KK   C1-15
  274     BA   0.235
  275     PB    3.20
  276     LS       0    82.4
  277     UD   0.279
                *

  278     KK    CP14
  279     KM   COMBINE RCP13 AND C1-15
  280     KM   C-1 CHANNEL @ HORIZON DRIVE
  281     HC       2
                *
1                                    HEC-1 INPUT                                    PAGE  8

LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  282     KK   RCP14
  283     KM   ROUTE CP14 TO C1-24
  284     KM   FACILITY = C-1 CHANNEL
  285     KM   FACILITY # = C1CH 0561
  286     KM   LINING = CONCRETE
  287     RD    2065    0.020   .015       0    TRAP      20       0
                *

  288     KK   C1-16
  289     BA   0.519
  290     PB    3.39
  291     LS       0    86.1
  292     UD   0.173
                *

  293     KK  RC1-16
  294     KM   ROUTE C1-16 TO C1-17
  295     KM   FACILITY = C-1 CHANNEL - BOULDER HWY
  296     KM   FACILITY # = C1BH 0216
  297     KM   LINING = CONCRETE
  298     RD    1800   0.018    .015       0    TRAP      25       2
                *

  299     KK   C1-17
  300     BA   0.567
  301     PB    3.40
  302     LS       0    90.2
  303     UD   0.361
                *

  304     KK    CP15
  305     KM   COMBINE RC1-16 AND C1-17
  306     KM   C-1 CHANNEL - BOULDER HIGHWAY @ BOULDER HIGHWAY
  307     HC       2
                *

  308     KK   RCP15
  309     KM   ROUTE CP15 TO C1-18
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 310          KM   FACILITY = C-1 CHANNEL - BOULDER HWY
 311          KM   FACILITY # = C1BH 0214 TO C1BH 0184
 312          KM   LINING = CONCRETE
 313          RD    1710   0.010    .015       0    TRAP      30       2
              *

 314          KK   RCP15
 315          KM   ROUTE CP15 TO C1-18
 316          KM   FACILITY = C-1 CHANNEL - BOULDER HWY
 317          KM   FACILITY # = C1BH 0150
 318          KM   LINING = CONCRETE
 319          RD    1745   0.013    .015       0    TRAP      40       2
              *
1                                        HEC-1 INPUT                                                    PAGE  9

        LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 320          KK   C1-18
 321          BA   0.333
 322          PB    3.34
 323          LS       0    93.6
 324          UD   0.257
              *

 325          KK    CP16
 326          KM   COMBINE RCP15 AND C1-18
 327          KM   C-1 CHANNEL - BOULDER HIGHWAY @ ROBERT WAY
 328          HC       2
              *

 329          KK   RCP16
 330          KM   ROUTE CP16 TO C1-19
 331          KM   FACILITY = C-1 CHANNEL - BOULDER HWY
 332          KM   FACILITY # = C1BH 0111
 333          KM   LINING = CONCRETE
 334          RD    1960   0.008    .015       0    TRAP      20       2
              *

 335          KK   C1-19
 336          BA   0.107
 337          PB    3.29
 338          LS       0    93.3
 339          UD   0.120
              *

 340          KK    CP17
 341          KM   COMBINE RCP16 AND C1-19
 342          KM   C-1 CHANNEL - BOULDER HIGHWAY BETWEEN MUSEUM DRIVE AND MAGIC WAY
 343          HC       2
              *

 344          KK   C1-20
 345          BA   0.618
 346          PB    3.31
 347          LS       0    75.4
 348          UD   0.260
              *

 349          KK  RC1-20
 350          KM   ROUTE C1-20 TO C1-19
 351          RD    2500   0.029    .016       0    TRAP       0      50
              *

 352          KK    CP18
 353          KM   COMBINE CP17 AND RC1-20
 354          KM   C-1 CHANNEL - BOULDER HIGHWAY BETWEEN MUSEUM DRIVE AND MAGIC WAY
 355          HC       2
              *
1                                        HEC-1 INPUT                                                    PAGE 10

        LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 356          KK   RCP18
 357          KM   ROUTE CP18 TO C1-22
 358          KM   FACILITY = C-1 CHANNEL - BOULDER HWY
 359          KM   FACILITY # = C1BH 0073
 360          KM   LINING = CONCRETE
 361          RD    2000   0.008    .015       0    TRAP      30       2
              *

 362          KK   C1-21
 363          BA   0.396
 364          PB    3.27
 365          LS       0    77.9
 366          UD   0.285
              *

 367          KK  RC1-21
 368          KM   ROUTE C1-21 TO C1-22
 369          RD    4500   0.022    .016       0    TRAP       0      50
              *

 370          KK   C1-22
```

```
371          BA   0.235
372          PB    3.26
373          LS       0    92.1
374          UD   0.184
             *

375          KK    CP19
376          KM   COMBINE RC1-21 AND C1-22
377          KM   BOULDER HIGHWAY @ EQUESTRIAN DRIVE
378          HC       2
             *

379          KK    CP20
380          KM   COMBINE RCP18 AND CP19
381          KM   C-1 CHANNEL - BOULDER HIGHWAY @ EQUESTRIAN DRIVE
382          HC       2
             *

383          KK   RCP20
384          KM   ROUTE CP20 TO C1-23
385          KM   FACILITY = C-1 CHANNEL - BOULDER HWY
386          KM   FACILITY # = C1BH 0042
387          KM   LINING = CONCRETE
388          RD    1525   0.010    .015       0    TRAP      30       2
             *

389          KK   C1-23
390          BA   0.338
391          PB    3.21
392          LS       0    90.5
393          UD   0.268
             *
```



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LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

394          KK    CP21
395          KM   COMBINE RCP20 AND C1-23
396          KM   C-1 CHANNEL - BOULDER HIGHWAY @ RACETRACK ROAD
397          HC       2
             *

398          KK   RCP21
399          KM   ROUTE CP21 TO C1-24
400          KM   FACILITY = C-1 CHANNEL - BOULDER HWY
401          KM   FACILITY # = C1BH 0000
402          KM   LINING = CONCRETE
403          RD    2140   0.010    .015       0    TRAP      30       2
             *

404          KK   C1-24
405          BA   0.073
406          PB    3.13
407          LS       0    92.1
408          UD   0.147
             *

409          KK    CP22
410          KM   COMBINE RCP21 AND C1-24
411          KM   BOULDER HIGHWAY
412          HC       2
             *

413          KK  CPC1BH
414          KM   COMBINE RCP14 AND CP22
415          KM   CONFLUENCE OF C-1 CHANNEL AND C-1 CHANNEL - BOULDER HWY
416          HC       2
             *

417          KK   RC1BH
418          KM   ROUTE C1BH TO C1-25
419          KM   FACILITY = C-1 CHANNEL
420          KM   FACILITY # = C1CH 0528
421          KM   LINING = CONCRETE
422          RD     700   0.020    .015       0    TRAP      25       2
             *

423          KK   C1-25
424          BA   0.062
425          PB    3.11
426          LS       0    92.6
427          UD   0.164
             *

428          KK    CP23
429          KM   COMBINE RC1BH AND C1-25
430          KM   C-1 CHANNEL AT SAUSILITO DRIVE
431          HC       2
             *
```



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LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
```

```
 432          KK   RCP23
 433          KM   ROUTE CP23 TO C1-28
 434          KM   FACILITY = C-1 CHANNEL
 435          KM   FACILITY # = C1CH 0528
 436          KM   LINING = CONCRETE
 437          RD     640   0.020    .015       0    TRAP      25       2
              *

 438          KK   C1-26
 439          BA   0.400
 440          PB    3.14
 441          LS       0    86.0
 442          UD   0.309
              *

 443          KK  RC1-26
 444          KM   ROUTE C1-26 TO C1-27
 445          KM   UNION PACIFIC RAILROAD
 446          RD    1700   0.020    .016       0    TRAP       0      50
              *

 447          KK   C1-27
 448          BA   0.231
 449          PB    3.08
 450          LS       0    73.7
 451          UD   0.193
              *

 452          KK    CP24
 453          KM   COMBINE RC1-26 AND C1-27
 454          KM   BEGINNING OF GREENWAY CHANNEL
 455          HC       2
              *

 456          KK   RCP24
 457          KM   ROUTE CP24 TO C1-28
 458          KM   FACILITY = C-1 CHANNEL - GREENWAY
 459          KM   FACILITY # = C1GW 0081 TO C1GW 0000
 460          KM   LINING = CONCRETE
 461          RD    4314   0.005    .015       0    TRAP       6       1
              *

 462          KK   C1-28
 463          BA   0.377
 464          PB    3.07
 465          LS       0    87.7
 466          UD   0.200
              *
```



```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 467          KK    CP25
 468          KM   COMBINE RCP24 AND C1-28
 469          HC       2
              *

 470          KK    CP26
 471          KM   COMBINE RCP23 AND CP25
 472          KM   CONFLUENCE OF C-1 CHANNEL AND GREENWAY CHANNEL
 473          HC       2
              *

 474          KK   RCP26
 475          KM   ROUTE CP26 TO C1-29
 476          KM   FACILITY = C-1 CHANNEL
 477          KM   FACILITY # = C1CH 0502 TO C1CH 0455
 478          KM   LINING = CONCRETE
 479          RD    3100   0.025    .015       0    TRAP      25       2
              *

 480          KK   C1-29
 481          BA   0.146
 482          PB    2.99
 483          LS       0    84.0
 484          UD   0.284
              *

 485          KK    CP27
 486          KM   COMBINE RCP26 AND C1-29
 487          KM   C-1 CHANNEL @ DOOLEY DRIVE
 488          HC       2
              *

 489          KK   RCP27
 490          KM   ROUTE CP27 TO C1-53
 491          KM   FACILITY = C-1 CHANNEL
 492          KM   FACILITY # = C1CH 0455 TO C1CH 0441
 493          KM   LINING = CONCRETE
 494          RD    1195   0.025    .015       0    TRAP      25       2
              *

 495          KK   C1-30
 496          BA   0.297
```

```
497          PB    3.41
498          LS       0    86.4
499          UD   0.236
             *

500          KK  RC1-30
501          KM   ROUTE C1-30 TO C1-31
502          KM   APPALOOSA ROAD
503          RD    2700   0.020    .016       0    TRAP       0      50
             *
```



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LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

504          KK   C1-31
505          BA   0.323
506          PB    3.38
507          LS       0    59.1
508          UD   0.322
             *

509          KK    CP28
510          KM   COMBINE RC1-30 AND C1-31
511          KM   APPALOOSA ROAD @ PALOMINO DRIVE
512          HC       2
             *

513          KK   RCP28
514          KM   ROUTE CP28 TO C1-32
515          KM   APPALOOSA ROAD
516          RD    2600   0.020    .016       0    TRAP       0      50
             *

517          KK   C1-32
518          BA   0.325
519          PB    3.33
520          LS       0    58.6
521          UD   0.356
             *

522          KK    CP29
523          KM   COMBINE RCP28 AND C1-32
524          KM   APPALOOSA ROAD @ EQUESTRIAN DRIVE
525          HC       2
             *

526          KK   RCP29
527          KM   ROUTE CP29 TO C1-33
528          KM   FACILITY = C-1 CHANNEL - EQUESTRIAN TRIBUTARY 1
529          KM   FACILITY # = C1E1 0002
530          KM   LINING = RCB
531          RD    1200   0.014    .015       0    TRAP       7       0
             *

532          KK   C1-33
533          BA   0.267
534          PB    3.31
535          LS       0    79.0
536          UD   0.382
             *

537          KK    CP30
538          KM   COMBINE RCP29 AND C1-33
539          KM   EQUESTRIAN DRIVE @ CHICKSAW DRIVE
540          HC       2
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

541          KK   RCP30
542          KM   ROUTE CP30 TO C1-34
543          KM   FACILITY = C-1 CHANNEL - EQUESTRIAN TRIBUTARY 1
544          KM   FACILITY # = C1E1 0002
545          KM   LINING = RCB
546          RD    1000   0.014    .015       0    TRAP       7       0
             *

547          KK   C1-34
548          BA   0.335
549          PB    3.25
550          LS       0    84.1
551          UD   0.300
             *

552          KK    CP31
553          KM   COMBINE RCP30 AND C1-34
554          KM   EQUESTRIAN DETENTION BASIN
555          HC       2
             *

556          KK  C1-47A
557          BA   0.141
```

```
558          PB    3.26
559          LS       0    76.2
560          UD   0.294
             *

561          KK   CP31A
562          KM   COMBINE CP31 AND C1-47A
563          KM   EQUESTRIAN DETENTION BASIN
564          HC       2
             *

565          KK   C1-35
566          BA   0.543
567          PB    3.43
568          LS       0    86.2
569          UD   0.240
             *

570          KK  RC1-35
571          KM   ROUTE C1-35 TO C1-36
572          RD    4200   0.060    .016       0    TRAP       0      50
             *

573          KK   C1-36
574          BA   0.247
575          PB    3.43
576          LS       0    62.6
577          UD   0.238
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

578          KK    CP32
579          KM   COMBINE RC1-35 AND C1-36
580          HC       2
             *

581          KK   RCP32
582          KM   ROUTE CP32 TO C1-37
583          KM   FACILITY = C-1 CHANNEL - EQUESTRIAN DB OUTFALL
584          KM   FACILITY # = C1EQ 0297
585          KM   LINING = RIPRAP
586          RD    1500   0.020    .040       0    TRAP      35       3
             *

587          KK   C1-37
588          BA   0.222
589          PB    3.43
590          LS       0    68.2
591          UD   0.205
             *

592          KK    CP33
593          KM   COMBINE RCP32 AND C1-37
594          HC       2
             *

595          KK   RCP33
596          KM   ROUTE CP33 TO C1-38
597          KM   FACILITY = C-1 CHANNEL - EQUESTRIAN DB OUTFALL
598          KM   FACILITY # = C1EQ 0297
599          KM   LINING = RIPRAP
600          RD    1800   0.020    .040       0    TRAP      35       3
             *

601          KK   C1-38
602          BA   0.493
603          PB    3.43
604          LS       0    79.8
605          UD   0.256
             *

606          KK    CP34
607          KM   COMBINE RCP33 AND C1-38
608          HC       2
             *

609          KK   RCP34
610          KM   ROUTE CP34 TO C1-40
611          KM   FACILITY = C-1 CHANNEL - EQUESTRIAN DB OUTFALL
612          KM   FACILITY # = C1EQ 0297
613          KM   LINING = RIPRAP
614          RD    1600   0.016    .040       0    TRAP      35       3
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

615          KK   C1-39
616          BA   0.611
617          PB    3.43
618          LS       0    87.9
```

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619          UD   0.310
             *

620          KK  RC1-39
621          KM   ROUTE C1-39 TO C1-40
622          RD    2700   0.060    .016       0    TRAP       0      50
             *

623          KK   C1-40
624          BA   0.220
625          PB    3.43
626          LS       0    67.3
627          UD   0.218
             *

628          KK    CP35
629          KM   COMBINE RC1-39 AND C1-40
630          HC       2
             *

631          KK    CP36
632          KM   COMBINE RCP34 AND CP35
633          HC       2
             *

634          KK   RCP36
635          KM   ROUTE CP36 TO C1-41
636          KM   FACILITY = C-1 CHANNEL - EQUESTRIAN DB OUTFALL
637          KM   FACILITY # = C1EQ 0297
638          KM   LINING = RIPRAP
639          RD    2500   0.020    .040       0    TRAP      35       3
             *

640          KK   C1-41
641          BA   0.162
642          PB    3.41
643          LS       0    76.7
644          UD   0.161
             *

645          KK    CP37
646          KM   COMBINE RCP36 AND C1-41
647          HC       2
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

648          KK   RCP37
649          KM   ROUTE CP37 TO C1-42
650          KM   FACILITY = C-1 CHANNEL - EQUESTRIAN DB OUTFALL
651          KM   FACILITY # = C1EQ 0297
652          KM   LINING = RIPRAP
653          RD    1000   0.020    .040       0    TRAP      35       3
             *

654          KK   C1-42
655          BA   0.988
656          PB    3.42
657          LS       0    85.2
658          UD   0.346
             *

659          KK    CP38
660          KM   COMBINE RCP37 AND C1-42
661          HC       2
             *

662          KK   RCP38
663          KM   ROUTE CP38 TO C1-43
664          KM   FACILITY = C-1 CHANNEL - EQUESTRIAN DB OUTFALL
665          KM   FACILITY # = C1EQ 0202
666          KM   LINING = CONCRETE
667          RD    5000   0.024    .015       0    TRAP      20       2
             *

668          KK    CP39
669          KM   COMBINE CP31A AND RCP38
670          HC       2
             *

671          KK   C1-44
672          BA   0.323
673          PB    3.31
674          LS       0    84.2
675          UD   0.222
             *

676          KK   C1-43
677          BA   0.540
678          PB    3.40
679          LS       0    85.5
680          UD   0.281
             *
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745          SE    2068    2069    2070    2072
746          SQ       0    69.4    98.2   120.3   138.9   155.3   170.1   183.7   196.4   208.3
747          SQ   219.6     225   230.2   240.5
748          SS    2069     900     3.0     1.5
             *

749          KK   C1-48
750          BA   0.240
751          PB    3.14
752          LS       0    78.5
753          UD   0.199
             *

754          KK    CP45
755          KM   COMBINE DB4 AND C1-48
756          HC       2
             *

757          KK   RCP45
758          KM   ROUTE CP45 TO C1-49
759          KM   FACILITY = C-1 CHANNEL - EQUESTRIAN DB OUTFALL
760          KM   FACILITY # = C1EQ 0112
761          KM   LINING = EARTH
762          RD    1445   0.014   0.025       0    TRAP      45       2
             *
1                                        HEC-1 INPUT                                        PAGE 21

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

763          KK   RCP45
764          KM   ROUTE CP45 TO C1-49
765          KM   FACILITY = C-1 CHANNEL - EQUESTRIAN DB OUTFALL
766          KM   FACILITY # = C1EQ 0078
767          KM   LINING = GRASS
768          RD    1760   0.015   0.030       0    TRAP      40       5
             *

769          KK   C1-49
770          BA   0.520
771          PB    3.14
772          LS       0    82.7
773          UD   0.400
             *

774          KK    CP46
775          KM   COMBINE RCP45 AND C1-49
776          KM   RACETRACK ROAD @ NEWPORT DRIVE
777          HC       2
             *

778          KK   C1-50
779          BA   0.349
780          PB    3.07
781          LS       0    83.5
782          UD   0.233
             *

783          KK    CP47
784          KM   COMBINE CP46 AND C1-50
785          KM   C-1 CHANNEL - EQUESTRIAN @ NEWPORT DRIVE
786          HC       2
             *

787          KK   RCP47
788          KM   ROUTE CP47 TO C1-53
789          KM   FACILITY = C-1 CHANNEL - EQUESTRIAN DB OUTFALL
790          KM   FACILITY # = C1EQ 0000
791          KM   LINING = CONCRETE
792          RD    3920   0.014   0.015       0    TRAP      10       2
             *

793          KK   C1-53
794          BA   0.266
795          PB    2.98
796          LS       0    81.5
797          UD   0.353
             *
1                                        HEC-1 INPUT                                        PAGE 22

LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

798          KK    CP48
799          KM   COMBINE RCP47 AND C1-53
800          HC       2
             *

801          KK   C1-51
802          BA   0.416
803          PB    3.09
804          LS       0    85.2
805          UD   0.303
             *
```

```
806          KK  RC1-51
807          KM   ROUTE C1-51 TO C1-52
808          KM   BURKHOLDER BOULEVARD
809          RD    2640   0.030   0.016       0    TRAP       0      50
             *

810          KK   C1-52
811          BA   0.250
812          PB    3.03
813          LS       0    83.8
814          UD   0.239
             *

815          KK    CP49
816          KM   COMBINE RC1-51 AND C1-52
817          KM   RACETRACK ROAD @ BURKHOLDER BOULEVARD
818          HC       2
             *

819          KK   RCP49
820          KM   ROUTE CP49 TO C1-53
821          KM   BURKHOLDER BOULEVARD
822          RD    2735   0.018   0.016       0    TRAP       0      50
             *

823          KK    CP50
824          KM   COMBINE CP48 AND RCP49
825          KM   BURKHOLDER BOULEVARD
826          HC       2
             *

827          KK    CP51
828          KM   COMBINE RCP27 AND CP50
829          KM   CONFLUENCE OF C-1 CHANNEL AND BURKHOLDER BOULEVARD
830          HC       2
             *
```



```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

831          KK   RCP51
832          KM   ROUTE CP51 TO C1-58
833          KM   FACILITY = C-1 CHANNEL
834          KM   FACILITY # = C1CH 0408 TO C1CH 0400
835          KM   LINING = CONCRETE
836          RD    2100   0.025    .015       0    TRAP      25       2
             *

837          KK   C1-56
838          BA   0.453
839          PB    3.05
840          LS       0    83.1
841          UD   0.440
             *

842          KK   RC156
843          KM   ROUTE C156 TO C1-57
844          KM   FACILITY = C-1 CHANNEL - DRAKE CHANNEL
845          KM   FACIILITY # = C1DC 0051
846          KM   LINING = EARTH
847          RD    2640   0.005    .020       0    TRAP      20       2
             *

848          KK   C1-57
849          BA   0.248
850          PB    2.97
851          LS       0    84.0
852          UD   0.163
             *

853          KK    CP54
854          KM   COMBINE RC156 AND C1-57
855          KM   DRAKE CHANNEL @ RACETRACK ROAD
856          HC       2
             *

857          KK   RCP54
858          KM   ROUTE CP54 TO C1-58
859          KM   FACILITY = C-1 CHANNEL - DRAKE CHANNEL
860          KM   FACIILITY # = C1DC 0031 TO C1DC 0026
861          KM   LINING = CONCRETE
862          RD    1050   0.027    .015       0    TRAP      26       0
             *

863          KK   RCP54
864          KM   ROUTE CP54 TO C1-58
865          KM   FACILITY = C-1 CHANNEL - DRAKE CHANNEL
866          KM   FACIILITY # = C1DC 0013
867          KM   LINING = CONCRETE
868          RD     650   0.027    .015       0    TRAP      16       2
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
```

```
869          KK   RCP54
870          KM   ROUTE CP54 TO C1-58
871          KM   FACILITY = C-1 CHANNEL - DRAKE CHANNEL
872          KM   FACIILITY # = C1DC 0000
873          KM   LINING = CONCRETE
874          RD     700   0.027    .015       0    TRAP      25       0
             *

875          KK   C1-58
876          BA   0.234
877          PB    2.92
878          LS       0    82.3
879          UD   0.216
             *

880          KK    CP55
881          KM   COMBINE RCP54 AND C1-58
882          HC       2
             *

883          KK   CPC1D
884          KM   COMBINE RCP51 AND CP55
885          KM   CONFLUENCE OF C-1 CHANNEL AND DRAKE CHANNEL
886          HC       2
             *

887          KK  RCPC1D
888          KM   ROUTE CPC1D TO C1-61
889          KM   FACILITY = C-1 CHANNEL
890          KM   FACILITY # = C1CH 0392 TO C1CH 0353
891          KM   LINING = CONCRETE
892          RD    2385   0.007    .015       0    TRAP    14.5       2
             *

893          KK   C1-59
894          BA   0.310
895          PB    2.99
896          LS       0    81.1
897          UD   0.378
             *

898          KK  RC1-59
899          KM   ROUTE C1-59 TO C1-60
900          KM   WARM SPRINGS ROAD
901          RD    2600   0.029   0.016       0    TRAP       0      50
             *

902          KK   C1-60
903          BA   0.246
904          PB    2.93
905          LS       0    70.6
906          UD   0.316
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

907          KK    CP57
908          KM   COMBINE RC1-59 AND C1-60
909          KM   RACETRACK ROAD @ WARM SPRINGS ROAD
910          HC       2
             *

911          KK   RCP57
912          KM   ROUTE CP57 TO C1-61
913          KM   WARM SPRINGS ROAD
914          RD    2640   0.025    .016       0    TRAP       0      50
             *

915          KK   C1-61
916          BA   0.250
917          PB    2.87
918          LS       0    83.7
919          UD   0.292
             *

920          KK    CP58
921          KM   COMBINE RCP57 AND C1-61
922          KM   PUEBLO BOULEVARD @ WARM SPRINGS ROAD
923          HC       2
             *

924          KK    CP59
925          KM   COMBINE RCPC1D AND CP58
926          KM   C-1 CHANNEL @ WARM SPRINGS ROAD
927          HC       2
             *

928          KK   RCP59
929          KM   ROUTE CP59 TO C1-63
930          KM   FACILITY = C-1 CHANNEL
931          KM   FACILITY # = C1CH 0346 TO C1CH 0335
```

```
 932          KM   LINING = CONCRETE
 933          RD     870   0.012    .015       0    TRAP      40       2
              *

 934          KK   RCP59
 935          KM   ROUTE CP59 TO C1-63
 936          KM   FACILITY = C-1 CHANNEL
 937          KM   FACILITY # = C1CH 0284
 938          KM   LINING = CONCRETE
 939          RD    1760   0.017    .015       0    TRAP      15       1
              *

 940          KK   C1-62
 941          BA   0.417
 942          PB    2.92
 943          LS       0    73.3
 944          UD   0.294
              *
1                                        HEC-1 INPUT                                        PAGE 26

        LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 945          KK  RC1-62
 946          KM   ROUTE C1-62 TO C1-63
 947          KM   ITHACA AVENUE
 948          RD    2640   0.025    .016       0    TRAP       0      50
              *

 949          KK   C1-63
 950          BA   0.251
 951          PB    2.85
 952          LS       0    72.5
 953          UD   0.293
              *

 954          KK    CP60
 955          KM   COMBINE C1-62 AND C1-63
 956          KM   PUEBLO BOULEVARD @ ITHACA AVENUE
 957          HC       2
              *

 958          KK   C1-54
 959          KM   REVISED BASIN AREA TO MATCH TOPOGRAPHY
 960          KM   REVISED LAG TIME TO MATCH NEW BASIN AREA
 961          BA   5.379
 962          PB    3.43
 963          LS       0    84.3
 964          UD   0.720
              *

 965          KK     DB5
 966          KM   FACILITY = EAST C-1 DETENTION BASIN
 967          KM   FACILITY # = C1DC 0303
 968          KM   STORAGE VOLUME = 880 ACRE-FEET
 969          KM   OUTLET = 48" RCP
 970          KO       3
 971          RS       1    STOR      -1
 972          SV    0.02    1.85   10.35   24.60   45.03   70.78  104.85  148.32  204.08  271.64
 973          SV  362.21  482.58  551.62  625.31  704.75  789.13  879.88  975.68 1103.9  1414.3
 974          SE  2446.0  2450.0  2454.0  2458.0  2462.0  2466.0  2470.0  2474.0  2478.0  2482.0
 975          SE  2486.0  2490.0  2492.0  2494.0  2496.0  2498.0  2500.0  2502.2  2506.0  2510.0
 976          SQ       0   24.59   37.30   46.66   54.44   61.24   67.35   72.96   78.16   83.04
 977          SQ   87.65   92.02   94.14   96.20   98.22  100.21  102.15  104.06  107.77  111.36
 978          SE  2446.0  2450.0  2454.0  2458.0  2462.0  2466.0  2470.0  2474.0  2478.0  2482.0
 979          SE  2486.0  2490.0  2492.0  2494.0  2496.0  2498.0  2500.0  2502.2  2506.0  2510.0
              *

 980          KK    RDB5
 981          KM   ROUTE DB5 TO C1-55
 982          KM   FACILITY = C-1 CHANNEL - ITHACA
 983          KM   FACILITY # = C1DC 0226 TO C1DC 0170
 984          KM   TYPE OF FACILTIY = CONCRETE
 985          RD    6750   0.029    .025       0    TRAP      20       3
              *
1                                        HEC-1 INPUT                                        PAGE 27

        LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 986          KK   C1-55
 987          KM   REVISED BASIN AREA TO MATCH TOPOGRAPHY
 988          KM   REVISED LAG TIME TO MATCH NEW BASIN AREA
 989          BA   0.981
 990          PB    3.20
 991          LS       0    86.9
 992          UD   0.257
              *

 993          KK    CP52
 994          KM   COMBINE RDB5 AND C1-55
 995          HC       2
              *

 996          KK   RCP52
```

```
 997          KM   ROUTE CP52 TO DB6
 998          KM   FACILITY = LEVEE TO NEC1DB
 999          KM   FACILITY # = C1IT 0155
1000          KM   LINING = CONCRETE
1001          RD    3830   0.025    .025       0    TRAP       5       2
              *

1002          KK   C1-65
1003          KM   REVISED BASIN AREA TO MATCH TOPOGRAPHY
1004          KM   REVISED LAG TIME TO MATCH NEW BASIN AREA
1005          BA   2.564
1006          PB    3.29
1007          LS       0    86.1
1008          UD   0.849
              *

1009          KK   CP52A
1010          KM   COMBINE RCP52 AND C1-65
1011          HC       2
              *

1012          KK   C1-66
1013          KM   REVISED BASIN AREA TO MATCH TOPOGRAPHY
1014          KM   REVISED LAG TIME TO MATCH NEW BASIN AREA
1015          BA   0.873
1016          PB    3.06
1017          LS       0    87.6
1018          UD   0.199
              *

1019          KK    CP64
1020          KM   COMBINE C1-66, AND RCP52
1021          KM   NORTHEAST C-1 DETENTION BASIN
1022          HC       2
              *
1                                        HEC-1 INPUT                                        PAGE 28

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1023          KK     DB6
1024          KM   FACILITY = NORTHEAST C-1 DETENTION BASIN
1025          KM   FACILITY # = C1IT 0118
1026          KM   STORAGE VOLUME = 310 ACRE-FEET
1027          KM   OUTLET = 48" RCP
1028          KM   REVISED PER GCW DESIGN
1029          KO       3
1030          RS       1    STOR      -1
1031          SV       0   11.92   20.04   54.96  103.23  156.48  214.92  278.69  333.63  348.25
1032          SE    1952    1956    1957    1961    1966    1971    1976    1981    1985    1986
1033          SQ       0   73.74   82.45  110.61  137.96  160.72  180.63  198.56  211.81  214.99
              *

1034          KK    RDB6
1035          KM   ROUTE DB6 TO C1-67
1036          KM   FACILITY = C-1 CHANNEL - ITHACA
1037          KM   FACILITY # = C1IT 0000
1038          KM   LINING = RCP
1039          RD    6200   0.022   0.013       0    CIRC     6.0
              *

1040          KK   CP60A
1041          KM   COMBINE CP60 AND RDB6
1042          KM   C-1 CHANNEL @ CADIZ AVENUE
1043          HC       2
              *

1044          KK    CP61
1045          KM   COMBINE RCP59 AND CP60A
1046          KM   C-1 CHANNEL @ ITHACA AVENUE
1047          HC       2
              *

1048          KK   RCP61
1049          KM   ROUTE CP61 TO C1-64
1050          KM   FACILITY = C-1 CHANNEL
1051          KM   FACILITY # = C1CH 0269
1052          KM   LINING = CONCRETE
1053          RD    1740   0.023    .015       0    TRAP      15       2
              *

1054          KK   RCP61
1055          KM   ROUTE CP61 TO C1-64
1056          KM   FACILITY = C-1 CHANNEL
1057          KM   FACILITY # = C1CH 0220
1058          KM   LINING = CONCRETE
1059          RD    2160   0.023    .015       0    TRAP      15       1
              *
1                                        HEC-1 INPUT                                        PAGE 29

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1060          KK   C1-67
1061          KM   REVISED BASIN AREA TO MATCH TOPOGRAPHY
```

```
1062          KM   REVISED LAG TIME TO MATCH NEW BASIN AREA
1063          BA   0.394
1064          PB    2.91
1065          LS       0    77.9
1066          UD   0.356
              *

1067          KK  RC1-67
1068          KM   ROUTE C1-67 TO C1-64
1069          KM   CADIZ AVENUE
1070          RD    2640   0.019    .016       0    TRAP       0      50
              *

1071          KK   C1-64
1072          BA   0.376
1073          PB    2.84
1074          LS       0    70.2
1075          UD   0.339
              *

1076          KK    CP62
1077          KM   COMBINE RC1-67 AND C1-64
1078          HC       2
              *

1079          KK    CP66
1080          KM   COMBINE RCP61 AND CP62
1081          KM   C-1 CHANNEL @ CADIZ AVENUE
1082          HC       2
              *

1083          KK   C1-68
1084          BA   0.356
1085          PB    2.86
1086          LS       0    85.1
1087          UD   0.302
              *

1088          KK  RC1-68
1089          KM   ROUTE C1-68 TO C1-72
1090          KM   FACILITY = C-1 CHANNEL - LAKE MEAD
1091          KM   FACILITY # = C1LM 0184 TO C1LM 0144
1092          KM   LINING = CONCRETE
1093          RD    2980   0.009    .015       0    TRAP      10       2
              *

1094          KK   C1-72
1095          BA   0.451
1096          PB    2.83
1097          LS       0    82.0
1098          UD   0.251
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9.....10

1099          KK    CP67
1100          KM   COMBINE RC1-68 AND C1-72
1101          KM   WARM SPRINGS ROAD @ LAKE MEAD DRIVE
1102          HC       2
              *

1103          KK   C1-70
1104          BA   0.344
1105          PB    2.93
1106          LS       0    86.6
1107          UD   0.397
              *

1108          KK  RC1-70
1109          KM   ROUTE C1-70 TO C1-71
1110          KM   PALO VERDE DRIVE
1111          RD    2300   0.020    .016       0    TRAP       0      50
              *

1112          KK   C1-71
1113          BA   0.290
1114          PB    2.87
1115          LS       0    80.7
1116          UD   0.368
              *

1117          KK    CP68
1118          KM   COMBINE RC1-70 AND C1-71
1119          KM   PALO VERDE DRIVE @ WARM SPRINGS
1120          HC       2
              *

1121          KK   RCP68
1122          KM   ROUTE CP68 TO C1-72
1123          KM   WARM SPRINGS ROAD
1124          RD    2300   0.023    .016       0    TRAP       0      50
              *
```

```
1125          KK    CP69
1126          KM    COMBINE CP67 AND RCP68
1127          KM    WARM SPRINGS ROAD @ LAKE MEAD DRIVE
1128          HC       2
              *

1129          KK    RCP69
1130          KM    ROUTE CP69 TO C1-73
1131          KM    FACILITY = C-1 CHANNEL - LAKE MEAD
1132          KM    FACILITY # = C1LM 0125 TO C1LM 0083
1133          KM    LINING = CONCRETE
1134          RD     3115   0.009    .015       0    TRAP      10       2
              *
1                                        HEC-1 INPUT                                                    PAGE 31

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1135          KK    C1-73
1136          BA    0.325
1137          PB     2.83
1138          LS       0    84.8
1139          UD    0.327
              *

1140          KK    CP70
1141          KM    COMBINE RCP69 AND C1-73
1142          HC       2
              *

1143          KK    RCP70
1144          KM    ROUTE CP70 TO C1-74
1145          KM    FACILITY = C-1 CHANNEL - LAKE MEAD
1146          KM    FACILITY # = C1LM 0083 TO C1LM 0000
1147          KM    LINING = CONCRETE
1148          RD     4370   0.009    .015       0    TRAP      10       2
              *

1149          KK    C1-74
1150          BA    0.195
1151          PB     2.83
1152          LS       0    87.1
1153          UD    0.145
              *

1154          KK    CP71
1155          KM    COMBINE RCP70 AND C1-74
1156          HC       2
              *

1157          KK  CPC1LM
1158          KM    COMBINE CP66 AND CP71
1159          KM    C-1 CHANNEL @ LAKE MEAD DRIVE
1160          HC       2
              *

1161          KK    RC1LM
1162          KM    ROUTE CPC1LM TO C1-75
1163          KM    FACILITY = C-1 CHANNEL
1164          KM    FACILITY # = C1CH 0161
1165          KM    LINING = CONCRETE
1166          RD     2850   0.020    .015       0    TRAP      40       0
              *

1167          KK    C1-75
1168          BA    0.366
1169          PB     2.83
1170          LS       0    83.4
1171          UD    0.133
              *
1                                        HEC-1 INPUT                                                    PAGE 32

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1172          KK    CP72
1173          KM    COMBINE RC1LM AND C1-75
1174          HC       2
              *

1175          KK    RCP72
1176          KM    ROUTE CP72 TO C1-78
1177          KM    FACILITY = C-1 CHANNEL
1178          KM    FACILITY # = C1CH 0040
1179          KM    LINING = CONCRETE
1180          RD     2000   0.010    .015       0    TRAP      40       0
              *

1181          KK    C1-76
1182          BA    0.347
1183          PB     2.93
1184          LS       0    85.2
1185          UD    0.233
              *
```

```
1186          KK  RC1-76
1187          KM   ROUTE C1-76 TO C1-77
1188          KM   FACILITY = C1-CHANNEL - FOUR KIDS
1189          KM   FACILITY # = C1FK 0076
1190          KM   LINING = CONCRETE
1191          RD    1400   0.030    .015       0    TRAP      10       0
              *

1192          KK   C1-77
1193          BA   0.434
1194          PB    2.87
1195          LS       0    79.2
1196          UD   0.173
              *

1197          KK   CP72A
1198          KM   COMBINE RC1-76 AND C1-77
1199          HC       2
              *

1200          KK  RCP72A
1201          KM   ROUTE CP72A TO C1-78
1202          KM   FACILITY = C1-CHANNEL - FOUR KIDS
1203          KM   FACILITY # = C1FK 0040
1204          KM   LINING = CONCRETE
1205          RD    1750   0.027    .015       0    TRAP      10       0
              *

1206          KK  RCP72A
1207          KM   ROUTE CP72A TO C1-78
1208          KM   FACILITY = C1-CHANNEL - FOUR KIDS
1209          KM   FACILITY # = C1FK 0014
1210          KM   LINING = EARTH
1211          RD    1280   0.018    .025       0    TRAP      21       0
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1212          KK  RCP72A
1213          KM   ROUTE CP72A TO C1-78
1214          KM   FACILITY = C1-CHANNEL - FOUR KIDS
1215          KM   FACILITY # = C1FK 0000
1216          KM   LINING = RCB
1217          RD     770   0.025    .015       0    TRAP      10       0
              *

1218          KK   C1-78
1219          BA   0.215
1220          PB    2.85
1221          LS       0    89.9
1222          UD   0.148
              *

1223          KK   CP72B
1224          KM   COMBINE RCP72A AND C1-78
1225          HC       2
              *

1226          KK    CP75
1227          KM   COMBINE RCP72 AND CP72B
1228          HC       2
              *

1229          KK   RCP75
1230          KM   ROUTE CP75 TO C1-82
1231          KM   FACILITY = C-1 CHANNEL
1232          KM   FACILITY # = C1CH 0040
1233          KM   LINING = CONCRETE
1234          RD    4300   0.010    .015       0    TRAP      40       0
              *

1235          KK   C1-82
1236          BA   0.701
1237          PB    2.83
1238          LS       0    72.6
1239          UD   0.289
              *

1240          KK    CP76
1241          KM   COMBINE RCP75 AND C1-82
1242          KM   C-1 CHANNEL AND LAS VEGAS WASH
1243          HC       2
              *
1244          ZZ
```

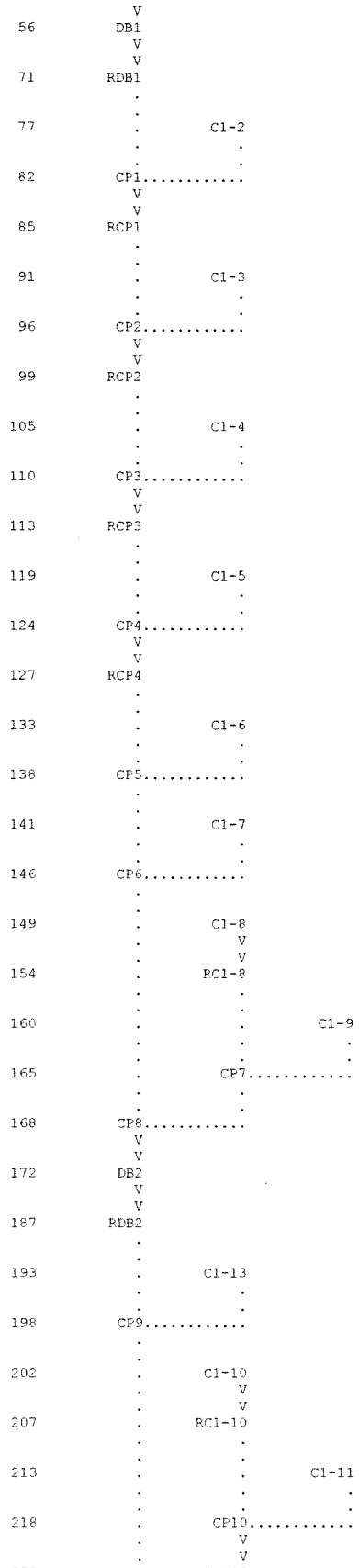
1

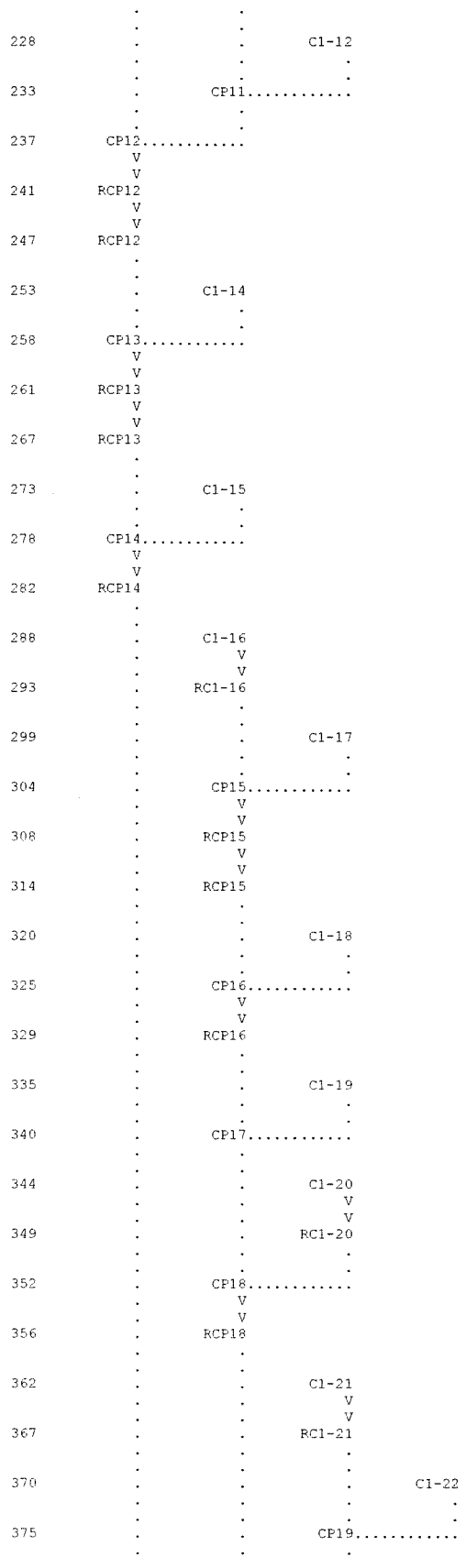
SCHEMATIC DIAGRAM OF STREAM NETWORK

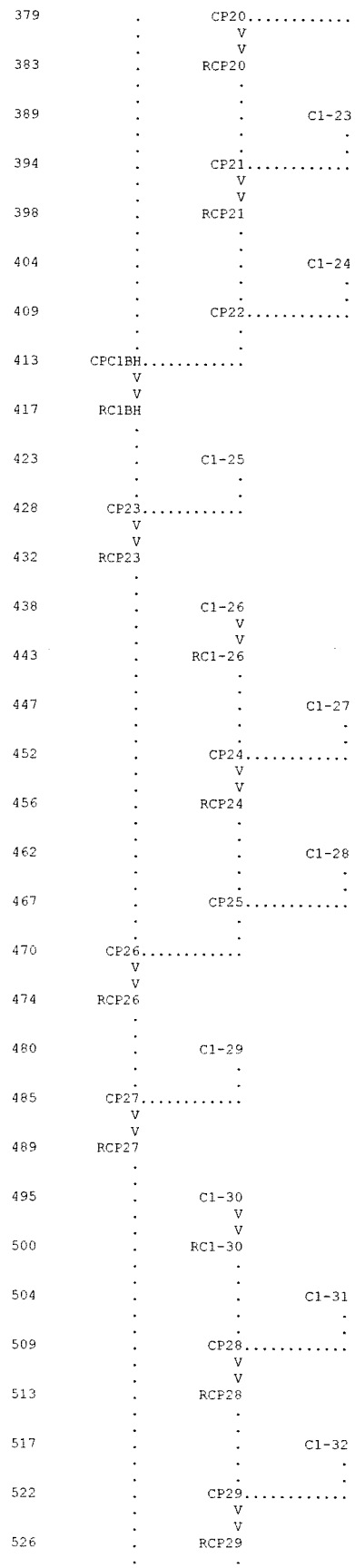
```
 INPUT
  LINE      (V) ROUTING          (---->) DIVERSION OR PUMP FLOW

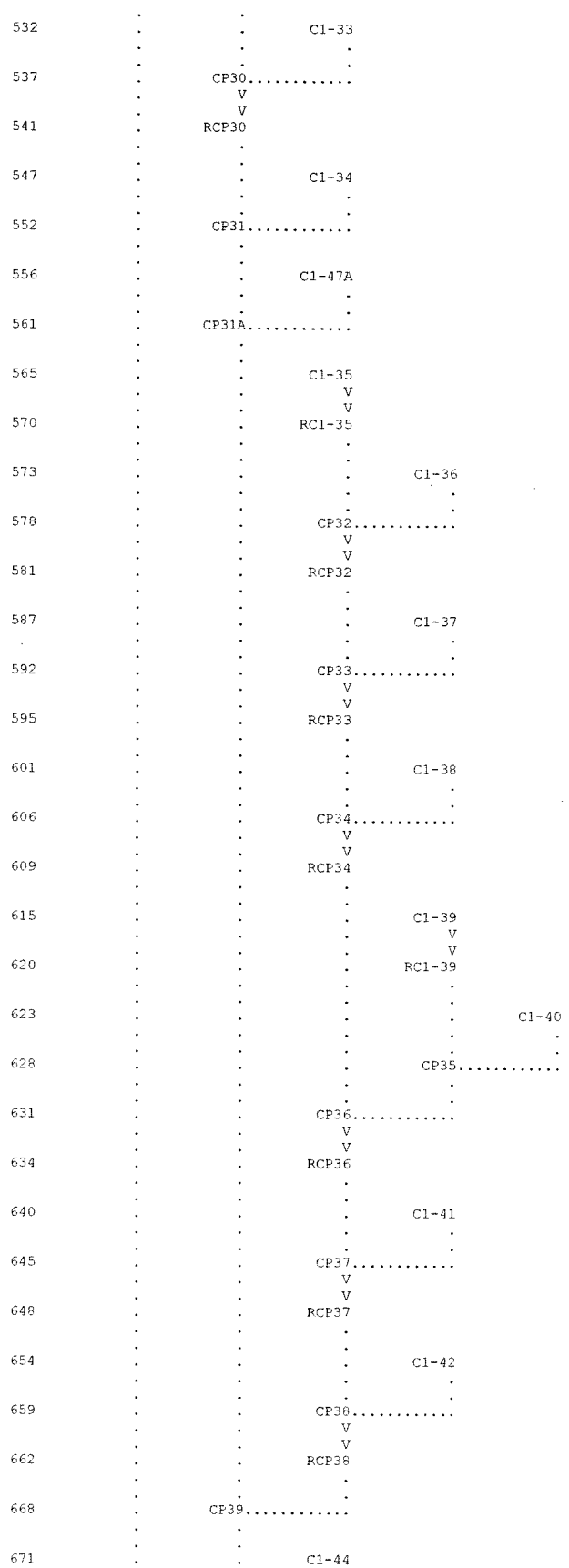
   NO.      (.) CONNECTOR        (<----) RETURN OF DIVERTED OR PUMPED FLOW

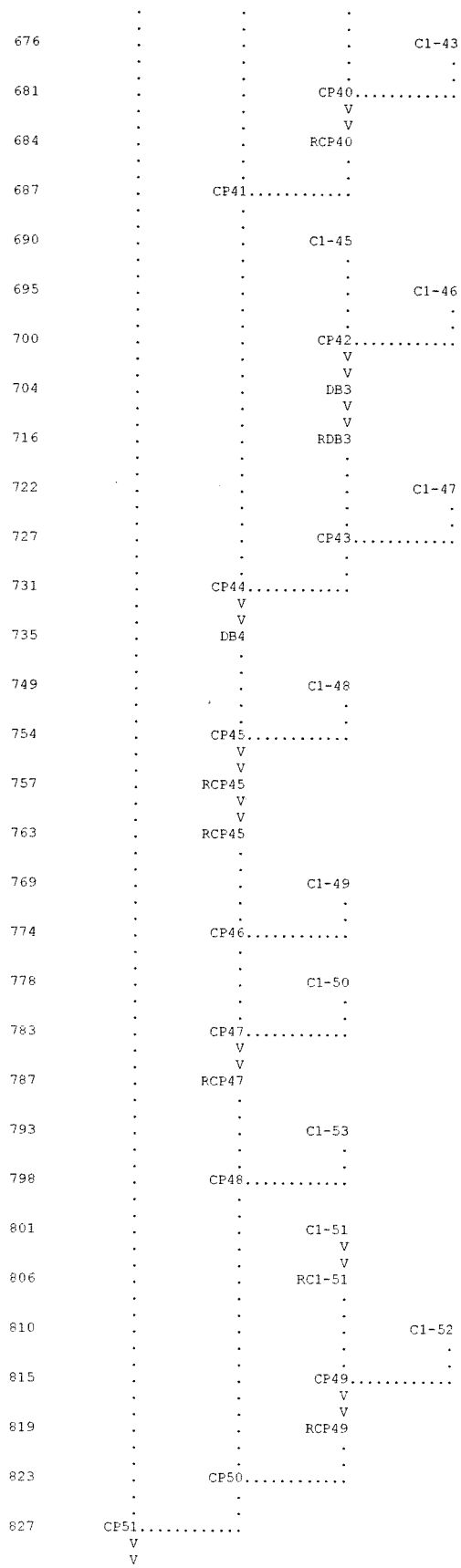
    43        C1-1
                V
```

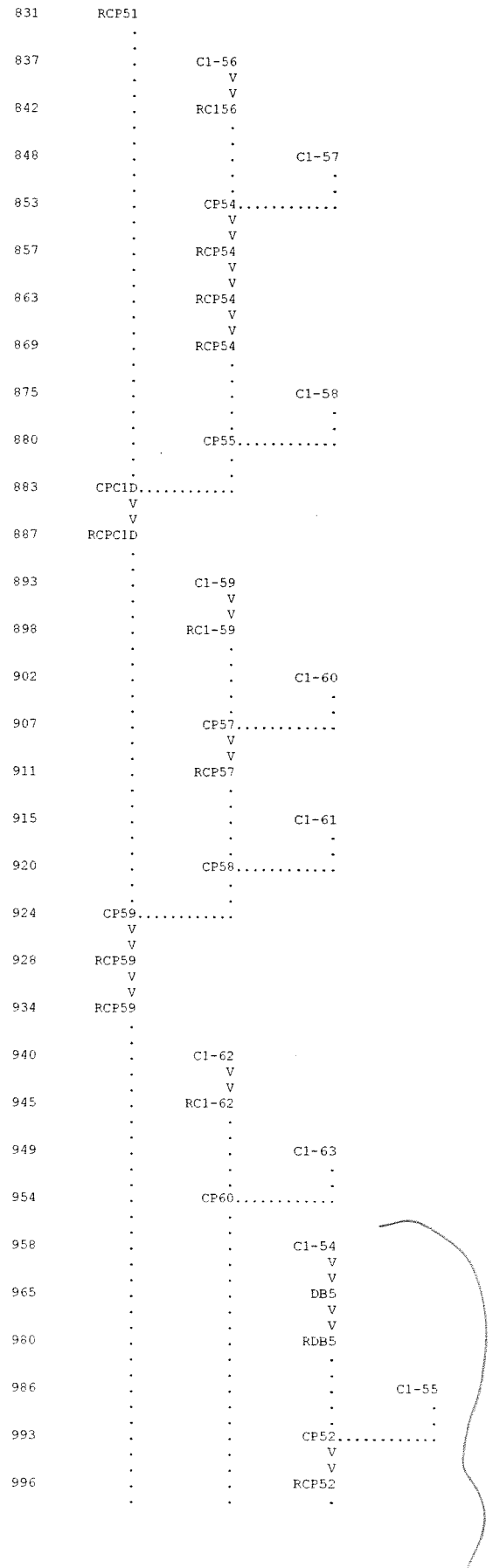

DB1
RDB1
C1-2
CP1
RCP1
C1-3
CP2
RCP2
C1-4
CP3
RCP3
C1-5
CP4
RCP4
C1-6
CP5
C1-7
CP6
C1-8
RC1-8
C1-9
CP7
CP8
DB2
RDB2
C1-13
CP9
C1-10
RC1-10
C1-11
CP10
RCP10

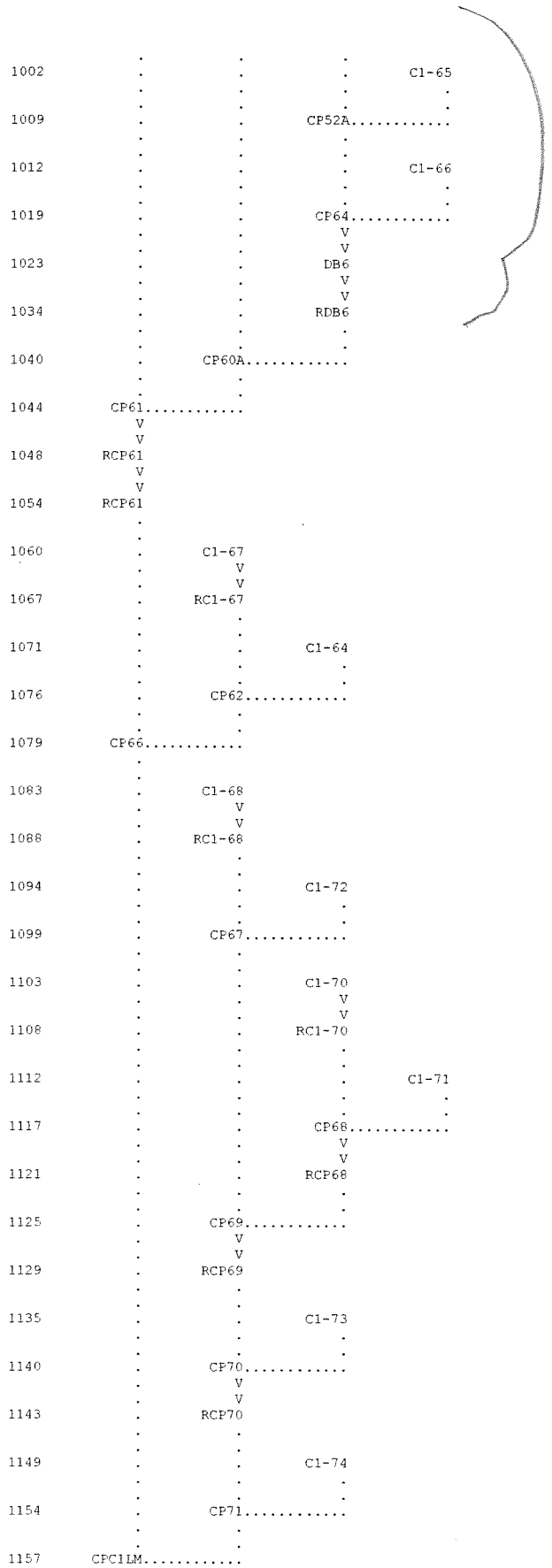

228
C1-12
233
CP11
237
CP12
241
RCP12
247
RCP12
253
C1-14
258
CP13
261
RCP13
267
RCP13
273
C1-15
278
CP14
282
RCP14
288
C1-16
293
RC1-16
299
C1-17
304
CP15
308
RCP15
314
RCP15
320
C1-18
325
CP16
329
RCP16
335
C1-19
340
CP17
344
C1-20
349
RC1-20
352
CP18
356
RCP18
362
C1-21
367
RC1-21
370
C1-22
375
CP19

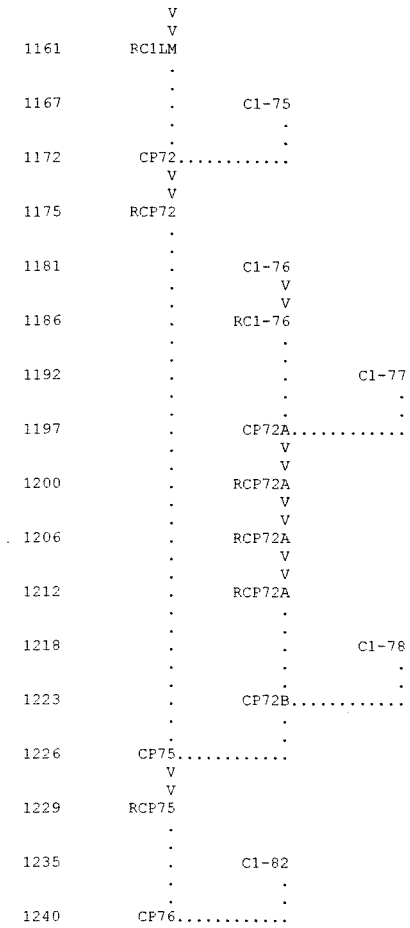

379
CP20
383
RCP20
389
C1-23
394
CP21
398
RCP21
404
C1-24
409
CP22
413
CPC1BH
417
RC1BH
423
C1-25
428
CP23
432
RCP23
438
C1-26
443
RC1-26
447
C1-27
452
CP24
456
RCP24
462
C1-28
467
CP25
470
CP26
474
RCP26
480
C1-29
485
CP27
489
RCP27
495
C1-30
500
RC1-30
504
C1-31
509
CP28
513
RCP28
517
C1-32
522
CP29
526
RCP29


532
C1-33
537
CP30
541
RCP30
547
C1-34
552
CP31
556
C1-47A
561
CP31A
565
C1-35
570
RC1-35
573
C1-36
578
CP32
581
RCP32
587
C1-37
592
CP33
595
RCP33
601
C1-38
606
CP34
609
RCP34
615
C1-39
620
RC1-39
623
C1-40
628
CP35
631
CP36
634
RCP36
640
C1-41
645
CP37
648
RCP37
654
C1-42
659
CP38
662
RCP38
668
CP39
671
C1-44


676
C1-43
681
CP40
684
RCP40
687
CP41
690
C1-45
695
C1-46
700
CP42
704
DB3
716
RDB3
722
C1-47
727
CP43
731
CP44
735
DB4
749
C1-48
754
CP45
757
RCP45
763
RCP45
769
C1-49
774
CP46
778
C1-50
783
CP47
787
RCP47
793
C1-53
798
CP48
801
C1-51
806
RC1-51
810
C1-52
815
CP49
819
RCP49
823
CP50
827
CP51


831 RCP51
837 C1-56
842 RC156
848 C1-57
853 CP54
857 RCP54
863 RCP54
869 RCP54
875 C1-58
880 CP55
883 CPC1D
887 RCPC1D
893 C1-59
898 RC1-59
902 C1-60
907 CP57
911 RCP57
915 C1-61
920 CP58
924 CP59
928 RCP59
934 RCP59
940 C1-62
945 RC1-62
949 C1-63
954 CP60
958 C1-54
965 DB5
960 RDB5
986 C1-55
993 CP52
996 RCP52


1002 C1-65
1009 CP52A
1012 C1-66
1019 CP64
1023 DB6
1034 RDB6
1040 CP60A
1044 CP61
1048 RCP61
1054 RCP61
1060 C1-67
1067 RC1-67
1071 C1-64
1076 CP62
1079 CP66
1083 C1-68
1088 RC1-68
1094 C1-72
1099 CP67
1103 C1-70
1108 RC1-70
1112 C1-71
1117 CP68
1121 RCP68
1125 CP69
1129 RCP69
1135 C1-73
1140 CP70
1143 RCP70
1149 C1-74
1154 CP71
1157 CPC1LM



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*               JUN   1998              *
*            VERSION 4.1                *
*                                       *
*  RUN DATE   12SEP05  TIME  15:38:41   *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN UPDATE
C-1 WATERSHED
RECOMMENDED DRAINAGE SYSTEM WITH ULTIMATE DEVELOPMENT
INPUT FILE = C1SDN4B.DAT
INPUT FILE DATE = APRIL 18, 2002
DESIGN STORM = 100-YEAR 6-HR STORM
STORM DISTRIBUTION = SDN #4
MODELED BY = LOUIS BERGER GROUP (RYAN R. BELSICK, P.E. and SYNDI DUDLEY, PHD, P.E.)
STORM CENTERING = NO STORM CENTERING

REFERENCED HYDROLOGIC MODELS:
PREDESIGN REPORT FOR THE BLACK MOUNTAIN AND MISSION HILLS DETENTION BASINS AND OUTFALL STRUCTURES (VTN 1992)
SNWA RIVER MOUNTAINS WATER TREATMENT FACILITY DRAFT TECHNICAL DRAINAGE STUDY (MONTGOMERY WATSON/CH2MHILL 1997)
EAST C-1 DETENTION BASIN FINAL DESIGN (VTN 1998)
DESIGN MEMORANDUM FOR THE EQUESTRIAN DETENTION BASIN (POGGEMEYER 1994)
DESIGN CALCULATION NOTEBOOK FOR THE BLACK MOUNTAIN DETENTION BASIN (VTN 1998)

**REVISED C1 BASINS BY G.C. WALLACE, INC.
**REVISED NORTHEAST C-1 DETENTION BASIN STAGE/STORAGE BY G.C. WALLACE, INC.
**INPUT FILE = C1SDN4B-ALT3.DAT
**INPUT FILE DATE = DECEMBER 23, 2004

JR CARDS CONTAIN DARFS BASED ON THE FOLLOWING VALUES:

	AREA SQ.MI.	DARF
	8 - 9	0.875
	9 - 10	0.865
	10 - 11	0.857
	11 - 12	0.85

```
41 IO          OUTPUT CONTROL VARIABLES
                    IPRNT           5  PRINT CONTROL
                    IPLOT           0  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE

   IT          HYDROGRAPH TIME DATA
                     NMIN           5  MINUTES IN COMPUTATION INTERVAL
                    IDATE      1    0  STARTING DATE
                    ITIME         0000  STARTING TIME
                       NQ          300  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE      2    0  ENDING DATE
                   NDTIME         0055  ENDING TIME
                    ICENT           19  CENTURY MARK

                 COMPUTATION INTERVAL      .08 HOURS
                     TOTAL TIME BASE    24.92 HOURS

       ENGLISH UNITS
            DRAINAGE AREA          SQUARE MILES
            PRECIPITATION DEPTH    INCHES
            LENGTH, ELEVATION      FEET
            FLOW                   CUBIC FEET PER SECOND
            STORAGE VOLUME         ACRE-FEET
            SURFACE AREA           ACRES
            TEMPERATURE            DEGREES FAHRENHEIT

   JP          MULTI-PLAN OPTION
                    NPLAN           1  NUMBER OF PLANS

   JR          MULTI-RATIO OPTION
                   RATIOS OF PRECIPITATION
                   .88       .87       .86       .85
```

*** ***

```
            **************
            *            *
56 KK       *       DB1  *
            *            *
            **************

61 KO          OUTPUT CONTROL VARIABLES
                    IPRNT           3  PRINT CONTROL
                    IPLOT           0  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE

              HYDROGRAPH ROUTING DATA

62 RS          STORAGE ROUTING
                    NSTPS           1  NUMBER OF SUBREACHES
                     ITYP        STOR  TYPE OF INITIAL CONDITION
                   RSVRIC       -1.00  INITIAL CONDITION
                        X         .00 WORKING R AND D COEFFICIENT

63 SV            STORAGE          .0       .6       6.5      18.6      31.6      45.5      60.1      75.7      92.4     110.2
                               129.3     149.6     171.1     194.0     218.3     244.1     271.5     300.8     332.4     366.3

65 SE          ELEVATION     2553.00   2554.00   2556.00   2558.00   2560.00   2562.00   2564.00   2566.00   2568.00   2570.00
                             2572.00   2574.00   2576.00   2578.00   2580.00   2582.00   2584.00   2586.00   2588.00   2590.00

67 SQ          DISCHARGE         0.        7.       45.       69.       86.      101.      114.      125.      135.      145.
                               154.      163.      171.      179.      186.      193.      200.      207.      213.      220.

69 SE          ELEVATION     2553.00   2554.00   2556.00   2558.00   2560.00   2562.00   2564.00   2566.00   2568.00   2570.00
                             2572.00   2574.00   2576.00   2578.00   2580.00   2582.00   2584.00   2586.00   2588.00   2590.00
```

***

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	.60	6.48	18.65	31.64	45.46	60.12	75.70	92.37	110.20
OUTFLOW	.00	6.53	45.16	68.98	86.47	100.98	113.65	125.04	135.47	145.16
ELEVATION	2553.00	2554.00	2556.00	2558.00	2560.00	2562.00	2564.00	2566.00	2568.00	2570.00
STORAGE	129.25	149.55	171.13	194.02	218.30	244.08	271.52	300.83	332.35	366.33
OUTFLOW	154.24	162.82	170.97	178.74	186.19	193.35	200.26	206.94	213.41	219.69
ELEVATION	2572.00	2574.00	2576.00	2578.00	2580.00	2582.00	2584.00	2586.00	2588.00	2590.00

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HYDROGRAPH AT STATION DB1
FOR PLAN 1, RATIO = .88

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 193.	6.25		185.	135.	130.	130.
		(INCHES)	.457	1.330	1.330	1.330
		(AC-FT)	92.	268.	268.	268.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)					
243.	6.25		216.	116.	112.	112.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
			6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)					
2581.91	6.25		2579.78	2569.56	2568.95	2568.95

CUMULATIVE AREA = 3.77 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION DB1
FOR PLAN 1, RATIO = .87

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 192.	6.25		184.	133.	128.	128.
		(INCHES)	.453	1.314	1.314	1.314
		(AC-FT)	91.	264.	264.	264.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)					
238.	6.25		212.	113.	109.	109.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
			6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)					
2581.54	6.25		2579.42	2569.23	2568.63	2568.63

CUMULATIVE AREA = 3.77 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION DB1
FOR PLAN 1, RATIO = .86

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 191.	6.25		183.	132.	127.	127.
		(INCHES)	.451	1.300	1.300	1.300
		(AC-FT)	91.	262.	262.	262.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)					
234.	6.25		208.	110.	106.	106.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
			6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)					
2581.24	6.25		2579.12	2568.96	2568.38	2568.38

CUMULATIVE AREA = 3.77 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION DB1
FOR PLAN 1, RATIO = .85

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 190.	6.25		182.	131.	126.	126.
		(INCHES)	.448	1.288	1.288	1.288
		(AC-FT)	90.	259.	259.	259.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)					
231.	6.25		205.	108.	104.	104.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE

```
                                        6-HR        24-HR        72-HR      24.92-HR
+    (FEET)       (HR)
    2580.99       6.25               2578.86      2568.73      2568.15       2568.15

                          CUMULATIVE AREA =     3.77 SQ MI


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             *            *
  172 KK     *       DB2  *
             *            *
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  177 KO           OUTPUT CONTROL VARIABLES
                        IPRNT          3  PRINT CONTROL
                        IPLOT          0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE

                 HYDROGRAPH ROUTING DATA

  178 RS           STORAGE ROUTING
                        NSTPS          1  NUMBER OF SUBREACHES
                         ITYP       STOR  TYPE OF INITIAL CONDITION
                       RSVRIC      -1.00  INITIAL CONDITION
                            X        .00 WORKING R AND D COEFFICIENT

  179 SV             STORAGE          .0        2.5       15.9       40.2       72.3      107.2      185.2      273.0      371.6      480.1
                                     598.5      630.2

  181 SE           ELEVATION      2323.00    2326.00    2328.00    2330.00    2332.00    2334.00    2338.00    2342.00    2346.00    2350.00
                                  2354.00    2355.00

  183 SQ           DISCHARGE           0.        57.       109.       143.       170.       194.       234.       268.       299.       326.
                                     352.       358.

  185 SE           ELEVATION      2323.00    2326.00    2328.00    2330.00    2332.00    2334.00    2338.00    2342.00    2346.00    2350.00
                                  2354.00    2355.00

                                                                      ***

                                        COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

                 STORAGE         .00       2.55      15.85      40.23      72.34     107.20     185.20     273.00     371.60     480.10
                 OUTFLOW         .00      56.78     108.70     142.90     170.40     193.90     234.10     268.40     298.70     326.10
               ELEVATION     2323.00    2326.00    2328.00    2330.00    2332.00    2334.00    2338.00    2342.00    2346.00    2350.00

                 STORAGE      598.50     630.20
                 OUTFLOW      351.60     357.60
               ELEVATION     2354.00    2355.00

       ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION      DB2
                            FOR PLAN 1, RATIO =  .88

   PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR        24-HR        72-HR      24.92-HR
+    (CFS)        (HR)
                   (CFS)
+      302.       6.50                  297.         252.         242.          242.
                (INCHES)                .296        1.003        1.003         1.003
                 (AC-FT)                147.         499.         499.          499.

  PEAK STORAGE   TIME                        MAXIMUM AVERAGE STORAGE
                                        6-HR        24-HR        72-HR      24.92-HR
+  (AC-FT)       (HR)
       383.      6.50                  366.         263.         253.          253.

   PEAK STAGE    TIME                          MAXIMUM AVERAGE STAGE
                                        6-HR        24-HR        72-HR      24.92-HR
+    (FEET)       (HR)
    2346.43      6.50               2345.77      2341.00      2340.34       2340.34

                          CUMULATIVE AREA =     9.33 SQ MI

       ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION      DB2
                            FOR PLAN 1, RATIO =  .87

   PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                        6-HR        24-HR        72-HR      24.92-HR
+    (CFS)        (HR)
                   (CFS)
+      300.       6.50                  295.         249.         240.          240.
                (INCHES)                .294         .994         .994          .994
                 (AC-FT)                146.         495.         495.          495.

  PEAK STORAGE   TIME                        MAXIMUM AVERAGE STORAGE
```

		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
376.	6.50	359.	257.	247.	247.

PEAK STAGE TIME — MAXIMUM AVERAGE STAGE

		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
2346.15	6.50	2345.48	2340.73	2340.08	2340.08

CUMULATIVE AREA = 9.33 SQ MI

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HYDROGRAPH AT STATION DB2
FOR PLAN 1, RATIO = .86

PEAK FLOW TIME — MAXIMUM AVERAGE FLOW

		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)				
	(CFS)				
+ 298.	6.50	293.	248.	238.	238.
	(INCHES)	.292	.986	.987	.987
	(AC-FT)	145.	491.	491.	491.

PEAK STORAGE TIME — MAXIMUM AVERAGE STORAGE

		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
370.	6.50	353.	252.	243.	243.

PEAK STAGE TIME — MAXIMUM AVERAGE STAGE

		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
2345.92	6.50	2345.24	2340.51	2339.87	2339.87

CUMULATIVE AREA = 9.33 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION DB2
FOR PLAN 1, RATIO = .85

PEAK FLOW TIME — MAXIMUM AVERAGE FLOW

		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)				
	(CFS)				
+ 297.	6.50	291.	246.	237.	237.
	(INCHES)	.290	.980	.980	.980
	(AC-FT)	144.	488.	488.	488.

PEAK STORAGE TIME — MAXIMUM AVERAGE STORAGE

		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
364.	6.50	348.	248.	239.	239.

PEAK STAGE TIME — MAXIMUM AVERAGE STAGE

		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
2345.71	6.50	2345.03	2340.32	2339.69	2339.69

CUMULATIVE AREA = 9.33 SQ MI

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ELEVL	2177.50	ELEVATION AT CENTER OF OUTLET
CAREA	12.57	CROSS-SECTIONAL AREA
COQL	.65	COEFFICIENT
EXPL	.50	EXPONENT OF HEAD

715 SS SPILLWAY

CREL	2186.00	SPILLWAY CREST ELEVATION
SPWID	200.00	SPILLWAY WIDTH
COQW	3.30	WEIR COEFFICIENT
EXPW	1.50	EXPONENT OF HEAD

***

COMPUTED OUTFLOW-ELEVATION DATA

OUTFLOW	.00	.00	91.55	98.91	107.56	117.86	130.34	145.78	165.37	191.04
ELEVATION	2177.00	2177.50	2179.45	2179.78	2180.19	2180.74	2181.46	2182.45	2183.87	2186.00
OUTFLOW	197.67	238.05	343.47	544.80	873.48	1360.19	2036.22	2933.06	4081.06	5511.67
ELEVATION	2186.04	2186.17	2186.37	2186.65	2187.01	2187.45	2187.97	2188.57	2189.24	2190.00

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.02	.22	.42	1.37	2.31	2.99	3.45	4.16	6.13	7.10
OUTFLOW	.00	.00	46.33	80.25	91.55	98.91	103.61	107.56	117.86	122.59
ELEVATION	2177.00	2177.50	2178.00	2179.00	2179.45	2179.78	2180.00	2180.19	2180.74	2181.00
STORAGE	9.56	12.49	15.67	19.56	27.35	28.52	39.13	51.40	52.01	53.71
OUTFLOW	130.34	139.00	145.78	153.68	165.37	167.06	179.45	191.04	197.67	238.05
ELEVATION	2181.46	2182.00	2182.45	2183.00	2183.87	2184.00	2185.00	2186.00	2186.04	2186.17
STORAGE	56.50	60.38	65.19	65.36	71.93	79.67	80.13	89.49	96.63	100.88
OUTFLOW	343.47	544.80	861.97	873.48	1360.19	2036.22	2079.09	2933.06	3651.68	4081.06
ELEVATION	2186.37	2186.65	2187.00	2187.01	2187.45	2187.97	2188.00	2188.57	2189.00	2189.24
STORAGE	114.02									
OUTFLOW	5511.67									
ELEVATION	2190.00									

*** *** *** *** ***

HYDROGRAPH AT STATION DB3
FOR PLAN 1, RATIO = .88

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)				
		(CFS)			
+ 137.	4.08	70.	17.	17.	17.
		(INCHES) 1.298	1.298	1.298	1.298
		(AC-FT) 35.	35.	35.	35.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
12.	4.08	4.	1.	1.	1.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
2181.87	4.08	2179.35	2177.96	2177.93	2177.93

CUMULATIVE AREA = .50 SQ MI

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HYDROGRAPH AT STATION DB3
FOR PLAN 1, RATIO = .87

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)				
		(CFS)			
+ 136.	4.08	68.	17.	16.	16.
		(INCHES) 1.272	1.272	1.272	1.272
		(AC-FT) 34.	34.	34.	34.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
11.	4.08	4.	1.	1.	1.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
2181.81	4.08	2179.30	2177.95	2177.92	2177.92

CUMULATIVE AREA = .50 SQ MI

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HYDROGRAPH AT STATION DB3

FOR PLAN 1, RATIO = .86

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 135.	4.08		67.	17.	16.	16.
		(INCHES)	1.252	1.252	1.252	1.252
		(AC-FT)	33.	33.	33.	33.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
11.	4.08	4.	1.	1.	1.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
2181.76	4.08	2179.26	2177.94	2177.91	2177.91

CUMULATIVE AREA = .50 SQ MI

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HYDROGRAPH AT STATION DB3
FOR PLAN 1, RATIO = .85

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 135.	4.08		66.	17.	16.	16.
		(INCHES)	1.235	1.235	1.235	1.235
		(AC-FT)	33.	33.	33.	33.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
11.	4.08	4.	1.	1.	1.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
2181.72	4.08	2179.23	2177.93	2177.90	2177.90

CUMULATIVE AREA = .50 SQ MI

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STORAGE	389.84	421.48	453.68	553.27
OUTFLOW	219.60	225.00	230.20	240.50
ELEVATION	2068.00	2069.00	2070.00	2072.00

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HYDROGRAPH AT STATION DB4
FOR PLAN 1, RATIO = .88

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)				
	(CFS)				
+ 221.	6.33	216.	179.	173.	173.
	(INCHES)	.284	.944	.944	.944
	(AC-FT)	107.	355.	355.	355.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
400.	6.33	368.	230.	221.	221.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
2068.33	6.33	2067.28	2062.15	2061.63	2061.63

CUMULATIVE AREA = 7.06 SQ MI

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HYDROGRAPH AT STATION DB4
FOR PLAN 1, RATIO = .87

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)				
	(CFS)				
+ 220.	6.33	214.	178.	171.	171.
	(INCHES)	.282	.935	.936	.936
	(AC-FT)	106.	352.	352.	352.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
392.	6.33	359.	223.	215.	215.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
2068.06	6.33	2067.01	2061.92	2061.41	2061.41

CUMULATIVE AREA = 7.06 SQ MI

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HYDROGRAPH AT STATION DB4
FOR PLAN 1, RATIO = .86

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)				
	(CFS)				
+ 219.	6.33	213.	176.	170.	170.
	(INCHES)	.280	.929	.929	.929
	(AC-FT)	106.	350.	350.	350.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
386.	6.33	353.	218.	210.	210.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
2067.86	6.33	2066.82	2061.75	2061.24	2061.24

CUMULATIVE AREA = 7.06 SQ MI

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HYDROGRAPH AT STATION DB4
FOR PLAN 1, RATIO = .85

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)				
	(CFS)				
+ 218.	6.33	212.	175.	169.	169.
	(INCHES)	.279	.923	.923	.923
	(AC-FT)	105.	348.	348.	348.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
379.	6.33	347.	213.	206.	206.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
2067.66	6.33	2066.62	2061.58	2061.08	2061.08

CUMULATIVE AREA = 7.06 SQ MI

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965 KK

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*       DB5  *
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970 KO OUTPUT CONTROL VARIABLES

IPRNT	3	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

HYDROGRAPH ROUTING DATA

971 RS STORAGE ROUTING

NSTPS	1	NUMBER OF SUBREACHES
ITYP	STOR	TYPE OF INITIAL CONDITION
RSVRIC	-1.00	INITIAL CONDITION
X	.00	WORKING R AND D COEFFICIENT

972 SV	STORAGE	.0	1.9	10.4	24.6	45.0	70.8	104.8	148.3	204.1	271.6
		362.2	482.6	551.6	625.3	704.8	789.1	879.9	975.7	1103.9	1414.3
974 SE	ELEVATION	2446.00	2450.00	2454.00	2458.00	2462.00	2466.00	2470.00	2474.00	2478.00	2482.00
		2486.00	2490.00	2492.00	2494.00	2496.00	2498.00	2500.00	2502.20	2506.00	2510.00
976 SQ	DISCHARGE	0.	25.	37.	47.	54.	61.	67.	73.	78.	83.
		88.	92.	94.	96.	98.	100.	102.	104.	108.	111.
978 SE	ELEVATION	2446.00	2450.00	2454.00	2458.00	2462.00	2466.00	2470.00	2474.00	2478.00	2482.00
		2486.00	2490.00	2492.00	2494.00	2496.00	2498.00	2500.00	2502.20	2506.00	2510.00

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COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.02	1.85	10.35	24.60	45.03	70.78	104.85	148.32	204.08	271.64
OUTFLOW	.00	24.59	37.30	46.66	54.44	61.24	67.35	72.96	78.16	83.04
ELEVATION	2446.00	2450.00	2454.00	2458.00	2462.00	2466.00	2470.00	2474.00	2478.00	2482.00
STORAGE	362.21	482.58	551.62	625.31	704.75	789.13	879.88	975.68	1103.90	1414.30
OUTFLOW	87.65	92.02	94.14	96.20	98.22	100.21	102.15	104.06	107.77	111.36
ELEVATION	2486.00	2490.00	2492.00	2494.00	2496.00	2498.00	2500.00	2502.20	2506.00	2510.00

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HYDROGRAPH AT STATION DB5
FOR PLAN 1, RATIO = .88

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)				
	(CFS)				
+ 89.	7.08	89.	79.	76.	76.
	(INCHES)	.154	.549	.549	.549
	(AC-FT)	44.	157.	157.	157.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
409.	7.08	395.	301.	290.	290.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
2487.54	7.08	2487.10	2480.97	2479.69	2479.69

CUMULATIVE AREA = 5.38 SQ MI

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HYDROGRAPH AT STATION DB5
FOR PLAN 1, RATIO = .67

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW

			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 89.	7.08		89.	79.	76.	76.
		(INCHES)	.153	.546	.546	.546
		(AC-FT)	44.	157.	157.	157.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)					
401.	7.08		388.	295.	284.	284.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
			6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)					
2487.28	7.08		2486.84	2480.69	2479.41	2479.41

CUMULATIVE AREA = 5.38 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION DB5
FOR PLAN 1, RATIO = .86

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 89.	7.08		88.	79.	76.	76.
		(INCHES)	.153	.544	.544	.544
		(AC-FT)	44.	156.	156.	156.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)					
394.	7.08		381.	290.	279.	279.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
			6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)					
2487.07	7.08		2486.63	2480.45	2479.19	2479.19

CUMULATIVE AREA = 5.38 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION DB5
FOR PLAN 1, RATIO = .85

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 89.	7.08		88.	78.	76.	76.
		(INCHES)	.152	.542	.542	.542
		(AC-FT)	44.	156.	156.	156.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)					
389.	7.08		376.	285.	274.	274.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
			6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)					
2486.89	7.08		2486.45	2480.25	2478.99	2478.99

CUMULATIVE AREA = 5.38 SQ MI

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1031 SV	STORAGE	.0	11.9	20.0	55.0	103.2	156.5	214.9	278.7	333.6	348.3
1032 SE	ELEVATION	1952.00	1956.00	1957.00	1961.00	1966.00	1971.00	1976.00	1981.00	1985.00	1986.00
1033 SQ	DISCHARGE	0.	74.	82.	111.	138.	161.	181.	199.	212.	215.

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HYDROGRAPH AT STATION DB6
FOR PLAN 1, RATIO = .88

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)				
		(CFS)			
+ 210.	6.83	206.	173.	167.	167.
		(INCHES) .195	.658	.659	.659
		(AC-FT) 102.	344.	344.	344.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
324.	6.83	309.	221.	213.	213.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
1984.33	6.83	1983.17	1975.85	1974.97	1974.97

CUMULATIVE AREA = 9.80 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION DB6
FOR PLAN 1, RATIO = .87

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)				
		(CFS)			
+ 208.	6.83	204.	172.	166.	166.
		(INCHES) .194	.653	.653	.653
		(AC-FT) 101.	341.	341.	341.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
318.	6.83	303.	217.	209.	209.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
1983.89	6.83	1982.75	1975.48	1974.61	1974.61

CUMULATIVE AREA = 9.80 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION DB6
FOR PLAN 1, RATIO = .86

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)				
		(CFS)			
+ 207.	6.83	203.	171.	165.	165.
		(INCHES) .193	.649	.649	.649
		(AC-FT) 101.	339.	339.	339.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
314.	6.83	298.	213.	205.	205.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
1983.55	6.83	1982.41	1975.18	1974.33	1974.33

CUMULATIVE AREA = 9.80 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION DB6
FOR PLAN 1, RATIO = .85

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	24.92-HR
+ (CFS)	(HR)					
		(CFS)				
+ 206.	6.83		202.	170.	164.	164.
		(INCHES)	.192	.645	.645	.645
		(AC-FT)	100.	337.	337.	337.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (AC-FT)	(HR)				
309.	6.83	294.	210.	202.	202.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	24.92-HR
+ (FEET)	(HR)				
1983.24	6.83	1982.11	1974.92	1974.08	1974.08

CUMULATIVE AREA = 9.80 SQ MI

1

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1 .88	RATIO 2 .87	RATIO 3 .86	RATIO 4 .85
HYDROGRAPH AT								
+	C1-1	3.77	1	FLOW	2201.	2163.	2132.	2105.
				TIME	4.00	4.00	4.00	4.00
ROUTED TO								
+	DB1	3.77	1	FLOW	193.	192.	191.	190.
				TIME	6.25	6.25	6.25	6.25
			** PEAK STAGES IN FEET **					
			1	STAGE	2581.91	2581.54	2581.24	2580.99
				TIME	6.25	6.25	6.25	6.25
ROUTED TO								
+	RDB1	3.77	1	FLOW	193.	192.	191.	190.
				TIME	6.33	6.25	6.25	6.25
HYDROGRAPH AT								
+	C1-2	.45	1	FLOW	412.	404.	399.	393.
				TIME	3.58	3.58	3.58	3.58
2 COMBINED AT								
+	CP1	4.22	1	FLOW	494.	486.	479.	473.
				TIME	3.58	3.58	3.58	3.58
ROUTED TO								
+	RCP1	4.22	1	FLOW	491.	483.	476.	471.
				TIME	3.67	3.67	3.67	3.67
HYDROGRAPH AT								
+	C1-3	.27	1	FLOW	312.	307.	302.	299.
				TIME	3.50	3.50	3.50	3.50
2 COMBINED AT								
+	CP2	4.50	1	FLOW	785.	770.	760.	751.
				TIME	3.58	3.58	3.58	3.58
ROUTED TO								
+	RCP2	4.50	1	FLOW	766.	751.	742.	732.
				TIME	3.58	3.58	3.58	3.58
HYDROGRAPH AT								
+	C1-4	.60	1	FLOW	587.	577.	569.	562.
				TIME	3.58	3.58	3.58	3.58
2 COMBINED AT								
+	CP3	5.09	1	FLOW	1353.	1328.	1310.	1294.
				TIME	3.58	3.58	3.58	3.58
ROUTED TO								
+	RCP3	5.09	1	FLOW	1330.	1308.	1289.	1272.
				TIME	3.58	3.58	3.58	3.58
HYDROGRAPH AT								
+	C1-5	.13	1	FLOW	152.	149.	147.	146.
				TIME	3.58	3.58	3.58	3.58
2 COMBINED AT								
+	CP4	5.22	1	FLOW	1482.	1457.	1436.	1417.
				TIME	3.58	3.58	3.58	3.58
ROUTED TO								
+	RCP4	5.22	1	FLOW	1457.	1433.	1412.	1393.
				TIME	3.58	3.58	3.58	3.58

HYDROGRAPH AT								
+	C1-6	1.04	1	FLOW	632.	621.	612.	604.
				TIME	4.00	4.00	4.00	4.00
2 COMBINED AT								
+	CP5	6.27	1	FLOW	1812.	1780.	1756.	1735.
				TIME	3.67	3.67	3.67	3.67
HYDROGRAPH AT								
+	C1-7	.84	1	FLOW	694.	682.	673.	664.
				TIME	3.75	3.75	3.75	3.75
2 COMBINED AT								
+	CP6	7.11	1	FLOW	2488.	2445.	2411.	2382.
				TIME	3.67	3.67	3.67	3.67
HYDROGRAPH AT								
+	C1-8	.84	1	FLOW	710.	696.	686.	676.
				TIME	3.67	3.67	3.67	3.67
ROUTED TO								
+	RC1-8	.84	1	FLOW	688.	680.	656.	649.
				TIME	3.67	3.75	3.75	3.67
HYDROGRAPH AT								
+	C1-9	1.38	1	FLOW	632.	619.	609.	600.
				TIME	4.08	4.08	4.08	4.08
2 COMBINED AT								
+	CP7	2.22	1	FLOW	1128.	1111.	1091.	1074.
				TIME	3.83	3.83	3.83	3.83
2 COMBINED AT								
+	CP8	9.33	1	FLOW	3525.	3467.	3404.	3362.
				TIME	3.67	3.75	3.75	3.75
ROUTED TO								
+	DB2	9.33	1	FLOW	302.	300.	298.	297.
				TIME	6.50	6.50	6.50	6.50
			** PEAK STAGES IN FEET **					
			1	STAGE	2346.43	2346.15	2345.92	2345.71
				TIME	6.50	6.50	6.50	6.50
ROUTED TO								
+	RDB2	9.33	1	FLOW	302.	300.	298.	297.
				TIME	6.58	6.58	6.58	6.58
HYDROGRAPH AT								
+	C1-13	.42	1	FLOW	256.	250.	246.	242.
				TIME	3.67	3.67	3.67	3.67
2 COMBINED AT								
+	CP9	9.75	1	FLOW	432.	425.	420.	415.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-10	.41	1	FLOW	283.	278.	274.	270.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RC1-10	.41	1	FLOW	279.	273.	270.	265.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-11	.23	1	FLOW	130.	127.	125.	123.
				TIME	3.75	3.75	3.75	3.75
2 COMBINED AT								
+	CP10	.63	1	FLOW	408.	400.	394.	388.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RCP10	.63	1	FLOW	404.	395.	390.	384.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-12	.38	1	FLOW	309.	303.	299.	295.
				TIME	3.67	3.67	3.67	3.67
2 COMBINED AT								
+	CP11	1.01	1	FLOW	667.	653.	643.	634.
				TIME	3.75	3.75	3.75	3.75
2 COMBINED AT								
+	CP12	10.76	1	FLOW	1099.	1078.	1063.	1049.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RCP12	10.76	1	FLOW	1097.	1076.	1060.	1046.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RCP12	10.76	1	FLOW	1091.	1070.	1054.	1040.
				TIME	3.75	3.75	3.75	3.75

HYDROGRAPH AT								
+	C1-14	.41	1	FLOW	316.	310.	306.	301.
				TIME	3.67	3.67	3.67	3.67
2 COMBINED AT								
+	CP13	11.18	1	FLOW	1398.	1372.	1352.	1334.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RCP13	11.18	1	FLOW	1391.	1366.	1345.	1327.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RCP13	11.18	1	FLOW	1387.	1362.	1341.	1324.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-15	.23	1	FLOW	168.	165.	162.	160.
				TIME	3.67	3.67	3.67	3.67
2 COMBINED AT								
+	CP14	11.41	1	FLOW	1551.	1523.	1500.	1480.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RCP14	11.41	1	FLOW	1540.	1511.	1488.	1468.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-16	.52	1	FLOW	587.	577.	569.	562.
				TIME	3.58	3.58	3.58	3.58
ROUTED TO								
+	RC1-16	.52	1	FLOW	561.	551.	544.	537.
				TIME	3.58	3.58	3.58	3.58
HYDROGRAPH AT								
+	C1-17	.57	1	FLOW	546.	538.	531.	526.
				TIME	3.75	3.75	3.75	3.75
2 COMBINED AT								
+	CP15	1.09	1	FLOW	1049.	1033.	1016.	1008.
				TIME	3.67	3.67	3.67	3.67
ROUTED TO								
+	RCP15	1.09	1	FLOW	1031.	1015.	999.	990.
				TIME	3.67	3.67	3.67	3.67
ROUTED TO								
+	RCP15	1.09	1	FLOW	1003.	990.	976.	966.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-18	.33	1	FLOW	407.	402.	397.	393.
				TIME	3.67	3.67	3.67	3.67
2 COMBINED AT								
+	CP16	1.42	1	FLOW	1410.	1389.	1370.	1356.
				TIME	3.67	3.67	3.67	3.67
ROUTED TO								
+	RCP16	1.42	1	FLOW	1383.	1364.	1345.	1332.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-19	.11	1	FLOW	157.	155.	153.	152.
				TIME	3.50	3.50	3.50	3.50
2 COMBINED AT								
+	CP17	1.53	1	FLOW	1473.	1450.	1432.	1415.
				TIME	3.67	3.67	3.67	3.67
HYDROGRAPH AT								
+	C1-20	.62	1	FLOW	336.	328.	321.	316.
				TIME	3.67	3.67	3.67	3.67
ROUTED TO								
+	RC1-20	.62	1	FLOW	330.	321.	320.	314.
				TIME	3.75	3.75	3.75	3.75
2 COMBINED AT								
+	CP18	2.14	1	FLOW	1790.	1761.	1739.	1721.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RCP18	2.14	1	FLOW	1782.	1753.	1733.	1711.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-21	.40	1	FLOW	229.	224.	220.	216.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RC1-21	.40	1	FLOW	235.	229.	225.	221.

				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-22	.23	1	FLOW	305.	300.	297.	294.
				TIME	3.58	3.58	3.58	3.58
2 COMBINED AT								
+	CP19	.63	1	FLOW	434.	425.	419.	413.
				TIME	3.67	3.67	3.67	3.67
2 COMBINED AT								
+	CP20	2.77	1	FLOW	2210.	2173.	2145.	2118.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RCP20	2.77	1	FLOW	2198.	2160.	2133.	2107.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-23	.34	1	FLOW	351.	345.	341.	338.
				TIME	3.67	3.67	3.67	3.67
2 COMBINED AT								
+	CP21	3.11	1	FLOW	2527.	2484.	2453.	2424.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RCP21	3.11	1	FLOW	2501.	2457.	2428.	2398.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-24	.07	1	FLOW	96.	95.	94.	93.
				TIME	3.58	3.58	3.58	3.58
2 COMBINED AT								
+	CP22	3.19	1	FLOW	2556.	2511.	2481.	2450.
				TIME	3.75	3.75	3.75	3.75
2 COMBINED AT								
+	CPC1BH	14.60	1	FLOW	4096.	4022.	3969.	3918.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RC1BH	14.60	1	FLOW	4084.	4010.	3956.	3905.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-25	.06	1	FLOW	80.	79.	78.	78.
				TIME	3.58	3.58	3.58	3.58
2 COMBINED AT								
+	CP23	14.66	1	FLOW	4134.	4059.	4005.	3954.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RCP23	14.66	1	FLOW	4122.	4049.	3993.	3942.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-26	.40	1	FLOW	311.	306.	302.	298.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RC1-26	.40	1	FLOW	309.	305.	300.	296.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-27	.23	1	FLOW	107.	104.	102.	100.
				TIME	3.58	3.58	3.58	3.58
2 COMBINED AT								
+	CP24	.63	1	FLOW	399.	393.	386.	380.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RCP24	.63	1	FLOW	397.	391.	384.	378.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-28	.38	1	FLOW	368.	362.	357.	353.
				TIME	3.58	3.58	3.58	3.58
2 COMBINED AT								
+	CP25	1.01	1	FLOW	687.	673.	662.	653.
				TIME	3.67	3.67	3.67	3.67
2 COMBINED AT								
+	CP26	15.67	1	FLOW	4804.	4719.	4652.	4593.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RCP26	15.67	1	FLOW	4751.	4666.	4596.	4537.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								

+	C1-29	.15	1	FLOW	100.	98.	96.	95.
				TIME	3.67	3.67	3.67	3.67
2 COMBINED AT								
+	CP27	15.81	1	FLOW	4849.	4763.	4691.	4630.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RCP27	15.81	1	FLOW	4821.	4736.	4662.	4601.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-30	.30	1	FLOW	300.	295.	291.	288.
				TIME	3.67	3.67	3.67	3.67
ROUTED TO								
+	RC1-30	.30	1	FLOW	301.	296.	292.	288.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-31	.32	1	FLOW	39.	37.	36.	35.
				TIME	3.92	3.92	3.92	3.92
2 COMBINED AT								
+	CP28	.62	1	FLOW	336.	329.	324.	319.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RCP28	.62	1	FLOW	331.	318.	312.	310.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-32	.32	1	FLOW	34.	33.	32.	31.
				TIME	5.00	5.00	5.00	5.00
2 COMBINED AT								
+	CP29	.94	1	FLOW	362.	348.	340.	337.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RCP29	.94	1	FLOW	360.	345.	338.	335.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-33	.27	1	FLOW	147.	144.	142.	139.
				TIME	3.83	3.83	3.83	3.83
2 COMBINED AT								
+	CP30	1.21	1	FLOW	507.	489.	479.	474.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RCP30	1.21	1	FLOW	505.	487.	477.	471.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-34	.34	1	FLOW	255.	251.	247.	244.
				TIME	3.75	3.75	3.75	3.75
2 COMBINED AT								
+	CP31	1.55	1	FLOW	738.	717.	703.	695.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-47A	.14	1	FLOW	73.	71.	70.	69.
				TIME	3.75	3.75	3.75	3.75
2 COMBINED AT								
+	CP31A	1.69	1	FLOW	806.	783.	768.	759.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-35	.54	1	FLOW	547.	538.	530.	524.
				TIME	3.67	3.67	3.67	3.67
ROUTED TO								
+	RC1-35	.54	1	FLOW	527.	525.	526.	514.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-36	.25	1	FLOW	55.	53.	51.	50.
				TIME	3.75	3.75	3.75	3.75
2 COMBINED AT								
+	CP32	.79	1	FLOW	582.	578.	577.	564.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RCP32	.79	1	FLOW	579.	573.	570.	557.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-37	.22	1	FLOW	89.	87.	85.	83.
				TIME	3.67	3.67	3.67	3.67

2 COMBINED AT								
+	CP33	1.01	1	FLOW	658.	650.	645.	631.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RCP33	1.01	1	FLOW	638.	629.	626.	615.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-38	.49	1	FLOW	367.	359.	353.	348.
				TIME	3.67	3.67	3.67	3.67
2 COMBINED AT								
+	CP34	1.50	1	FLOW	979.	964.	951.	931.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RCP34	1.50	1	FLOW	959.	941.	935.	913.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-39	.61	1	FLOW	583.	574.	566.	560.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RC1-39	.61	1	FLOW	582.	572.	567.	560.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-40	.22	1	FLOW	81.	78.	76.	75.
				TIME	3.67	3.67	3.67	3.67
2 COMBINED AT								
+	CP35	.83	1	FLOW	656.	644.	638.	629.
				TIME	3.75	3.75	3.75	3.75
2 COMBINED AT								
+	CP36	2.34	1	FLOW	1608.	1573.	1556.	1524.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RCP36	2.34	1	FLOW	1590.	1566.	1546.	1519.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-41	.16	1	FLOW	124.	121.	119.	117.
				TIME	3.58	3.58	3.58	3.58
2 COMBINED AT								
+	CP37	2.50	1	FLOW	1657.	1632.	1611.	1582.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RCP37	2.50	1	FLOW	1641.	1612.	1593.	1565.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-42	.99	1	FLOW	810.	796.	785.	775.
				TIME	3.75	3.75	3.75	3.75
2 COMBINED AT								
+	CP38	3.49	1	FLOW	2423.	2382.	2352.	2315.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RCP38	3.49	1	FLOW	2403.	2348.	2318.	2287.
				TIME	3.83	3.83	3.83	3.83
2 COMBINED AT								
+	CP39	5.17	1	FLOW	3209.	3130.	3087.	3046.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-44	.32	1	FLOW	289.	284.	280.	276.
				TIME	3.67	3.67	3.67	3.67
HYDROGRAPH AT								
+	C1-43	.54	1	FLOW	488.	479.	472.	467.
				TIME	3.67	3.67	3.67	3.67
2 COMBINED AT								
+	CP40	.86	1	FLOW	777.	763.	752.	743.
				TIME	3.67	3.67	3.67	3.67
ROUTED TO								
+	RCP40	.86	1	FLOW	779.	765.	754.	744.
				TIME	3.75	3.75	3.75	3.75
2 COMBINED AT								
+	CP41	6.04	1	FLOW	3956.	3865.	3811.	3761.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-45	.22	1	FLOW	213.	210.	207.	204.
				TIME	3.58	3.58	3.58	3.58

HYDROGRAPH AT								
+	C1-46	.28	1	FLOW	228.	223.	220.	217.
				TIME	3.58	3.58	3.58	3.58
2 COMBINED AT								
+	CP42	.50	1	FLOW	441.	433.	426.	421.
				TIME	3.58	3.58	3.58	3.58
ROUTED TO								
+	DB3	.50	1	FLOW	137.	136.	135.	135.
				TIME	4.08	4.08	4.08	4.08
			** PEAK STAGES IN FEET **					
			1	STAGE	2181.87	2181.81	2181.76	2181.72
				TIME	4.08	4.08	4.08	4.08
ROUTED TO								
+	RDB3	.50	1	FLOW	137.	136.	135.	134.
				TIME	4.17	4.17	4.17	4.08
HYDROGRAPH AT								
+	C1-47	.52	1	FLOW	253.	247.	242.	238.
				TIME	3.75	3.75	3.75	3.75
2 COMBINED AT								
+	CP43	1.02	1	FLOW	380.	373.	368.	363.
				TIME	3.75	3.75	3.75	3.75
2 COMBINED AT								
+	CP44	7.06	1	FLOW	4321.	4223.	4165.	4111.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	DB4	7.06	1	FLOW	221.	220.	219.	218.
				TIME	6.33	6.33	6.33	6.33
			** PEAK STAGES IN FEET **					
			1	STAGE	2068.33	2068.06	2067.86	2067.66
				TIME	6.33	6.33	6.33	6.33
HYDROGRAPH AT								
+	C1-48	.24	1	FLOW	155.	151.	148.	146.
				TIME	3.58	3.58	3.58	3.58
2 COMBINED AT								
+	CP45	7.30	1	FLOW	296.	292.	288.	285.
				TIME	3.67	3.67	3.67	3.67
ROUTED TO								
+	RCP45	7.30	1	FLOW	293.	288.	285.	281.
				TIME	3.67	3.67	3.67	3.67
ROUTED TO								
+	RCP45	7.30	1	FLOW	293.	285.	281.	280.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-49	.52	1	FLOW	309.	303.	298.	294.
				TIME	3.83	3.83	3.83	3.83
2 COMBINED AT								
+	CP46	7.82	1	FLOW	595.	584.	575.	569.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-50	.35	1	FLOW	266.	260.	256.	253.
				TIME	3.67	3.67	3.67	3.67
2 COMBINED AT								
+	CP47	8.17	1	FLOW	831.	812.	800.	792.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RCP47	8.17	1	FLOW	817.	800.	788.	779.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-53	.27	1	FLOW	143.	140.	138.	136.
				TIME	3.75	3.75	3.75	3.75
2 COMBINED AT								
+	CP48	8.43	1	FLOW	960.	940.	926.	915.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-51	.42	1	FLOW	307.	301.	297.	293.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RC1-51	.42	1	FLOW	301.	300.	296.	289.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-52	.25	1	FLOW	187.	184.	181.	179.

				TIME	3.67	3.67	3.67	3.67
2 COMBINED AT								
+	CP49	.67	1	FLOW	471.	467.	461.	451.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RCP49	.67	1	FLOW	460.	454.	449.	446.
				TIME	3.83	3.83	3.83	3.83
2 COMBINED AT								
+	CP50	9.10	1	FLOW	1413.	1391.	1368.	1354.
				TIME	3.83	3.83	3.83	3.83
2 COMBINED AT								
+	CP51	24.91	1	FLOW	6231.	6119.	6024.	5951.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RCP51	24.91	1	FLOW	6186.	6082.	5989.	5915.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-56	.45	1	FLOW	247.	242.	238.	235.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RC156	.45	1	FLOW	248.	243.	239.	235.
				TIME	3.92	3.92	3.92	3.92
HYDROGRAPH AT								
+	C1-57	.25	1	FLOW	213.	209.	206.	203.
				TIME	3.58	3.58	3.58	3.58
2 COMBINED AT								
+	CP54	.70	1	FLOW	343.	336.	331.	326.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RCP54	.70	1	FLOW	342.	335.	330.	325.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RCP54	.70	1	FLOW	341.	335.	329.	324.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RCP54	.70	1	FLOW	341.	334.	328.	324.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-58	.23	1	FLOW	157.	153.	151.	149.
				TIME	3.67	3.67	3.67	3.67
2 COMBINED AT								
+	CP55	.93	1	FLOW	482.	472.	464.	457.
				TIME	3.67	3.67	3.67	3.67
2 COMBINED AT								
+	CPC1D	25.85	1	FLOW	6638.	6525.	6425.	6344.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RCPC1D	25.85	1	FLOW	6631.	6517.	6419.	6338.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-59	.31	1	FLOW	159.	156.	153.	151.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RC1-59	.31	1	FLOW	159.	155.	153.	151.
				TIME	3.92	3.92	3.92	3.92
HYDROGRAPH AT								
+	C1-60	.25	1	FLOW	64.	62.	60.	59.
				TIME	3.75	3.75	3.75	3.75
2 COMBINED AT								
+	CP57	.56	1	FLOW	222.	217.	212.	209.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RCP57	.56	1	FLOW	223.	217.	213.	209.
				TIME	3.92	3.92	3.92	3.92
HYDROGRAPH AT								
+	C1-61	.25	1	FLOW	154.	151.	148.	146.
				TIME	3.67	3.67	3.75	3.75
2 COMBINED AT								
+	CP58	.81	1	FLOW	350.	341.	335.	329.
				TIME	3.83	3.83	3.83	3.83
2 COMBINED AT								

+	CP59	26.65	1	FLOW	6981.	6859.	6754.	6667.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RCP59	26.65	1	FLOW	6968.	6847.	6742.	6654.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RCP59	26.65	1	FLOW	6949.	6825.	6721.	6631.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-62	.42	1	FLOW	140.	136.	133.	130.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RC1-62	.42	1	FLOW	138.	135.	132.	129.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-63	.25	1	FLOW	74.	72.	70.	69.
				TIME	3.75	3.75	3.75	3.75
2 COMBINED AT								
+	CP60	.67	1	FLOW	209.	203.	199.	194.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-54	5.38	1	FLOW	2868.	2817.	2775.	2740.
				TIME	4.17	4.17	4.17	4.17
ROUTED TO								
+	DB5	5.38	1	FLOW	89.	89.	89.	89.
				TIME	7.08	7.08	7.08	7.08
			** PEAK STAGES IN FEET **					
			1	STAGE	2487.54	2487.28	2487.07	2486.89
				TIME	7.08	7.08	7.08	7.08
ROUTED TO								
+	RDB5	5.38	1	FLOW	89.	89.	89.	89.
				TIME	7.25	7.25	7.25	7.25
HYDROGRAPH AT								
+	C1-55	.98	1	FLOW	896.	881.	869.	859.
				TIME	3.67	3.67	3.67	3.67
2 COMBINED AT								
+	CP52	6.36	1	FLOW	945.	930.	917.	906.
				TIME	3.67	3.67	3.67	3.67
ROUTED TO								
+	RCP52	6.36	1	FLOW	915.	904.	894.	881.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-65	2.56	1	FLOW	1246.	1224.	1207.	1192.
				TIME	4.33	4.33	4.33	4.33
2 COMBINED AT								
+	CP52A	8.92	1	FLOW	1668.	1638.	1617.	1598.
				TIME	4.08	4.08	4.08	4.08
HYDROGRAPH AT								
+	C1-66	.87	1	FLOW	847.	833.	822.	812.
				TIME	3.58	3.58	3.58	3.58
2 COMBINED AT								
+	CP64	9.80	1	FLOW	2248.	2211.	2182.	2153.
				TIME	3.67	3.75	3.75	3.75
ROUTED TO								
+	DB6	9.80	1	FLOW	210.	208.	207.	206.
				TIME	6.83	6.83	6.83	6.83
			** PEAK STAGES IN FEET **					
			1	STAGE	1984.33	1983.89	1983.55	1983.24
				TIME	6.83	6.83	6.83	6.83
ROUTED TO								
+	RDB6	9.80	1	FLOW	210.	208.	207.	206.
				TIME	6.92	6.92	6.92	6.92
2 COMBINED AT								
+	CP60A	10.47	1	FLOW	339.	332.	327.	322.
				TIME	3.83	3.83	3.83	3.83
2 COMBINED AT								
+	CP61	37.12	1	FLOW	7288.	7158.	7048.	6953.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RCP61	37.12	1	FLOW	7260.	7131.	7020.	6922.
				TIME	3.83	3.83	3.83	3.83

OUTFALL

ROUTED TO								
+	RCP61	37.12	1	FLOW	7223.	7091.	6982.	6881.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-67	.39	1	FLOW	163.	159.	156.	153.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RC1-67	.39	1	FLOW	163.	159.	156.	154.
				TIME	3.92	3.92	3.92	3.92
HYDROGRAPH AT								
+	C1-64	.38	1	FLOW	84.	81.	79.	77.
				TIME	3.83	3.83	3.83	3.83
2 COMBINED AT								
+	CP62	.77	1	FLOW	247.	240.	235.	230.
				TIME	3.83	3.83	3.83	3.83
2 COMBINED AT								
+	CP66	37.89	1	FLOW	7469.	7331.	7217.	7111.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-68	.36	1	FLOW	231.	227.	223.	220.
				TIME	3.75	3.75	3.75	3.75
ROUTED TO								
+	RC1-68	.36	1	FLOW	228.	226.	222.	216.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-72	.45	1	FLOW	268.	263.	258.	254.
				TIME	3.67	3.67	3.67	3.67
2 COMBINED AT								
+	CP67	.81	1	FLOW	479.	472.	464.	455.
				TIME	3.75	3.75	3.75	3.75
HYDROGRAPH AT								
+	C1-70	.34	1	FLOW	221.	217.	214.	211.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RC1-70	.34	1	FLOW	217.	213.	210.	209.
				TIME	3.92	3.92	3.92	3.92
HYDROGRAPH AT								
+	C1-71	.29	1	FLOW	136.	133.	131.	129.
				TIME	3.83	3.83	3.83	3.83
2 COMBINED AT								
+	CP68	.63	1	FLOW	351.	344.	339.	336.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RCP68	.63	1	FLOW	347.	341.	338.	335.
				TIME	3.92	3.92	3.92	3.92
2 COMBINED AT								
+	CP69	1.44	1	FLOW	774.	762.	752.	740.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RCP69	1.44	1	FLOW	773.	762.	749.	735.
				TIME	3.83	3.83	3.83	3.83
HYDROGRAPH AT								
+	C1-73	.32	1	FLOW	199.	195.	192.	189.
				TIME	3.75	3.75	3.75	3.75
2 COMBINED AT								
+	CP70	1.77	1	FLOW	961.	948.	932.	915.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RCP70	1.77	1	FLOW	949.	930.	916.	905.
				TIME	3.92	3.92	3.83	3.92
HYDROGRAPH AT								
+	C1-74	.19	1	FLOW	185.	182.	180.	177.
				TIME	3.58	3.58	3.58	3.58
2 COMBINED AT								
+	CP71	1.96	1	FLOW	1029.	1009.	1000.	981.
				TIME	3.83	3.83	3.83	3.83
2 COMBINED AT								
+	CPC1LM	39.85	1	FLOW	8498.	8341.	8217.	8092.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RC1LM	39.85	1	FLOW	8426.	8269.	8142.	8017.
				TIME	3.83	3.83	3.83	3.83

HYDROGRAPH AT								
+	C1-75	.37	1	FLOW	296.	290.	285.	281.
				TIME	3.58	3.58	3.58	3.58
2 COMBINED AT								
+	CP72	40.22	1	FLOW	8560.	8400.	8272.	8145.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RCP72	40.22	1	FLOW	8488.	8327.	8203.	8095.
				TIME	3.83	3.83	3.92	3.92
HYDROGRAPH AT								
+	C1-76	.35	1	FLOW	265.	260.	257.	253.
				TIME	3.67	3.67	3.67	3.67
ROUTED TO								
+	RC1-76	.35	1	FLOW	263.	259.	254.	251.
				TIME	3.67	3.67	3.67	3.67
HYDROGRAPH AT								
+	C1-77	.43	1	FLOW	264.	258.	253.	249.
				TIME	3.58	3.58	3.58	3.58
2 COMBINED AT								
+	CP72A	.78	1	FLOW	509.	499.	490.	483.
				TIME	3.58	3.58	3.58	3.58
ROUTED TO								
+	RCP72A	.78	1	FLOW	504.	494.	485.	479.
				TIME	3.67	3.67	3.67	3.67
ROUTED TO								
+	RCP72A	.78	1	FLOW	501.	490.	482.	475.
				TIME	3.67	3.67	3.67	3.67
ROUTED TO								
+	RCP72A	.78	1	FLOW	499.	488.	480.	472.
				TIME	3.67	3.67	3.67	3.67
HYDROGRAPH AT								
+	C1-78	.22	1	FLOW	231.	228.	225.	222.
				TIME	3.58	3.58	3.58	3.58
2 COMBINED AT								
+	CP72B	1.00	1	FLOW	694.	679.	668.	658.
				TIME	3.58	3.58	3.58	3.58
2 COMBINED AT								
+	CP75	41.21	1	FLOW	8985.	8815.	8678.	8546.
				TIME	3.83	3.83	3.83	3.83
ROUTED TO								
+	RCP75	41.21	1	FLOW	8902.	8738.	8609.	8492.
				TIME	3.92	3.92	3.92	3.92
HYDROGRAPH AT								
+	C1-82	.70	1	FLOW	207.	200.	196.	191.
				TIME	3.75	3.75	3.75	3.75
2 COMBINED AT								
+	CP76	41.91	1	FLOW	9076.	8907.	8774.	8655.
				TIME	3.92	3.92	3.92	3.92

1

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= .00									
RDB1	MANE	3.72	193.01	379.76	1.33	5.00	193.01	380.00	1.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2677E+03 EXCESS= .0000E+00 OUTFLOW= .2672E+03 BASIN STORAGE= .5355E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00									
RDB1	MANE	3.73	191.69	376.55	1.31	5.00	191.69	375.00	1.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2641E+03 EXCESS= .0000E+00 OUTFLOW= .2636E+03 BASIN STORAGE= .5223E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00									
RDB1	MANE	3.73	190.64	376.97	1.30	5.00	190.64	375.00	1.30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2616E+03 EXCESS= .0000E+00 OUTFLOW= .2611E+03 BASIN STORAGE= .5101E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB1	MANE	3.74	189.72	377.34	1.29	5.00	189.72	375.00	1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2593E+03 EXCESS= .0000E+00 OUTFLOW= .2589E+03 BASIN STORAGE= .4997E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP1	MANE	1.20	495.06	217.46	1.34	5.00	491.34	220.00	1.34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3013E+03 EXCESS= .0000E+00 OUTFLOW= .3010E+03 BASIN STORAGE= .3485E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP1	MANE	1.21	486.34	216.55	1.32	5.00	482.65	220.00	1.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2973E+03 EXCESS= .0000E+00 OUTFLOW= .2970E+03 BASIN STORAGE= .3419E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP1	MANE	1.22	479.60	216.55	1.30	5.00	476.15	220.00	1.30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2941E+03 EXCESS= .0000E+00 OUTFLOW= .2938E+03 BASIN STORAGE= .3362E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP1	MANE	1.22	473.57	217.64	1.29	5.00	470.97	220.00	1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2912E+03 EXCESS= .0000E+00 OUTFLOW= .2910E+03 BASIN STORAGE= .3312E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP2	MANE	1.38	776.18	216.60	1.35	5.00	766.26	215.00	1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3233E+03 EXCESS= .0000E+00 OUTFLOW= .3229E+03 BASIN STORAGE= .4827E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP2	MANE	1.39	759.21	216.79	1.33	5.00	751.44	215.00	1.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3189E+03 EXCESS= .0000E+00 OUTFLOW= .3186E+03 BASIN STORAGE= .4732E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP2	MANE	1.40	751.71	216.61	1.31	5.00	741.66	215.00	1.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3154E+03 EXCESS= .0000E+00 OUTFLOW= .3150E+03 BASIN STORAGE= .4656E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP2	MANE	1.40	744.94	216.24	1.30	5.00	732.27	215.00	1.30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3123E+03 EXCESS= .0000E+00 OUTFLOW= .3120E+03 BASIN STORAGE= .4589E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP3	MANE	.64	1346.76	216.00	1.37	5.00	1330.33	215.00	1.37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3715E+03 EXCESS= .0000E+00 OUTFLOW= .3713E+03 BASIN STORAGE= .2793E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP3	MANE	.65	1325.29	215.68	1.35	5.00	1307.58	215.00	1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3662E+03 EXCESS= .0000E+00 OUTFLOW= .3661E+03 BASIN STORAGE= .2738E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP3	MANE	.65	1304.99	215.55	1.33	5.00	1288.91	215.00	1.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3620E+03 EXCESS= .0000E+00 OUTFLOW= .3618E+03 BASIN STORAGE= .2694E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP3	MANE	.65	1288.44	215.99	1.32	5.00	1271.51	215.00	1.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3583E+03 EXCESS= .0000E+00 OUTFLOW= .3582E+03 BASIN STORAGE= .2655E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP4	MANE	.64	1476.84	215.99	1.37	5.00	1457.00	215.00	1.37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3826E+03 EXCESS= .0000E+00 OUTFLOW= .3825E+03 BASIN STORAGE= .2909E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP4	MANE	.65	1451.42	215.53	1.35	5.00	1432.83	215.00	1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3772E+03 EXCESS= .0000E+00 OUTFLOW= .3770E+03 BASIN STORAGE= .2852E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP4	MANE	.65	1430.18	216.11	1.34	5.00	1411.81	215.00	1.34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3729E+03 EXCESS= .0000E+00 OUTFLOW= .3727E+03 BASIN STORAGE= .2807E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP4	MANE	.65	1412.92	215.96	1.32	5.00	1392.54	215.00	1.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3691E+03 EXCESS= .0000E+00 OUTFLOW= .3689E+03 BASIN STORAGE= .2766E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-8	MANE	4.22	705.59	223.45	1.37	5.00	688.00	220.00	1.37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6144E+02 EXCESS= .0000E+00 OUTFLOW= .6146E+02 BASIN STORAGE= .4581E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-8	MANE	4.25	679.98	220.76	1.35	5.00	679.53	225.00	1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6019E+02 EXCESS= .0000E+00 OUTFLOW= .6021E+02 BASIN STORAGE= .5454E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-8	MANE	4.27	673.43	222.00	1.32	5.00	656.14	225.00	1.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5918E+02 EXCESS= .0000E+00 OUTFLOW= .5920E+02 BASIN STORAGE= .6331E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-8	MANE	4.29	669.86	223.11	1.31	5.00	648.75	220.00	1.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5844E+02 EXCESS= .0000E+00 OUTFLOW= .5846E+02 BASIN STORAGE= .5251E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB2	MANE	4.64	301.63	394.68	1.00	5.00	301.63	395.00	1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4985E+03 EXCESS= .0000E+00 OUTFLOW= .4968E+03 BASIN STORAGE= .1729E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB2	MANE	4.65	299.73	390.53	.99	5.00	299.73	395.00	.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4947E+03 EXCESS= .0000E+00 OUTFLOW= .4930E+03 BASIN STORAGE= .1713E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB2	MANE	4.65	298.07	390.97	.98	5.00	298.06	395.00	.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4915E+03 EXCESS= .0000E+00 OUTFLOW= .4898E+03 BASIN STORAGE= .1696E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB2	MANE	4.66	296.51	391.38	.97	5.00	296.50	395.00	.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4874E+03 EXCESS= .0000E+00 OUTFLOW= .4857E+03 BASIN STORAGE= .1683E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-10	MANE	2.03	281.84	227.24	1.32	5.00	278.59	225.00	1.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2849E+02 EXCESS= .0000E+00 OUTFLOW= .2849E+02 BASIN STORAGE= .3041E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-10	MANE	2.04	275.92	228.10	1.29	5.00	273.39	225.00	1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2794E+02 EXCESS= .0000E+00 OUTFLOW= .2794E+02 BASIN STORAGE= .2423E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

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     RC1-10  MANE         2.04    271.67    226.76      1.27      5.00    269.65    225.00        1.27

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2751E+02 EXCESS= .0000E+00 OUTFLOW= .2751E+02 BASIN STORAGE= .2634E-03 PERCENT ERROR=    .0

     FOR PLAN = 1  RATIO=  .00
     RC1-10  MANE         2.05    268.59    227.37      1.26      5.00    265.37    225.00        1.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2713E+02 EXCESS= .0000E+00 OUTFLOW= .2713E+02 BASIN STORAGE= .2862E-03 PERCENT ERROR=    .0

     FOR PLAN = 1  RATIO=  .00
       RCP10  MANE         3.13    406.77    228.30      1.23      5.00    404.35    230.00        1.23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4131E+02 EXCESS= .0000E+00 OUTFLOW= .4131E+02 BASIN STORAGE= .2498E-02 PERCENT ERROR=    .0

     FOR PLAN = 1  RATIO=  .00
       RCP10  MANE         3.15    395.47    226.67      1.20      5.00    394.87    230.00        1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4049E+02 EXCESS= .0000E+00 OUTFLOW= .4049E+02 BASIN STORAGE= .2515E-02 PERCENT ERROR=    .0

     FOR PLAN = 1  RATIO=  .00
       RCP10  MANE         3.16    392.72    227.81      1.18      5.00    390.02    230.00        1.18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3983E+02 EXCESS= .0000E+00 OUTFLOW= .3984E+02 BASIN STORAGE= .1932E-02 PERCENT ERROR=    .0

     FOR PLAN = 1  RATIO=  .00
       RCP10  MANE         3.18    385.02    229.03      1.16      5.00    383.74    230.00        1.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3926E+02 EXCESS= .0000E+00 OUTFLOW= .3926E+02 BASIN STORAGE= .2042E-02 PERCENT ERROR=    .0

     FOR PLAN = 1  RATIO=  .00
       RCP12  MANE          .65   1096.68    225.02      1.02      5.00   1096.59    225.00        1.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5880E+03 EXCESS= .0000E+00 OUTFLOW= .5876E+03 BASIN STORAGE= .4346E+00 PERCENT ERROR=    .0

     FOR PLAN = 1  RATIO=  .00
       RCP12  MANE          .66   1076.30    225.17      1.01      5.00   1075.81    225.00        1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5817E+03 EXCESS= .0000E+00 OUTFLOW= .5813E+03 BASIN STORAGE= .4312E+00 PERCENT ERROR=    .0

     FOR PLAN = 1  RATIO=  .00
       RCP12  MANE          .66   1060.63    225.64      1.00      5.00   1060.36    225.00        1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5766E+03 EXCESS= .0000E+00 OUTFLOW= .5762E+03 BASIN STORAGE= .4277E+00 PERCENT ERROR=    .0

     FOR PLAN = 1  RATIO=  .00
       RCP12  MANE          .66   1046.67    225.34      1.00      5.00   1045.93    225.00        1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5722E+03 EXCESS= .0000E+00 OUTFLOW= .5719E+03 BASIN STORAGE= .4250E+00 PERCENT ERROR=    .0

     FOR PLAN = 1  RATIO=  .00
       RCP12  MANE          .99   1095.10    225.97      1.02      5.00   1090.56    225.00        1.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5878E+03 EXCESS= .0000E+00 OUTFLOW= .5872E+03 BASIN STORAGE= .6139E+00 PERCENT ERROR=    .0

     FOR PLAN = 1  RATIO=  .00
       RCP12  MANE          .99   1071.65    225.36      1.01      5.00   1070.06    225.00        1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5812E+03 EXCESS= .0000E+00 OUTFLOW= .5807E+03 BASIN STORAGE= .6091E+00 PERCENT ERROR=    .0

     FOR PLAN = 1  RATIO=  .00
       RCP12  MANE         1.00   1056.12    225.39      1.00      5.00   1054.19    225.00        1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5764E+03 EXCESS= .0000E+00 OUTFLOW= .5758E+03 BASIN STORAGE= .6039E+00 PERCENT ERROR=    .0

     FOR PLAN = 1  RATIO=  .00
       RCP12  MANE         1.00   1041.99    226.37      1.00      5.00   1040.09    225.00        1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5718E+03 EXCESS= .0000E+00 OUTFLOW= .5713E+03 BASIN STORAGE= .5999E+00 PERCENT ERROR=    .0
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          FOR PLAN = 1  RATIO=  .00
             RCP13  MANE          .85   1393.74    225.28      1.03      5.00   1391.48    225.00        1.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6166E+03 EXCESS= .0000E+00 OUTFLOW= .6161E+03 BASIN STORAGE= .5712E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP13  MANE          .86   1369.45    225.77      1.02      5.00   1366.04    225.00        1.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6099E+03 EXCESS= .0000E+00 OUTFLOW= .6094E+03 BASIN STORAGE= .5668E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP13  MANE          .86   1348.14    225.98      1.01      5.00   1345.41    225.00        1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6042E+03 EXCESS= .0000E+00 OUTFLOW= .6037E+03 BASIN STORAGE= .5621E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP13  MANE          .86   1329.25    226.08      1.00      5.00   1327.21    225.00        1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5995E+03 EXCESS= .0000E+00 OUTFLOW= .5990E+03 BASIN STORAGE= .5583E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP13  MANE          .37   1389.41    225.24      1.03      5.00   1387.32    225.00        1.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6162E+03 EXCESS= .0000E+00 OUTFLOW= .6159E+03 BASIN STORAGE= .3121E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP13  MANE          .38   1364.54    225.41      1.02      5.00   1362.21    225.00        1.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6094E+03 EXCESS= .0000E+00 OUTFLOW= .6092E+03 BASIN STORAGE= .3099E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP13  MANE          .38   1343.56    225.27      1.01      5.00   1341.30    225.00        1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6038E+03 EXCESS= .0000E+00 OUTFLOW= .6036E+03 BASIN STORAGE= .3077E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP13  MANE          .38   1325.96    225.36      1.00      5.00   1323.51    225.00        1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5990E+03 EXCESS= .0000E+00 OUTFLOW= .5987E+03 BASIN STORAGE= .3058E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP14  MANE          .98   1546.95    226.21      1.04      5.00   1540.05    225.00        1.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6316E+03 EXCESS= .0000E+00 OUTFLOW= .6309E+03 BASIN STORAGE= .8561E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP14  MANE          .99   1520.74    225.90      1.02      5.00   1511.45    225.00        1.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6245E+03 EXCESS= .0000E+00 OUTFLOW= .6239E+03 BASIN STORAGE= .8502E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP14  MANE          .99   1494.68    226.31      1.02      5.00   1488.21    225.00        1.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6188E+03 EXCESS= .0000E+00 OUTFLOW= .6182E+03 BASIN STORAGE= .8442E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP14  MANE         1.00   1473.67    225.54      1.01      5.00   1468.20    225.00        1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6138E+03 EXCESS= .0000E+00 OUTFLOW= .6132E+03 BASIN STORAGE= .8391E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              RC1-16  MANE         1.70    575.70    216.08      1.64      5.00    561.05    215.00        1.64

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4542E+02 EXCESS= .0000E+00 OUTFLOW= .4542E+02 BASIN STORAGE= .1367E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              RC1-16  MANE         1.71    567.47    217.34      1.61      5.00    551.28    215.00        1.61
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .4461E+02 EXCESS= .0000E+00 OUTFLOW= .4461E+02 BASIN STORAGE= .1678E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-16	MANE	1.72	565.31	216.65	1.59	5.00	544.49	215.00	1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4399E+02 EXCESS= .0000E+00 OUTFLOW= .4400E+02 BASIN STORAGE= .1607E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-16	MANE	1.73	550.87	217.56	1.57	5.00	536.87	215.00	1.57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4342E+02 EXCESS= .0000E+00 OUTFLOW= .4342E+02 BASIN STORAGE= .1595E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP15	MANE	1.66	1042.86	221.30	1.82	5.00	1030.98	220.00	1.82

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1053E+03 EXCESS= .0000E+00 OUTFLOW= .1053E+03 BASIN STORAGE= .1896E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP15	MANE	1.67	1021.91	220.84	1.79	5.00	1015.16	220.00	1.79

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1035E+03 EXCESS= .0000E+00 OUTFLOW= .1035E+03 BASIN STORAGE= .1640E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP15	MANE	1.68	1009.33	222.09	1.76	5.00	999.35	220.00	1.76

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1021E+03 EXCESS= .0000E+00 OUTFLOW= .1021E+03 BASIN STORAGE= .1768E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP15	MANE	1.69	998.98	221.03	1.74	5.00	990.46	220.00	1.74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1009E+03 EXCESS= .0000E+00 OUTFLOW= .1009E+03 BASIN STORAGE= .1896E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP15	MANE	1.68	1028.63	221.52	1.82	5.00	1003.40	225.00	1.82

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1053E+03 EXCESS= .0000E+00 OUTFLOW= .1053E+03 BASIN STORAGE= .2236E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP15	MANE	1.69	1009.49	222.76	1.79	5.00	990.00	225.00	1.79

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1035E+03 EXCESS= .0000E+00 OUTFLOW= .1035E+03 BASIN STORAGE= .1891E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP15	MANE	1.70	996.62	222.33	1.76	5.00	975.65	225.00	1.76

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1021E+03 EXCESS= .0000E+00 OUTFLOW= .1021E+03 BASIN STORAGE= .2030E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP15	MANE	1.70	984.37	221.34	1.74	5.00	965.85	225.00	1.74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1009E+03 EXCESS= .0000E+00 OUTFLOW= .1009E+03 BASIN STORAGE= .2196E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP16	MANE	1.73	1403.76	222.90	1.92	5.00	1383.01	225.00	1.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1450E+03 EXCESS= .0000E+00 OUTFLOW= .1450E+03 BASIN STORAGE= .1566E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP16	MANE	1.74	1386.05	222.27	1.89	5.00	1364.14	225.00	1.89

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1427E+03 EXCESS= .0000E+00 OUTFLOW= .1427E+03 BASIN STORAGE= .1915E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP16	MANE	1.74	1363.50	221.57	1.86	5.00	1344.52	225.00	1.86

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1409E+03 EXCESS= .0000E+00 OUTFLOW= .1409E+03 BASIN STORAGE= .1677E-02 PERCENT ERROR= .0

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          FOR PLAN = 1  RATIO=  .00
             RCP16  MANE          1.75   1353.27    222.32       1.84       5.00   1332.45    225.00         1.84

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1392E+03 EXCESS= .0000E+00 OUTFLOW= .1392E+03 BASIN STORAGE= .1726E-02 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO=  .00
            RC1-20  MANE          4.10    332.25    225.74        .91       5.00    329.89    225.00          .91

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3012E+02 EXCESS= .0000E+00 OUTFLOW= .3012E+02 BASIN STORAGE= .1359E-02 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO=  .00
            RC1-20  MANE          4.13    322.26    222.99        .89       5.00    320.99    225.00          .89

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2943E+02 EXCESS= .0000E+00 OUTFLOW= .2944E+02 BASIN STORAGE= .9751E-03 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO=  .00
            RC1-20  MANE          4.15    322.02    224.10        .88       5.00    319.95    225.00          .88

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2889E+02 EXCESS= .0000E+00 OUTFLOW= .2889E+02 BASIN STORAGE= .1239E-02 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO=  .00
            RC1-20  MANE          4.17    314.71    225.09        .86       5.00    314.27    225.00          .86

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2838E+02 EXCESS= .0000E+00 OUTFLOW= .2839E+02 BASIN STORAGE= .9638E-03 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO=  .00
             RCP18  MANE          1.73   1785.97    223.78       1.64       5.00   1782.16    225.00         1.64

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1875E+03 EXCESS= .0000E+00 OUTFLOW= .1875E+03 BASIN STORAGE= .2485E-02 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO=  .00
             RCP18  MANE          1.74   1758.28    223.31       1.61       5.00   1753.23    225.00         1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1843E+03 EXCESS= .0000E+00 OUTFLOW= .1844E+03 BASIN STORAGE= .2037E-02 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO=  .00
             RCP18  MANE          1.75   1734.23    224.27       1.59       5.00   1732.56    225.00         1.59

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1818E+03 EXCESS= .0000E+00 OUTFLOW= .1818E+03 BASIN STORAGE= .2531E-02 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO=  .00
             RCP18  MANE          1.76   1713.18    223.36       1.57       5.00   1711.02    225.00         1.57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1796E+03 EXCESS= .0000E+00 OUTFLOW= .1796E+03 BASIN STORAGE= .2533E-02 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO=  .00
            RC1-21  MANE          5.00    234.51    230.00       1.03       5.00    234.51    230.00         1.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2166E+02 EXCESS= .0000E+00 OUTFLOW= .2167E+02 BASIN STORAGE= .2441E-02 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO=  .00
            RC1-21  MANE          5.00    229.29    230.00       1.00       5.00    229.29    230.00         1.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2118E+02 EXCESS= .0000E+00 OUTFLOW= .2119E+02 BASIN STORAGE= .2368E-02 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO=  .00
            RC1-21  MANE          5.00    225.12    230.00        .99       5.00    225.12    230.00          .99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2080E+02 EXCESS= .0000E+00 OUTFLOW= .2081E+02 BASIN STORAGE= .2348E-02 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO=  .00
            RC1-21  MANE          5.00    221.49    230.00        .97       5.00    221.49    230.00          .97

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2047E+02 EXCESS= .0000E+00 OUTFLOW= .2048E+02 BASIN STORAGE= .2331E-02 PERCENT ERROR=     .0

          FOR PLAN = 1  RATIO=  .00
             RCP20  MANE          1.14   2201.49    226.23       1.59       5.00   2197.94    225.00         1.59
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .2346E+03 EXCESS= .0000E+00 OUTFLOW= .2346E+03 BASIN STORAGE= .1511E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP20	MANE	1.15	2162.75	225.28	1.56	5.00	2159.61	225.00	1.56	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2306E+03 EXCESS= .0000E+00 OUTFLOW= .2306E+03 BASIN STORAGE= .1715E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP20	MANE	1.15	2136.40	226.28	1.54	5.00	2132.98	225.00	1.54	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2274E+03 EXCESS= .0000E+00 OUTFLOW= .2274E+03 BASIN STORAGE= .1660E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP20	MANE	1.16	2111.64	226.14	1.52	5.00	2106.58	225.00	1.52	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2245E+03 EXCESS= .0000E+00 OUTFLOW= .2245E+03 BASIN STORAGE= .1710E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP21	MANE	1.53	2519.76	226.39	1.62	5.00	2501.28	225.00	1.62	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2681E+03 EXCESS= .0000E+00 OUTFLOW= .2681E+03 BASIN STORAGE= .2173E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP21	MANE	1.54	2476.14	226.23	1.59	5.00	2457.36	225.00	1.59	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2635E+03 EXCESS= .0000E+00 OUTFLOW= .2635E+03 BASIN STORAGE= .2183E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP21	MANE	1.55	2437.60	225.66	1.57	5.00	2428.15	225.00	1.57	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2599E+03 EXCESS= .0000E+00 OUTFLOW= .2599E+03 BASIN STORAGE= .2518E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP21	MANE	1.55	2415.64	226.63	1.55	5.00	2397.77	225.00	1.55	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2567E+03 EXCESS= .0000E+00 OUTFLOW= .2567E+03 BASIN STORAGE= .2226E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1BH	MANE	.33	4093.01	225.35	1.16	5.00	4083.80	225.00	1.16	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9068E+03 EXCESS= .0000E+00 OUTFLOW= .9065E+03 BASIN STORAGE= .3425E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1BH	MANE	.33	4018.41	225.43	1.15	5.00	4009.79	225.00	1.15	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8950E+03 EXCESS= .0000E+00 OUTFLOW= .8947E+03 BASIN STORAGE= .3400E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1BH	MANE	.33	3964.79	225.47	1.14	5.00	3956.14	225.00	1.14	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8854E+03 EXCESS= .0000E+00 OUTFLOW= .8851E+03 BASIN STORAGE= .3373E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1BH	MANE	.33	3913.89	225.48	1.13	5.00	3905.24	225.00	1.13	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8771E+03 EXCESS= .0000E+00 OUTFLOW= .8768E+03 BASIN STORAGE= .3351E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP23	MANE	.30	4130.74	225.37	1.17	5.00	4122.29	225.00	1.17	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9131E+03 EXCESS= .0000E+00 OUTFLOW= .9129E+03 BASIN STORAGE= .3132E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP23	MANE	.30	4057.03	225.29	1.15	5.00	4048.54	225.00	1.15	

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9011E+03 EXCESS= .0000E+00 OUTFLOW= .9009E+03 BASIN STORAGE= .3109E+00 PERCENT ERROR= .0

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          FOR PLAN = 1  RATIO=  .00
             RCP23  MANE          .30   4001.28    225.43      1.14      5.00   3992.89    225.00        1.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8914E+03 EXCESS= .0000E+00 OUTFLOW= .8912E+03 BASIN STORAGE= .3085E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP23  MANE          .30   3949.30    225.22      1.13      5.00   3941.72    225.00        1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8832E+03 EXCESS= .0000E+00 OUTFLOW= .8829E+03 BASIN STORAGE= .3064E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RC1-26  MANE         3.27    310.81    225.56      1.45      5.00    309.24    225.00        1.45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3090E+02 EXCESS= .0000E+00 OUTFLOW= .3090E+02 BASIN STORAGE= .8388E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RC1-26  MANE         3.28    307.10    226.55      1.42      5.00    304.81    225.00        1.42

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3034E+02 EXCESS= .0000E+00 OUTFLOW= .3035E+02 BASIN STORAGE= .9463E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RC1-26  MANE         3.30    301.70    227.36      1.40      5.00    299.59    225.00        1.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2989E+02 EXCESS= .0000E+00 OUTFLOW= .2989E+02 BASIN STORAGE= .7681E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RC1-26  MANE         3.31    296.97    228.07      1.38      5.00    295.71    225.00        1.38

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2950E+02 EXCESS= .0000E+00 OUTFLOW= .2950E+02 BASIN STORAGE= .9597E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP24  MANE          5.00    397.24    230.00      1.18      5.00    397.24    230.00        1.18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3961E+02 EXCESS= .0000E+00 OUTFLOW= .3961E+02 BASIN STORAGE= .2719E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP24  MANE          5.00    390.84    230.00      1.15      5.00    390.84    230.00        1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3884E+02 EXCESS= .0000E+00 OUTFLOW= .3884E+02 BASIN STORAGE= .2673E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP24  MANE          5.00    383.71    230.00      1.14      5.00    383.71    230.00        1.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3821E+02 EXCESS= .0000E+00 OUTFLOW= .3821E+02 BASIN STORAGE= .2670E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP24  MANE          5.00    378.11    230.00      1.12      5.00    378.11    230.00        1.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3767E+02 EXCESS= .0000E+00 OUTFLOW= .3767E+02 BASIN STORAGE= .2651E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP26  MANE          1.28   4784.49    225.87      1.18      5.00   4750.71    225.00        1.18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9831E+03 EXCESS= .0000E+00 OUTFLOW= .9822E+03 BASIN STORAGE= .1411E+01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP26  MANE          1.28   4701.89    225.99      1.16      5.00   4666.48    225.00        1.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9699E+03 EXCESS= .0000E+00 OUTFLOW= .9690E+03 BASIN STORAGE= .1400E+01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP26  MANE          1.29   4631.03    225.81      1.15      5.00   4596.17    225.00        1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9591E+03 EXCESS= .0000E+00 OUTFLOW= .9582E+03 BASIN STORAGE= .1390E+01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP26  MANE          1.30   4572.20    226.81      1.14      5.00   4536.57    225.00        1.14
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .9499E+03 EXCESS= .0000E+00 OUTFLOW= .9490E+03 BASIN STORAGE= .1380E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP27	MANE	.49	4846.22	225.57	1.18	5.00	4820.76	225.00	1.18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9918E+03 EXCESS= .0000E+00 OUTFLOW= .9914E+03 BASIN STORAGE= .5439E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP27	MANE	.49	4760.66	225.49	1.16	5.00	4735.68	225.00	1.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9783E+03 EXCESS= .0000E+00 OUTFLOW= .9780E+03 BASIN STORAGE= .5399E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP27	MANE	.50	4688.17	225.68	1.15	5.00	4661.87	225.00	1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9675E+03 EXCESS= .0000E+00 OUTFLOW= .9672E+03 BASIN STORAGE= .5359E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP27	MANE	.50	4627.21	225.70	1.14	5.00	4600.84	225.00	1.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9580E+03 EXCESS= .0000E+00 OUTFLOW= .9577E+03 BASIN STORAGE= .5324E+00 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-30	MANE	5.00	300.72	225.00	1.68	5.00	300.72	225.00	1.68

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2659E+02 EXCESS= .0000E+00 OUTFLOW= .2660E+02 BASIN STORAGE= .1217E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-30	MANE	5.00	295.82	225.00	1.65	5.00	295.82	225.00	1.65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2613E+02 EXCESS= .0000E+00 OUTFLOW= .2613E+02 BASIN STORAGE= .1206E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-30	MANE	5.00	291.89	225.00	1.63	5.00	291.89	225.00	1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2576E+02 EXCESS= .0000E+00 OUTFLOW= .2576E+02 BASIN STORAGE= .1197E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-30	MANE	5.00	288.46	225.00	1.61	5.00	288.46	225.00	1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2543E+02 EXCESS= .0000E+00 OUTFLOW= .2544E+02 BASIN STORAGE= .1190E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP28	MANE	4.91	331.67	230.55	.96	5.00	330.92	230.00	.96

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3162E+02 EXCESS= .0000E+00 OUTFLOW= .3163E+02 BASIN STORAGE= .1155E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP28	MANE	4.93	321.33	226.82	.94	5.00	318.15	230.00	.94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3095E+02 EXCESS= .0000E+00 OUTFLOW= .3096E+02 BASIN STORAGE= .1493E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP28	MANE	4.95	318.45	227.77	.92	5.00	312.16	230.00	.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3043E+02 EXCESS= .0000E+00 OUTFLOW= .3044E+02 BASIN STORAGE= .1191E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP28	MANE	4.97	315.94	228.62	.91	5.00	309.91	230.00	.91

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2998E+02 EXCESS= .0000E+00 OUTFLOW= .2998E+02 BASIN STORAGE= .1033E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP29	MANE	.74	360.40	230.88	.72	5.00	359.74	230.00	.72

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3619E+02 EXCESS= .0000E+00 OUTFLOW= .3619E+02 BASIN STORAGE= .8935E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

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            RCP29  MANE          .76    346.10    230.91       .70      5.00    345.17    230.00         .70

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3533E+02 EXCESS= .0000E+00 OUTFLOW= .3533E+02 BASIN STORAGE= .8718E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RCP29  MANE          .76    339.10    230.61       .69      5.00    337.83    230.00         .69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3467E+02 EXCESS= .0000E+00 OUTFLOW= .3467E+02 BASIN STORAGE= .8954E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RCP29  MANE          .77    335.82    230.78       .68      5.00    334.58    230.00         .68

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3409E+02 EXCESS= .0000E+00 OUTFLOW= .3409E+02 BASIN STORAGE= .9315E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RCP30  MANE          .54    506.19    230.54       .81      5.00    504.71    230.00         .81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5207E+02 EXCESS= .0000E+00 OUTFLOW= .5207E+02 BASIN STORAGE= .7813E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RCP30  MANE          .55    488.60    230.54       .79      5.00    487.01    230.00         .79

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5087E+02 EXCESS= .0000E+00 OUTFLOW= .5087E+02 BASIN STORAGE= .7625E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RCP30  MANE          .55    478.00    230.76       .77      5.00    476.88    230.00         .77

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4993E+02 EXCESS= .0000E+00 OUTFLOW= .4993E+02 BASIN STORAGE= .7303E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RCP30  MANE          .56    472.79    230.69       .76      5.00    471.47    230.00         .76

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4912E+02 EXCESS= .0000E+00 OUTFLOW= .4912E+02 BASIN STORAGE= .7865E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RC1-35  MANE         4.65    540.46    223.06      1.68      5.00    526.69    225.00        1.67

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4853E+02 EXCESS= .0000E+00 OUTFLOW= .4854E+02 BASIN STORAGE= .1679E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RC1-35  MANE         4.67    534.95    224.00      1.65      5.00    524.84    225.00        1.65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4781E+02 EXCESS= .0000E+00 OUTFLOW= .4782E+02 BASIN STORAGE= .1350E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RC1-35  MANE         4.68    528.42    224.77      1.63      5.00    525.69    225.00        1.63

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4720E+02 EXCESS= .0000E+00 OUTFLOW= .4721E+02 BASIN STORAGE= .1137E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RC1-35  MANE         4.70    514.22    225.45      1.61      5.00    513.73    225.00        1.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4652E+02 EXCESS= .0000E+00 OUTFLOW= .4652E+02 BASIN STORAGE= .1658E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RCP32  MANE          2.94    582.41    226.04      1.28      5.00    578.55    225.00        1.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5397E+02 EXCESS= .0000E+00 OUTFLOW= .5397E+02 BASIN STORAGE= .2156E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RCP32  MANE          2.94    576.83    226.57      1.26      5.00    573.47    225.00        1.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5315E+02 EXCESS= .0000E+00 OUTFLOW= .5316E+02 BASIN STORAGE= .2624E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RCP32  MANE          2.94    574.01    226.69      1.25      5.00    569.95    225.00        1.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5253E+02 EXCESS= .0000E+00 OUTFLOW= .5254E+02 BASIN STORAGE= .2571E-02 PERCENT ERROR=    .0
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          FOR PLAN = 1  RATIO=  .00
             RCP32  MANE          2.97    561.08    225.56      1.23      5.00    557.37    225.00        1.23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5167E+02 EXCESS= .0000E+00 OUTFLOW= .5168E+02 BASIN STORAGE= .2369E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP33  MANE          3.38    646.92    226.27      1.14      5.00    638.13    230.00        1.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6148E+02 EXCESS= .0000E+00 OUTFLOW= .6149E+02 BASIN STORAGE= .2996E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP33  MANE          3.39    644.25    227.15      1.12      5.00    628.60    230.00        1.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6045E+02 EXCESS= .0000E+00 OUTFLOW= .6046E+02 BASIN STORAGE= .3384E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP33  MANE          3.40    640.07    227.79      1.11      5.00    625.99    230.00        1.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5967E+02 EXCESS= .0000E+00 OUTFLOW= .5967E+02 BASIN STORAGE= .3033E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP33  MANE          3.43    618.71    229.53      1.09      5.00    615.20    230.00        1.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5867E+02 EXCESS= .0000E+00 OUTFLOW= .5868E+02 BASIN STORAGE= .3046E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP34  MANE          2.82    967.92    228.13      1.17      5.00    958.81    230.00        1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9407E+02 EXCESS= .0000E+00 OUTFLOW= .9407E+02 BASIN STORAGE= .2660E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP34  MANE          2.83    950.19    226.52      1.15      5.00    940.87    230.00        1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9235E+02 EXCESS= .0000E+00 OUTFLOW= .9236E+02 BASIN STORAGE= .2591E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP34  MANE          2.85    942.77    227.61      1.13      5.00    935.21    230.00        1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9103E+02 EXCESS= .0000E+00 OUTFLOW= .9103E+02 BASIN STORAGE= .2849E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP34  MANE          2.87    917.86    229.30      1.12      5.00    912.87    230.00        1.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8957E+02 EXCESS= .0000E+00 OUTFLOW= .8958E+02 BASIN STORAGE= .2749E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              RC1-39  MANE          2.94    585.07    226.40      1.81      5.00    582.03    225.00        1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5903E+02 EXCESS= .0000E+00 OUTFLOW= .5903E+02 BASIN STORAGE= .7517E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              RC1-39  MANE          2.95    572.15    224.35      1.78      5.00    572.02    225.00        1.78

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5803E+02 EXCESS= .0000E+00 OUTFLOW= .5803E+02 BASIN STORAGE= .8601E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              RC1-39  MANE          2.96    567.75    225.08      1.76      5.00    567.33    225.00        1.76

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5724E+02 EXCESS= .0000E+00 OUTFLOW= .5724E+02 BASIN STORAGE= .7077E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              RC1-39  MANE          2.97    562.92    225.73      1.74      5.00    560.38    225.00        1.74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5655E+02 EXCESS= .0000E+00 OUTFLOW= .5656E+02 BASIN STORAGE= .8682E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP36  MANE          3.45   1593.53    227.59      1.29      5.00   1590.14    230.00        1.29
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .1601E+03 EXCESS= .0000E+00 OUTFLOW= .1601E+03 BASIN STORAGE= .4504E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP36	MANE	3.47	1570.58	229.30	1.26	5.00	1566.37	230.00	1.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1571E+03 EXCESS= .0000E+00 OUTFLOW= .1572E+03 BASIN STORAGE= .4322E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP36	MANE	3.49	1547.88	230.20	1.24	5.00	1546.13	230.00	1.24

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1549E+03 EXCESS= .0000E+00 OUTFLOW= .1550E+03 BASIN STORAGE= .3711E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP36	MANE	3.51	1524.30	228.30	1.23	5.00	1518.56	230.00	1.23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1526E+03 EXCESS= .0000E+00 OUTFLOW= .1526E+03 BASIN STORAGE= .3889E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP37	MANE	1.37	1649.45	230.70	1.27	5.00	1640.64	230.00	1.27

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1691E+03 EXCESS= .0000E+00 OUTFLOW= .1691E+03 BASIN STORAGE= .1460E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP37	MANE	1.37	1621.39	230.54	1.25	5.00	1612.33	230.00	1.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1660E+03 EXCESS= .0000E+00 OUTFLOW= .1660E+03 BASIN STORAGE= .1487E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP37	MANE	1.38	1603.49	231.59	1.23	5.00	1592.77	230.00	1.23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1636E+03 EXCESS= .0000E+00 OUTFLOW= .1636E+03 BASIN STORAGE= .1496E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP37	MANE	1.39	1573.65	231.63	1.21	5.00	1565.43	230.00	1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1612E+03 EXCESS= .0000E+00 OUTFLOW= .1612E+03 BASIN STORAGE= .1501E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP38	MANE	2.55	2403.50	229.61	1.36	5.00	2402.90	230.00	1.36

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2533E+03 EXCESS= .0000E+00 OUTFLOW= .2534E+03 BASIN STORAGE= .2901E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP38	MANE	2.57	2364.46	230.95	1.34	5.00	2347.55	230.00	1.34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2486E+03 EXCESS= .0000E+00 OUTFLOW= .2486E+03 BASIN STORAGE= .2786E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP38	MANE	2.58	2330.05	231.94	1.32	5.00	2318.33	230.00	1.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2451E+03 EXCESS= .0000E+00 OUTFLOW= .2451E+03 BASIN STORAGE= .3163E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP38	MANE	2.59	2300.12	230.58	1.30	5.00	2286.68	230.00	1.30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2416E+03 EXCESS= .0000E+00 OUTFLOW= .2416E+03 BASIN STORAGE= .3283E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP40	MANE	5.00	778.76	225.00	1.54	5.00	778.76	225.00	1.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7109E+02 EXCESS= .0000E+00 OUTFLOW= .7110E+02 BASIN STORAGE= .1906E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP40	MANE	5.00	764.92	225.00	1.52	5.00	764.92	225.00	1.52

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6979E+02 EXCESS= .0000E+00 OUTFLOW= .6981E+02 BASIN STORAGE= .1890E-02 PERCENT ERROR= .0

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          FOR PLAN = 1  RATIO=  .00
             RCP40  MANE          5.00    753.86    225.00      1.49      5.00    753.86    225.00        1.49

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6876E+02 EXCESS= .0000E+00 OUTFLOW= .6878E+02 BASIN STORAGE= .1877E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP40  MANE          5.00    744.19    225.00      1.47      5.00    744.19    225.00        1.47

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6786E+02 EXCESS= .0000E+00 OUTFLOW= .6788E+02 BASIN STORAGE= .1865E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              RDB3  MANE          3.36    136.90    248.54      1.30      5.00    136.78    250.00        1.30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3453E+02 EXCESS= .0000E+00 OUTFLOW= .3453E+02 BASIN STORAGE= .4494E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              RDB3  MANE          3.36    135.91    248.89      1.27      5.00    135.82    250.00        1.27

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3385E+02 EXCESS= .0000E+00 OUTFLOW= .3385E+02 BASIN STORAGE= .4015E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              RDB3  MANE          3.37    135.12    249.17      1.25      5.00    135.05    250.00        1.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3333E+02 EXCESS= .0000E+00 OUTFLOW= .3332E+02 BASIN STORAGE= .3722E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              RDB3  MANE          3.37    134.47    246.04      1.23      5.00    134.40    245.00        1.23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3286E+02 EXCESS= .0000E+00 OUTFLOW= .3286E+02 BASIN STORAGE= .3474E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP45  MANE          3.05    294.62    222.58       .94      5.00    293.02    220.00         .94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3681E+03 EXCESS= .0000E+00 OUTFLOW= .3671E+03 BASIN STORAGE= .1022E+01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP45  MANE          3.07    290.65    220.73       .93      5.00    288.48    220.00         .93

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3644E+03 EXCESS= .0000E+00 OUTFLOW= .3635E+03 BASIN STORAGE= .1014E+01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP45  MANE          3.08    287.62    221.66       .93      5.00    284.59    220.00         .93

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3619E+03 EXCESS= .0000E+00 OUTFLOW= .3610E+03 BASIN STORAGE= .1008E+01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP45  MANE          3.09    284.04    222.53       .92      5.00    281.45    220.00         .92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3594E+03 EXCESS= .0000E+00 OUTFLOW= .3585E+03 BASIN STORAGE= .1000E+01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP45  MANE          4.33    293.70    225.06       .94      5.00    293.50    225.00         .94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3671E+03 EXCESS= .0000E+00 OUTFLOW= .3658E+03 BASIN STORAGE= .1381E+01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP45  MANE          4.35    287.61    226.22       .93      5.00    285.35    225.00         .93

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3634E+03 EXCESS= .0000E+00 OUTFLOW= .3622E+03 BASIN STORAGE= .1370E+01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP45  MANE          4.37    282.65    227.24       .92      5.00    281.34    225.00         .92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3615E+03 EXCESS= .0000E+00 OUTFLOW= .3602E+03 BASIN STORAGE= .1360E+01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP45  MANE          4.39    280.62    223.69       .92      5.00    280.22    225.00         .92
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .3583E+03 EXCESS= .0000E+00 OUTFLOW= .3570E+03 BASIN STORAGE= .1351E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP47	MANE	3.15	827.32	226.65	.97	5.00	816.54	225.00	.97

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4224E+03 EXCESS= .0000E+00 OUTFLOW= .4212E+03 BASIN STORAGE= .1340E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP47	MANE	3.17	808.95	228.22	.96	5.00	800.11	225.00	.96

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4180E+03 EXCESS= .0000E+00 OUTFLOW= .4168E+03 BASIN STORAGE= .1328E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP47	MANE	3.18	796.09	226.11	.95	5.00	788.24	225.00	.95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4147E+03 EXCESS= .0000E+00 OUTFLOW= .4136E+03 BASIN STORAGE= .1319E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP47	MANE	3.19	789.35	226.84	.94	5.00	778.80	225.00	.94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4112E+03 EXCESS= .0000E+00 OUTFLOW= .4100E+03 BASIN STORAGE= .1310E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-51	MANE	4.38	306.31	227.61	1.36	5.00	301.48	225.00	1.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3009E+02 EXCESS= .0000E+00 OUTFLOW= .3009E+02 BASIN STORAGE= .1144E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-51	MANE	4.40	301.26	228.64	1.33	5.00	300.08	225.00	1.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2956E+02 EXCESS= .0000E+00 OUTFLOW= .2956E+02 BASIN STORAGE= .9315E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-51	MANE	4.41	296.83	225.06	1.31	5.00	296.43	225.00	1.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2911E+02 EXCESS= .0000E+00 OUTFLOW= .2911E+02 BASIN STORAGE= .1245E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-51	MANE	4.43	292.89	225.79	1.29	5.00	288.78	225.00	1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2869E+02 EXCESS= .0000E+00 OUTFLOW= .2869E+02 BASIN STORAGE= .1047E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP49	MANE	4.93	466.78	226.92	1.30	5.00	460.47	230.00	1.30

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4634E+02 EXCESS= .0000E+00 OUTFLOW= .4635E+02 BASIN STORAGE= .1166E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP49	MANE	4.94	461.67	227.46	1.28	5.00	454.48	230.00	1.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4555E+02 EXCESS= .0000E+00 OUTFLOW= .4556E+02 BASIN STORAGE= .1678E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP49	MANE	4.96	455.65	228.22	1.26	5.00	449.24	230.00	1.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4487E+02 EXCESS= .0000E+00 OUTFLOW= .4488E+02 BASIN STORAGE= .1431E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP49	MANE	4.99	449.09	229.46	1.24	5.00	446.18	230.00	1.24

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4420E+02 EXCESS= .0000E+00 OUTFLOW= .4421E+02 BASIN STORAGE= .1141E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP51	MANE	.79	6230.46	226.08	1.11	5.00	6186.21	230.00	1.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1474E+04 EXCESS= .0000E+00 OUTFLOW= .1473E+04 BASIN STORAGE= .1340E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP51	MANE	.80	6118.61	225.90	1.09	5.00	6081.96	230.00	1.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1455E+04 EXCESS= .0000E+00 OUTFLOW= .1454E+04 BASIN STORAGE= .1329E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP51	MANE	.80	6026.60	226.31	1.08	5.00	5989.17	230.00	1.08

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1440E+04 EXCESS= .0000E+00 OUTFLOW= .1439E+04 BASIN STORAGE= .1320E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP51	MANE	.80	5954.00	226.46	1.07	5.00	5915.30	230.00	1.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1426E+04 EXCESS= .0000E+00 OUTFLOW= .1425E+04 BASIN STORAGE= .1311E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC156	MANE	5.00	247.67	235.00	1.19	5.00	247.67	235.00	1.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2878E+02 EXCESS= .0000E+00 OUTFLOW= .2878E+02 BASIN STORAGE= .3349E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC156	MANE	5.00	242.77	235.00	1.17	5.00	242.77	235.00	1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2821E+02 EXCESS= .0000E+00 OUTFLOW= .2821E+02 BASIN STORAGE= .3317E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC156	MANE	5.00	238.85	235.00	1.15	5.00	238.85	235.00	1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2775E+02 EXCESS= .0000E+00 OUTFLOW= .2776E+02 BASIN STORAGE= .3291E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC156	MANE	5.00	235.44	235.00	1.13	5.00	235.44	235.00	1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2736E+02 EXCESS= .0000E+00 OUTFLOW= .2736E+02 BASIN STORAGE= .3269E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP54	MANE	.92	342.97	231.02	1.19	5.00	342.09	230.00	1.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4456E+02 EXCESS= .0000E+00 OUTFLOW= .4456E+02 BASIN STORAGE= .1075E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP54	MANE	.93	336.20	231.01	1.17	5.00	335.28	230.00	1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4368E+02 EXCESS= .0000E+00 OUTFLOW= .4368E+02 BASIN STORAGE= .1157E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP54	MANE	.94	330.52	230.64	1.15	5.00	329.79	230.00	1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4298E+02 EXCESS= .0000E+00 OUTFLOW= .4298E+02 BASIN STORAGE= .1075E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP54	MANE	.94	326.06	231.03	1.13	5.00	325.09	230.00	1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4237E+02 EXCESS= .0000E+00 OUTFLOW= .4237E+02 BASIN STORAGE= .1061E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP54	MANE	.59	341.96	230.53	1.19	5.00	341.43	230.00	1.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4458E+02 EXCESS= .0000E+00 OUTFLOW= .4458E+02 BASIN STORAGE= .2909E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP54	MANE	.59	335.10	230.86	1.17	5.00	334.57	230.00	1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4370E+02 EXCESS= .0000E+00 OUTFLOW= .4370E+02 BASIN STORAGE= .2965E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP54	MANE	.60	329.61	230.92	1.15	5.00	329.06	230.00	1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4300E+02 EXCESS= .0000E+00 OUTFLOW= .4300E+02 BASIN STORAGE= .3055E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP54	MANE	.60	324.97	230.81	1.13	5.00	324.37	230.00	1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4239E+02 EXCESS= .0000E+00 OUTFLOW= .4239E+02 BASIN STORAGE= .3052E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP54	MANE	.61	341.26	230.93	1.19	5.00	340.76	230.00	1.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4459E+02 EXCESS= .0000E+00 OUTFLOW= .4459E+02 BASIN STORAGE= .7509E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP54	MANE	.61	334.43	230.98	1.17	5.00	333.89	230.00	1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4371E+02 EXCESS= .0000E+00 OUTFLOW= .4371E+02 BASIN STORAGE= .6963E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP54	MANE	.62	329.03	230.66	1.15	5.00	328.41	230.00	1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4301E+02 EXCESS= .0000E+00 OUTFLOW= .4301E+02 BASIN STORAGE= .7301E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP54	MANE	.62	324.32	230.75	1.13	5.00	323.69	230.00	1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4240E+02 EXCESS= .0000E+00 OUTFLOW= .4240E+02 BASIN STORAGE= .7425E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCPC1D	MANE	1.29	6642.80	227.77	1.11	5.00	6631.40	230.00	1.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1531E+04 EXCESS= .0000E+00 OUTFLOW= .1530E+04 BASIN STORAGE= .2062E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCPC1D	MANE	1.29	6526.30	227.75	1.09	5.00	6517.18	230.00	1.10

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1511E+04 EXCESS= .0000E+00 OUTFLOW= .1510E+04 BASIN STORAGE= .2045E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCPC1D	MANE	1.30	6424.89	227.58	1.08	5.00	6419.30	230.00	1.08

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1495E+04 EXCESS= .0000E+00 OUTFLOW= .1493E+04 BASIN STORAGE= .2031E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCPC1D	MANE	1.31	6340.47	229.81	1.07	5.00	6338.13	230.00	1.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1480E+04 EXCESS= .0000E+00 OUTFLOW= .1479E+04 BASIN STORAGE= .2017E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-59	MANE	5.00	158.77	235.00	1.03	5.00	158.77	235.00	1.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1706E+02 EXCESS= .0000E+00 OUTFLOW= .1706E+02 BASIN STORAGE= .1309E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-59	MANE	5.00	155.49	235.00	1.01	5.00	155.49	235.00	1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1670E+02 EXCESS= .0000E+00 OUTFLOW= .1670E+02 BASIN STORAGE= .1294E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-59	MANE	5.00	152.88	235.00	.99	5.00	152.88	235.00	.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1641E+02 EXCESS= .0000E+00 OUTFLOW= .1642E+02 BASIN STORAGE= .1282E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-59	MANE	5.00	150.60	235.00	.98	5.00	150.60	235.00	.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1616E+02 EXCESS= .0000E+00 OUTFLOW= .1617E+02 BASIN STORAGE= .1272E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

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            RCP57  MANE          5.00    222.51    235.00       .80      5.00    222.51    235.00         .80

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2373E+02 EXCESS= .0000E+00 OUTFLOW= .2374E+02 BASIN STORAGE= .1414E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RCP57  MANE          5.00    217.15    235.00       .78      5.00    217.15    235.00         .78

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2318E+02 EXCESS= .0000E+00 OUTFLOW= .2318E+02 BASIN STORAGE= .1400E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RCP57  MANE          5.00    212.88    235.00       .77      5.00    212.88    235.00         .77

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2274E+02 EXCESS= .0000E+00 OUTFLOW= .2275E+02 BASIN STORAGE= .1388E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RCP57  MANE          5.00    209.15    235.00       .75      5.00    209.15    235.00         .75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2236E+02 EXCESS= .0000E+00 OUTFLOW= .2236E+02 BASIN STORAGE= .1377E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RCP59  MANE           .43   6971.88    230.19      1.10      5.00   6968.22    230.00        1.10

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1569E+04 EXCESS= .0000E+00 OUTFLOW= .1568E+04 BASIN STORAGE= .8069E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RCP59  MANE           .43   6850.45    230.36      1.09      5.00   6846.55    230.00        1.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1548E+04 EXCESS= .0000E+00 OUTFLOW= .1547E+04 BASIN STORAGE= .8007E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RCP59  MANE           .44   6746.02    230.33      1.08      5.00   6741.62    230.00        1.08

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1531E+04 EXCESS= .0000E+00 OUTFLOW= .1530E+04 BASIN STORAGE= .7955E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RCP59  MANE           .44   6656.96    230.09      1.07      5.00   6654.45    230.00        1.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1516E+04 EXCESS= .0000E+00 OUTFLOW= .1515E+04 BASIN STORAGE= .7904E+00 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RCP59  MANE           .62   6959.12    230.57      1.10      5.00   6948.67    230.00        1.10

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1568E+04 EXCESS= .0000E+00 OUTFLOW= .1568E+04 BASIN STORAGE= .1080E+01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RCP59  MANE           .62   6834.63    230.71      1.09      5.00   6825.48    230.00        1.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1547E+04 EXCESS= .0000E+00 OUTFLOW= .1546E+04 BASIN STORAGE= .1071E+01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RCP59  MANE           .63   6731.96    230.67      1.08      5.00   6721.15    230.00        1.08

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1530E+04 EXCESS= .0000E+00 OUTFLOW= .1530E+04 BASIN STORAGE= .1064E+01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RCP59  MANE           .63   6643.02    230.44      1.07      5.00   6631.14    230.00        1.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1515E+04 EXCESS= .0000E+00 OUTFLOW= .1515E+04 BASIN STORAGE= .1057E+01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RC1-62  MANE          4.00    139.75    228.00       .61      5.00    138.22    230.00         .61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1357E+02 EXCESS= .0000E+00 OUTFLOW= .1357E+02 BASIN STORAGE= .1014E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RC1-62  MANE          3.75    135.17    228.75       .59      5.00    134.67    230.00         .59

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1320E+02 EXCESS= .0000E+00 OUTFLOW= .1321E+02 BASIN STORAGE= .1183E-02 PERCENT ERROR=    .0
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          FOR PLAN = 1  RATIO=  .00
            RC1-62  MANE          3.75    131.98    228.75       .58      5.00    131.55    230.00         .58

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1292E+02 EXCESS= .0000E+00 OUTFLOW= .1292E+02 BASIN STORAGE= .1134E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            RC1-62  MANE          3.50    128.91    231.00       .57      5.00    128.65    230.00         .57

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1267E+02 EXCESS= .0000E+00 OUTFLOW= .1268E+02 BASIN STORAGE= .1322E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              RDB5  MANE          5.00     89.33    435.00       .54      5.00     89.33    435.00         .54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1578E+03 EXCESS= .0000E+00 OUTFLOW= .1559E+03 BASIN STORAGE= .1969E+01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              RDB5  MANE          5.00     89.05    435.00       .54      5.00     89.05    435.00         .54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1570E+03 EXCESS= .0000E+00 OUTFLOW= .1551E+03 BASIN STORAGE= .1963E+01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              RDB5  MANE          5.00     88.82    435.00       .54      5.00     88.82    435.00         .54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1564E+03 EXCESS= .0000E+00 OUTFLOW= .1545E+03 BASIN STORAGE= .1958E+01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              RDB5  MANE          5.00     88.62    435.00       .54      5.00     88.62    435.00         .54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1559E+03 EXCESS= .0000E+00 OUTFLOW= .1540E+03 BASIN STORAGE= .1953E+01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             RCP52  MANE          3.36    933.69    221.96       .70      5.00    915.15    225.00         .70

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2371E+03 EXCESS= .0000E+00 OUTFLOW= .2363E+03 BASIN STORAGE= .8782E+00 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
             RCP52  MANE          3.38    922.90    222.99       .69      5.00    904.15    225.00         .69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2349E+03 EXCESS= .0000E+00 OUTFLOW= .2342E+03 BASIN STORAGE= .8753E+00 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
             RCP52  MANE          3.39    906.25    223.84       .68      5.00    893.77    225.00         .69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2331E+03 EXCESS= .0000E+00 OUTFLOW= .2323E+03 BASIN STORAGE= .8731E+00 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
             RCP52  MANE          3.40    885.85    221.19       .68      5.00    881.01    225.00         .68

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2317E+03 EXCESS= .0000E+00 OUTFLOW= .2310E+03 BASIN STORAGE= .8704E+00 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
              RDB6  MANE          4.36    209.60    414.20       .65      5.00    209.60    415.00         .66

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3437E+03 EXCESS= .0000E+00 OUTFLOW= .3426E+03 BASIN STORAGE= .1147E+01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              RDB6  MANE          4.37    208.15    414.77       .65      5.00    208.15    415.00         .65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3414E+03 EXCESS= .0000E+00 OUTFLOW= .3402E+03 BASIN STORAGE= .1138E+01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              RDB6  MANE          4.37    206.99    415.24       .65      5.00    206.99    415.00         .65

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3395E+03 EXCESS= .0000E+00 OUTFLOW= .3383E+03 BASIN STORAGE= .1131E+01 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              RDB6  MANE          4.38    205.97    415.64       .64      5.00    205.97    415.00         .64
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .3368E+03 EXCESS= .0000E+00 OUTFLOW= .3357E+03 BASIN STORAGE= .1126E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP61	MANE	.61	7278.08	230.50	.98	5.00	7260.45	230.00	.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1931E+04 EXCESS= .0000E+00 OUTFLOW= .1930E+04 BASIN STORAGE= .1285E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP61	MANE	.61	7151.31	230.62	.96	5.00	7131.07	230.00	.96

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1907E+04 EXCESS= .0000E+00 OUTFLOW= .1906E+04 BASIN STORAGE= .1276E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP61	MANE	.62	7039.70	230.55	.95	5.00	7019.95	230.00	.95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1888E+04 EXCESS= .0000E+00 OUTFLOW= .1887E+04 BASIN STORAGE= .1268E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP61	MANE	.62	6936.85	230.33	.94	5.00	6921.88	230.00	.94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1870E+04 EXCESS= .0000E+00 OUTFLOW= .1869E+04 BASIN STORAGE= .1260E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP61	MANE	.68	7250.28	230.85	.97	5.00	7222.68	230.00	.97

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1931E+04 EXCESS= .0000E+00 OUTFLOW= .1929E+04 BASIN STORAGE= .1513E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP61	MANE	.68	7120.09	230.90	.96	5.00	7091.45	230.00	.96

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1906E+04 EXCESS= .0000E+00 OUTFLOW= .1905E+04 BASIN STORAGE= .1502E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP61	MANE	.69	7013.17	230.76	.95	5.00	6982.07	230.00	.95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1887E+04 EXCESS= .0000E+00 OUTFLOW= .1886E+04 BASIN STORAGE= .1493E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP61	MANE	.69	6908.19	230.49	.94	5.00	6881.38	230.00	.94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1869E+04 EXCESS= .0000E+00 OUTFLOW= .1868E+04 BASIN STORAGE= .1484E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-67	MANE	5.00	163.23	235.00	.81	5.00	163.23	235.00	.81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1709E+02 EXCESS= .0000E+00 OUTFLOW= .1709E+02 BASIN STORAGE= .1087E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-67	MANE	5.00	159.43	235.00	.79	5.00	159.43	235.00	.79

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1669E+02 EXCESS= .0000E+00 OUTFLOW= .1669E+02 BASIN STORAGE= .1074E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-67	MANE	5.00	156.40	235.00	.78	5.00	156.40	235.00	.78

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1637E+02 EXCESS= .0000E+00 OUTFLOW= .1638E+02 BASIN STORAGE= .1063E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-67	MANE	5.00	153.76	235.00	.77	5.00	153.76	235.00	.77

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1610E+02 EXCESS= .0000E+00 OUTFLOW= .1610E+02 BASIN STORAGE= .1627E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-68	MANE	4.13	230.28	227.19	1.19	5.00	227.51	225.00	1.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2253E+02 EXCESS= .0000E+00 OUTFLOW= .2254E+02 BASIN STORAGE= .1677E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-68	MANE	4.15	226.39	228.50	1.16	5.00	226.28	225.00	1.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2211E+02 EXCESS= .0000E+00 OUTFLOW= .2211E+02 BASIN STORAGE= .1979E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-68	MANE	4.17	223.13	225.39	1.15	5.00	221.55	225.00	1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2176E+02 EXCESS= .0000E+00 OUTFLOW= .2176E+02 BASIN STORAGE= .1581E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-68	MANE	4.19	219.92	226.33	1.13	5.00	216.32	225.00	1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2145E+02 EXCESS= .0000E+00 OUTFLOW= .2145E+02 BASIN STORAGE= .1993E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-70	MANE	4.82	219.06	231.42	1.34	5.00	217.43	235.00	1.34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2451E+02 EXCESS= .0000E+00 OUTFLOW= .2452E+02 BASIN STORAGE= .1291E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-70	MANE	4.84	215.50	232.45	1.31	5.00	212.97	235.00	1.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2407E+02 EXCESS= .0000E+00 OUTFLOW= .2408E+02 BASIN STORAGE= .1039E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-70	MANE	4.86	212.67	233.29	1.29	5.00	210.26	235.00	1.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2371E+02 EXCESS= .0000E+00 OUTFLOW= .2371E+02 BASIN STORAGE= .9084E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-70	MANE	4.88	210.21	234.04	1.28	5.00	208.51	235.00	1.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2340E+02 EXCESS= .0000E+00 OUTFLOW= .2340E+02 BASIN STORAGE= .1219E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP68	MANE	4.07	348.60	236.26	1.15	5.00	347.36	235.00	1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3896E+02 EXCESS= .0000E+00 OUTFLOW= .3896E+02 BASIN STORAGE= .1017E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP68	MANE	4.10	342.53	233.43	1.13	5.00	341.09	235.00	1.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3821E+02 EXCESS= .0000E+00 OUTFLOW= .3821E+02 BASIN STORAGE= .1158E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP68	MANE	4.11	339.24	234.25	1.11	5.00	338.20	235.00	1.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3758E+02 EXCESS= .0000E+00 OUTFLOW= .3759E+02 BASIN STORAGE= .1001E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP68	MANE	4.12	335.30	234.81	1.10	5.00	335.01	235.00	1.10

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3706E+02 EXCESS= .0000E+00 OUTFLOW= .3706E+02 BASIN STORAGE= .9046E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP69	MANE	2.98	772.59	229.40	1.11	5.00	772.56	230.00	1.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8508E+02 EXCESS= .0000E+00 OUTFLOW= .8508E+02 BASIN STORAGE= .1921E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP69	MANE	2.99	763.71	230.48	1.09	5.00	762.43	230.00	1.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8343E+02 EXCESS= .0000E+00 OUTFLOW= .8343E+02 BASIN STORAGE= .1987E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP69	MANE	3.01	752.27	231.43	1.07	5.00	748.99	230.00	1.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8205E+02 EXCESS= .0000E+00 OUTFLOW= .8205E+02 BASIN STORAGE= .1660E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP69	MANE	3.02	737.00	232.64	1.05	5.00	735.24	230.00	1.05

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8085E+02 EXCESS= .0000E+00 OUTFLOW= .8086E+02 BASIN STORAGE= .1745E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP70	MANE	3.91	952.61	234.63	1.11	5.00	948.97	235.00	1.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1050E+03 EXCESS= .0000E+00 OUTFLOW= .1050E+03 BASIN STORAGE= .2575E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP70	MANE	3.93	936.62	231.73	1.09	5.00	930.25	235.00	1.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1029E+03 EXCESS= .0000E+00 OUTFLOW= .1029E+03 BASIN STORAGE= .2134E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP70	MANE	3.95	927.84	232.96	1.08	5.00	916.32	230.00	1.08

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1012E+03 EXCESS= .0000E+00 OUTFLOW= .1013E+03 BASIN STORAGE= .2419E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP70	MANE	3.97	911.52	234.22	1.06	5.00	905.19	235.00	1.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9976E+02 EXCESS= .0000E+00 OUTFLOW= .9977E+02 BASIN STORAGE= .2659E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1LM	MANE	.90	8487.30	231.22	.98	5.00	8425.97	230.00	.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2075E+04 EXCESS= .0000E+00 OUTFLOW= .2073E+04 BASIN STORAGE= .2630E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1LM	MANE	.91	8333.14	231.13	.96	5.00	8268.60	230.00	.96

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2047E+04 EXCESS= .0000E+00 OUTFLOW= .2045E+04 BASIN STORAGE= .2612E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1LM	MANE	.92	8200.11	231.61	.95	5.00	8141.78	230.00	.95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2026E+04 EXCESS= .0000E+00 OUTFLOW= .2024E+04 BASIN STORAGE= .2598E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1LM	MANE	.92	8085.75	231.19	.94	5.00	8016.71	230.00	.94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2006E+04 EXCESS= .0000E+00 OUTFLOW= .2004E+04 BASIN STORAGE= .2584E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP72	MANE	.78	8553.95	231.08	.98	5.00	8488.46	230.00	.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2094E+04 EXCESS= .0000E+00 OUTFLOW= .2093E+04 BASIN STORAGE= .2273E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP72	MANE	.78	8394.31	231.27	.96	5.00	8327.43	230.00	.96

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2067E+04 EXCESS= .0000E+00 OUTFLOW= .2065E+04 BASIN STORAGE= .2258E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP72	MANE	.79	8266.61	231.12	.95	5.00	8202.53	235.00	.95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2044E+04 EXCESS= .0000E+00 OUTFLOW= .2043E+04 BASIN STORAGE= .2245E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP72	MANE	.79	8142.00	230.97	.94	5.00	8095.04	235.00	.94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2024E+04 EXCESS= .0000E+00 OUTFLOW= .2023E+04 BASIN STORAGE= .2234E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-76	MANE	.90	264.00	220.31	1.24	5.00	263.32	220.00	1.24

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2299E+02 EXCESS= .0000E+00 OUTFLOW= .2299E+02 BASIN STORAGE= .1011E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-76	MANE	.91	258.90	220.12	1.22	5.00	258.64	220.00	1.22

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2256E+02 EXCESS= .0000E+00 OUTFLOW= .2256E+02 BASIN STORAGE= .9348E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-76	MANE	.92	255.50	220.53	1.20	5.00	254.49	220.00	1.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2221E+02 EXCESS= .0000E+00 OUTFLOW= .2221E+02 BASIN STORAGE= .9442E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RC1-76	MANE	.92	252.25	220.78	1.18	5.00	251.26	220.00	1.18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2191E+02 EXCESS= .0000E+00 OUTFLOW= .2191E+02 BASIN STORAGE= .1011E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP72A	MANE	.90	510.07	216.25	1.03	5.00	503.69	220.00	1.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4281E+02 EXCESS= .0000E+00 OUTFLOW= .4281E+02 BASIN STORAGE= .1247E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP72A	MANE	.91	499.30	216.31	1.01	5.00	493.84	220.00	1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4192E+02 EXCESS= .0000E+00 OUTFLOW= .4192E+02 BASIN STORAGE= .1219E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP72A	MANE	.91	491.26	216.85	.99	5.00	485.07	220.00	.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4122E+02 EXCESS= .0000E+00 OUTFLOW= .4122E+02 BASIN STORAGE= .1361E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP72A	MANE	.92	483.50	216.39	.97	5.00	478.62	220.00	.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4060E+02 EXCESS= .0000E+00 OUTFLOW= .4060E+02 BASIN STORAGE= .1358E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP72A	MANE	1.36	502.55	220.51	1.03	5.00	500.70	220.00	1.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4285E+02 EXCESS= .0000E+00 OUTFLOW= .4285E+02 BASIN STORAGE= .2102E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP72A	MANE	1.37	491.62	220.89	1.01	5.00	490.06	220.00	1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4196E+02 EXCESS= .0000E+00 OUTFLOW= .4197E+02 BASIN STORAGE= .1876E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP72A	MANE	1.38	482.52	221.09	.99	5.00	481.89	220.00	.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4126E+02 EXCESS= .0000E+00 OUTFLOW= .4126E+02 BASIN STORAGE= .2143E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP72A	MANE	1.39	476.53	220.89	.98	5.00	474.66	220.00	.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4064E+02 EXCESS= .0000E+00 OUTFLOW= .4064E+02 BASIN STORAGE= .1844E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP72A	MANE	.41	499.11	220.10	1.03	5.00	498.57	220.00	1.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4289E+02 EXCESS= .0000E+00 OUTFLOW= .4289E+02 BASIN STORAGE= .5487E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP72A	MANE	.41	489.18	220.36	1.01	5.00	487.97	220.00	1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4200E+02 EXCESS= .0000E+00 OUTFLOW= .4200E+02 BASIN STORAGE= .5682E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP72A	MANE	.41	480.54	220.20	.99	5.00	479.64	220.00	.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4129E+02 EXCESS= .0000E+00 OUTFLOW= .4129E+02 BASIN STORAGE= .5731E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP72A	MANE	.42	473.56	220.29	.98	5.00	472.41	220.00	.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4067E+02 EXCESS= .0000E+00 OUTFLOW= .4067E+02 BASIN STORAGE= .5747E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCP75	MANE	1.64	8966.35	232.99	.98	5.00	8901.98	235.00	.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2154E+04 EXCESS= .0000E+00 OUTFLOW= .2151E+04 BASIN STORAGE= .4889E+01 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .00

RCP75	MANE	1.65	8802.88	231.47	.96	5.00	8737.77	235.00	.97

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2125E+04 EXCESS= .0000E+00 OUTFLOW= .2122E+04 BASIN STORAGE= .4857E+01 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .00

RCP75	MANE	1.66	8667.18	232.92	.95	5.00	8608.53	235.00	.95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2101E+04 EXCESS= .0000E+00 OUTFLOW= .2098E+04 BASIN STORAGE= .4831E+01 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .00

RCP75	MANE	1.67	8544.02	232.68	.95	5.00	8492.35	235.00	.95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2081E+04 EXCESS= .0000E+00 OUTFLOW= .2078E+04 BASIN STORAGE= .4806E+01 PERCENT ERROR= -.1

*** NORMAL END OF HEC-1 ***

HYDRAULIC MODELING COMPUTATIONS

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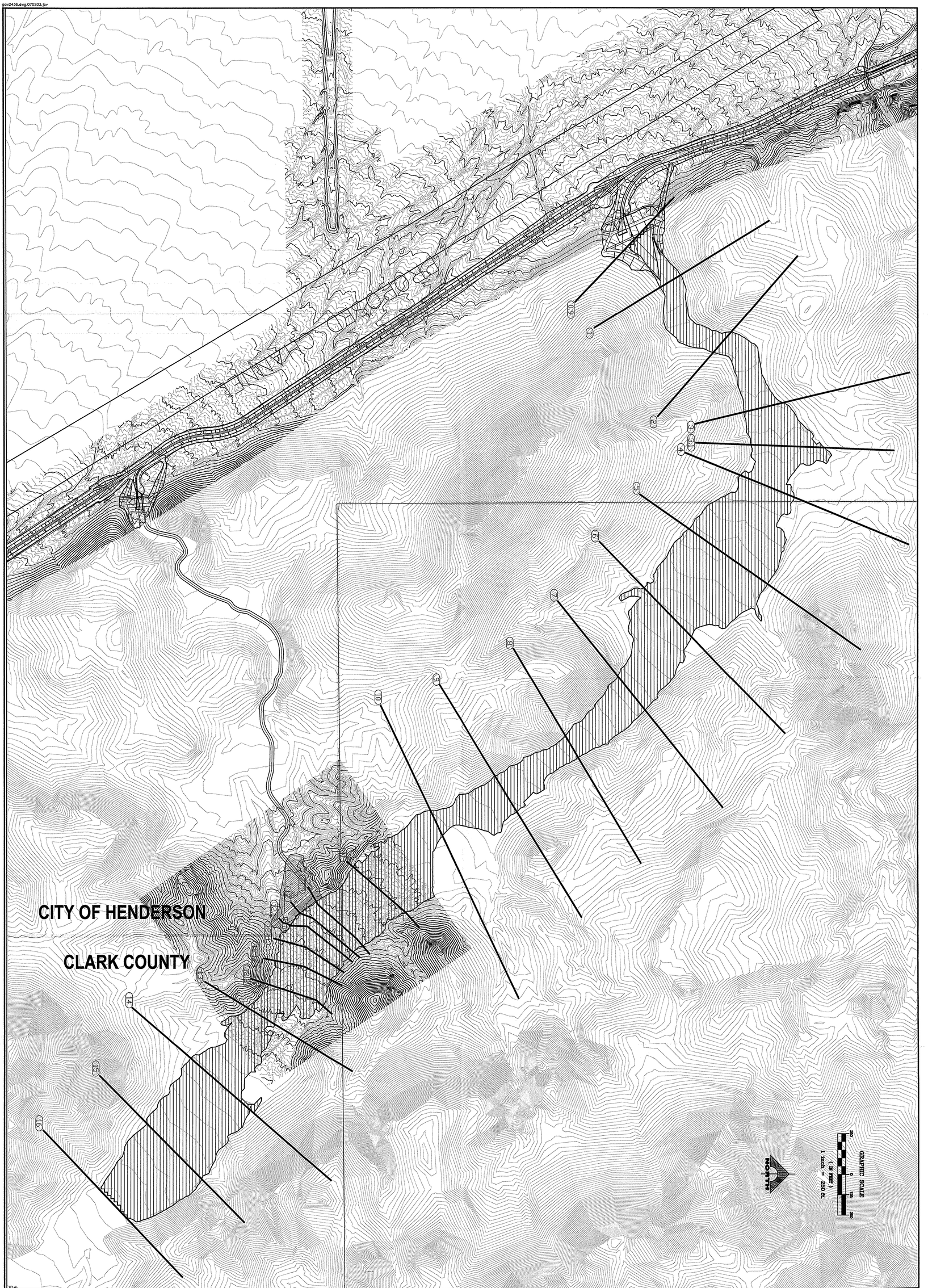


CRITICAL DEPTH SUMMARY TABLE - UPPER BERM										
Cross Section	Elevation ft	Critical Depth ft	Discharge cfs	Energy Gradient ft/ft	Froude Number	Flow Regime	Flow Area sq ft	Average Velocity ft/s	Composite n	Critical Slope ft/ft
0.9	2121.1	1.1	1527	0.009	1.0	Critical	255.7	5.9	0.025	0.009
1	2136.6	1.6	1527	0.008	1.0	Critical	219.2	7.0	0.025	0.008
2	2151.4	1.4	1527	0.009	1.0	Critical	224.4	6.8	0.025	0.009
3	2166.1	1.1	1527	0.009	1.0	Critical	261.7	5.9	0.025	0.009
3.1	2175.7	0.7	1527	0.010	1.0	Critical	324.9	4.8	0.025	0.010
4	2180.8	0.8	1527	0.010	1.0	Critical	292.1	5.2	0.025	0.010
5	2200.6	0.6	1527	0.011	1.0	Critical	346.6	4.4	0.025	0.011
6	2216.3	1.3	1527	0.012	1.0	Critical	236.3	6.5	0.025	0.012
7	2236.0	1.0	1527	0.009	1.0	Critical	271.3	5.7	0.025	0.009
8	2251.5	1.5	1527	0.008	1.0	Critical	225.9	6.8	0.025	0.008
9	2266.3	1.3	1527	0.009	1.0	Critical	240.2	6.4	0.025	0.009
10	2282.5	2.5	1527	0.017	1.0	Critical	167.3	9.1	0.025	0.017
11	2300.8	1.8	1527	0.017	1.0	Critical	202.0	7.6	0.025	0.017
11.1	2312.6	1.6	1527	0.025	1.0	Critical	210.7	7.3	0.025	0.025
12	2315.5	1.5	1527	0.024	1.0	Critical	221.0	6.9	0.025	0.024
12.1	2317.3	1.3	1527	0.020	1.0	Critical	237.8	6.4	0.025	0.020
12.11	2320.9	0.9	1527	0.011	1.0	Critical	285.9	5.3	0.025	0.011
12.12	2324.5	1.5	1527	0.011	1.0	Critical	221.1	7.0	0.025	0.019
12.2	2330.2	1.2	1527	0.016	1.0	Critical	246.3	6.1	0.025	0.016
13	2337.7	1.7	1527	0.014	1.0	Critical	206.7	7.4	0.025	0.014
14	2356.4	1.4	1527	0.013	1.0	Critical	226.1	6.8	0.025	0.013
15	2375.8	0.8	1527	0.010	1.0	Critical	298.7	5.1	0.025	0.010
16	2391.0	1.0	1527	0.009	1.0	Critical	277.3	5.4	0.025	0.009

Normal Depth Results

Cross Section:	0.9	
Elevation:	2121.11	ft MSL
Depth:	1.11	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.009	ft/ft
Froude Number:	1.0002	
Flow Regime:	Critical	
Flow Area:	255.72	sq ft
Average Velocity:	5.93	ft/s
Maximum Velocity:	5.93	ft/s
Composite n:	0.025	
Hydraulic Radius:	1.07	ft
Wetted Perimeter:	238.37	ft
Wetted Top Width:	238.16	ft
Critical Slope:	0.0091	ft/ft

Normal Depth Results

Cross Section:	1	
Elevation:	2136.55	ft MSL
Depth:	1.55	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.008	ft/ft
Froude Number:	0.9849	
Flow Regime:	Critical	
Flow Area:	219.18	sq ft
Average Velocity:	6.96	ft/s
Maximum Velocity:	6.96	ft/s
Composite n:	0.025	
Hydraulic Radius:	1.49	ft
Wetted Perimeter:	147.00	ft
Wetted Top Width:	146.57	ft
Critical Slope:	0.0082	ft/ft

Normal Depth Results

Cross Section:	2	
Elevation:	2151.37	ft MSL
Depth:	1.37	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.009	ft/ft
Froude Number:	1.0268	
Flow Regime:	Critical	
Flow Area:	224.37	sq ft
Average Velocity:	6.80	ft/s
Maximum Velocity:	6.80	ft/s
Composite n:	0.025	
Hydraulic Radius:	1.32	ft
Wetted Perimeter:	170.28	ft
Wetted Top Width:	169.95	ft
Critical Slope:	0.0085	ft/ft

Normal Depth Results

Cross Section:	3	
Elevation:	2166.07	ft MSL
Depth:	1.07	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.009	ft/ft
Froude Number:	0.994	
Flow Regime:	Critical	
Flow Area:	261.65	sq ft
Average Velocity:	5.85	ft/s
Maximum Velocity:	5.85	ft/s
Composite n:	0.025	
Hydraulic Radius:	1.05	ft
Wetted Perimeter:	248.94	ft
Wetted Top Width:	248.66	ft
Critical Slope:	0.009	ft/ft

Normal Depth Results

Cross Section:	3.1	
Elevation:	2175.72	ft MSL
Depth:	0.72	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.01	ft/ft
Froude Number:	0.9768	
Flow Regime:	Critical	
Flow Area:	324.92	sq ft
Average Velocity:	4.75	ft/s
Maximum Velocity:	4.75	ft/s
Composite n:	0.025	
Hydraulic Radius:	0.71	ft
Wetted Perimeter:	456.13	ft
Wetted Top Width:	455.97	ft
Critical Slope:	0.0102	ft/ft

Normal Depth Results

Cross Section:	4	
Elevation:	2180.82	ft MSL
Depth:	0.82	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.01	ft/ft
Froude Number:	1.0151	
Flow Regime:	Critical	
Flow Area:	292.13	sq ft
Average Velocity:	5.21	ft/s
Maximum Velocity:	5.21	ft/s
Composite n:	0.025	
Hydraulic Radius:	0.82	ft
Wetted Perimeter:	357.03	ft
Wetted Top Width:	356.73	ft
Critical Slope:	0.0097	ft/ft

Normal Depth Results

Cross Section:	5	
Elevation:	2200.59	ft MSL
Depth:	0.59	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.011	ft/ft
Froude Number:	1.0128	
Flow Regime:	Critical	
Flow Area:	346.55	sq ft
Average Velocity:	4.37	ft/s
Maximum Velocity:	4.37	ft/s
Composite n:	0.025	
Hydraulic Radius:	0.59	ft
Wetted Perimeter:	591.96	ft
Wetted Top Width:	591.82	ft
Critical Slope:	0.0108	ft/ft

Normal Depth Results

Cross Section:	6	
Elevation:	2216.28	ft MSL
Depth:	1.28	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.012	ft/ft
Froude Number:	1.0087	
Flow Regime:	Critical	
Flow Area:	236.32	sq ft
Average Velocity:	6.46	ft/s
Maximum Velocity:	6.46	ft/s
Composite n:	0.025	
Hydraulic Radius:	0.98	ft
Wetted Perimeter:	239.93	ft
Wetted Top Width:	239.82	ft
Critical Slope:	0.0117	ft/ft

Normal Depth Results

Cross Section:	7	
Elevation:	2236.01	ft MSL
Depth:	1.01	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.009	ft/ft
Froude Number:	0.9862	
Flow Regime:	Critical	
Flow Area:	271.30	sq ft
Average Velocity:	5.66	ft/s
Maximum Velocity:	5.66	ft/s
Composite n:	0.025	
Hydraulic Radius:	1	ft
Wetted Perimeter:	270.53	ft
Wetted Top Width:	270.06	ft
Critical Slope:	0.0091	ft/ft

Normal Depth Results

Cross Section:	8	
Elevation:	2251.47	ft MSL
Depth:	1.47	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.008	ft/ft
Froude Number:	0.9839	
Flow Regime:	Critical	
Flow Area:	225.88	sq ft
Average Velocity:	6.76	ft/s
Maximum Velocity:	6.76	ft/s
Composite n:	0.025	
Hydraulic Radius:	1.43	ft
Wetted Perimeter:	158.14	ft
Wetted Top Width:	157.56	ft
Critical Slope:	0.0082	ft/ft

Normal Depth Results

Cross Section:	9	
Elevation:	2266.31	ft MSL
Depth:	1.31	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.009	ft/ft
Froude Number:	0.9798	
Flow Regime:	Critical	
Flow Area:	240.19	sq ft
Average Velocity:	6.40	ft/s
Maximum Velocity:	6.40	ft/s
Composite n:	0.025	
Hydraulic Radius:	1.2	ft
Wetted Perimeter:	199.43	ft
Wetted Top Width:	199.10	ft
Critical Slope:	0.0092	ft/ft

Normal Depth Results

Cross Section:	10	
Elevation:	2282.54	ft MSL
Depth:	2.54	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.017	ft/ft
Froude Number:	1.0103	
Flow Regime:	Critical	
Flow Area:	167.29	sq ft
Average Velocity:	9.14	ft/s
Maximum Velocity:	9.14	ft/s
Composite n:	0.025	
Hydraulic Radius:	1.27	ft
Wetted Perimeter:	131.22	ft
Wetted Top Width:	130.68	ft
Critical Slope:	0.0166	ft/ft

Normal Depth Results

Cross Section:	11	
Elevation:	2300.78	ft MSL
Depth:	1.78	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.017	ft/ft
Froude Number:	0.9995	
Flow Regime:	Critical	
Flow Area:	201.96	sq ft
Average Velocity:	7.57	ft/s
Maximum Velocity:	7.57	ft/s
Composite n:	0.025	
Hydraulic Radius:	0.96	ft
Wetted Perimeter:	210.04	ft
Wetted Top Width:	208.81	ft
Critical Slope:	0.0169	ft/ft

Normal Depth Results

Cross Section:	11.1	
Elevation:	2312.63	ft MSL
Depth:	1.63	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.025	ft/ft
Froude Number:	0.9992	
Flow Regime:	Critical	
Flow Area:	210.69	sq ft
Average Velocity:	7.32	ft/s
Maximum Velocity:	7.32	ft/s
Composite n:	0.025	
Hydraulic Radius:	0.69	ft
Wetted Perimeter:	307.52	ft
Wetted Top Width:	307.23	ft
Critical Slope:	0.0245	ft/ft

Normal Depth Results

Cross Section:	12	
Elevation:	2315.45	ft MSL
Depth:	1.45	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.024	ft/ft
Froude Number:	1.0116	
Flow Regime:	Critical	
Flow Area:	221.04	sq ft
Average Velocity:	6.90	ft/s
Maximum Velocity:	6.90	ft/s
Composite n:	0.025	
Hydraulic Radius:	0.65	ft
Wetted Perimeter:	342.47	ft
Wetted Top Width:	342.06	ft
Critical Slope:	0.0235	ft/ft

Normal Depth Results

Cross Section:	12.1	
Elevation:	2317.25	ft MSL
Depth:	1.25	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.02	ft/ft
Froude Number:	1.012	
Flow Regime:	Critical	
Flow Area:	237.79	sq ft
Average Velocity:	6.40	ft/s
Maximum Velocity:	6.40	ft/s
Composite n:	0.025	
Hydraulic Radius:	0.66	ft
Wetted Perimeter:	359.45	ft
Wetted Top Width:	358.56	ft
Critical Slope:	0.0196	ft/ft

Normal Depth Results

Cross Section:	12.11	
Elevation:	2320.86	ft MSL
Depth:	0.86	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.011	ft/ft
Froude Number:	1.015	
Flow Regime:	Critical	
Flow Area:	285.89	sq ft
Average Velocity:	5.29	ft/s
Maximum Velocity:	5.29	ft/s
Composite n:	0.025	
Hydraulic Radius:	0.78	ft
Wetted Perimeter:	367.17	ft
Wetted Top Width:	366.82	ft
Critical Slope:	0.0108	ft/ft

Normal Depth Results

Cross Section:	12.12	
Elevation:	2324.45	ft MSL
Depth:	1.45	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.02	ft/ft
Froude Number:	1.0115	
Flow Regime:	Critical	
Flow Area:	221.06	sq ft
Average Velocity:	6.95	ft/s
Maximum Velocity:	6.95	ft/s
Composite n:	0.025	
Hydraulic Radius:	0.75	ft
Wetted Perimeter:	295.40	ft
Wetted Top Width:	295.27	ft
Critical Slope:	0.0193	ft/ft

Normal Depth Results

Cross Section:	12.2	
Elevation:	2330.20	ft MSL
Depth:	1.20	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.016	ft/ft
Froude Number:	0.9964	
Flow Regime:	Critical	
Flow Area:	246.32	sq ft
Average Velocity:	6.13	ft/s
Maximum Velocity:	6.13	ft/s
Composite n:	0.025	
Hydraulic Radius:	0.73	ft
Wetted Perimeter:	336.21	ft
Wetted Top Width:	335.78	ft
Critical Slope:	0.0164	ft/ft

Normal Depth Results

Cross Section:	13	
Elevation:	2337.68	ft MSL
Depth:	1.68	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.014	ft/ft
Froude Number:	1.0053	
Flow Regime:	Critical	
Flow Area:	206.72	sq ft
Average Velocity:	7.44	ft/s
Maximum Velocity:	7.44	ft/s
Composite n:	0.025	
Hydraulic Radius:	1.08	ft
Wetted Perimeter:	190.61	ft
Wetted Top Width:	190.44	ft
Critical Slope:	0.0136	ft/ft

Normal Depth Results

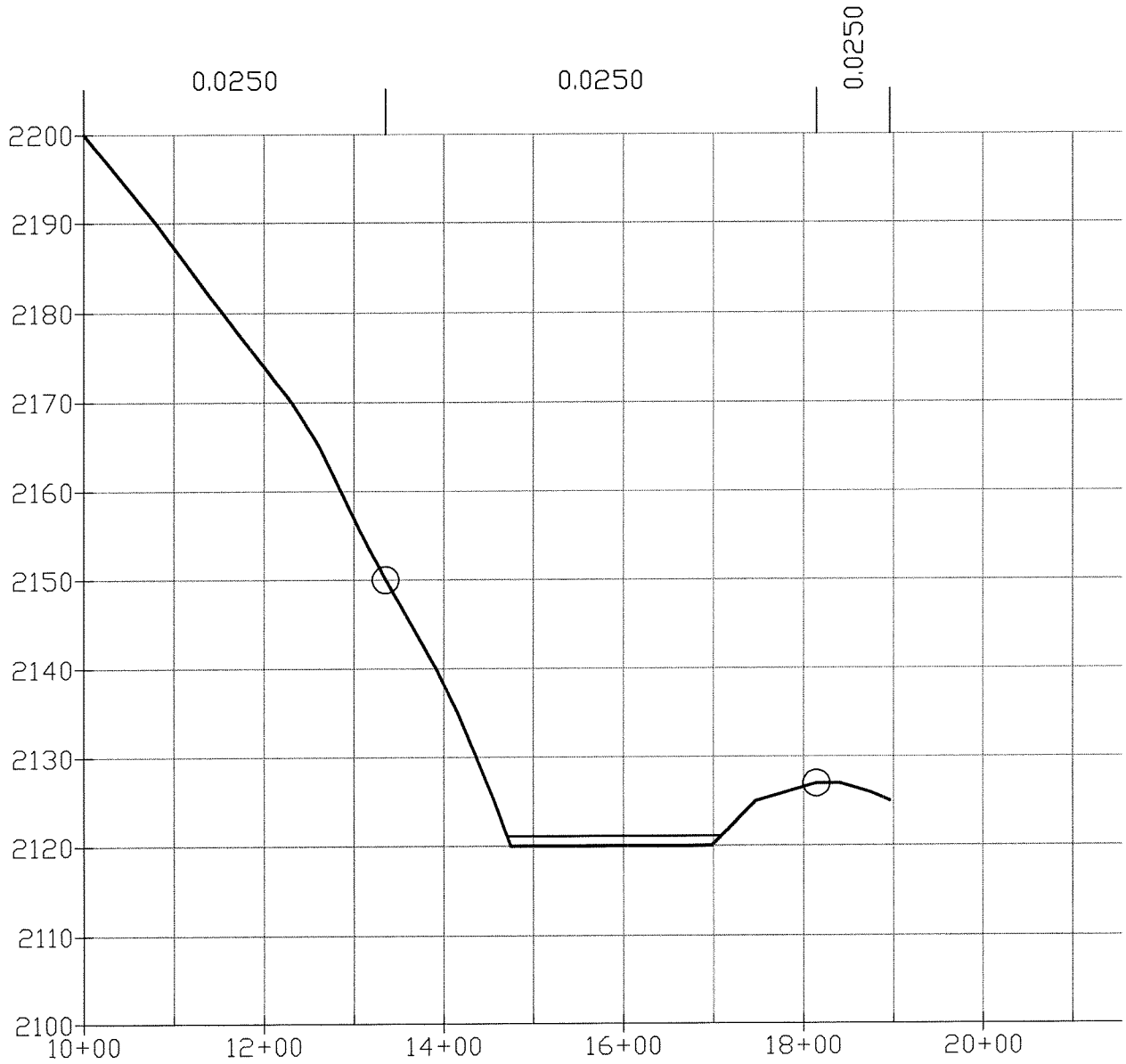
Cross Section:	14	
Elevation:	2356.39	ft MSL
Depth:	1.39	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.013	ft/ft
Froude Number:	1.0108	
Flow Regime:	Critical	
Flow Area:	226.09	sq ft
Average Velocity:	6.77	ft/s
Maximum Velocity:	6.77	ft/s
Composite n:	0.025	
Hydraulic Radius:	0.99	ft
Wetted Perimeter:	227.29	ft
Wetted Top Width:	227.26	ft
Critical Slope:	0.0126	ft/ft

Normal Depth Results

Cross Section:	15	
Elevation:	2375.83	ft MSL
Depth:	0.83	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.01	ft/ft
Froude Number:	0.9896	
Flow Regime:	Critical	
Flow Area:	298.69	sq ft
Average Velocity:	5.11	ft/s
Maximum Velocity:	5.11	ft/s
Composite n:	0.025	
Hydraulic Radius:	0.8	ft
Wetted Perimeter:	375.70	ft
Wetted Top Width:	375.59	ft
Critical Slope:	0.0102	ft/ft

Normal Depth Results

Cross Section:	16	
Elevation:	2390.95	ft MSL
Depth:	0.95	ft
Discharge:	1527.00	cfs
Energy Gradient:	0.009	ft/ft
Froude Number:	0.9937	
Flow Regime:	Critical	
Flow Area:	277.32	sq ft
Average Velocity:	5.44	ft/s
Maximum Velocity:	5.44	ft/s
Composite n:	0.025	
Hydraulic Radius:	0.94	ft
Wetted Perimeter:	293.85	ft
Wetted Top Width:	293.53	ft
Critical Slope:	0.0093	ft/ft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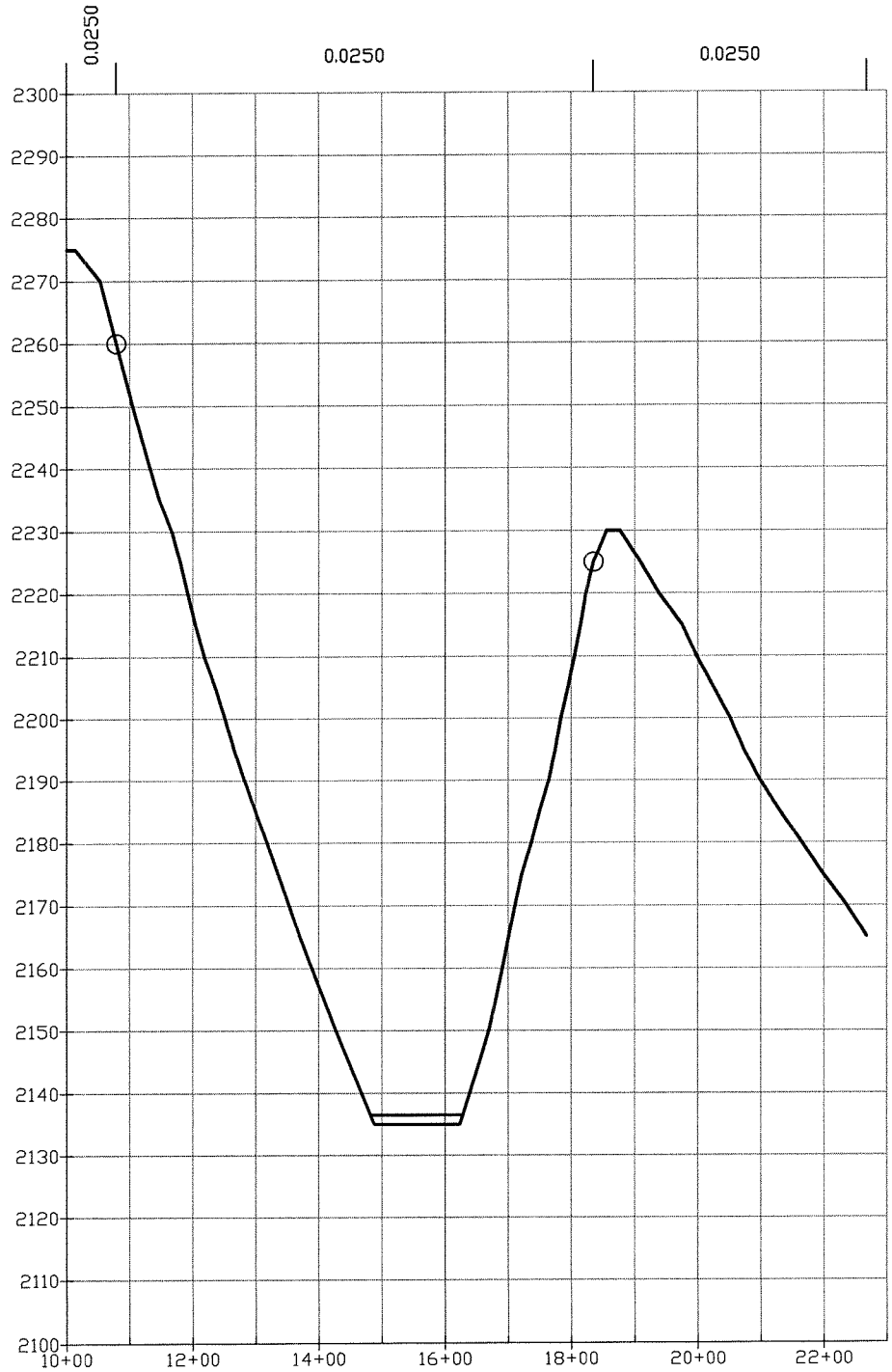
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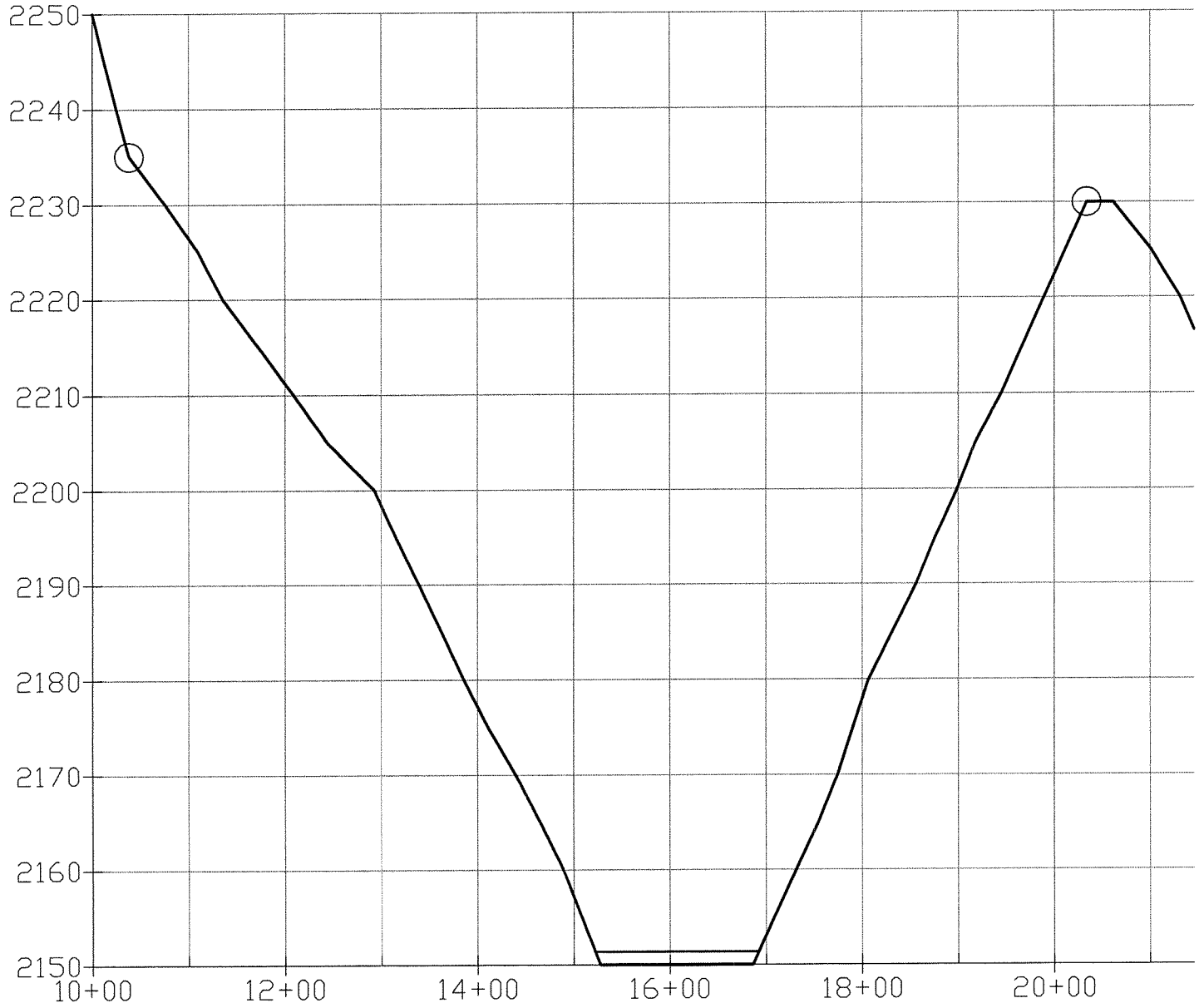
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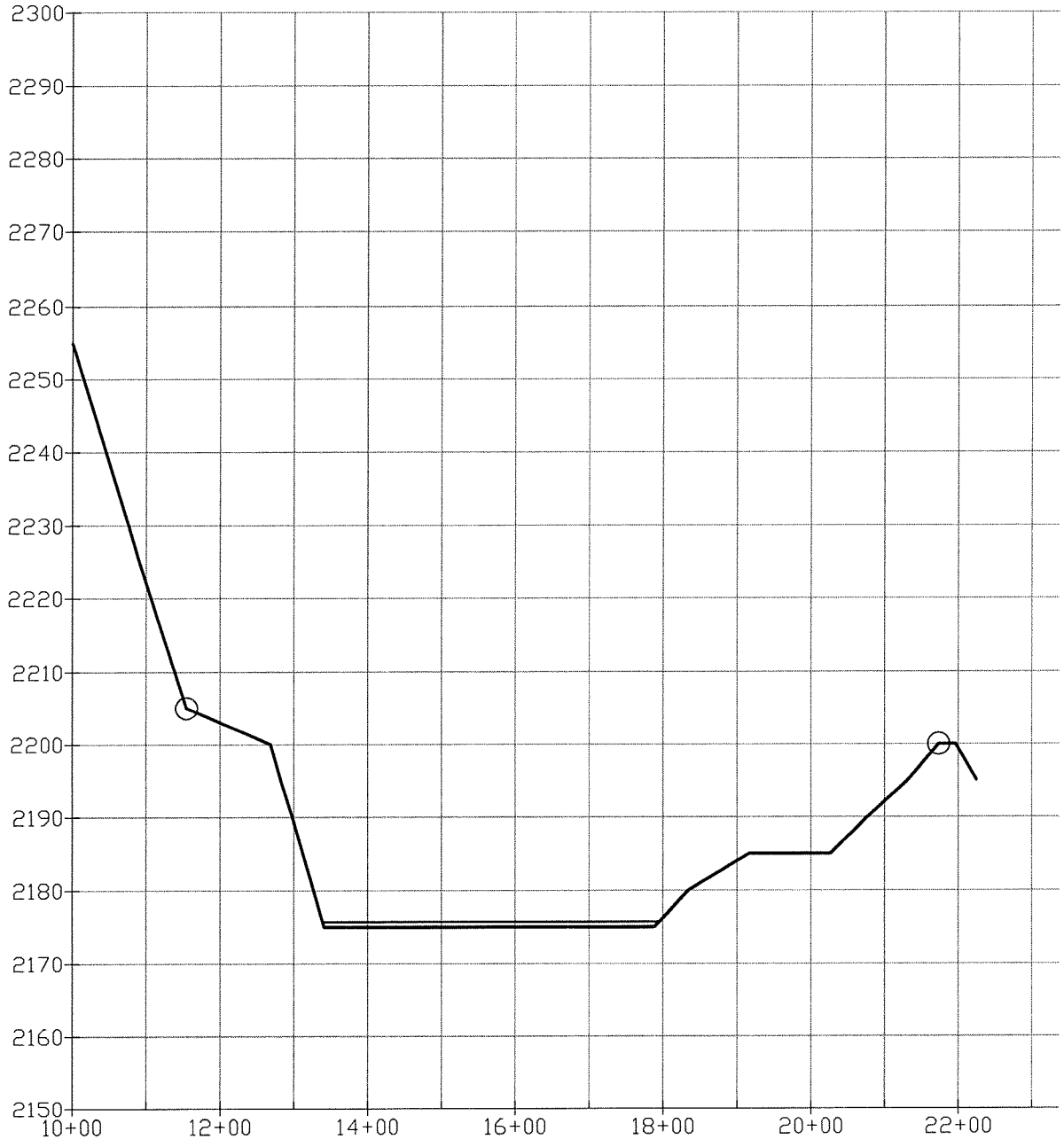
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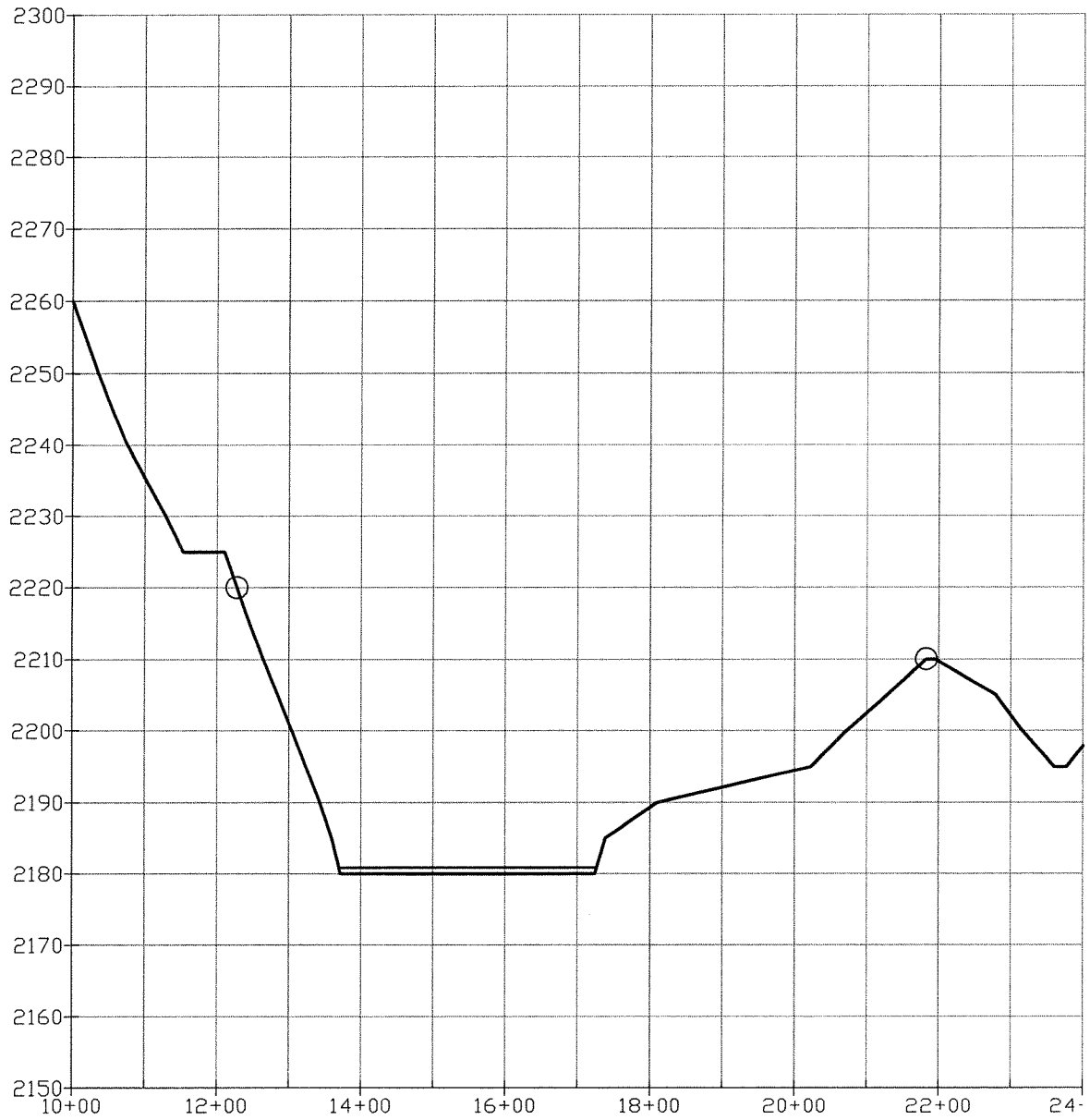
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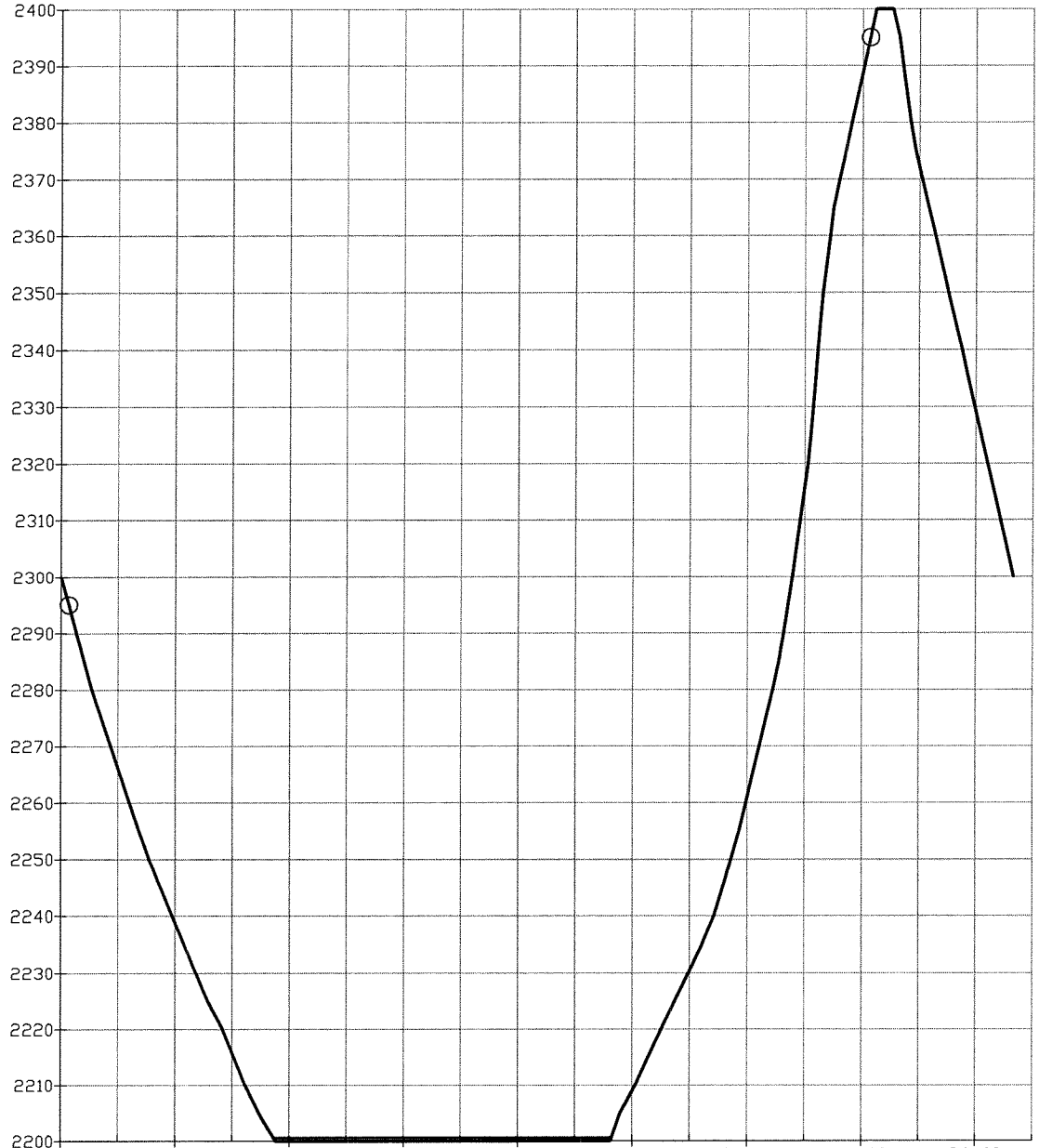
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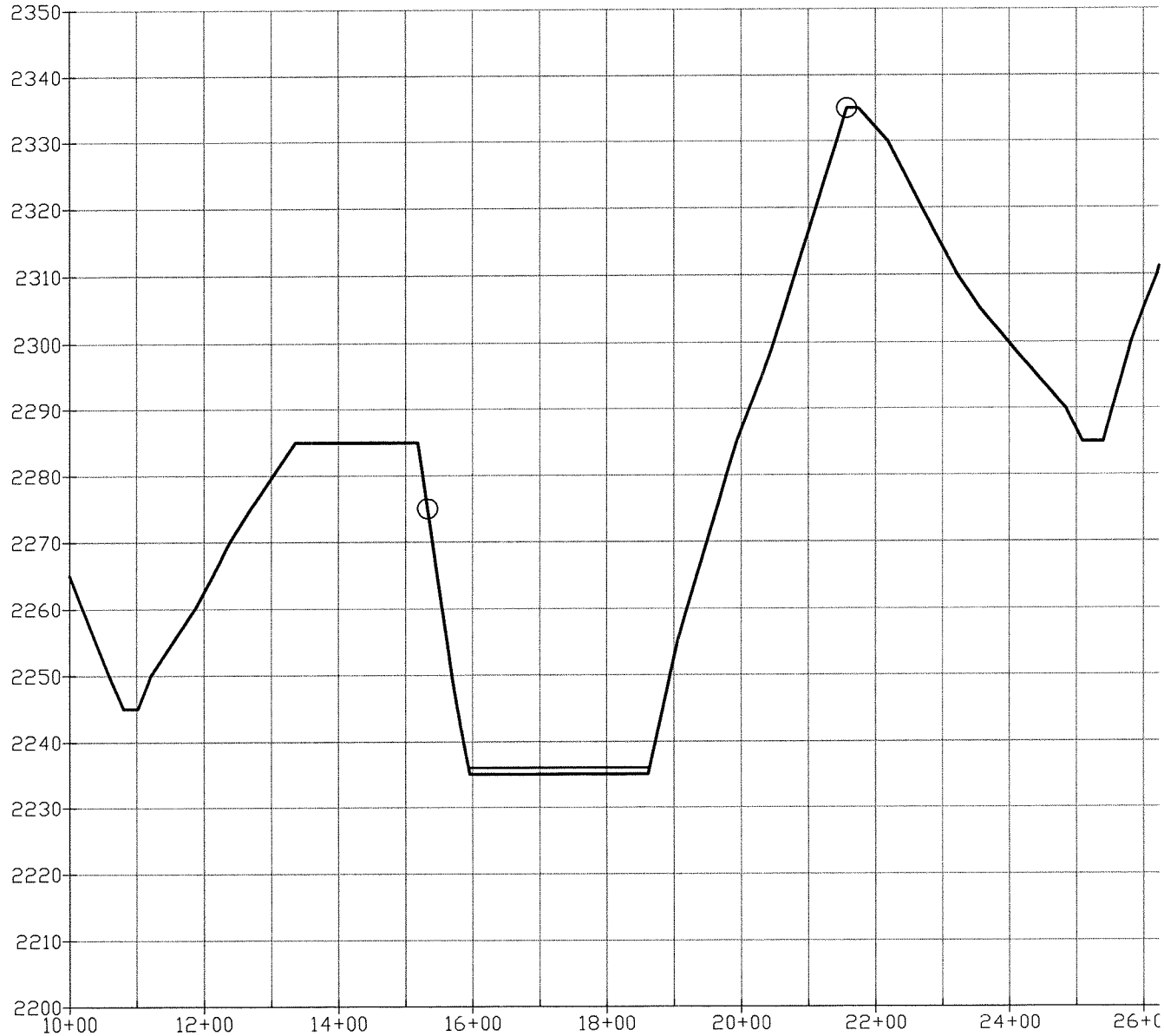
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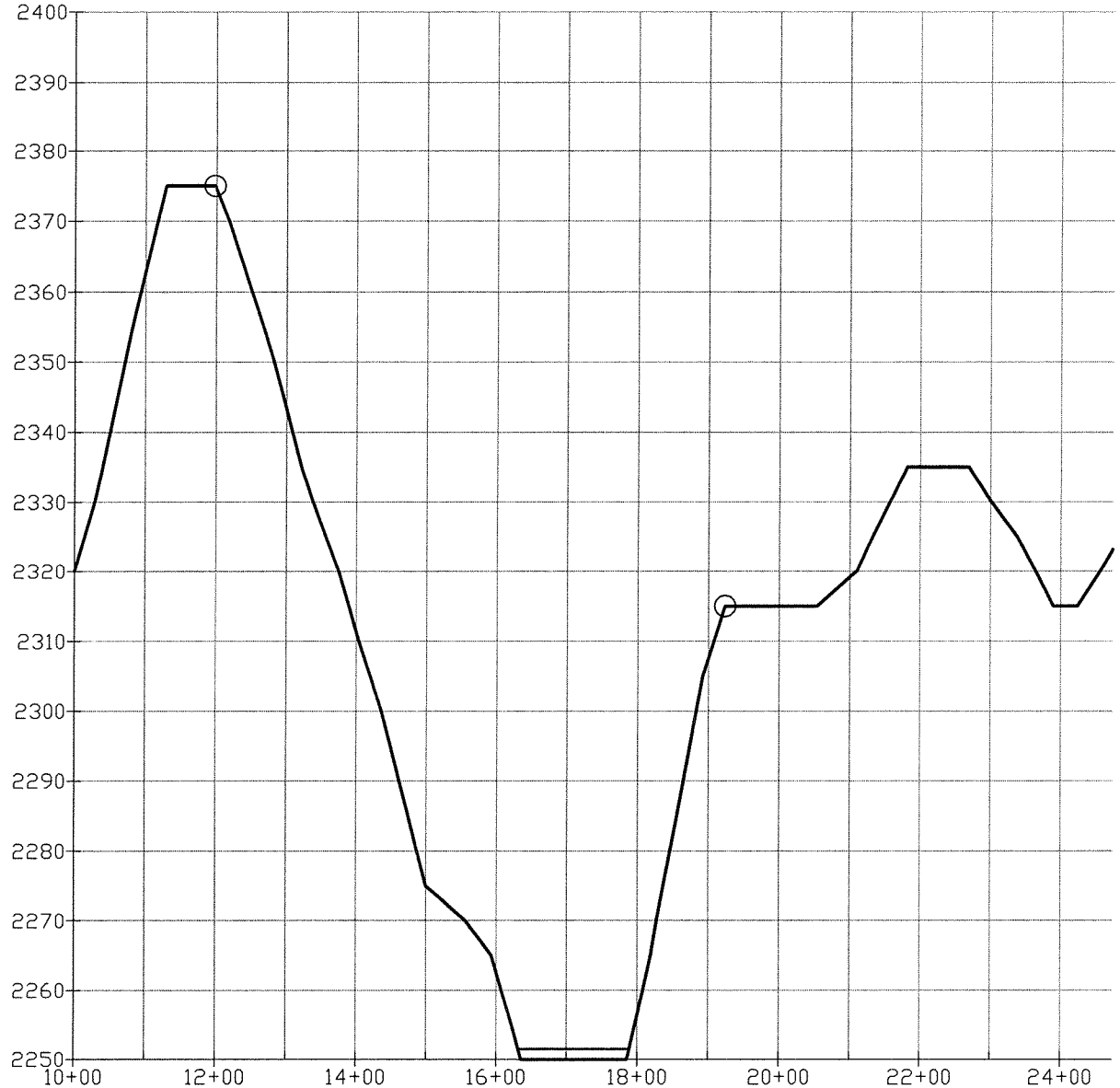
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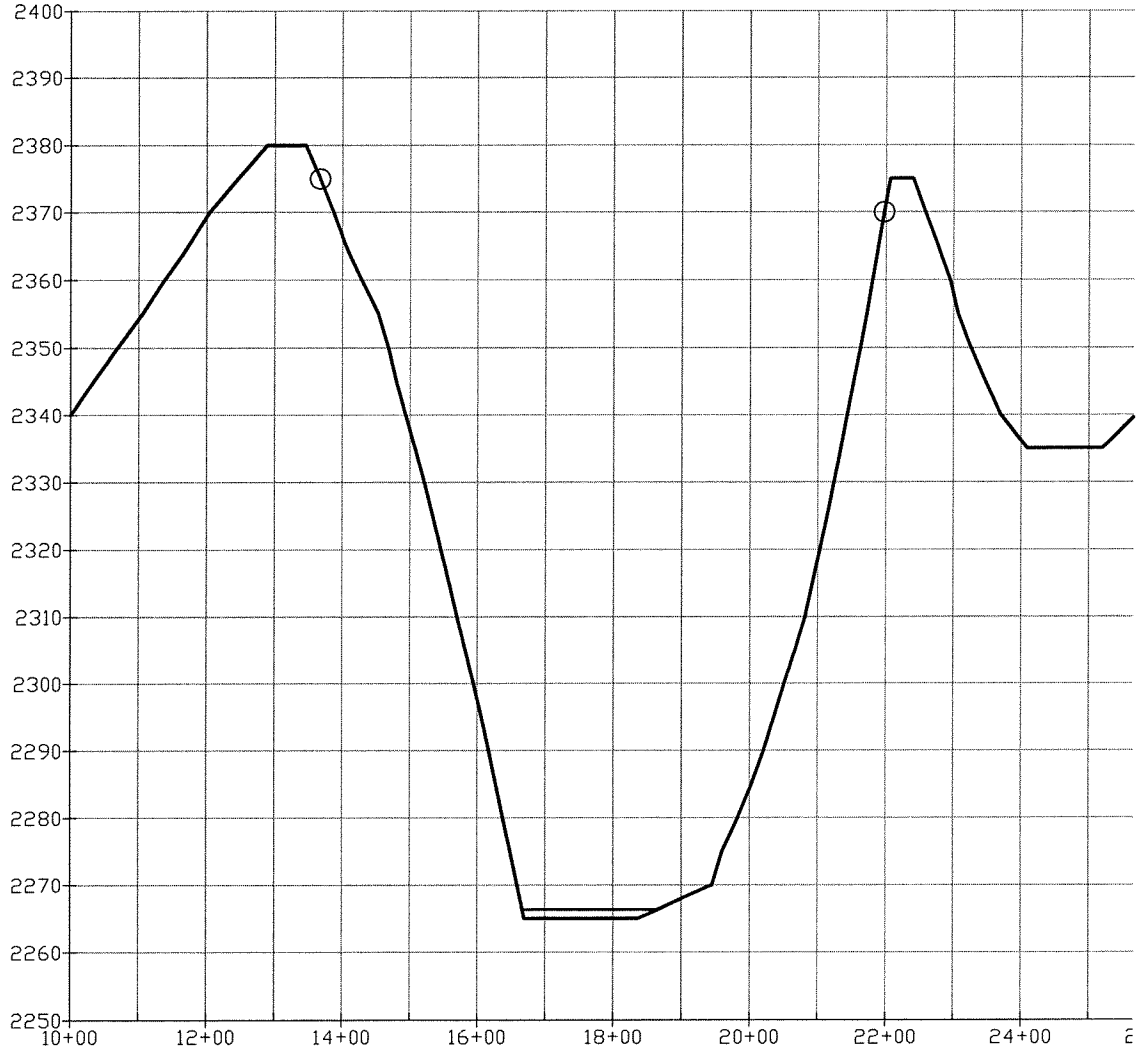
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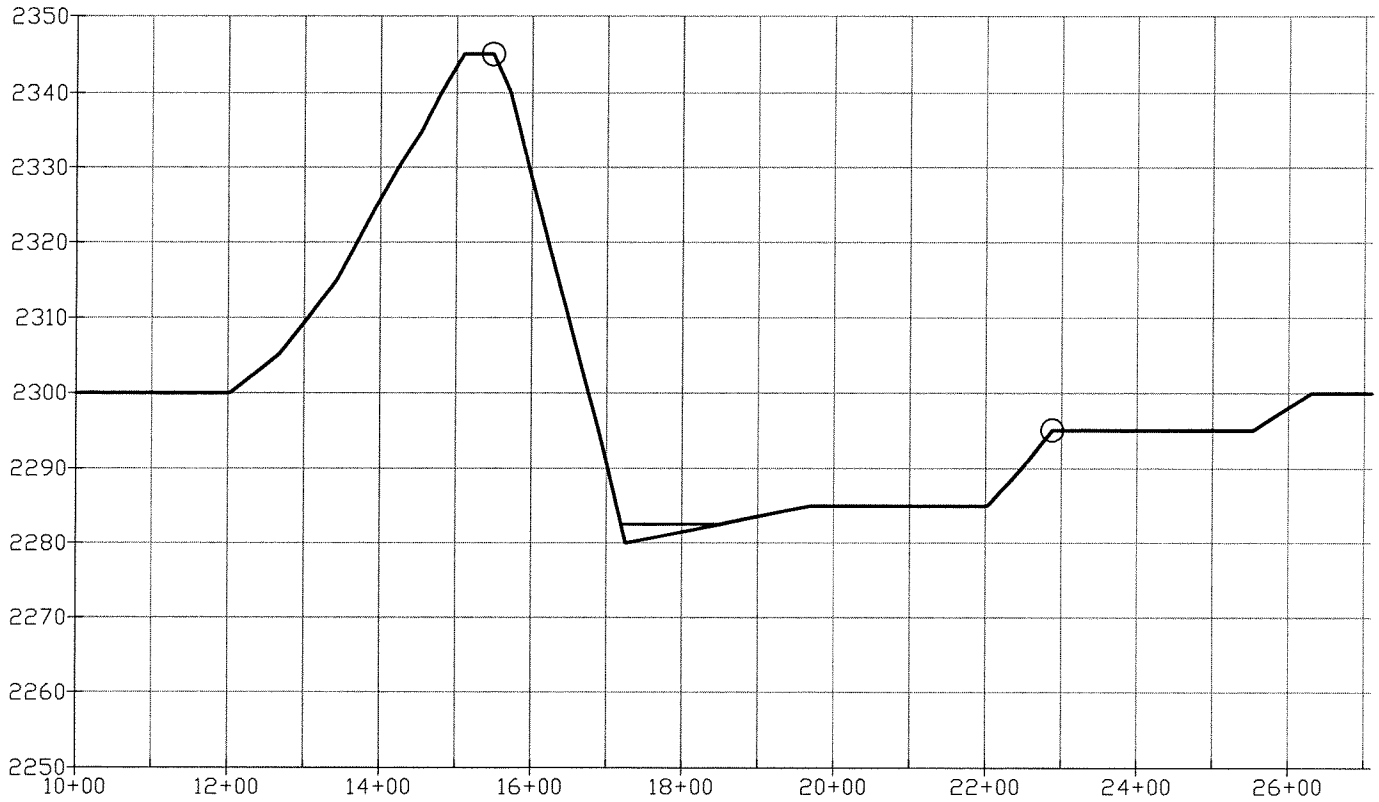
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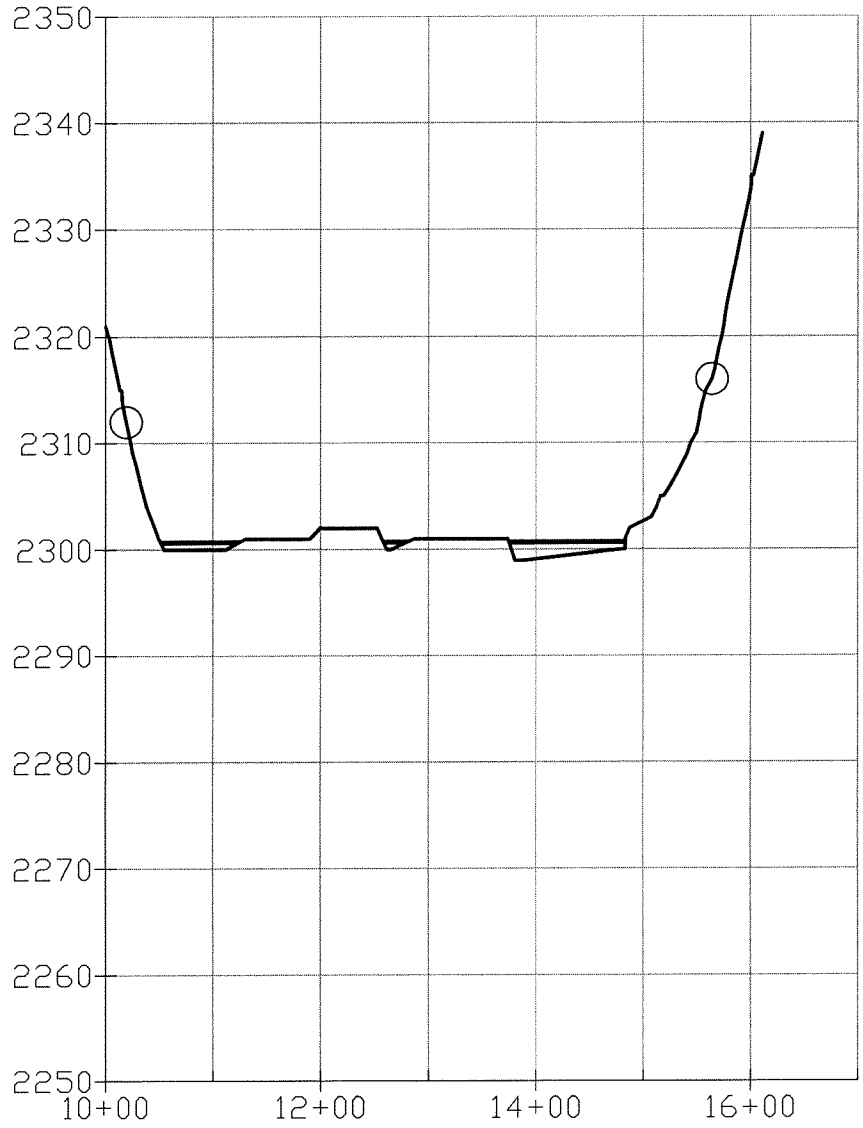
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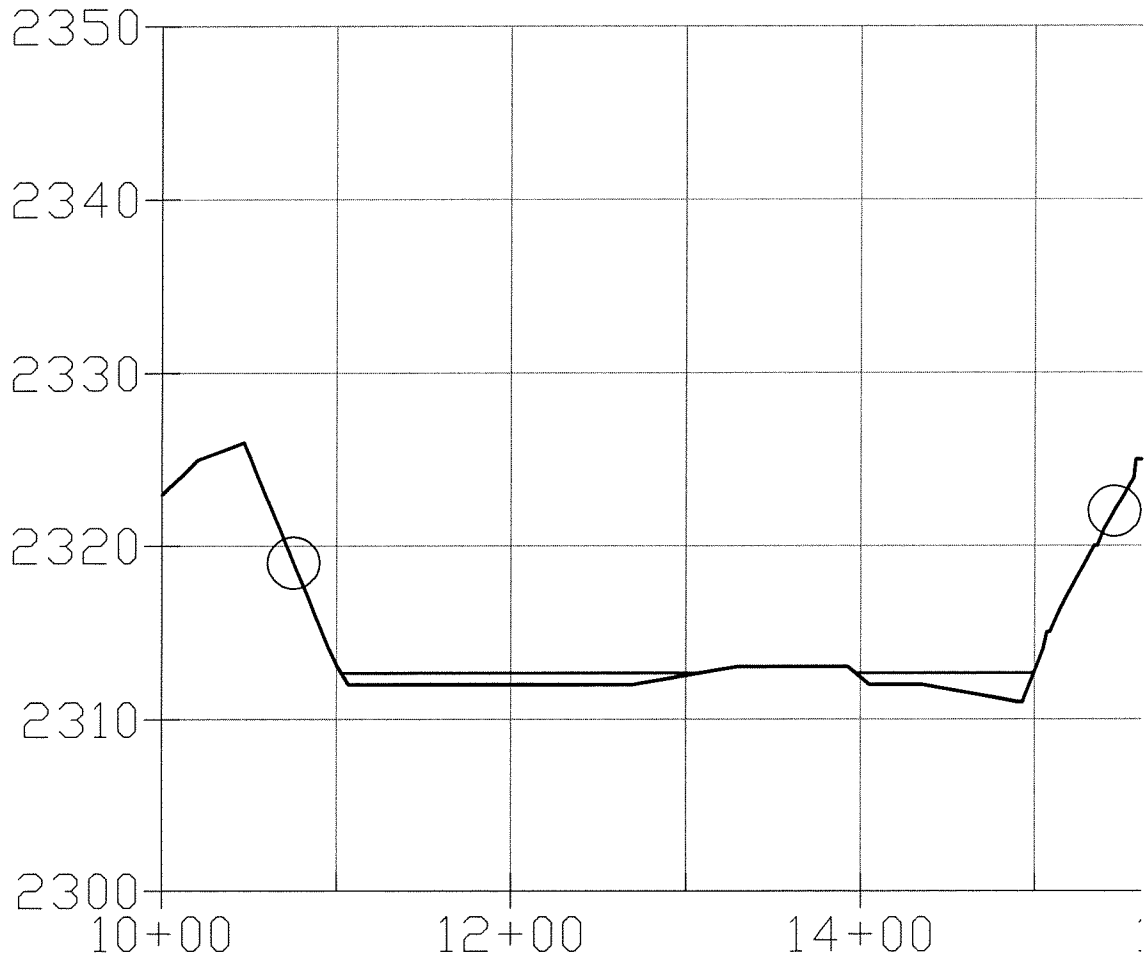

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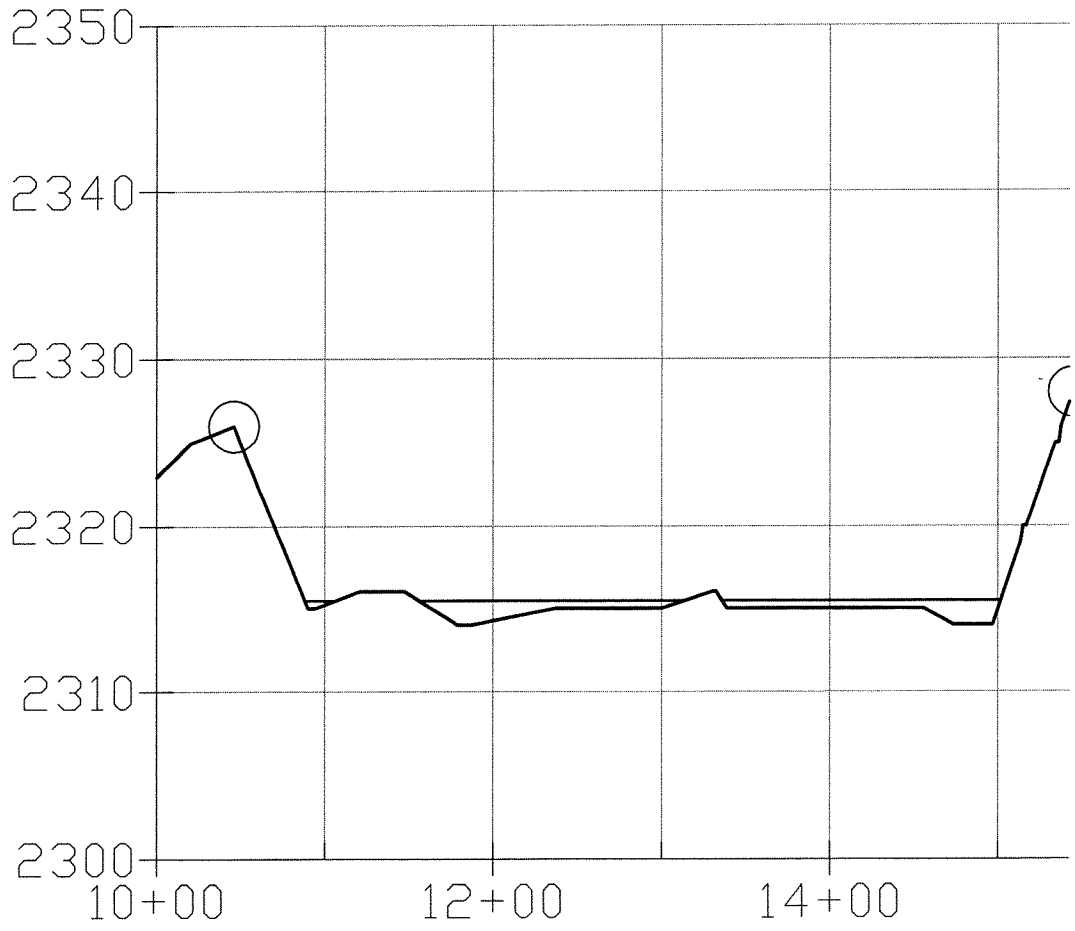

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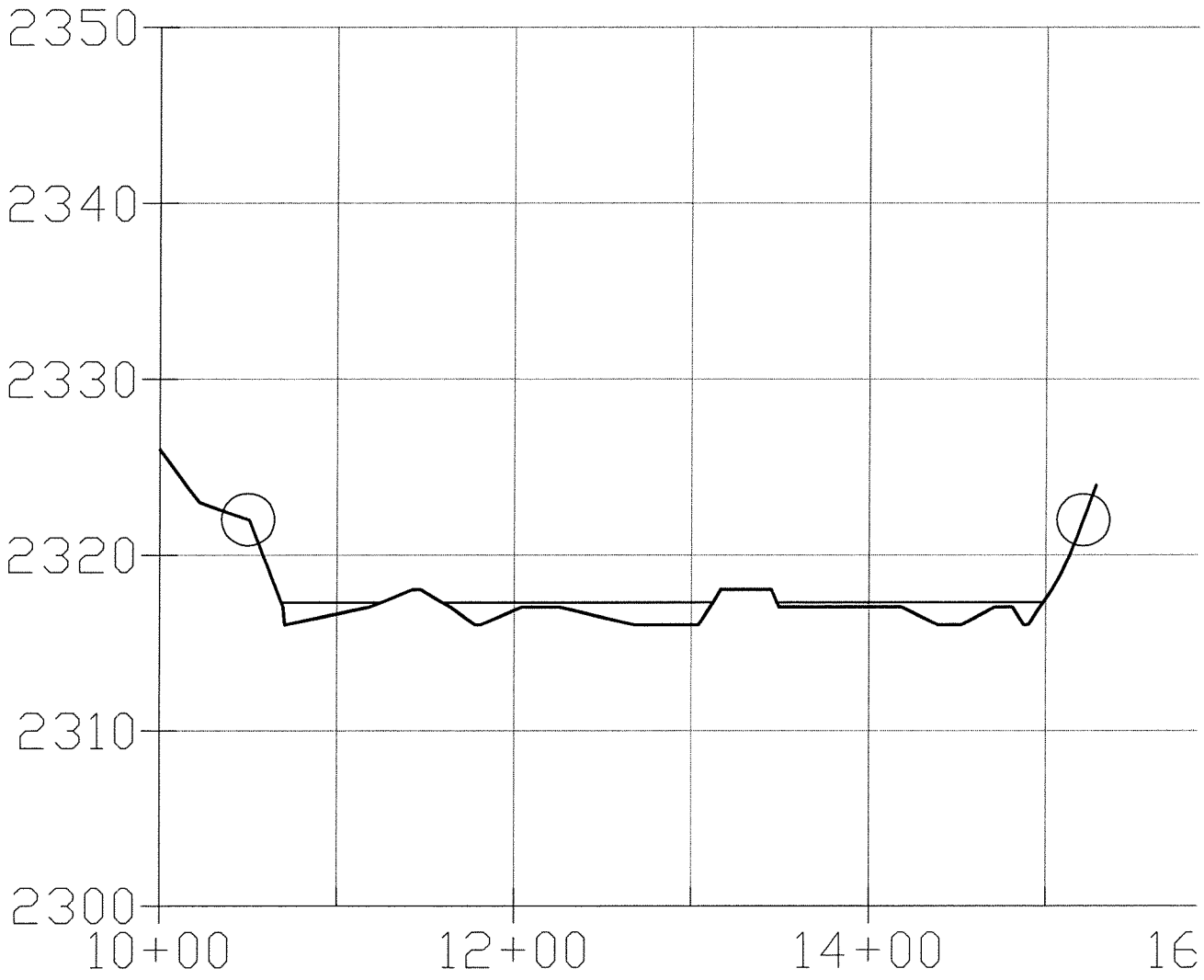

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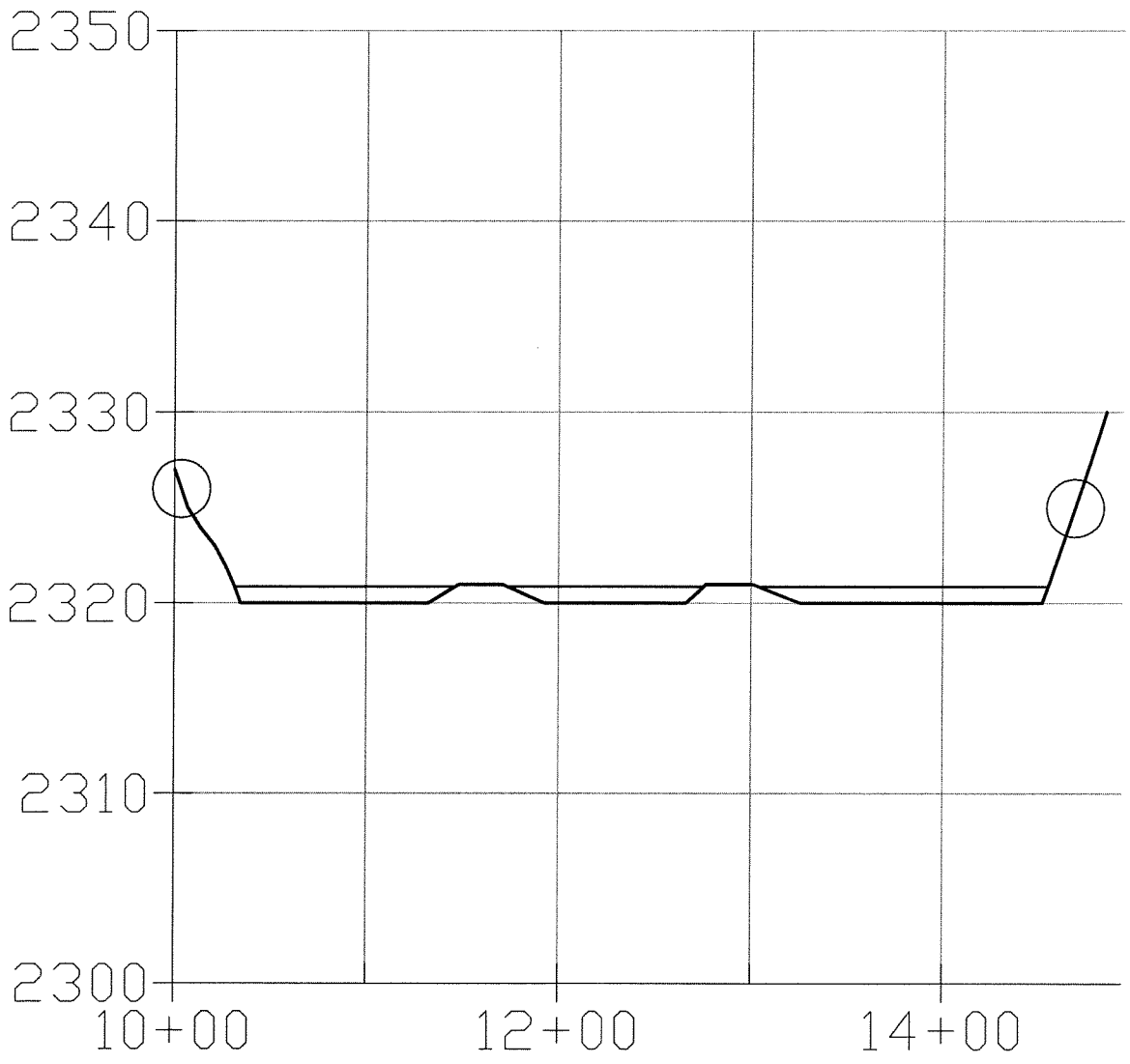

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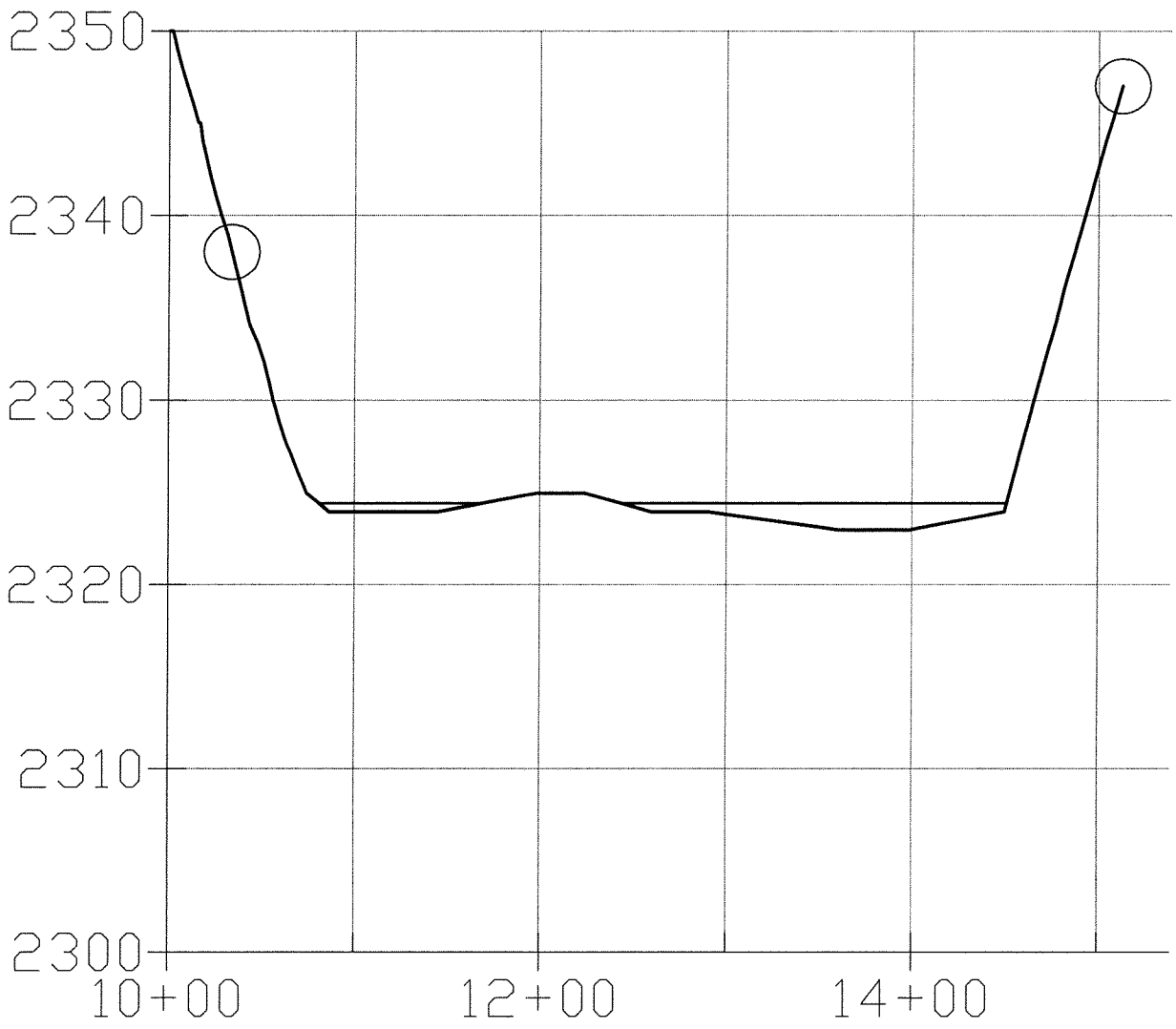

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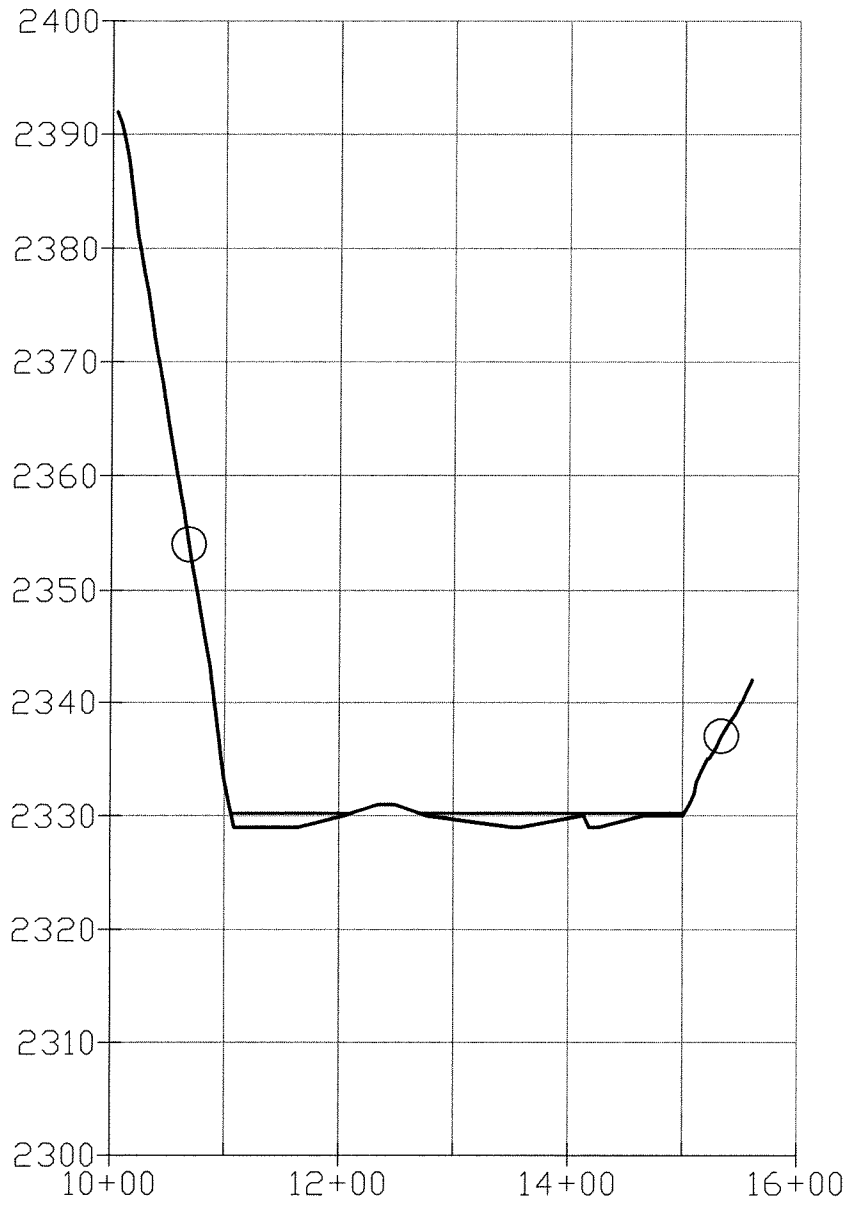
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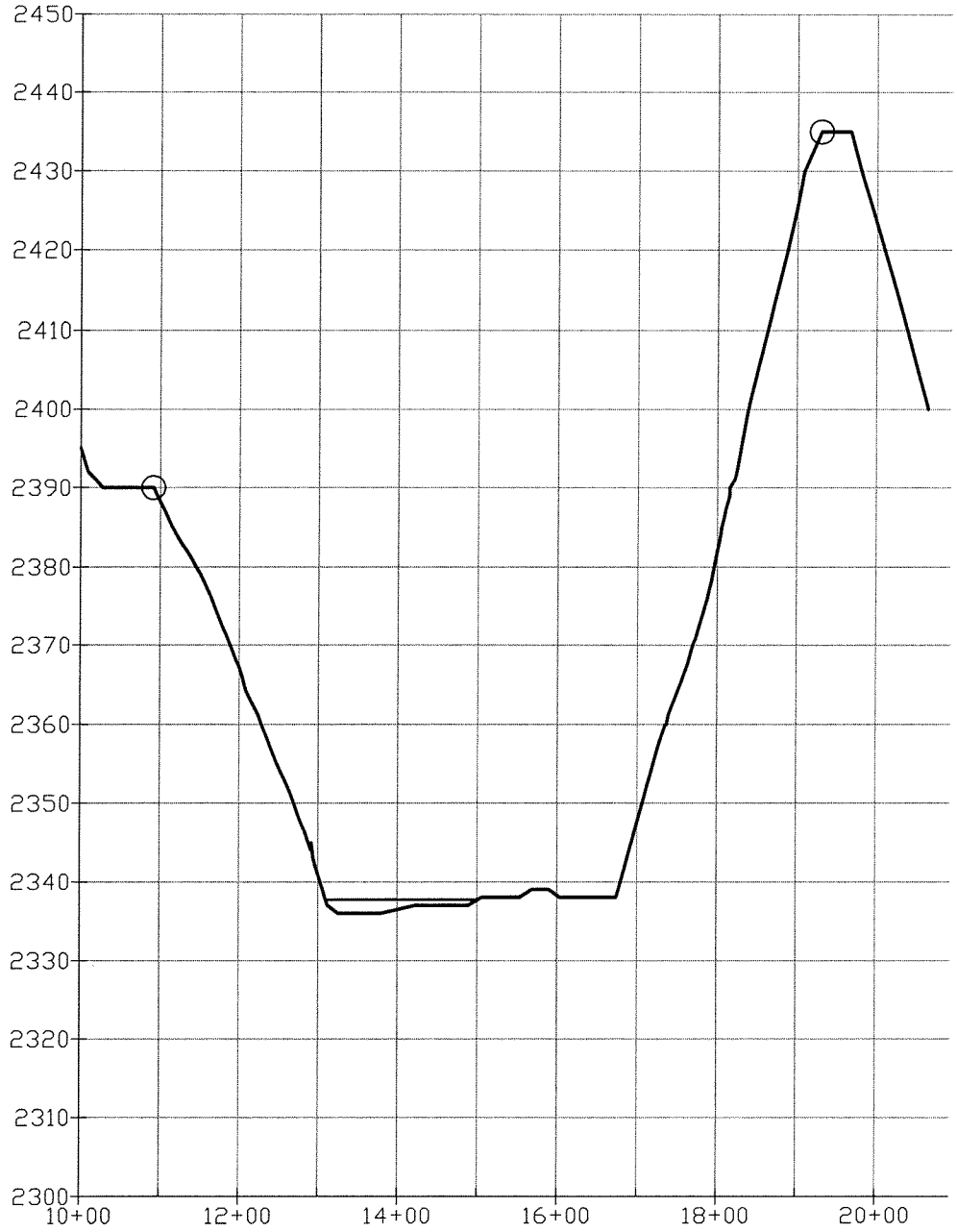
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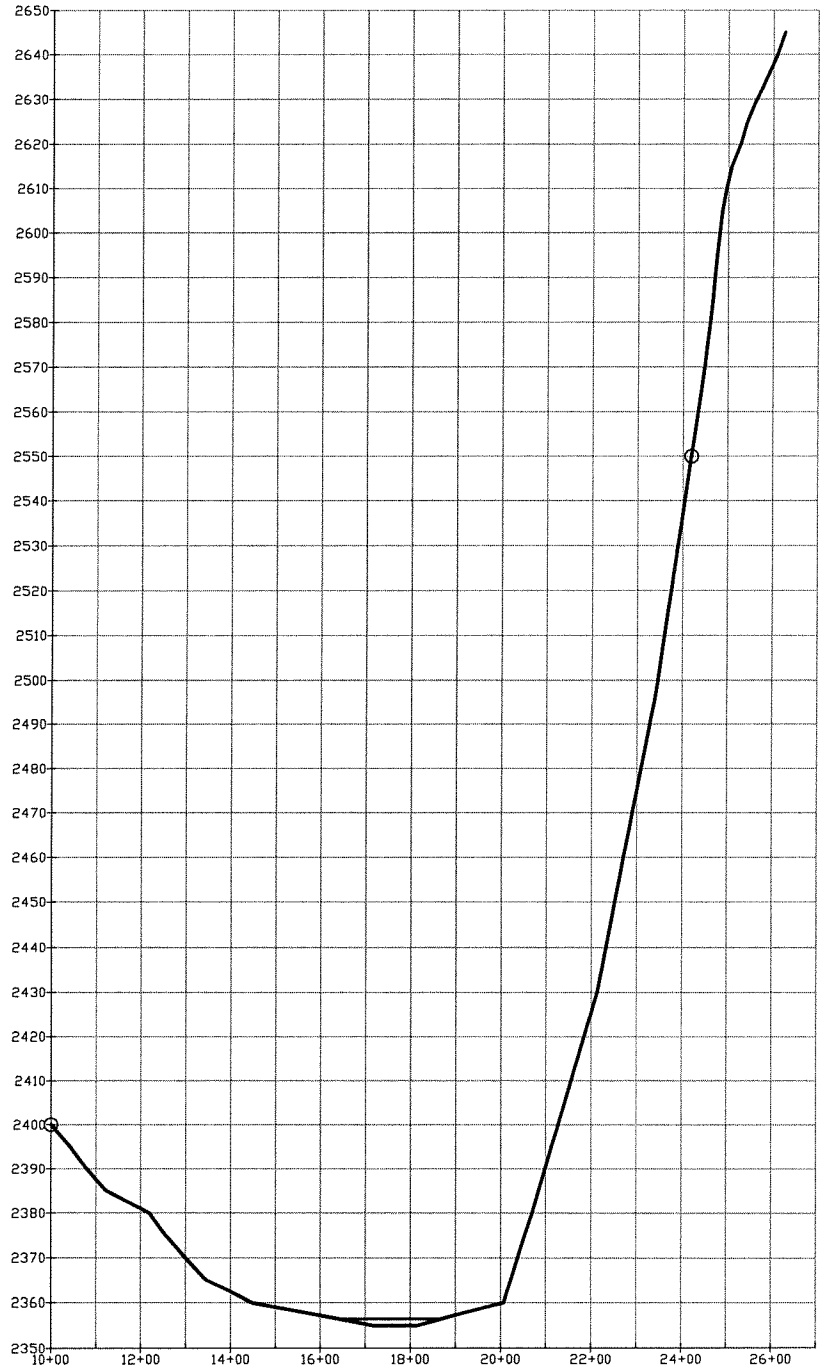
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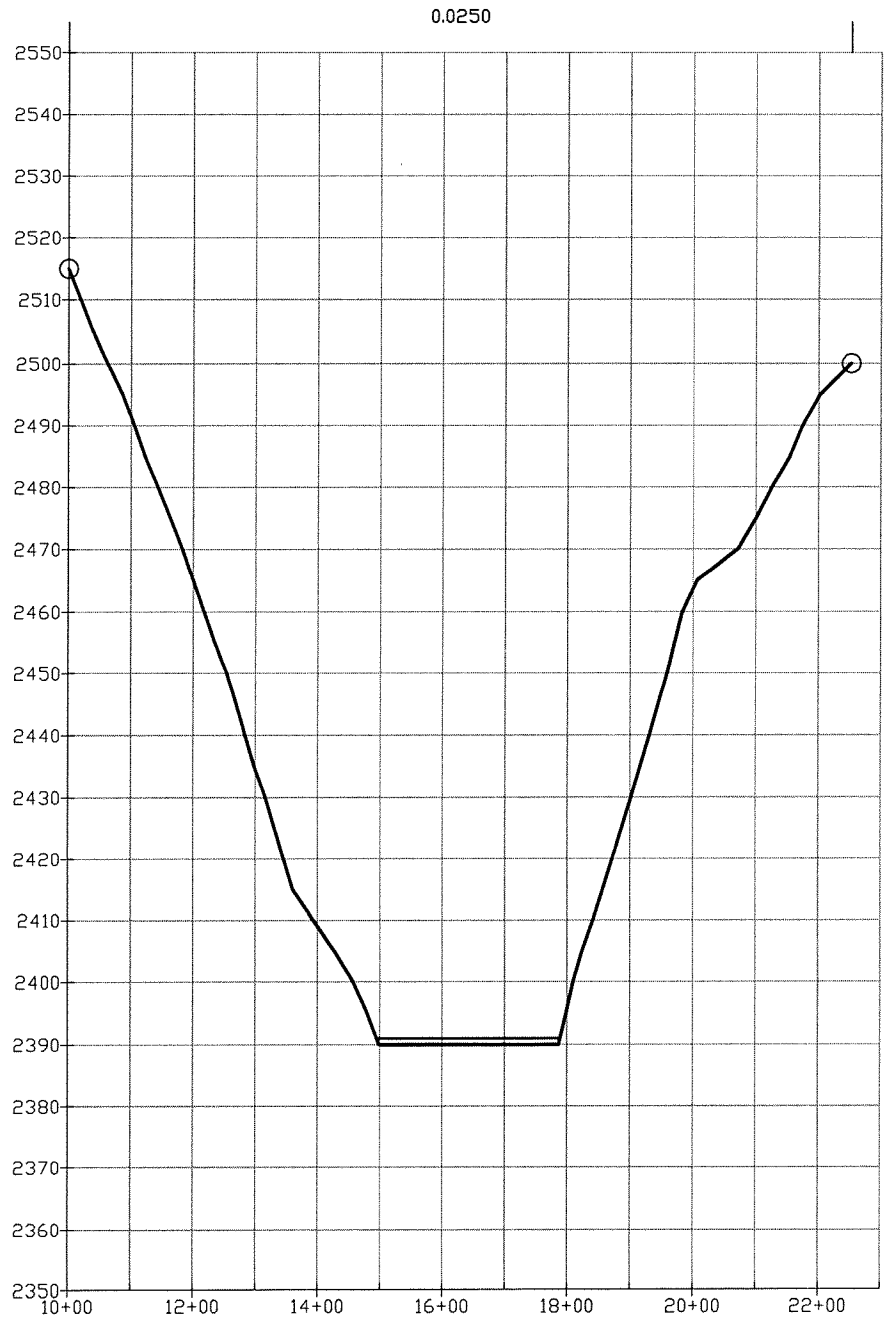
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HEC-RAS Plan: Final Design River: Main Reach: Inflow Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Inflow	9800	PF 1	1230.00	2246.00	2249.31	2249.31	2250.27	0.007886	7.87	156.23	82.42	1.01
Inflow	9700	PF 1	1230.00	2242.89	2245.11	2246.13	2248.53	0.050314	14.85	82.86	62.31	2.27
Inflow	9600	PF 1	1230.00	2239.86	2242.20	2242.90	2244.44	0.032173	12.01	102.38	81.83	1.89
Inflow	9500	PF 1	1230.00	2236.84	2239.19	2239.88	2241.40	0.028551	11.94	103.00	75.78	1.81
Inflow	9400	PF 1	1230.00	2233.50	2236.03	2236.76	2238.39	0.031823	12.33	99.78	68.37	1.80
Inflow	9371.90	PF 1	1230.00	2232.88	2234.93	2235.79	2237.81	0.012964	13.62	90.32	67.76	2.08
Inflow	9251.9	PF 1	1230.00	2229.12	2232.77	2233.98	2236.55	0.008072	15.61	78.82	32.82	1.77
Inflow	8801.9	PF 1	1230.00	2207.39	2209.50	2212.25	2228.33	0.074579	34.82	35.32	23.56	5.01
Inflow	8137.21	PF 1	1230.00	2192.27	2195.10	2197.13	2203.16	0.022845	22.78	54.00	27.91	2.89
Inflow	7935.67	PF 1	1230.00	2187.68	2190.48	2192.73	2198.83	0.020105	23.19	53.05	20.00	2.51
Inflow	7759.60	PF 1	1230.00	2183.68	2185.61	2187.76	2195.32	0.034343	25.01	49.18	27.67	3.31
Inflow	7612.88	PF 1	1230.00	2180.34	2183.19	2185.20	2191.12	0.022372	22.61	54.41	28.00	2.86
Inflow	7459.01	PF 1	1230.00	2176.84	2179.68	2181.70	2187.67	0.022568	22.68	54.24	27.96	2.87
Inflow	7347.92	PF 1	1230.00	2172.96	2175.66	2177.82	2184.90	0.027626	24.40	50.42	27.13	3.15
Inflow	7082.96	PF 1	1230.00	2163.69	2166.27	2168.55	2176.87	0.033434	26.13	47.07	26.38	3.45
Inflow	5964.44	PF 1	1230.00	2124.58	2127.12	2129.44	2138.23	0.035716	26.76	45.96	26.13	3.56
Inflow	4519.92	PF 1	1230.00	2100.59	2103.85	2105.45	2109.17	0.012884	18.51	66.46	30.47	2.21
Inflow	4328.87	PF 1	1230.00	2097.41	2100.68	2102.46	2106.72	0.012328	19.73	62.34	20.00	1.97
Inflow	4262.78	PF 1	1230.00	2096.32	2099.51	2101.37	2105.88	0.013334	20.25	60.73	20.00	2.05
Inflow	4126.20	PF 1	1230.00	2094.05	2097.14	2099.09	2103.95	0.014786	20.96	58.69	20.00	2.16
Inflow	4028.71	PF 1	1923.00	2092.43	2094.56	2096.59	2102.85	0.024441	23.11	83.23	42.00	2.89
Inflow	3862.29	PF 1	1923.00	2089.66	2093.07	2095.07	2099.84	0.012782	20.88	92.09	34.70	2.26
Inflow	3783.71	PF 1	1923.00	2086.12	2089.84	2092.18	2098.55	0.018189	23.68	81.20	33.25	2.67
Inflow	3549.25	PF 1	1923.00	2075.54	2078.71	2081.60	2092.78	0.035118	30.10	63.88	29.96	3.63
Inflow	3381.49	PF 1	1923.00	2067.98	2071.06	2074.04	2086.51	0.039959	31.55	60.96	29.37	3.86
Inflow	3015.73	PF 1	1923.00	2051.48	2054.48	2057.54	2071.13	0.044292	32.75	58.72	28.91	4.05
Inflow	2945.71	PF 1	1923.00	2048.32	2051.32	2054.38	2068.02	0.044498	32.80	58.62	28.89	4.06
Inflow	2800	PF 1	1923.00	2041.74	2044.73	2047.79	2061.52	0.044792	32.88	58.48	28.86	4.07
Inflow	2700	PF 1	2378.00	2034.68	2039.39	2043.98	2057.90	0.029726	34.53	68.87	15.00	2.84
Inflow	2448.32	PF 1	2378.00	2023.33	2027.67	2032.64	2049.52	0.037584	37.51	63.40	15.00	3.21
Inflow	2025.73	PF 1	2378.00	2015.00	2019.96	2024.31	2036.56	0.025487	32.69	72.74	15.00	2.62
Inflow	1603.62	PF 1	2378.00	2004.21	2009.17	2013.52	2025.79	0.025539	32.71	72.69	15.00	2.62
Inflow	1553.62	PF 1	2378.00	2003.35	2007.06	2011.10	2024.39	0.030965	33.41	71.18	20.00	3.12
Inflow	1392.84	PF 1	2378.00	2000.81	2004.80	2008.55	2019.71	0.024769	30.99	76.74	20.00	2.79
Inflow	1374.84	PF 1	2378.00	2000.54	2004.55	2008.28	2019.27	0.024283	30.78	77.25	20.00	2.76
Inflow	1366.30	PF 1	2378.00	2000.39	2004.24	2007.98	2019.06	0.024886	30.89	76.98	20.00	2.77
Inflow	1361.80	PF 1	2378.00	1999.96	2003.76	2007.54	2018.94	0.025772	31.26	76.08	20.00	2.82
Inflow	1357.30	PF 1	2378.00	1998.82	2002.49	2006.40	2018.82	0.028753	32.43	73.33	20.00	2.98

HEC-RAS Plan: Final Design River: Main Reach: Inflow Profile: PF 1 (Continued)

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Inflow	1236	PF 1	2378.00	1958.39	1960.46	1965.99	2011.87	0.164698	57.54	41.33	20.00	7.05
Inflow	1230	PF 1	2378.00	1956.39	1959.47	1964.96	2010.38	0.384578	57.26	41.53	20.00	7.00
Inflow	1229.99	PF 1	2378.00	1956.39	1958.45	1963.97	2010.32	0.166954	57.80	41.15	20.00	7.10
Inflow	1229.98	PF 1	2378.00	1956.39	1958.45	1964.01	2010.32	0.130096	57.80	41.15	50.00	7.10
Inflow	1220.01	PF 1	2378.00	1956.34	1957.83	1962.42	2008.63	0.196848	57.20	41.57	50.00	8.27
Inflow	1220	PF 1	2378.00	1956.34	1958.81	1963.22	2008.52	3.564034	56.58	42.03	50.00	8.42
Inflow	1219	PF 1	2378.00	1956.34	1957.71	1961.09	1997.93	2.546438	50.89	46.73	34.00	7.65
Inflow	1217	PF 1	2378.00	1956.32	1957.30	1960.44	1993.66	0.257016	48.39	49.15	50.00	8.60
Inflow	1202	PF 1	2378.00	1956.25	1957.49	1960.36	1980.26	0.119420	38.29	62.10	50.00	6.06
Inflow	1201.9	PF 1	2378.00	1956.25	1958.96	1961.56	1974.33	0.073212	31.46	75.58	50.00	4.51
Inflow	1200	PF 1	2378.00	1956.25	1959.01	1961.55	1973.53	0.066742	30.59	77.75	50.00	4.32
Inflow	1199.9	PF 1	2378.00	1956.25	1960.36	1960.36	1962.44	0.002538	11.57	205.52	50.00	1.01
Inflow	1138	PF 1	2378.00	1956.55	1957.49	1958.40	1961.13	0.026424	15.32	155.22	165.40	2.79
Inflow	1137.9	PF 1	2378.00	1955.64	1959.00	1957.49	1959.28	0.000391	4.28	555.52	165.40	0.41
Inflow	1133	PF 1	2378.00	1955.62	1959.00	1957.47	1959.28	0.000383	4.25	559.05	165.40	0.41

HEC-RAS Version 3.1.3 May 2005
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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X     X  XXXXXX    XXXX         XXXX       XX      XXXX
X     X  X        X    X       X   X     X  X    X
X     X  X        X            X   X    X    X   X
XXXXXXX  XXXX     X       XXX  XXXX     XXXXXX    XXXX
X     X  X        X            X  X     X    X        X
X     X  X        X    X       X   X    X    X        X
X     X  XXXXXX    XXXX        X    X   X    X   XXXXX
```

****

PROJECT DATA
Project Title: mainchannel
Project File : mainchannel.prj
Run Date and Time: 9/14/2007 10:51:38 AM

Project in English units

****

PLAN DATA

Plan Title: Final Design Extended Conc
Plan File : f:\504-424\Drainage\CLOMR\HEC-RAS\mainchannel.p01

Geometry Title: Final Design 07-16-07 Extended Conc
Geometry File : f:\504-424\Drainage\CLOMR\HEC-RAS\mainchannel.g01

Flow Title : Final Design 07-16-07
Flow File : f:\504-424\Drainage\CLOMR\HEC-RAS\mainchannel.f01

Plan Summary Information:
Number of: Cross Sections = 53 Multiple Openings = 0
Culverts = 0 Inline Structures = 0
Bridges = 0 Lateral Structures = 0

Computational Information
Water surface calculation tolerance = 0.01
Critical depth calculation tolerance = 0.01
Maximum number of iterations = 20
Maximum difference tolerance = 0.3
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Mixed Flow

****

FLOW DATA

Flow Title: Final Design 07-16-07
Flow File : f:\504-424\Drainage\CLOMR\HEC-RAS\mainchannel.f01

Flow Data (cfs)

River	Reach	RS	PF 1
Downstream Debri	Channel2 Inflow	1531.69	1440
Main	Inflow	9800	1230
Main	Inflow	7759.60	1230
Main	Inflow	4028.71	1923
Main	Inflow	2700	2378
Main	Inflow2	7759.60	1230
Main	Inflow3	4028.71	1923
Main	Inflow3	2700	2378
Upstream Debris Channel Inflow		1266.44	280

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Main	Inflow	PF 1	Critical	Known WS = 1959

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GEOMETRY DATA

Geometry Title: Final Design 07-16-07 Extended Conc
Geometry File : f:\504-424\Drainage\CLOMR\HEC-RAS\mainchannel.g01

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 9800

INPUT
Description:
Station Elevation Data num= 14

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2252	7.5	2251	15	2250	22	2249	29	2248
38	2247	47	2246	60	2246	68	2247	88	2248
95.5	2249	117.5	2250	122.5	2251	130	2252		

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.02	29	.025	60	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	130	100	100	.05	.1

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2250.27	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.96	Wt. n-Val.		0.028	
W.S. Elev (ft)	2249.31	Reach Len. (ft)	100.00	100.00	100.00
Crit W.S. (ft)	2249.31	Flow Area (sq ft)		156.23	
E.G. Slope (ft/ft)	*0.007886	Area (sq ft)		156.23	
Q Total (cfs)	1230.00	Flow (cfs)		1230.00	
Top Width (ft)	82.42	Top Width (ft)		82.42	
Vel Total (ft/s)	7.87	Avg. Vel. (ft/s)		7.87	
Max Chl Dpth (ft)	3.31	Hydr. Depth (ft)		1.90	
Conv. Total (cfs)	13851.2	Conv. (cfs)		13851.2	
Length Wtd. (ft)	100.00	Wetted Per. (ft)		82.79	
Min Ch El (ft)	2246.00	Shear (lb/sq ft)		0.93	
Alpha	1.00	Stream Power (lb/ft s)		7.31	
Frctn Loss (ft)	0.81	Cum Volume (acre-ft)		12.19	
C & E Loss (ft)	0.00	Cum SA (acres)		5.69	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 9700

INPUT
Description:
Station Elevation Data num= 15

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2249	8.5	2248	16	2247	23.5	2246	31	2245
39.5	2244	48	2243	55	2242.89	62	2243	78	2244
91	2245	105	2246	109.5	2247	115	2248	122.5	2249

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.02	31	.025	62	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	122.5	100	100	.05	.1

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2248.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	3.42	Wt. n-Val.		0.028	
W.S. Elev (ft)	2245.11	Reach Len. (ft)	100.00	100.00	100.00
Crit W.S. (ft)	2246.13	Flow Area (sq ft)		82.86	
E.G. Slope (ft/ft)	*0.050314	Area (sq ft)		82.86	
Q Total (cfs)	1230.00	Flow (cfs)		1230.00	
Top Width (ft)	62.31	Top Width (ft)		62.31	
Vel Total (ft/s)	14.85	Avg. Vel. (ft/s)		14.85	
Max Chl Dpth (ft)	2.22	Hydr. Depth (ft)		1.33	
Conv. Total (cfs)	5483.5	Conv. (cfs)		5483.5	
Length Wtd. (ft)	100.00	Wetted Per. (ft)		62.51	
Min Ch El (ft)	2242.89	Shear (lb/sq ft)		4.16	
Alpha	1.00	Stream Power (lb/ft s)		61.80	
Frctn Loss (ft)	1.62	Cum Volume (acre-ft)		11.92	
C & E Loss (ft)	0.12	Cum SA (acres)		5.53	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross

section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 9600

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2246	8.5	2245	16	2244	22	2243	28	2242
37	2241	47	2240	54	2239.86	64	2240	81	2241
94	2242	107	2242	115.5	2243	124	2244	130	2245
136	2246								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.02	28	.025	64	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
0 136 100 100 100 .05 .1

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2244.44	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.24	Wt. n-Val.		0.027	
W.S. Elev (ft)	2242.20	Reach Len. (ft)	100.00	100.00	100.00
Crit W.S. (ft)	2242.90	Flow Area (sq ft)		102.38	
E.G. Slope (ft/ft)	*0.032173	Area (sq ft)		102.38	
Q Total (cfs)	1230.00	Flow (cfs)		1230.00	
Top Width (ft)	81.83	Top Width (ft)		81.83	
Vel Total (ft/s)	12.01	Avg. Vel. (ft/s)		12.01	
Max Chl Dpth (ft)	2.33	Hydr. Depth (ft)		1.25	
Conv. Total (cfs)	6857.4	Conv. (cfs)		6857.4	
Length Wtd. (ft)	100.00	Wetted Per. (ft)		82.03	
Min Ch El (ft)	2239.86	Shear (lb/sq ft)		2.51	
Alpha	1.00	Stream Power (lb/ft s)		30.12	
Frctn Loss (ft)	3.97	Cum Volume (acre-ft)		11.71	
C & E Loss (ft)	0.12	Cum SA (acres)		5.36	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 9500

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2243	8	2242	16	2241	23	2240	32	2239
40	2238	50	2237	60	2236.84	69	2237	86	2238
96	2239	104	2239	115	2240	123	2241	127	2242
134	2243								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.02	32	.025	69	.035

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
0 134 100 100 100 .05 .1

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2241.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.21	Wt. n-Val.		0.027	
W.S. Elev (ft)	2239.19	Reach Len. (ft)	100.00	100.00	100.00
Crit W.S. (ft)	2239.88	Flow Area (sq ft)		103.00	
E.G. Slope (ft/ft)	*0.028551	Area (sq ft)		103.00	
Q Total (cfs)	1230.00	Flow (cfs)		1230.00	
Top Width (ft)	75.78	Top Width (ft)		75.78	
Vel Total (ft/s)	11.94	Avg. Vel. (ft/s)		11.94	
Max Chl Dpth (ft)	2.35	Hydr. Depth (ft)		1.36	
Conv. Total (cfs)	7279.4	Conv. (cfs)		7279.4	
Length Wtd. (ft)	100.00	Wetted Per. (ft)		76.00	
Min Ch El (ft)	2236.84	Shear (lb/sq ft)		2.42	
Alpha	1.00	Stream Power (lb/ft s)		28.85	
Frctn Loss (ft)	3.03	Cum Volume (acre-ft)		11.47	
C & E Loss (ft)	0.00	Cum SA (acres)		5.18	

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 9400

INPUT
Description:
Station Elevation Data num= 16

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2240	9	2239	18	2238	26	2237	34	2236
42	2235	50	2234	60	2233.5	68	2234	89	2235
96	2235	102	2236	108	2237	115	2238	123	2239
131	2240								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.02	34	.025	68	.035

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	131	28.1	28.1	28.1	.05	.1

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2238.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.36	Wt. n-Val.		0.028	
W.S. Elev (ft)	2236.03	Reach Len. (ft)	28.10	28.10	28.10
Crit W.S. (ft)	2236.76	Flow Area (sq ft)		99.78	
E.G. Slope (ft/ft)	*0.031823	Area (sq ft)		99.78	
Q Total (cfs)	1230.00	Flow (cfs)		1230.00	
Top Width (ft)	68.37	Top Width (ft)		68.37	
Vel Total (ft/s)	12.33	Avg. Vel. (ft/s)		12.33	
Max Chl Dpth (ft)	2.53	Hydr. Depth (ft)		1.46	
Conv. Total (cfs)	6895.0	Conv. (cfs)		6895.0	
Length Wtd. (ft)	28.10	Wetted Per. (ft)		68.63	
Min Ch El (ft)	2233.50	Shear (lb/sq ft)		2.89	
Alpha	1.00	Stream Power (lb/ft s)		35.61	
Frctn Loss (ft)	3.01	Cum Volume (acre-ft)		11.24	
C & E Loss (ft)	0.01	Cum SA (acres)		5.02	

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 9371.90

INPUT
Description:
Station Elevation Data num= 18

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
0	2239.18	2	2239	11	2238	20	2237	28	2236
35.5	2235	43	2234	50.5	2233	53	2232.88	64	2232.88
66	2233	88	2234	101	2234	104	2235	107	2236
112	2237	120.5	2238	127	2238.88				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
0	.015	0	.015	127	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
0	127	124.19	120	128.8	.05	.01

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2237.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.88	Wt. n-Val.		0.015	
W.S. Elev (ft)	2234.93	Reach Len. (ft)	124.19	120.00	128.80
Crit W.S. (ft)	2235.79	Flow Area (sq ft)		90.32	
E.G. Slope (ft/ft)	*0.012964	Area (sq ft)		90.32	
Q Total (cfs)	1230.00	Flow (cfs)		1230.00	
Top Width (ft)	67.76	Top Width (ft)		67.76	
Vel Total (ft/s)	13.62	Avg. Vel. (ft/s)		13.62	
Max Chl Dpth (ft)	2.05	Hydr. Depth (ft)		1.33	
Conv. Total (cfs)	10803.0	Conv. (cfs)		10803.0	
Length Wtd. (ft)	120.00	Wetted Per. (ft)		68.07	
Min Ch El (ft)	2232.88	Shear (lb/sq ft)		1.07	
Alpha	1.00	Stream Power (lb/ft s)		14.62	
Frctn Loss (ft)	0.54	Cum Volume (acre-ft)		11.18	
C & E Loss (ft)	0.03	Cum SA (acres)		4.97	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 9251.9

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24	2235.3	-6	2229.3	0	2229.12	6	2229.3	24	2235.3

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24	.015	-24	.015	24	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24	24	450	450	0	0

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2236.55	Element	Left OB	Channel	Right OB	
Vel Head (ft)	3.78	Wt. n-Val.		0.015		
W.S. Elev (ft)	2232.77	Reach Len. (ft)	450.00	450.00	450.00	
Crit W.S. (ft)	2233.98	Flow Area (sq ft)		78.82		
E.G. Slope (ft/ft)	*0.008072	Area (sq ft)		78.82		
Q Total (cfs)	1230.00	Flow (cfs)		1230.00		
Top Width (ft)	32.82	Top Width (ft)		32.82		
Vel Total (ft/s)	15.61	Avg. Vel. (ft/s)		15.61		
Max Chl Dpth (ft)	3.65	Hydr. Depth (ft)		2.40		
Conv. Total (cfs)	13690.1	Conv. (cfs)		13690.1		
Length Wtd. (ft)	450.00	Wetted Per. (ft)		33.95		
Min Ch El (ft)	2229.12	Shear (lb/sq ft)		1.17		
Alpha	1.00	Stream Power (lb/ft s)		18.26		
Frctn Loss (ft)	1.21	Cum Volume (acre-ft)		10.95		
C & E Loss (ft)	0.05	Cum SA (acres)		4.83		

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 8801.9

INPUT
Description: Grade Break
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24	2213.57	-6	2207.57	0	2207.39	6	2207.57	24	2213.57

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24	.015	-24	.015	24	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24	24	664.69	664.69	0	0

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2228.33	Element	Left OB	Channel	Right OB	
Vel Head (ft)	18.83	Wt. n-Val.		0.015		
W.S. Elev (ft)	2209.50	Reach Len. (ft)	664.69	664.69	664.69	
Crit W.S. (ft)	2212.25	Flow Area (sq ft)		35.32		
E.G. Slope (ft/ft)	*0.074579	Area (sq ft)		35.32		
Q Total (cfs)	1230.00	Flow (cfs)		1230.00		
Top Width (ft)	23.56	Top Width (ft)		23.56		
Vel Total (ft/s)	34.82	Avg. Vel. (ft/s)		34.82		
Max Chl Dpth (ft)	2.11	Hydr. Depth (ft)		1.50		
Conv. Total (cfs)	4504.0	Conv. (cfs)		4504.0		
Length Wtd. (ft)	664.69	Wetted Per. (ft)		24.19		
Min Ch El (ft)	2207.39	Shear (lb/sq ft)		6.80		
Alpha	1.00	Stream Power (lb/ft s)		236.78		
Frctn Loss (ft)	8.23	Cum Volume (acre-ft)		10.36		
C & E Loss (ft)	0.00	Cum SA (acres)		4.54		

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 8137.21

INPUT
Description: Transition to Rectangular Channel
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24	2198.45	-6	2192.45	0	2192.27	6	2192.45	24	2198.45

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24	.015	-24	.015	24	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24	24	202.02	201.54 202.02	.05	.1

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2203.16	Element	Left OB	Channel	Right OB
Vel Head (ft)	8.06	Wt. n-Val.		0.015	
W.S. Elev (ft)	2195.10	Reach Len. (ft)	202.02	201.54	202.02
Crit W.S. (ft)	2197.13	Flow Area (sq ft)		54.00	
E.G. Slope (ft/ft)	*0.022845	Area (sq ft)		54.00	
Q Total (cfs)	1230.00	Flow (cfs)		1230.00	
Top Width (ft)	27.91	Top Width (ft)		27.91	
Vel Total (ft/s)	22.78	Avg. Vel. (ft/s)		22.78	
Max Chl Dpth (ft)	2.83	Hydr. Depth (ft)		1.93	
Conv. Total (cfs)	8137.9	Conv. (cfs)		8137.9	
Length Wtd. (ft)	201.54	Wetted Per. (ft)		28.78	
Min Ch El (ft)	2192.27	Shear (lb/sq ft)		2.68	
Alpha	1.00	Stream Power (lb/ft s)		60.96	
Frctn Loss (ft)	25.17	Cum Volume (acre-ft)		9.67	
C & E Loss (ft)	0.00	Cum SA (acres)		4.15	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 7935.67

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-10	2193.98	-10	2187.98	0	2187.68	10	2187.98	10	2193.98

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-10	.015	-10	.015	10	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-10	10	136.07	136.07 136.07	0	0

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2198.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	8.35	Wt. n-Val.		0.015	
W.S. Elev (ft)	2190.48	Reach Len. (ft)	136.07	136.07	136.07
Crit W.S. (ft)	2192.73	Flow Area (sq ft)		53.05	
E.G. Slope (ft/ft)	*0.020105	Area (sq ft)		53.05	
Q Total (cfs)	1230.00	Flow (cfs)		1230.00	
Top Width (ft)	20.00	Top Width (ft)		20.00	
Vel Total (ft/s)	23.19	Avg. Vel. (ft/s)		23.19	
Max Chl Dpth (ft)	2.80	Hydr. Depth (ft)		2.65	
Conv. Total (cfs)	8674.6	Conv. (cfs)		8674.6	
Length Wtd. (ft)	136.07	Wetted Per. (ft)		25.01	
Min Ch El (ft)	2187.68	Shear (lb/sq ft)		2.66	
Alpha	1.00	Stream Power (lb/ft s)		61.72	
Frctn Loss (ft)	4.31	Cum Volume (acre-ft)		9.43	
C & E Loss (ft)	0.01	Cum SA (acres)		4.04	

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 7759.60

INPUT
Description:

Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-10	2189.98	-10	2183.98	0	2183.68	17.67	2183.98	17.67	2189.98

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-10	.015	-10	.015	17.67	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-10	17.67	147.39	146.72 146.86	.05	.1

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2195.32	Element	Left OB	Channel	Right OB	
Vel Head (ft)	9.71	Wt. n-Val.		0.015		
W.S. Elev (ft)	2185.61	Reach Len. (ft)	147.39	146.72	146.86	
Crit W.S. (ft)	2187.76	Flow Area (sq ft)		49.18		
E.G. Slope (ft/ft)	*0.034343	Area (sq ft)		49.18		
Q Total (cfs)	1230.00	Flow (cfs)		1230.00		
Top Width (ft)	27.67	Top Width (ft)		27.67		
Vel Total (ft/s)	25.01	Avg. Vel. (ft/s)		25.01		
Max Chl Dpth (ft)	1.93	Hydr. Depth (ft)		1.78		
Conv. Total (cfs)	6637.2	Conv. (cfs)		6637.2		
Length Wtd. (ft)	146.72	Wetted Per. (ft)		30.93		
Min Ch El (ft)	2183.68	Shear (lb/sq ft)		3.41		
Alpha	1.00	Stream Power (lb/ft s)		85.26		
Frctn Loss (ft)	3.51	Cum Volume (acre-ft)		9.27		
C & E Loss (ft)	0.00	Cum SA (acres)		3.96		

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 7612.88

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24	2186.52	-6	2180.52	0	2180.34	6	2180.52	24	2186.52

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24	.015	-24	.015	24	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24	24	161.25	153.87 146.48	0	0

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2191.12	Element	Left OB	Channel	Right OB	
Vel Head (ft)	7.94	Wt. n-Val.		0.015		
W.S. Elev (ft)	2183.19	Reach Len. (ft)	161.25	153.87	146.48	
Crit W.S. (ft)	2185.20	Flow Area (sq ft)		54.41		
E.G. Slope (ft/ft)	*0.022372	Area (sq ft)		54.41		
Q Total (cfs)	1230.00	Flow (cfs)		1230.00		
Top Width (ft)	28.00	Top Width (ft)		28.00		
Vel Total (ft/s)	22.61	Avg. Vel. (ft/s)		22.61		
Max Chl Dpth (ft)	2.85	Hydr. Depth (ft)		1.94		
Conv. Total (cfs)	8223.4	Conv. (cfs)		8223.4		
Length Wtd. (ft)	153.87	Wetted Per. (ft)		28.87		
Min Ch El (ft)	2180.34	Shear (lb/sq ft)		2.63		
Alpha	1.00	Stream Power (lb/ft s)		59.51		
Frctn Loss (ft)	4.02	Cum Volume (acre-ft)		9.09		
C & E Loss (ft)	0.18	Cum SA (acres)		3.87		

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 7459.01

INPUT
Description: Grade Break
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24	2183.02	-6	2177.02	0	2176.84	6	2177.02	24	2183.02

```
Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     -24    .015     -24    .015      24    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -24      24           116.42  111.09  105.76              0        0

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)         * 2187.67  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    7.99  * Wt. n-Val.            *          *    0.015  *          *
* W.S. Elev (ft)         * 2179.68  * Reach Len. (ft)       *  116.42  *  111.09  *  105.76  *
* Crit W.S. (ft)         * 2181.70  * Flow Area (sq ft)     *          *   54.24  *          *
* E.G. Slope (ft/ft)     *0.022568  * Area (sq ft)          *          *   54.24  *          *
* Q Total (cfs)          * 1230.00  * Flow (cfs)            *          * 1230.00  *          *
* Top Width (ft)         *   27.96  * Top Width (ft)        *          *   27.96  *          *
* Vel Total (ft/s)       *   22.68  * Avg. Vel. (ft/s)      *          *   22.68  *          *
* Max Chl Dpth (ft)      *    2.84  * Hydr. Depth (ft)      *          *    1.94  *          *
* Conv. Total (cfs)      *  8187.7  * Conv. (cfs)           *          *  8187.7  *          *
* Length Wtd. (ft)       *  111.09  * Wetted Per. (ft)      *          *   28.83  *          *
* Min Ch El (ft)         * 2176.84  * Shear (lb/sq ft)      *          *    2.65  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   60.11  *          *
* Frctn Loss (ft)        *    3.46  * Cum Volume (acre-ft)  *          *    8.90  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *          *    3.77  *          *
*****************************************************************************************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Main
REACH: Inflow            RS: 7347.92

INPUT
Description:
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -24 2179.14      -6 2173.14       0 2172.96       6 2173.14      24 2179.14

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     -24    .015     -24    .015      24    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -24      24           252.24  264.96  277.68              0        0

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)         * 2184.90  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    9.24  * Wt. n-Val.            *          *    0.015  *          *
* W.S. Elev (ft)         * 2175.66  * Reach Len. (ft)       *  252.24  *  264.96  *  277.68  *
* Crit W.S. (ft)         * 2177.82  * Flow Area (sq ft)     *          *   50.42  *          *
* E.G. Slope (ft/ft)     *0.027626  * Area (sq ft)          *          *   50.42  *          *
* Q Total (cfs)          * 1230.00  * Flow (cfs)            *          * 1230.00  *          *
* Top Width (ft)         *   27.13  * Top Width (ft)        *          *   27.13  *          *
* Vel Total (ft/s)       *   24.40  * Avg. Vel. (ft/s)      *          *   24.40  *          *
* Max Chl Dpth (ft)      *    2.70  * Hydr. Depth (ft)      *          *    1.86  *          *
* Conv. Total (cfs)      *  7400.2  * Conv. (cfs)           *          *  7400.2  *          *
* Length Wtd. (ft)       *  264.96  * Wetted Per. (ft)      *          *   27.95  *          *
* Min Ch El (ft)         * 2172.96  * Shear (lb/sq ft)      *          *    3.11  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   75.89  *          *
* Frctn Loss (ft)        *    2.77  * Cum Volume (acre-ft)  *          *    8.77  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *          *    3.70  *          *
*****************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Main
REACH: Inflow            RS: 7082.96

INPUT
Description:
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -24 2169.87      -6 2163.87       0 2163.69       6 2163.87      24 2169.87

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     -24    .015     -24    .015      24    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -24      24          1118.52 1118.52 1118.52              0        0
```

CROSS SECTION OUTPUT Profile #PF 1

Element	Left OB	Channel	Right OB
E.G. Elev (ft)	2176.87		
Vel Head (ft)	10.60	0.015	
W.S. Elev (ft)	2166.27	1118.52	1118.52	1118.52
Crit W.S. (ft)	2168.55	47.07	
E.G. Slope (ft/ft)	*0.033434	47.07	
Q Total (cfs)	1230.00	1230.00	
Top Width (ft)	26.38	26.38	
Vel Total (ft/s)	26.13	26.13	
Max Chl Dpth (ft)	2.58	1.78	
Conv. Total (cfs)	6726.8	6726.8	
Length Wtd. (ft)	1118.52	Wetted Per. (ft)	27.16	
Min Ch El (ft)	2163.69	Shear (lb/sq ft)	3.62	
Alpha	1.00	Stream Power (lb/ft s)	94.52	
Frctn Loss (ft)	8.03	Cum Volume (acre-ft)	8.47	
C & E Loss (ft)	0.00	Cum SA (acres)	3.54	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 5964.44

INPUT
Description: Grade Break
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24	2130.76	-6	2124.76	0	2124.58	6	2124.76	24	2130.76

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24	.015	-24	.015	24	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24	24	1444.52	1444.52	1444.52	0	0

CROSS SECTION OUTPUT Profile #PF 1

Element	Left OB	Channel	Right OB
E.G. Elev (ft)	2138.23		
Vel Head (ft)	11.12	0.015	
W.S. Elev (ft)	2127.12	1444.52	1444.52	1444.52
Crit W.S. (ft)	2129.44	45.96	
E.G. Slope (ft/ft)	*0.035716	45.96	
Q Total (cfs)	1230.00	1230.00	
Top Width (ft)	26.13	26.13	
Vel Total (ft/s)	26.76	26.76	
Max Chl Dpth (ft)	2.53	1.76	
Conv. Total (cfs)	6508.4	6508.4	
Length Wtd. (ft)	1444.52	Wetted Per. (ft)	26.90	
Min Ch El (ft)	2124.58	Shear (lb/sq ft)	3.81	
Alpha	1.00	Stream Power (lb/ft s)	101.97	
Frctn Loss (ft)	38.64	Cum Volume (acre-ft)	7.28	
C & E Loss (ft)	0.00	Cum SA (acres)	2.86	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 4519.92

INPUT
Description: Transition to Rectangular Channel
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24	2106.77	-6	2100.77	0	2100.59	6	2100.77	24	2106.77

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24	.015	-24	.015	24	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24	24	191.57	191.05	191.57	.05	.1

CROSS SECTION OUTPUT Profile #PF 1

Element	Left OB	Channel	Right OB
E.G. Elev (ft)	2109.17		
Vel Head (ft)	5.32	0.015	

* W.S. Elev (ft)	* 2103.85	* Reach Len. (ft)	* 191.57	* 191.05	* 191.57 *
* Crit W.S. (ft)	* 2105.45	* Flow Area (sq ft)	*	* 66.46	* *
* E.G. Slope (ft/ft)	*0.012884	* Area (sq ft)	*	* 66.46	* *
* Q Total (cfs)	* 1230.00	* Flow (cfs)	*	* 1230.00	* *
* Top Width (ft)	* 30.47	* Top Width (ft)	*	* 30.47	* *
* Vel Total (ft/s)	* 18.51	* Avg. Vel. (ft/s)	*	* 18.51	* *
* Max Chl Dpth (ft)	* 3.26	* Hydr. Depth (ft)	*	* 2.18	* *
* Conv. Total (cfs)	* 10836.2	* Conv. (cfs)	*	* 10836.2	* *
* Length Wtd. (ft)	* 191.05	* Wetted Per. (ft)	*	* 31.48	* *
* Min Ch El (ft)	* 2100.59	* Shear (lb/sq ft)	*	* 1.70	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 31.43	* *
* Frctn Loss (ft)	* 29.06	* Cum Volume (acre-ft)	*	* 5.41	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 1.93	* *

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 4328.87

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-10	2103.71	-10	2097.71	0	2097.41	10	2097.71	10	2103.71

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-10	.015	-10	.015	10	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-10	10	66.09	66.09	66.09	0	0

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2106.72	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 6.05	* Wt. n-Val.	*	* 0.015	* *
* W.S. Elev (ft)	* 2100.68	* Reach Len. (ft)	* 66.09	* 66.09	* 66.09 *
* Crit W.S. (ft)	* 2102.46	* Flow Area (sq ft)	*	* 62.34	* *
* E.G. Slope (ft/ft)	*0.012328	* Area (sq ft)	*	* 62.34	* *
* Q Total (cfs)	* 1230.00	* Flow (cfs)	*	* 1230.00	* *
* Top Width (ft)	* 20.00	* Top Width (ft)	*	* 20.00	* *
* Vel Total (ft/s)	* 19.73	* Avg. Vel. (ft/s)	*	* 19.73	* *
* Max Chl Dpth (ft)	* 3.27	* Hydr. Depth (ft)	*	* 3.12	* *
* Conv. Total (cfs)	* 11078.1	* Conv. (cfs)	*	* 11078.1	* *
* Length Wtd. (ft)	* 66.09	* Wetted Per. (ft)	*	* 25.94	* *
* Min Ch El (ft)	* 2097.41	* Shear (lb/sq ft)	*	* 1.85	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 36.49	* *
* Frctn Loss (ft)	* 2.41	* Cum Volume (acre-ft)	*	* 5.13	* *
* C & E Loss (ft)	* 0.04	* Cum SA (acres)	*	* 1.81	* *

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 4262.78

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-10	2102.62	-10	2096.62	0	2096.32	10	2096.62	10	2102.62

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-10	.015	-10	.015	10	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-10	10	139.31	136.58	133.85	0	0

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2105.88	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 6.37	* Wt. n-Val.	*	* 0.015	* *
* W.S. Elev (ft)	* 2099.51	* Reach Len. (ft)	* 139.31	* 136.58	* 133.85 *
* Crit W.S. (ft)	* 2101.37	* Flow Area (sq ft)	*	* 60.73	* *
* E.G. Slope (ft/ft)	*0.013334	* Area (sq ft)	*	* 60.73	* *

* Q Total (cfs)	* 1230.00	* Flow (cfs)	*	* 1230.00 *
* Top Width (ft)	* 20.00	* Top Width (ft)	*	* 20.00 *
* Vel Total (ft/s)	* 20.25	* Avg. Vel. (ft/s)	*	* 20.25 *
* Max Chl Dpth (ft)	* 3.19	* Hydr. Depth (ft)	*	* 3.04 *
* Conv. Total (cfs)	* 10651.7	* Conv. (cfs)	*	* 10651.7 *
* Length Wtd. (ft)	* 136.58	* Wetted Per. (ft)	*	* 25.78 *
* Min Ch El (ft)	* 2096.32	* Shear (lb/sq ft)	*	* 1.96 *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 39.71 *
* Frctn Loss (ft)	* 0.85	* Cum Volume (acre-ft)	*	* 5.04 *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 1.78 *

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 4126.20

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-10	2100.35	-10	2094.35	0	2094.05	10	2094.35	10	2100.35

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-10	.015	-10	.015	10	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-10	10	55.49	55.49	55.49	0	0

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2103.95	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 6.82	* Wt. n-Val.	*	* 0.015	* *
* W.S. Elev (ft)	* 2097.14	* Reach Len. (ft)	* 55.49	* 55.49	* 55.49 *
* Crit W.S. (ft)	* 2099.09	* Flow Area (sq ft)	*	* 58.69	* *
* E.G. Slope (ft/ft)	*0.014786	* Area (sq ft)	*	* 58.69	* *
* Q Total (cfs)	* 1230.00	* Flow (cfs)	*	* 1230.00	* *
* Top Width (ft)	* 20.00	* Top Width (ft)	*	* 20.00	* *
* Vel Total (ft/s)	* 20.96	* Avg. Vel. (ft/s)	*	* 20.96	* *
* Max Chl Dpth (ft)	* 3.08	* Hydr. Depth (ft)	*	* 2.93	* *
* Conv. Total (cfs)	* 10115.3	* Conv. (cfs)	*	* 10115.3	* *
* Length Wtd. (ft)	* 55.49	* Wetted Per. (ft)	*	* 25.58	* *
* Min Ch El (ft)	* 2094.05	* Shear (lb/sq ft)	*	* 2.12	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 44.39	* *
* Frctn Loss (ft)	* 1.92	* Cum Volume (acre-ft)	*	* 4.85	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 1.72	* *

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 4028.71

INPUT
Description: End of Confluence, Begin Transition to Trap Channel
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-10	2098.73	-10	2092.73	0	2092.43	32	2092.73	32	2098.73

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-10	.015	-10	.015	32	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-10	32	166.66	166.42	166.42	.05	.1

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2102.85	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 8.29	* Wt. n-Val.	*	* 0.015	* *
* W.S. Elev (ft)	* 2094.56	* Reach Len. (ft)	* 166.66	* 166.42	* 166.42 *
* Crit W.S. (ft)	* 2096.59	* Flow Area (sq ft)	*	* 83.23	* *
* E.G. Slope (ft/ft)	*0.024441	* Area (sq ft)	*	* 83.23	* *
* Q Total (cfs)	* 1923.00	* Flow (cfs)	*	* 1923.00	* *
* Top Width (ft)	* 42.00	* Top Width (ft)	*	* 42.00	* *
* Vel Total (ft/s)	* 23.11	* Avg. Vel. (ft/s)	*	* 23.11	* *
* Max Chl Dpth (ft)	* 2.13	* Hydr. Depth (ft)	*	* 1.98	* *
* Conv. Total (cfs)	* 12300.4	* Conv. (cfs)	*	* 12300.4	* *
* Length Wtd. (ft)	* 166.42	* Wetted Per. (ft)	*	* 45.67	* *
* Min Ch El (ft)	* 2092.43	* Shear (lb/sq ft)	*	* 2.78	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 64.25	* *
* Frctn Loss (ft)	* 1.10	* Cum Volume (acre-ft)	*	* 4.76	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 1.68	* *

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 3862.29

INPUT
Description: Grade Break
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-19.51	2095.84	-7.28	2089.88	0	2089.66	14.34	2089.88	26.57	2095.84

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-19.51	.015	-19.51	.015	26.57	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-19.51	26.57	78.71	78.58	78.59	.05	.1

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2099.84	Element	Left OB	Channel	Right OB
Vel Head (ft)	6.77	Wt. n-Val.		0.015	
W.S. Elev (ft)	2093.07	Reach Len. (ft)	78.71	78.58	78.59
Crit W.S. (ft)	2095.07	Flow Area (sq ft)		92.09	
E.G. Slope (ft/ft)	*0.012782	Area (sq ft)		92.09	
Q Total (cfs)	1923.00	Flow (cfs)		1923.00	
Top Width (ft)	34.70	Top Width (ft)		34.70	
Vel Total (ft/s)	20.88	Avg. Vel. (ft/s)		20.88	
Max Chl Dpth (ft)	3.41	Hydr. Depth (ft)		2.65	
Conv. Total (cfs)	17009.1	Conv. (cfs)		17009.1	
Length Wtd. (ft)	78.58	Wetted Per. (ft)		36.17	
Min Ch El (ft)	2089.66	Shear (lb/sq ft)		2.03	
Alpha	1.00	Stream Power (lb/ft s)		42.42	
Frctn Loss (ft)	2.87	Cum Volume (acre-ft)		4.42	
C & E Loss (ft)	0.15	Cum SA (acres)		1.54	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 3783.71

INPUT
Description: End of transition
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24	2092.3	-6	2086.3	0	2086.12	6	2086.3	24	2092.3

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24	.015	-24	.015	24	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24	24	234.46	234.46	234.46	0	0

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2098.55	Element	Left OB	Channel	Right OB
Vel Head (ft)	8.71	Wt. n-Val.		0.015	
W.S. Elev (ft)	2089.84	Reach Len. (ft)	234.46	234.46	234.46
Crit W.S. (ft)	2092.18	Flow Area (sq ft)		81.20	
E.G. Slope (ft/ft)	*0.018189	Area (sq ft)		81.20	
Q Total (cfs)	1923.00	Flow (cfs)		1923.00	
Top Width (ft)	33.25	Top Width (ft)		33.25	
Vel Total (ft/s)	23.68	Avg. Vel. (ft/s)		23.68	
Max Chl Dpth (ft)	3.72	Hydr. Depth (ft)		2.44	
Conv. Total (cfs)	14258.5	Conv. (cfs)		14258.5	
Length Wtd. (ft)	234.46	Wetted Per. (ft)		34.40	
Min Ch El (ft)	2086.12	Shear (lb/sq ft)		2.68	
Alpha	1.00	Stream Power (lb/ft s)		63.47	
Frctn Loss (ft)	1.19	Cum Volume (acre-ft)		4.27	
C & E Loss (ft)	0.10	Cum SA (acres)		1.47	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 3549.25

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24	2081.72	-6	2075.72	0	2075.54	6	2075.72	24	2081.72

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24	.015	-24	.015	24	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24	24	163.73	167.76 171.79	0	0

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2092.78	Element	Left OB	Channel	Right OB	
Vel Head (ft)	14.07	Wt. n-Val.		0.015		
W.S. Elev (ft)	2078.71	Reach Len. (ft)	163.73	167.76	171.79	
Crit W.S. (ft)	2081.60	Flow Area (sq ft)		63.88		
E.G. Slope (ft/ft)	*0.035118	Area (sq ft)		63.88		
Q Total (cfs)	1923.00	Flow (cfs)		1923.00		
Top Width (ft)	29.96	Top Width (ft)		29.96		
Vel Total (ft/s)	30.10	Avg. Vel. (ft/s)		30.10		
Max Chl Dpth (ft)	3.17	Hydr. Depth (ft)		2.13		
Conv. Total (cfs)	10261.5	Conv. (cfs)		10261.5		
Length Wtd. (ft)	167.76	Wetted Per. (ft)		30.94		
Min Ch El (ft)	2075.54	Shear (lb/sq ft)		4.53		
Alpha	1.00	Stream Power (lb/ft s)		136.28		
Frctn Loss (ft)	5.77	Cum Volume (acre-ft)		3.88		
C & E Loss (ft)	0.00	Cum SA (acres)		1.30		

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 3381.49

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24	2074.16	-6	2068.16	0	2067.98	6	2068.16	24	2074.16

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24	.015	-24	.015	24	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24	24	365.76	365.76 365.76	0	0

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2086.51	Element	Left OB	Channel	Right OB	
Vel Head (ft)	15.45	Wt. n-Val.		0.015		
W.S. Elev (ft)	2071.06	Reach Len. (ft)	365.76	365.76	365.76	
Crit W.S. (ft)	2074.04	Flow Area (sq ft)		60.96		
E.G. Slope (ft/ft)	*0.039959	Area (sq ft)		60.96		
Q Total (cfs)	1923.00	Flow (cfs)		1923.00		
Top Width (ft)	29.37	Top Width (ft)		29.37		
Vel Total (ft/s)	31.55	Avg. Vel. (ft/s)		31.55		
Max Chl Dpth (ft)	3.07	Hydr. Depth (ft)		2.08		
Conv. Total (cfs)	9620.0	Conv. (cfs)		9620.0		
Length Wtd. (ft)	365.76	Wetted Per. (ft)		30.31		
Min Ch El (ft)	2067.98	Shear (lb/sq ft)		5.02		
Alpha	1.00	Stream Power (lb/ft s)		158.25		
Frctn Loss (ft)	6.28	Cum Volume (acre-ft)		3.64		
C & E Loss (ft)	0.00	Cum SA (acres)		1.19		

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 3015.73

```
INPUT
Description:
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -24 2057.66      -6 2051.66       0 2051.48       6 2051.66      24 2057.66

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -24    .015     -24    .015      24    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -24      24             71.7   70.02   68.34              0       0

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         * 2071.13  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *   16.65  * Wt. n-Val.            *          *    0.015  *          *
* W.S. Elev (ft)         * 2054.48  * Reach Len. (ft)       *   71.70  *   70.02  *   68.34  *
* Crit W.S. (ft)         * 2057.54  * Flow Area (sq ft)     *          *   58.72  *          *
* E.G. Slope (ft/ft)     *0.044292  * Area (sq ft)          *          *   58.72  *          *
* Q Total (cfs)          * 1923.00  * Flow (cfs)            *          * 1923.00  *          *
* Top Width (ft)         *   28.91  * Top Width (ft)        *          *   28.91  *          *
* Vel Total (ft/s)       *   32.75  * Avg. Vel. (ft/s)      *          *   32.75  *          *
* Max Chl Dpth (ft)      *    3.00  * Hydr. Depth (ft)      *          *    2.03  *          *
* Conv. Total (cfs)      *  9137.3  * Conv. (cfs)           *          *  9137.3  *          *
* Length Wtd. (ft)       *   70.02  * Wetted Per. (ft)      *          *   29.83  *          *
* Min Ch El (ft)         * 2051.48  * Shear (lb/sq ft)      *          *    5.44  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *  178.26  *          *
* Frctn Loss (ft)        *   15.38  * Cum Volume (acre-ft)  *          *    3.13  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *          *    0.95  *          *
*************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Main
REACH: Inflow            RS: 2945.71

INPUT
Description:
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -24  2054.5      -6  2048.5       0 2048.32       6  2048.5      24  2054.5

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
     -24    .015     -24    .015      24    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -24      24           145.71  145.71  145.71              0       0

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         * 2068.02  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *   16.71  * Wt. n-Val.            *          *    0.015  *          *
* W.S. Elev (ft)         * 2051.32  * Reach Len. (ft)       *  145.71  *  145.71  *  145.71  *
* Crit W.S. (ft)         * 2054.38  * Flow Area (sq ft)     *          *   58.62  *          *
* E.G. Slope (ft/ft)     *0.044498  * Area (sq ft)          *          *   58.62  *          *
* Q Total (cfs)          * 1923.00  * Flow (cfs)            *          * 1923.00  *          *
* Top Width (ft)         *   28.89  * Top Width (ft)        *          *   28.89  *          *
* Vel Total (ft/s)       *   32.80  * Avg. Vel. (ft/s)      *          *   32.80  *          *
* Max Chl Dpth (ft)      *    2.99  * Hydr. Depth (ft)      *          *    2.03  *          *
* Conv. Total (cfs)      *  9116.1  * Conv. (cfs)           *          *  9116.1  *          *
* Length Wtd. (ft)       *  145.71  * Wetted Per. (ft)      *          *   29.81  *          *
* Min Ch El (ft)         * 2048.32  * Shear (lb/sq ft)      *          *    5.46  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *  179.22  *          *
* Frctn Loss (ft)        *    3.11  * Cum Volume (acre-ft)  *          *    3.04  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *          *    0.90  *          *
*************************************************************************************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Main
REACH: Inflow            RS: 2800

INPUT
Description:
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -24 2047.92      -6 2041.92       0 2041.74       6 2041.92      24 2047.92
```

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24	.015	-24	.015	24	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff Contr.	Expan.
-24	24	100	100	100	.05	.1

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2061.52	Element	Left OB	Channel	Right OB
Vel Head (ft)	16.79	Wt. n-Val.		0.015	
W.S. Elev (ft)	2044.73	Reach Len. (ft)	100.00	100.00	100.00
Crit W.S. (ft)	2047.79	Flow Area (sq ft)		58.48	
E.G. Slope (ft/ft)	*0.044792	Area (sq ft)		58.48	
Q Total (cfs)	1923.00	Flow (cfs)		1923.00	
Top Width (ft)	28.86	Top Width (ft)		28.86	
Vel Total (ft/s)	32.88	Avg. Vel. (ft/s)		32.88	
Max Chl Dpth (ft)	2.99	Hydr. Depth (ft)		2.03	
Conv. Total (cfs)	9086.1	Conv. (cfs)		9086.1	
Length Wtd. (ft)	100.00	Wetted Per. (ft)		29.78	
Min Ch El (ft)	2041.74	Shear (lb/sq ft)		5.49	
Alpha	1.00	Stream Power (lb/ft s)		180.60	
Frctn Loss (ft)	6.51	Cum Volume (acre-ft)		2.84	
C & E Loss (ft)	0.00	Cum SA (acres)		0.80	

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 2700

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-7.5	2042.41	-7.5	2034.91	0	2034.68	7.5	2034.91	7.5	2042.41

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-7.5	.015	-7.5	.015	7.5	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff Contr.	Expan.
-7.5	7.5	251.68	251.68	251.68	0	0

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2057.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	18.51	Wt. n-Val.		0.015	
W.S. Elev (ft)	2039.39	Reach Len. (ft)	251.68	251.68	251.68
Crit W.S. (ft)	2043.98	Flow Area (sq ft)		68.87	
E.G. Slope (ft/ft)	*0.029726	Area (sq ft)		68.87	
Q Total (cfs)	2378.00	Flow (cfs)		2378.00	
Top Width (ft)	15.00	Top Width (ft)		15.00	
Vel Total (ft/s)	34.53	Avg. Vel. (ft/s)		34.53	
Max Chl Dpth (ft)	4.71	Hydr. Depth (ft)		4.59	
Conv. Total (cfs)	13792.6	Conv. (cfs)		13792.6	
Length Wtd. (ft)	251.68	Wetted Per. (ft)		23.96	
Min Ch El (ft)	2034.68	Shear (lb/sq ft)		5.33	
Alpha	1.00	Stream Power (lb/ft s)		184.18	
Frctn Loss (ft)	3.53	Cum Volume (acre-ft)		2.70	
C & E Loss (ft)	0.09	Cum SA (acres)		0.75	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 2448.32

INPUT
Description: Grade Break
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-7.5	2031.06	-7.5	2023.56	0	2023.33	7.5	2023.56	7.5	2031.06

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-7.5	.015	-7.5	.015	7.5	.015

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -7.5     7.5           422.59  422.59  422.59              0       0

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 2049.52  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *   21.84  * Wt. n-Val.            *          *    0.015  *          *
* W.S. Elev (ft)         * 2027.67  * Reach Len. (ft)       *  422.59  *  422.59  *  422.59  *
* Crit W.S. (ft)         * 2032.64  * Flow Area (sq ft)     *          *   63.40  *          *
* E.G. Slope (ft/ft)     *0.037584  * Area (sq ft)          *          *   63.40  *          *
* Q Total (cfs)          * 2378.00  * Flow (cfs)            *          * 2378.00  *          *
* Top Width (ft)         *   15.00  * Top Width (ft)        *          *   15.00  *          *
* Vel Total (ft/s)       *   37.51  * Avg. Vel. (ft/s)      *          *   37.51  *          *
* Max Chl Dpth (ft)      *    4.34  * Hydr. Depth (ft)      *          *    4.23  *          *
* Conv. Total (cfs)      * 12266.3  * Conv. (cfs)           *          * 12266.3  *          *
* Length Wtd. (ft)       *  422.59  * Wetted Per. (ft)      *          *   23.23  *          *
* Min Ch El (ft)         * 2023.33  * Shear (lb/sq ft)      *          *    6.40  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *  240.18  *          *
* Frctn Loss (ft)        *    8.38  * Cum Volume (acre-ft)  *          *    2.32  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *          *    0.67  *          *
************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Main
REACH: Inflow            RS: 2025.73

INPUT
Description: Grade Break
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
    -7.5 2022.73    -7.5 2015.23       0    2015     7.5 2015.23     7.5 2022.73

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    -7.5    .015    -7.5    .015     7.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -7.5     7.5           422.11  422.11  422.11              0       0

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 2036.56  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *   16.59  * Wt. n-Val.            *          *    0.015  *          *
* W.S. Elev (ft)         * 2019.96  * Reach Len. (ft)       *  422.11  *  422.11  *  422.11  *
* Crit W.S. (ft)         * 2024.31  * Flow Area (sq ft)     *          *   72.74  *          *
* E.G. Slope (ft/ft)     *0.025487  * Area (sq ft)          *          *   72.74  *          *
* Q Total (cfs)          * 2378.00  * Flow (cfs)            *          * 2378.00  *          *
* Top Width (ft)         *   15.00  * Top Width (ft)        *          *   15.00  *          *
* Vel Total (ft/s)       *   32.69  * Avg. Vel. (ft/s)      *          *   32.69  *          *
* Max Chl Dpth (ft)      *    4.96  * Hydr. Depth (ft)      *          *    4.85  *          *
* Conv. Total (cfs)      * 14895.5  * Conv. (cfs)           *          * 14895.5  *          *
* Length Wtd. (ft)       *  422.11  * Wetted Per. (ft)      *          *   24.48  *          *
* Min Ch El (ft)         * 2015.00  * Shear (lb/sq ft)      *          *    4.73  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *  154.59  *          *
* Frctn Loss (ft)        *   12.96  * Cum Volume (acre-ft)  *          *    1.65  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *          *    0.52  *          *
************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Main
REACH: Inflow            RS: 1603.62

INPUT
Description:
Station Elevation Data    num=       5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
    -7.5 2011.94    -7.5 2004.44       0 2004.21     7.5 2004.44     7.5 2011.94

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
***********************************************
    -7.5    .015    -7.5    .015     7.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -7.5     7.5                50      50      50              0       0

CROSS SECTION OUTPUT  Profile #PF 1
```

E.G. Elev (ft)	2025.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	16.62	Wt. n-Val.		0.015	
W.S. Elev (ft)	2009.17	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2013.52	Flow Area (sq ft)		72.69	
E.G. Slope (ft/ft)	*0.025539	Area (sq ft)		72.69	
Q Total (cfs)	2378.00	Flow (cfs)		2378.00	
Top Width (ft)	15.00	Top Width (ft)		15.00	
Vel Total (ft/s)	32.71	Avg. Vel. (ft/s)		32.71	
Max Chl Dpth (ft)	4.96	Hydr. Depth (ft)		4.85	
Conv. Total (cfs)	14880.3	Conv. (cfs)		14880.3	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		24.47	
Min Ch El (ft)	2004.21	Shear (lb/sq ft)		4.74	
Alpha	1.00	Stream Power (lb/ft s)		154.95	
Frctn Loss (ft)	10.77	Cum Volume (acre-ft)		0.95	
C & E Loss (ft)	0.00	Cum SA (acres)		0.37	

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 1553.62

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-10	2011.65	-10	2003.65	0	2003.35	10	2003.65	10	2011.65

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-10	.015	-10	.015	10	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-10	10	155.99	160.78	165.99	.05	.1

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2024.39	Element	Left OB	Channel	Right OB
Vel Head (ft)	17.33	Wt. n-Val.		0.015	
W.S. Elev (ft)	2007.06	Reach Len. (ft)	155.99	160.78	165.99
Crit W.S. (ft)	2011.10	Flow Area (sq ft)		71.18	
E.G. Slope (ft/ft)	*0.030965	Area (sq ft)		71.18	
Q Total (cfs)	2378.00	Flow (cfs)		2378.00	
Top Width (ft)	20.00	Top Width (ft)		20.00	
Vel Total (ft/s)	33.41	Avg. Vel. (ft/s)		33.41	
Max Chl Dpth (ft)	3.71	Hydr. Depth (ft)		3.56	
Conv. Total (cfs)	13513.9	Conv. (cfs)		13513.9	
Length Wtd. (ft)	160.78	Wetted Per. (ft)		26.83	
Min Ch El (ft)	2003.35	Shear (lb/sq ft)		5.13	
Alpha	1.00	Stream Power (lb/ft s)		171.36	
Frctn Loss (ft)	1.40	Cum Volume (acre-ft)		0.87	
C & E Loss (ft)	0.00	Cum SA (acres)		0.35	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 1392.84

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-10	2008.11	-10	2001.11	0	2000.81	10	2001.11	10	2008.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-10	.015	-10	.015	10	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-10	10	18	18	18	0	0

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2019.71	Element	Left OB	Channel	Right OB
Vel Head (ft)	14.91	Wt. n-Val.		0.015	
W.S. Elev (ft)	2004.80	Reach Len. (ft)	18.00	18.00	18.00
Crit W.S. (ft)	2008.55	Flow Area (sq ft)		76.74	
E.G. Slope (ft/ft)	*0.024769	Area (sq ft)		76.74	
Q Total (cfs)	2378.00	Flow (cfs)		2378.00	

* Top Width (ft)	* 20.00	* Top Width (ft)	*	* 20.00	*
* Vel Total (ft/s)	* 30.99	* Avg. Vel. (ft/s)	*	* 30.99	*
* Max Chl Dpth (ft)	* 3.99	* Hydr. Depth (ft)	*	* 3.84	*
* Conv. Total (cfs)	* 15109.9	* Conv. (cfs)	*	* 15109.9	*
* Length Wtd. (ft)	* 18.00	* Wetted Per. (ft)	*	* 27.38	*
* Min Ch El (ft)	* 2000.81	* Shear (lb/sq ft)	*	* 4.33	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 134.29	*
* Frctn Loss (ft)	* 4.44	* Cum Volume (acre-ft)	*	* 0.59	*
* C & E Loss (ft)	* 0.24	* Cum SA (acres)	*	* 0.28	*

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 1374.84

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-10	2007.84	-10	2000.84	0	2000.54	10	2000.84	10	2007.84

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-10	.015	-10	.015	10	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-10	10	8.54	8.54	0	0

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2019.27	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 14.71	* Wt. n-Val.	*	* 0.015 *	*
* W.S. Elev (ft)	* 2004.55	* Reach Len. (ft)	* 8.54 *	8.54 *	8.54 *
* Crit W.S. (ft)	* 2008.28	* Flow Area (sq ft)	*	* 77.25 *	*
* E.G. Slope (ft/ft)	*0.024283	* Area (sq ft)	*	* 77.25 *	*
* Q Total (cfs)	* 2378.00	* Flow (cfs)	*	* 2378.00 *	*
* Top Width (ft)	* 20.00	* Top Width (ft)	*	* 20.00 *	*
* Vel Total (ft/s)	* 30.78	* Avg. Vel. (ft/s)	*	* 30.78 *	*
* Max Chl Dpth (ft)	* 4.01	* Hydr. Depth (ft)	*	* 3.86 *	*
* Conv. Total (cfs)	* 15260.2	* Conv. (cfs)	*	* 15260.2 *	*
* Length Wtd. (ft)	* 8.54	* Wetted Per. (ft)	*	* 27.43 *	*
* Min Ch El (ft)	* 2000.54	* Shear (lb/sq ft)	*	* 4.27 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 131.41 *	*
* Frctn Loss (ft)	* 0.44	* Cum Volume (acre-ft)	*	* 0.56 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 0.27 *	*

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 1366.30

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-10	2008.69	-10	2000.39	0	2000.39	10	2000.39	10	2008.69

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-10	.015	-10	.015	10	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-10	10	4.5	4.5	0	0

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2019.06	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 14.82	* Wt. n-Val.	*	* 0.015 *	*
* W.S. Elev (ft)	* 2004.24	* Reach Len. (ft)	* 4.50 *	4.50 *	4.50 *
* Crit W.S. (ft)	* 2007.98	* Flow Area (sq ft)	*	* 76.98 *	*
* E.G. Slope (ft/ft)	*0.024886	* Area (sq ft)	*	* 76.98 *	*
* Q Total (cfs)	* 2378.00	* Flow (cfs)	*	* 2378.00 *	*
* Top Width (ft)	* 20.00	* Top Width (ft)	*	* 20.00 *	*
* Vel Total (ft/s)	* 30.89	* Avg. Vel. (ft/s)	*	* 30.89 *	*
* Max Chl Dpth (ft)	* 3.85	* Hydr. Depth (ft)	*	* 3.85 *	*
* Conv. Total (cfs)	* 15074.2	* Conv. (cfs)	*	* 15074.2 *	*
* Length Wtd. (ft)	* 4.50	* Wetted Per. (ft)	*	* 27.70 *	*
* Min Ch El (ft)	* 2000.39	* Shear (lb/sq ft)	*	* 4.32 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 133.39 *	*
* Frctn Loss (ft)	* 0.21	* Cum Volume (acre-ft)	*	* 0.55 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 0.27 *	*

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 1361.80

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-10	2008.26	-10	1999.96	0	1999.96	10	1999.96	10	2008.26

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-10	.015	-10	.015	10	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-10	10	4.5	4.5	4.5	0	0

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2018.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	15.17	Wt. n-Val.		0.015	
W.S. Elev (ft)	2003.76	Reach Len. (ft)	4.50	4.50	4.50
Crit W.S. (ft)	2007.54	Flow Area (sq ft)		76.08	
E.G. Slope (ft/ft)	0.025772	Area (sq ft)		76.08	
Q Total (cfs)	2378.00	Flow (cfs)		2378.00	
Top Width (ft)	20.00	Top Width (ft)		20.00	
Vel Total (ft/s)	31.26	Avg. Vel. (ft/s)		31.26	
Max Chl Dpth (ft)	3.80	Hydr. Depth (ft)		3.80	
Conv. Total (cfs)	14812.8	Conv. (cfs)		14812.8	
Length Wtd. (ft)	4.50	Wetted Per. (ft)		27.61	
Min Ch El (ft)	1999.96	Shear (lb/sq ft)		4.43	
Alpha	1.00	Stream Power (lb/ft s)		138.59	
Frctn Loss (ft)	0.11	Cum Volume (acre-ft)		0.54	
C & E Loss (ft)	0.00	Cum SA (acres)		0.27	

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 1357.30

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-10	2007.12	-10	1998.82	0	1998.82	10	1998.82	10	2007.12

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-10	.015	-10	.015	10	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-10	10	121.3	121.3	121.3	0	0

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2018.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	16.33	Wt. n-Val.		0.015	
W.S. Elev (ft)	2002.49	Reach Len. (ft)	121.30	121.30	121.30
Crit W.S. (ft)	2006.40	Flow Area (sq ft)		73.33	
E.G. Slope (ft/ft)	0.028753	Area (sq ft)		73.33	
Q Total (cfs)	2378.00	Flow (cfs)		2378.00	
Top Width (ft)	20.00	Top Width (ft)		20.00	
Vel Total (ft/s)	32.43	Avg. Vel. (ft/s)		32.43	
Max Chl Dpth (ft)	3.67	Hydr. Depth (ft)		3.67	
Conv. Total (cfs)	14024.0	Conv. (cfs)		14024.0	
Length Wtd. (ft)	121.30	Wetted Per. (ft)		27.33	
Min Ch El (ft)	1998.82	Shear (lb/sq ft)		4.82	
Alpha	1.00	Stream Power (lb/ft s)		156.17	
Frctn Loss (ft)	0.12	Cum Volume (acre-ft)		0.53	
C & E Loss (ft)	0.00	Cum SA (acres)		0.26	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 1236

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
     -10 1965.39     -10 1958.39      10 1958.39      10 1965.39

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     -10    .015     -10    .015      10    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -10      10                6       6       6            .05       .1

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 2011.87  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *   51.42  * Wt. n-Val.            *          *    0.015 *          *
* W.S. Elev (ft)         * 1960.46  * Reach Len. (ft)       *    6.00  *     6.00 *    6.00  *
* Crit W.S. (ft)         * 1965.99  * Flow Area (sq ft)     *          *    41.33 *          *
* E.G. Slope (ft/ft)     *0.164698  * Area (sq ft)          *          *    41.33 *          *
* Q Total (cfs)          * 2378.00  * Flow (cfs)            *          * 2378.00 *          *
* Top Width (ft)         *   20.00  * Top Width (ft)        *          *   20.00 *          *
* Vel Total (ft/s)       *   57.54  * Avg. Vel. (ft/s)      *          *   57.54 *          *
* Max Chl Dpth (ft)      *    2.07  * Hydr. Depth (ft)      *          *    2.07 *          *
* Conv. Total (cfs)      *  5859.6  * Conv. (cfs)           *          *  5859.6 *          *
* Length Wtd. (ft)       *    6.00  * Wetted Per. (ft)      *          *   24.13 *          *
* Min Ch El (ft)         * 1958.39  * Shear (lb/sq ft)      *          *   17.61 *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          * 1013.19 *          *
* Frctn Loss (ft)        *    6.94  * Cum Volume (acre-ft)   *          *    0.37 *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    0.21 *          *
************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Main
REACH: Inflow            RS: 1230

INPUT
Description:
Station Elevation Data    num=      24
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -10 1976.39     -10 1956.39      -9 1956.39      -9 1958.39      -7 1958.39
      -7 1956.39      -5 1956.39      -5 1958.39      -3 1958.39      -3 1956.39
      -1 1956.39      -1 1958.39       1 1958.39       1 1956.39       3 1956.39
       3 1958.39       5 1958.39       5 1956.39       7 1956.39       7 1958.39
       9 1958.39       9 1956.39      10 1956.39      10 1976.39

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
     -10    .015     -10    .015      10    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -10      10              .01     .01     .01            .05       .1

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 2010.38  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *   50.91  * Wt. n-Val.            *          *    0.015 *          *
* W.S. Elev (ft)         * 1959.47  * Reach Len. (ft)       *    0.01  *     0.01 *    0.01  *
* Crit W.S. (ft)         * 1964.96  * Flow Area (sq ft)     *          *    41.53 *          *
* E.G. Slope (ft/ft)     *0.384578  * Area (sq ft)          *          *    41.53 *          *
* Q Total (cfs)          * 2378.00  * Flow (cfs)            *          * 2378.00 *          *
* Top Width (ft)         *   20.00  * Top Width (ft)        *          *   20.00 *          *
* Vel Total (ft/s)       *   57.26  * Avg. Vel. (ft/s)      *          *   57.26 *          *
* Max Chl Dpth (ft)      *    3.08  * Hydr. Depth (ft)      *          *    2.08 *          *
* Conv. Total (cfs)      *  3834.6  * Conv. (cfs)           *          *  3834.6 *          *
* Length Wtd. (ft)       *    0.01  * Wetted Per. (ft)      *          *   46.15 *          *
* Min Ch El (ft)         * 1956.39  * Shear (lb/sq ft)      *          *   21.60 *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          * 1237.05 *          *
* Frctn Loss (ft)        *    1.44  * Cum Volume (acre-ft)   *          *    0.37 *          *
* C & E Loss (ft)        *    0.05  * Cum SA (acres)         *          *    0.21 *          *
************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Main
REACH: Inflow            RS: 1229.99

INPUT
Description:
```

Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-10	1976.39	-10	1956.39	10	1956.39	10	1976.39

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-10	.015	-10	.015	10	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-10	10	.01	.01	.05	.1

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2010.32	Element	Left OB	Channel	Right OB
Vel Head (ft)	51.87	Wt. n-Val.		0.015	
W.S. Elev (ft)	1958.45	Reach Len. (ft)	0.01	0.01	0.01
Crit W.S. (ft)	1963.97	Flow Area (sq ft)		41.15	
E.G. Slope (ft/ft)	*0.166954	Area (sq ft)		41.15	
Q Total (cfs)	2378.00	Flow (cfs)		2378.00	
Top Width (ft)	20.00	Top Width (ft)		20.00	
Vel Total (ft/s)	57.80	Avg. Vel. (ft/s)		57.80	
Max Chl Dpth (ft)	2.06	Hydr. Depth (ft)		2.06	
Conv. Total (cfs)	5819.9	Conv. (cfs)		5819.9	
Length Wtd. (ft)	0.01	Wetted Per. (ft)		24.11	
Min Ch El (ft)	1956.39	Shear (lb/sq ft)		17.78	
Alpha	1.00	Stream Power (lb/ft s)		1027.83	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		0.37	
C & E Loss (ft)	0.05	Cum SA (acres)		0.21	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 1229.98

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-25	1976.39	-25	1956.39	25	1956.39	25	1976.39

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-25	.015	-25	.015	25	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-25	25	9.97	9.97	.05	.1

Ineffective Flow num= 2

Sta L	Sta R	Elev	Permanent
-25	-10	1976.39	F
10	25	1976.39	F

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2010.32	Element	Left OB	Channel	Right OB
Vel Head (ft)	51.87	Wt. n-Val.		0.015	
W.S. Elev (ft)	1958.45	Reach Len. (ft)	9.97	9.97	9.97
Crit W.S. (ft)	1964.01	Flow Area (sq ft)		41.15	
E.G. Slope (ft/ft)	*0.130096	Area (sq ft)		102.86	
Q Total (cfs)	2378.00	Flow (cfs)		2378.00	
Top Width (ft)	50.00	Top Width (ft)		50.00	
Vel Total (ft/s)	57.80	Avg. Vel. (ft/s)		57.80	
Max Chl Dpth (ft)	2.06	Hydr. Depth (ft)		2.06	
Conv. Total (cfs)	6592.9	Conv. (cfs)		6592.9	
Length Wtd. (ft)	9.97	Wetted Per. (ft)		20.00	
Min Ch El (ft)	1956.39	Shear (lb/sq ft)		16.71	
Alpha	1.00	Stream Power (lb/ft s)		965.70	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		0.37	
C & E Loss (ft)	0.00	Cum SA (acres)		0.21	

Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, water surface was used.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 1220.01

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
     -25 1976.34     -25 1956.34      25 1956.34      25 1976.34

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*******************************************
     -25    .015     -25    .015      25    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -25      25              .01     .01     .01            .05       .1
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
     -25     -14 1976.34       F
      14      25 1976.34       F

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)         * 2008.63  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *   50.81  * Wt. n-Val.            *          *    0.015  *          *
* W.S. Elev (ft)         * 1957.83  * Reach Len. (ft)       *    0.01  *     0.01  *    0.01  *
* Crit W.S. (ft)         * 1962.42  * Flow Area (sq ft)     *          *    41.57  *          *
* E.G. Slope (ft/ft)     *0.196848  * Area (sq ft)          *          *    74.24  *          *
* Q Total (cfs)          * 2378.00  * Flow (cfs)            *          * 2378.00  *          *
* Top Width (ft)         *   50.00  * Top Width (ft)        *          *   50.00  *          *
* Vel Total (ft/s)       *   57.20  * Avg. Vel. (ft/s)      *          *   57.20  *          *
* Max Chl Dpth (ft)      *    1.48  * Hydr. Depth (ft)      *          *    1.48  *          *
* Conv. Total (cfs)      *  5359.8  * Conv. (cfs)           *          *  5359.8  *          *
* Length Wtd. (ft)       *    0.01  * Wetted Per. (ft)      *          *   28.00  *          *
* Min Ch El (ft)         * 1956.34  * Shear (lb/sq ft)      *          *   18.25  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          * 1043.71  *          *
* Frctn Loss (ft)        *    1.58  * Cum Volume (acre-ft)  *          *    0.35  *          *
* C & E Loss (ft)        *    0.11  * Cum SA (acres)        *          *    0.19  *          *
**********************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         water surface was used.

CROSS SECTION


RIVER: Main
REACH: Inflow             RS: 1220

INPUT
Description:
Station Elevation Data    num=      36
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
     -25 1976.34     -25 1956.34     -15 1956.34     -15 1958.34     -13 1958.34
     -13 1956.34     -11 1956.34     -11 1958.34      -9 1958.34      -9 1956.34
      -7 1956.34      -7 1958.34      -5 1958.34      -5 1956.34      -3 1956.34
      -3 1958.34      -1 1958.34      -1 1956.34       1 1956.34       1 1958.34
       3 1958.34       3 1956.34       5 1956.34       5 1958.34       7 1958.34
       7 1956.34       9 1956.34       9 1958.34      11 1958.34      11 1956.34
      13 1956.34      13 1958.34      15 1958.34      15 1956.34      25 1956.34
      25 1976.34

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*******************************************
     -25     .04     -25     .04      25     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -25      25                1       1       1             .6       .8
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
     -25     -15               F
      15      25               F

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)         * 2008.52  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *   49.71  * Wt. n-Val.            *          *    0.040  *          *
* W.S. Elev (ft)         * 1958.81  * Reach Len. (ft)       *    1.00  *     1.00  *    1.00  *
* Crit W.S. (ft)         * 1963.22  * Flow Area (sq ft)     *          *    42.03  *          *
* E.G. Slope (ft/ft)     *3.564034  * Area (sq ft)          *          *    91.38  *          *
* Q Total (cfs)          * 2378.00  * Flow (cfs)            *          * 2378.00  *          *
* Top Width (ft)         *   50.00  * Top Width (ft)        *          *   50.00  *          *
* Vel Total (ft/s)       *   56.58  * Avg. Vel. (ft/s)      *          *   56.58  *          *
* Max Chl Dpth (ft)      *    2.47  * Hydr. Depth (ft)      *          *    1.40  *          *
* Conv. Total (cfs)      *  1259.6  * Conv. (cfs)           *          *  1259.6  *          *
* Length Wtd. (ft)       *    1.00  * Wetted Per. (ft)      *          *   58.00  *          *
* Min Ch El (ft)         * 1956.34  * Shear (lb/sq ft)      *          *  161.24  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          * 9122.61  *          *
* Frctn Loss (ft)        *    0.01  * Cum Volume (acre-ft)  *          *    0.35  *          *
* C & E Loss (ft)        *    0.11  * Cum SA (acres)        *          *    0.19  *          *
**********************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
```

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 1219

INPUT
Description:
Station Elevation Data num= 36

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-25	1976.34	-25	1956.34	-15	1956.34	-15	1958.34	-13	1958.34
-13	1956.34	-11	1956.34	-11	1958.34	-9	1958.34	-9	1956.34
-7	1956.34	-7	1958.34	-5	1958.34	-5	1956.34	-3	1956.34
-3	1958.34	-1	1958.34	-1	1956.34	1	1956.34	1	1958.34
3	1958.34	3	1956.34	5	1956.34	5	1958.34	7	1958.34
7	1956.34	9	1956.34	9	1958.34	11	1958.34	11	1956.34
13	1956.34	13	1958.34	15	1958.34	15	1956.34	25	1956.34
25	1976.34								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-25	.04	-25	.04	25	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-25	25	2	2	.6	.8

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1997.93	Element	Left OB	Channel	Right OB
Vel Head (ft)	40.22	Wt. n-Val.		0.040	
W.S. Elev (ft)	1957.71	Reach Len. (ft)	2.00	2.00	2.00
Crit W.S. (ft)	1961.09	Flow Area (sq ft)		46.73	
E.G. Slope (ft/ft)	*2.546438	Area (sq ft)		46.73	
Q Total (cfs)	2378.00	Flow (cfs)		2378.00	
Top Width (ft)	34.00	Top Width (ft)		34.00	
Vel Total (ft/s)	50.89	Avg. Vel. (ft/s)		50.89	
Max Chl Dpth (ft)	1.37	Hydr. Depth (ft)		1.37	
Conv. Total (cfs)	1490.2	Conv. (cfs)		1490.2	
Length Wtd. (ft)	2.00	Wetted Per. (ft)		58.74	
Min Ch El (ft)	1956.34	Shear (lb/sq ft)		126.46	
Alpha	1.00	Stream Power (lb/ft s)		6436.18	
Frctn Loss (ft)	2.99	Cum Volume (acre-ft)		0.35	
C & E Loss (ft)	7.59	Cum SA (acres)		0.19	

Warning: Divided flow computed for this cross-section.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 1217

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-25	1976.32	-25	1956.32	25	1956.32	25	1976.32

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-25	.015	-25	.015	25	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-25	25	15	15	.6	.8

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1993.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	36.36	Wt. n-Val.		0.015	
W.S. Elev (ft)	1957.30	Reach Len. (ft)	15.00	15.00	15.00
Crit W.S. (ft)	1960.44	Flow Area (sq ft)		49.15	
E.G. Slope (ft/ft)	*0.257016	Area (sq ft)		49.15	
Q Total (cfs)	2378.00	Flow (cfs)		2378.00	
Top Width (ft)	50.00	Top Width (ft)		50.00	
Vel Total (ft/s)	48.39	Avg. Vel. (ft/s)		48.39	
Max Chl Dpth (ft)	0.98	Hydr. Depth (ft)		0.98	
Conv. Total (cfs)	4690.6	Conv. (cfs)		4690.6	
Length Wtd. (ft)	15.00	Wetted Per. (ft)		51.97	
Min Ch El (ft)	1956.32	Shear (lb/sq ft)		15.17	
Alpha	1.00	Stream Power (lb/ft s)		734.26	
Frctn Loss (ft)	1.18	Cum Volume (acre-ft)		0.34	
C & E Loss (ft)	3.09	Cum SA (acres)		0.19	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for

additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 1202

INPUT
Description:
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-25	1976.25	-25	1956.25	25	1956.25	25	1976.25

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-25	.015	-25	.015	25	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-25	25	.1	.1	.6	.8

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1980.26	Element	Left OB	Channel	Right OB
Vel Head (ft)	22.77	Wt. n-Val.		0.015	
W.S. Elev (ft)	1957.49	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	1960.36	Flow Area (sq ft)		62.10	
E.G. Slope (ft/ft)	*0.119420	Area (sq ft)		62.10	
Q Total (cfs)	2378.00	Flow (cfs)		2378.00	
Top Width (ft)	50.00	Top Width (ft)		50.00	
Vel Total (ft/s)	38.29	Avg. Vel. (ft/s)		38.29	
Max Chl Dpth (ft)	1.24	Hydr. Depth (ft)		1.24	
Conv. Total (cfs)	6881.3	Conv. (cfs)		6881.3	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		52.48	
Min Ch El (ft)	1956.25	Shear (lb/sq ft)		8.82	
Alpha	1.00	Stream Power (lb/ft s)		337.80	
Frctn Loss (ft)	2.53	Cum Volume (acre-ft)		0.32	
C & E Loss (ft)	10.87	Cum SA (acres)		0.17	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 1201.9

INPUT
Description:
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-25	1976.25	-25	1956.25	-15	1956.25	-15	1958.25	15	1958.25
15	1956.25	25	1956.25	25	1976.25				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-25	.015	-25	.015	25	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-25	25	1.9	1.9	.6	.8

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1974.33	Element	Left OB	Channel	Right OB
Vel Head (ft)	15.37	Wt. n-Val.		0.015	
W.S. Elev (ft)	1958.96	Reach Len. (ft)	1.90	1.90	1.90
Crit W.S. (ft)	1961.56	Flow Area (sq ft)		75.58	
E.G. Slope (ft/ft)	*0.073212	Area (sq ft)		75.58	
Q Total (cfs)	2378.00	Flow (cfs)		2378.00	
Top Width (ft)	50.00	Top Width (ft)		50.00	
Vel Total (ft/s)	31.46	Avg. Vel. (ft/s)		31.46	
Max Chl Dpth (ft)	2.71	Hydr. Depth (ft)		1.51	
Conv. Total (cfs)	8788.6	Conv. (cfs)		8788.6	
Length Wtd. (ft)	1.90	Wetted Per. (ft)		59.42	
Min Ch El (ft)	1956.25	Shear (lb/sq ft)		5.81	
Alpha	1.00	Stream Power (lb/ft s)		182.91	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		0.32	
C & E Loss (ft)	5.92	Cum SA (acres)		0.17	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for

additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 1200

INPUT
Description:
Station Elevation Data num= 8

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-25	1976.25	-25	1956.25	-15	1956.25	-15	1958.25	15	1958.25
15	1956.25	25	1956.25	25	1976.25				

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-25	.015	-25	.015	25	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-25	25	.1	.1	.6	.8

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1973.53	Element	Left OB	Channel	Right OB
Vel Head (ft)	14.53	Wt. n-Val.		0.015	
W.S. Elev (ft)	1959.01	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	1961.55	Flow Area (sq ft)		77.75	
E.G. Slope (ft/ft)	*0.066742	Area (sq ft)		77.75	
Q Total (cfs)	2378.00	Flow (cfs)		2378.00	
Top Width (ft)	50.00	Top Width (ft)		50.00	
Vel Total (ft/s)	30.59	Avg. Vel. (ft/s)		30.59	
Max Chl Dpth (ft)	2.76	Hydr. Depth (ft)		1.56	
Conv. Total (cfs)	9204.8	Conv. (cfs)		9204.8	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		59.51	
Min Ch El (ft)	1956.25	Shear (lb/sq ft)		5.44	
Alpha	1.00	Stream Power (lb/ft s)		166.50	
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)		0.32	
C & E Loss (ft)	0.68	Cum SA (acres)		0.17	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 1199.9

INPUT
Description:
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-25	1976.25	-25	1956.25	-15	1956.25	15	1956.25	25	1956.25
25	1976.25								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-25	.015	-25	.015	25	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-25	25	61.9	61.9	.6	.8

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1962.44	Element	Left OB	Channel	Right OB
Vel Head (ft)	2.08	Wt. n-Val.		0.015	
W.S. Elev (ft)	1960.36	Reach Len. (ft)	61.90	61.90	61.90
Crit W.S. (ft)	1960.36	Flow Area (sq ft)		205.52	
E.G. Slope (ft/ft)	*0.002538	Area (sq ft)		205.52	
Q Total (cfs)	2378.00	Flow (cfs)		2378.00	
Top Width (ft)	50.00	Top Width (ft)		50.00	
Vel Total (ft/s)	11.57	Avg. Vel. (ft/s)		11.57	
Max Chl Dpth (ft)	4.11	Hydr. Depth (ft)		4.11	
Conv. Total (cfs)	47201.3	Conv. (cfs)		47201.3	
Length Wtd. (ft)	61.90	Wetted Per. (ft)		58.22	
Min Ch El (ft)	1956.25	Shear (lb/sq ft)		0.56	
Alpha	1.00	Stream Power (lb/ft s)		6.47	
Frctn Loss (ft)	0.10	Cum Volume (acre-ft)		0.32	
C & E Loss (ft)	1.22	Cum SA (acres)		0.17	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 1138

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-82.7	1962.55	-82.7	1956.55	0	1956.55	82.7	1956.55	82.7	1962.55

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-82.7	.015	-82.7	.015	82.7	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff Contr.	Expan.
-82.7	82.7	.1	.1	.1	.6	.8

CROSS SECTION OUTPUT Profile #PF 1

Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1961.13		
Vel Head (ft)	3.64	Wt. n-Val.	0.015	
W.S. Elev (ft)	1957.49	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	1958.40	Flow Area (sq ft)	155.22	
E.G. Slope (ft/ft)	*0.026424	Area (sq ft)	155.22	
Q Total (cfs)	2378.00	Flow (cfs)	2378.00	
Top Width (ft)	165.40	Top Width (ft)	165.40	
Vel Total (ft/s)	15.32	Avg. Vel. (ft/s)	15.32	
Max Chl Dpth (ft)	0.94	Hydr. Depth (ft)	0.94	
Conv. Total (cfs)	14628.9	Conv. (cfs)	14628.9	
Length Wtd. (ft)	0.10	Wetted Per. (ft)	167.28	
Min Ch El (ft)	1956.55	Shear (lb/sq ft)	1.53	
Alpha	1.00	Stream Power (lb/ft s)	23.45	
Frctn Loss (ft)	0.37	Cum Volume (acre-ft)	0.06	
C & E Loss (ft)	0.94	Cum SA (acres)	0.02	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 1137.9

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-82.7	1961.64	-82.7	1955.64	0	1955.64	82.7	1955.64	82.7	1961.64

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-82.7	.015	-82.7	.015	82.7	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff Contr.	Expan.
-82.7	82.7	4.9	4.9	4.9	.05	.1

CROSS SECTION OUTPUT Profile #PF 1

Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1959.28		
Vel Head (ft)	0.28	Wt. n-Val.	0.015	
W.S. Elev (ft)	1959.00	Reach Len. (ft)	4.90	4.90	4.90
Crit W.S. (ft)	1957.49	Flow Area (sq ft)	555.52	
E.G. Slope (ft/ft)	*0.000391	Area (sq ft)	555.52	
Q Total (cfs)	2378.00	Flow (cfs)	2378.00	
Top Width (ft)	165.40	Top Width (ft)	165.40	
Vel Total (ft/s)	4.28	Avg. Vel. (ft/s)	4.28	
Max Chl Dpth (ft)	3.36	Hydr. Depth (ft)	3.36	
Conv. Total (cfs)	*120185.8	Conv. (cfs)	*120185.8	
Length Wtd. (ft)	4.90	Wetted Per. (ft)	172.12	
Min Ch El (ft)	1955.64	Shear (lb/sq ft)	0.08	
Alpha	1.00	Stream Power (lb/ft s)	0.34	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)	0.06	
C & E Loss (ft)	0.00	Cum SA (acres)	0.02	

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION

RIVER: Main
REACH: Inflow RS: 1133

INPUT
Description:
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-82.7	1961.62	-82.7	1955.62	0	1955.62	82.7	1955.62	82.7	1961.62

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-82.7	.015	-82.7	.015	82.7	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-82.7	82.7	0	0	.05	.1

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1959.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.28	Wt. n-Val.		0.015	
W.S. Elev (ft)	1959.00	Reach Len. (ft)			
Crit W.S. (ft)	1957.47	Flow Area (sq ft)		559.05	
E.G. Slope (ft/ft)	0.000383	Area (sq ft)		559.05	
Q Total (cfs)	2378.00	Flow (cfs)		2378.00	
Top Width (ft)	165.40	Top Width (ft)		165.40	
Vel Total (ft/s)	4.25	Avg. Vel. (ft/s)		4.25	
Max Chl Dpth (ft)	3.38	Hydr. Depth (ft)		3.38	
Conv. Total (cfs)	121442.4	Conv. (cfs)		121442.4	
Length Wtd. (ft)		Wetted Per. (ft)		172.16	
Min Ch El (ft)	1955.62	Shear (lb/sq ft)		0.08	
Alpha	1.00	Stream Power (lb/ft s)		0.33	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

SUMMARY OF MANNING'S N VALUES

River:Main

Reach	River Sta.	n1	n2	n3
Inflow	9800	.02	.025	.035
Inflow	9700	.02	.025	.035
Inflow	9600	.02	.025	.035
Inflow	9500	.02	.025	.035
Inflow	9400	.02	.025	.035
Inflow	9371.90	.015	.015	.015
Inflow	9251.9	.015	.015	.015
Inflow	8801.9	.015	.015	.015
Inflow	8137.21	.015	.015	.015
Inflow	7935.67	.015	.015	.015
Inflow	7759.60	.015	.015	.015
Inflow	7612.88	.015	.015	.015
Inflow	7459.01	.015	.015	.015
Inflow	7347.92	.015	.015	.015
Inflow	7082.96	.015	.015	.015
Inflow	5964.44	.015	.015	.015
Inflow	4519.92	.015	.015	.015
Inflow	4328.87	.015	.015	.015
Inflow	4262.78	.015	.015	.015
Inflow	4126.20	.015	.015	.015
Inflow	4028.71	.015	.015	.015
Inflow	3862.29	.015	.015	.015
Inflow	3783.71	.015	.015	.015
Inflow	3549.25	.015	.015	.015
Inflow	3381.49	.015	.015	.015
Inflow	3015.73	.015	.015	.015
Inflow	2945.71	.015	.015	.015
Inflow	2800	.015	.015	.015
Inflow	2700	.015	.015	.015
Inflow	2448.32	.015	.015	.015
Inflow	2025.73	.015	.015	.015
Inflow	1603.62	.015	.015	.015
Inflow	1553.62	.015	.015	.015
Inflow	1392.84	.015	.015	.015
Inflow	1374.84	.015	.015	.015
Inflow	1366.30	.015	.015	.015
Inflow	1361.80	.015	.015	.015
Inflow	1357.30	.015	.015	.015
Inflow	1236	.015	.015	.015
Inflow	1230	.015	.015	.015
Inflow	1229.99	.015	.015	.015
Inflow	1229.98	.015	.015	.015
Inflow	1220.01	.015	.015	.015
Inflow	1220	.04	.04	.04
Inflow	1219	.04	.04	.04
Inflow	1217	.015	.015	.015
Inflow	1202	.015	.015	.015

*Inflow	1201.9	.015*	.015*	.015*
*Inflow	1200	.015*	.015*	.015*
*Inflow	1199.9	.015*	.015*	.015*
*Inflow	1138	.015*	.015*	.015*
*Inflow	1137.9	.015*	.015*	.015*
*Inflow	1133	.015*	.015*	.015*

SUMMARY OF REACH LENGTHS

River: Main

Reach	River Sta.	Left	Channel	Right
*Inflow	9800	100*	100*	100*
*Inflow	9700	100*	100*	100*
*Inflow	9600	100*	100*	100*
*Inflow	9500	100*	100*	100*
*Inflow	9400	28.1*	28.1*	28.1*
*Inflow	9371.90	124.19*	120*	128.8*
*Inflow	9251.9	450*	450*	450*
*Inflow	8801.9	664.69*	664.69*	664.69*
*Inflow	8137.21	202.02*	201.54*	202.02*
*Inflow	7935.67	136.07*	136.07*	136.07*
*Inflow	7759.60	147.39*	146.72*	146.86*
*Inflow	7612.88	161.25*	153.87*	146.48*
*Inflow	7459.01	116.42*	111.09*	105.76*
*Inflow	7347.92	252.24*	264.96*	277.68*
*Inflow	7082.96	1118.52*	1118.52*	1118.52*
*Inflow	5964.44	1444.52*	1444.52*	1444.52*
*Inflow	4519.92	191.57*	191.05*	191.57*
*Inflow	4328.87	66.09*	66.09*	66.09*
*Inflow	4262.78	139.31*	136.58*	133.85*
*Inflow	4126.20	55.49*	55.49*	55.49*
*Inflow	4028.71	166.66*	166.42*	166.42*
*Inflow	3862.29	78.71*	78.58*	78.59*
*Inflow	3783.71	234.46*	234.46*	234.46*
*Inflow	3549.25	163.73*	167.76*	171.79*
*Inflow	3381.49	365.76*	365.76*	365.76*
*Inflow	3015.73	71.7*	70.02*	68.34*
*Inflow	2945.71	145.71*	145.71*	145.71*
*Inflow	2800	100*	100*	100*
*Inflow	2700	251.68*	251.68*	251.68*
*Inflow	2448.32	422.59*	422.59*	422.59*
*Inflow	2025.73	422.11*	422.11*	422.11*
*Inflow	1603.62	50*	50*	50*
*Inflow	1553.62	155.99*	160.78*	165.99*
*Inflow	1392.84	18*	18*	18*
*Inflow	1374.84	8.54*	8.54*	8.54*
*Inflow	1366.30	4.5*	4.5*	4.5*
*Inflow	1361.80	4.5*	4.5*	4.5*
*Inflow	1357.30	121.3*	121.3*	121.3*
*Inflow	1236	6*	6*	6*
*Inflow	1230	.01*	.01*	.01*
*Inflow	1229.99	.01*	.01*	.01*
*Inflow	1229.98	9.97*	9.97*	9.97*
*Inflow	1220.01	.01*	.01*	.01*
*Inflow	1220	1*	1*	1*
*Inflow	1219	2*	2*	2*
*Inflow	1217	15*	15*	15*
*Inflow	1202	.1*	.1*	.1*
*Inflow	1201.9	1.9*	1.9*	1.9*
*Inflow	1200	.1*	.1*	.1*
*Inflow	1199.9	61.9*	61.9*	61.9*
*Inflow	1138	.1*	.1*	.1*
*Inflow	1137.9	4.9*	4.9*	4.9*
*Inflow	1133	0*	0*	0*

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Main

Reach	River Sta.	Contr.	Expan.
*Inflow	9800	.05*	.1*
*Inflow	9700	.05*	.1*
*Inflow	9600	.05*	.1*
*Inflow	9500	.05*	.1*
*Inflow	9400	.05*	.1*
*Inflow	9371.90	.05*	.01*
*Inflow	9251.9	0*	0*
*Inflow	8801.9	0*	0*
*Inflow	8137.21	.05*	.1*
*Inflow	7935.67	0*	0*
*Inflow	7759.60	.05*	.1*
*Inflow	7612.88	0*	0*
*Inflow	7459.01	0*	0*
*Inflow	7347.92	0*	0*
*Inflow	7082.96	0*	0*
*Inflow	5964.44	0*	0*

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*Inflow          *    4519.92 *      .05*       .1*
*Inflow          *    4328.87 *        0*       0*
*Inflow          *    4262.78 *        0*       0*
*Inflow          *    4126.20 *        0*       0*
*Inflow          *    4028.71 *      .05*       .1*
*Inflow          *    3862.29 *      .05*       .1*
*Inflow          *    3783.71 *        0*       0*
*Inflow          *    3549.25 *        0*       0*
*Inflow          *    3381.49 *        0*       0*
*Inflow          *    3015.73 *        0*       0*
*Inflow          *    2945.71 *        0*       0*
*Inflow          *    2800    *      .05*       .1*
*Inflow          *    2700    *        0*       0*
*Inflow          *    2448.32 *        0*       0*
*Inflow          *    2025.73 *        0*       0*
*Inflow          *    1603.62 *        0*       0*
*Inflow          *    1553.62 *      .05*       .1*
*Inflow          *    1392.84 *        0*       0*
*Inflow          *    1374.84 *        0*       0*
*Inflow          *    1366.30 *        0*       0*
*Inflow          *    1361.80 *        0*       0*
*Inflow          *    1357.30 *        0*       0*
*Inflow          *    1236    *      .05*       .1*
*Inflow          *    1230    *      .05*       .1*
*Inflow          *    1229.99 *      .05*       .1*
*Inflow          *    1229.98 *      .05*       .1*
*Inflow          *    1220.01 *      .05*       .1*
*Inflow          *    1220    *       .6*       .8*
*Inflow          *    1219    *       .6*       .8*
*Inflow          *    1217    *       .6*       .8*
*Inflow          *    1202    *       .6*       .8*
*Inflow          *    1201.9  *       .6*       .8*
*Inflow          *    1200    *       .6*       .8*
*Inflow          *    1199.9  *       .6*       .8*
*Inflow          *    1138    *       .6*       .8*
*Inflow          *    1137.9  *      .05*       .1*
*Inflow          *    1133    *      .05*       .1*
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Profile Output Table - CHECKRAS

Reach	River Sta	Profile	Froude # Chl	Top Wdth Act	Conv. Total	Prof Delta WS	Left Sta Eff	Enc Sta L	Center Station	Enc Sta R	Rght Sta Eff	Min Ch El	Left Stagn	Right Stagn
				(ft)	(cfs)	(ft)	(ft)	(ft)		(ft)	(ft)	(ft)	(ft)	
Inflow	9800	PF 1	1.01	82.42	13851.2		19.85		65.00	102.27	2246.00			
Inflow	9700	PF 1	2.27	62.31	5483.5		30.19		61.25	92.51	2242.89			
Inflow	9600	PF 1	1.89	81.83	6857.4		26.83		68.00	108.66	2239.86			
Inflow	9500	PF 1	1.81	75.78	7279.4		30.30		67.00	106.08	2236.84			
Inflow	9400	PF 1	1.80	68.37	6895.0		33.79		65.50	102.16	2233.50			
Inflow	9371.90	PF 1	2.08	67.76	10803.0		36.03		63.50	103.79	2232.88			
Inflow	9251.9	PF 1	1.77	32.82	13690.1		-16.41		0.00	16.41	2229.12			
Inflow	8801.9	PF 1	5.01	23.56	4504.0		-11.78		0.00	11.78	2207.39			
Inflow	8137.21	PF 1	2.89	27.91	8137.9		-13.96		0.00	13.96	2192.27			
Inflow	7935.67	PF 1	2.51	20.00	8674.6		-10.00		0.00	10.00	2187.68			
Inflow	7759.60	PF 1	3.31	27.67	6637.2		-10.00		3.84	17.67	2183.68			
Inflow	7612.88	PF 1	2.86	28.00	8223.4		-14.00		0.00	14.00	2180.34			
Inflow	7459.01	PF 1	2.87	27.96	8187.7		-13.98		0.00	13.98	2176.84			
Inflow	7347.92	PF 1	3.15	27.13	7400.2		-13.57		0.00	13.57	2172.96			
Inflow	7082.96	PF 1	3.45	26.38	6726.8		-13.19		0.00	13.19	2163.69			
Inflow	5964.44	PF 1	3.56	26.13	6508.4		-13.06		0.00	13.06	2124.58			
Inflow	4519.92	PF 1	2.21	30.47	10836.2		-15.24		0.00	15.24	2100.59			
Inflow	4328.87	PF 1	1.97	20.00	11078.1		-10.00		0.00	10.00	2097.41			
Inflow	4262.78	PF 1	2.05	20.00	10651.7		-10.00		0.00	10.00	2096.32			
Inflow	4126.20	PF 1	2.16	20.00	10115.3		-10.00		0.00	10.00	2094.05			
Inflow	4028.71	PF 1	2.89	42.00	12300.4		-10.00		11.00	32.00	2092.43			
Inflow	3862.29	PF 1	2.26	34.70	17009.1		-13.82		3.53	20.88	2089.66			
Inflow	3783.71	PF 1	2.67	33.25	14258.5		-16.62		0.00	16.62	2086.12			

* Inflow	* 3549.25	* PF 1	*	3.63 *	29.96 *	10261.5 *	*	-14.98 *	*	
0.00 *	*	14.98 *	2075.54 *	*	*					
* Inflow	* 3381.49	* PF 1	*	3.86 *	29.37 *	9620.0 *	*	-14.68 *	*	
0.00 *	*	14.68 *	2067.98 *	*	*					
* Inflow	* 3015.73	* PF 1	*	4.05 *	28.91 *	9137.3 *	*	-14.45 *	*	
0.00 *	*	14.45 *	2051.48 *	*	*					
* Inflow	* 2945.71	* PF 1	*	4.06 *	28.89 *	9116.1 *	*	-14.44 *	*	
0.00 *	*	14.44 *	2048.32 *	*	*					
* Inflow	* 2800	* PF 1	*	4.07 *	28.86 *	9086.1 *	*	-14.43 *	*	
0.00 *	*	14.43 *	2041.74 *	*	*					
* Inflow	* 2700	* PF 1	*	2.84 *	15.00 *	13792.6 *	*	-7.50 *	*	
0.00 *	*	7.50 *	2034.68 *	*	*					
* Inflow	* 2448.32	* PF 1	*	3.21 *	15.00 *	12266.3 *	*	-7.50 *	*	
0.00 *	*	7.50 *	2023.33 *	*	*					
* Inflow	* 2025.73	* PF 1	*	2.62 *	15.00 *	14895.5 *	*	-7.50 *	*	
0.00 *	*	7.50 *	2015.00 *	*	*					
* Inflow	* 1603.62	* PF 1	*	2.62 *	15.00 *	14880.3 *	*	-7.50 *	*	
0.00 *	*	7.50 *	2004.21 *	*	*					
* Inflow	* 1553.62	* PF 1	*	3.12 *	20.00 *	13513.9 *	*	-10.00 *	*	
0.00 *	*	10.00 *	2003.35 *	*	*					
* Inflow	* 1392.84	* PF 1	*	2.79 *	20.00 *	15109.9 *	*	-10.00 *	*	
0.00 *	*	10.00 *	2000.81 *	*	*					
* Inflow	* 1374.84	* PF 1	*	2.76 *	20.00 *	15260.2 *	*	-10.00 *	*	
0.00 *	*	10.00 *	2000.54 *	*	*					
* Inflow	* 1366.30	* PF 1	*	2.77 *	20.00 *	15074.2 *	*	-10.00 *	*	
0.00 *	*	10.00 *	2000.39 *	*	*					
* Inflow	* 1361.80	* PF 1	*	2.82 *	20.00 *	14812.8 *	*	-10.00 *	*	
0.00 *	*	10.00 *	1999.96 *	*	*					
* Inflow	* 1357.30	* PF 1	*	2.98 *	20.00 *	14024.0 *	*	-10.00 *	*	
0.00 *	*	10.00 *	1998.82 *	*	*					
* Inflow	* 1236	* PF 1	*	7.05 *	20.00 *	5859.6 *	*	-10.00 *	*	
0.00 *	*	10.00 *	1958.39 *	*	*					
* Inflow	* 1230	* PF 1	*	7.00 *	20.00 *	3834.6 *	*	-10.00 *	*	
0.00 *	*	10.00 *	1956.39 *	*	*					
* Inflow	* 1229.99	* PF 1	*	7.10 *	20.00 *	5819.9 *	*	-10.00 *	*	
0.00 *	*	10.00 *	1956.39 *	*	*					
* Inflow	* 1229.98	* PF 1	*	7.10 *	20.00 *	6592.9 *	*	-10.00 *	*	
0.00 *	*	10.00 *	1956.39 *	*	*					
* Inflow	* 1220.01	* PF 1	*	8.27 *	28.00 *	5359.8 *	*	-14.00 *	*	
0.00 *	*	14.00 *	1956.34 *	*	*					
* Inflow	* 1220	* PF 1	*	8.42 *	30.00 *	1259.6 *	*	-15.00 *	*	
0.00 *	*	15.00 *	1956.34 *	*	*					
* Inflow	* 1219	* PF 1	*	7.65 *	34.00 *	1490.2 *	*	-25.00 *	*	
0.00 *	*	25.00 *	1956.34 *	*	*					
* Inflow	* 1217	* PF 1	*	8.60 *	50.00 *	4690.6 *	*	-25.00 *	*	
0.00 *	*	25.00 *	1956.32 *	*	*					
* Inflow	* 1202	* PF 1	*	6.06 *	50.00 *	6881.3 *	*	-25.00 *	*	
0.00 *	*	25.00 *	1956.25 *	*	*					
* Inflow	* 1201.9	* PF 1	*	4.51 *	50.00 *	8788.6 *	*	-25.00 *	*	
0.00 *	*	25.00 *	1956.25 *	*	*					
* Inflow	* 1200	* PF 1	*	4.32 *	50.00 *	9204.8 *	*	-25.00 *	*	
0.00 *	*	25.00 *	1956.25 *	*	*					
* Inflow	* 1199.9	* PF 1	*	1.01 *	50.00 *	47201.3 *	*	-25.00 *	*	
0.00 *	*	25.00 *	1956.25 *	*	*					
* Inflow	* 1138	* PF 1	*	2.79 *	165.40 *	14628.9 *	*	-82.70 *	*	
0.00 *	*	82.70 *	1956.55 *	*	*					
* Inflow	* 1137.9	* PF 1	*	0.41 *	165.40 *	120185.8 *	*	-82.70 *	*	
0.00 *	*	82.70 *	1955.64 *	*	*					
* Inflow	* 1133	* PF 1	*	0.41 *	165.40 *	121442.4 *	*	-82.70 *	*	
0.00 *	*	82.70 *	1955.62 *	*	*					

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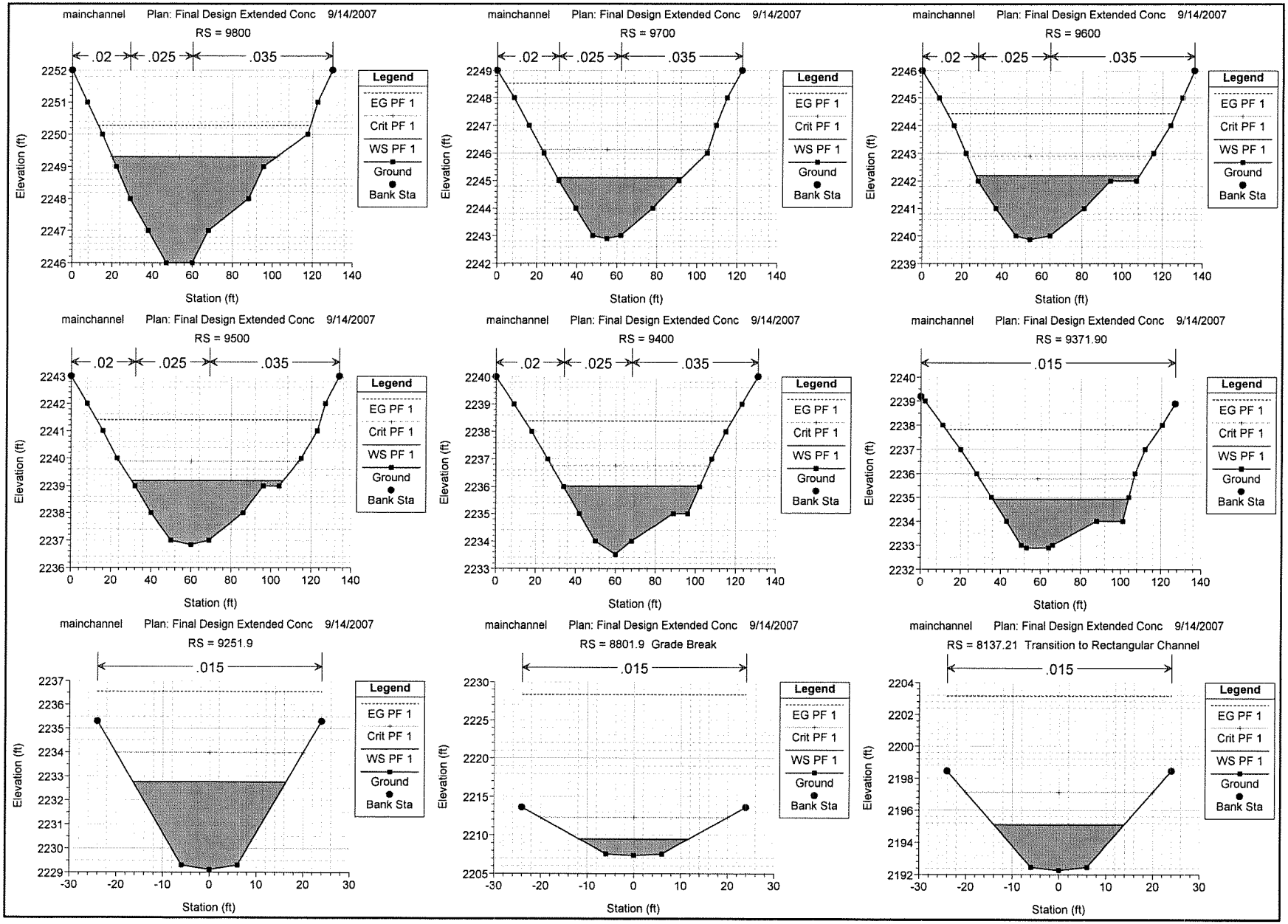
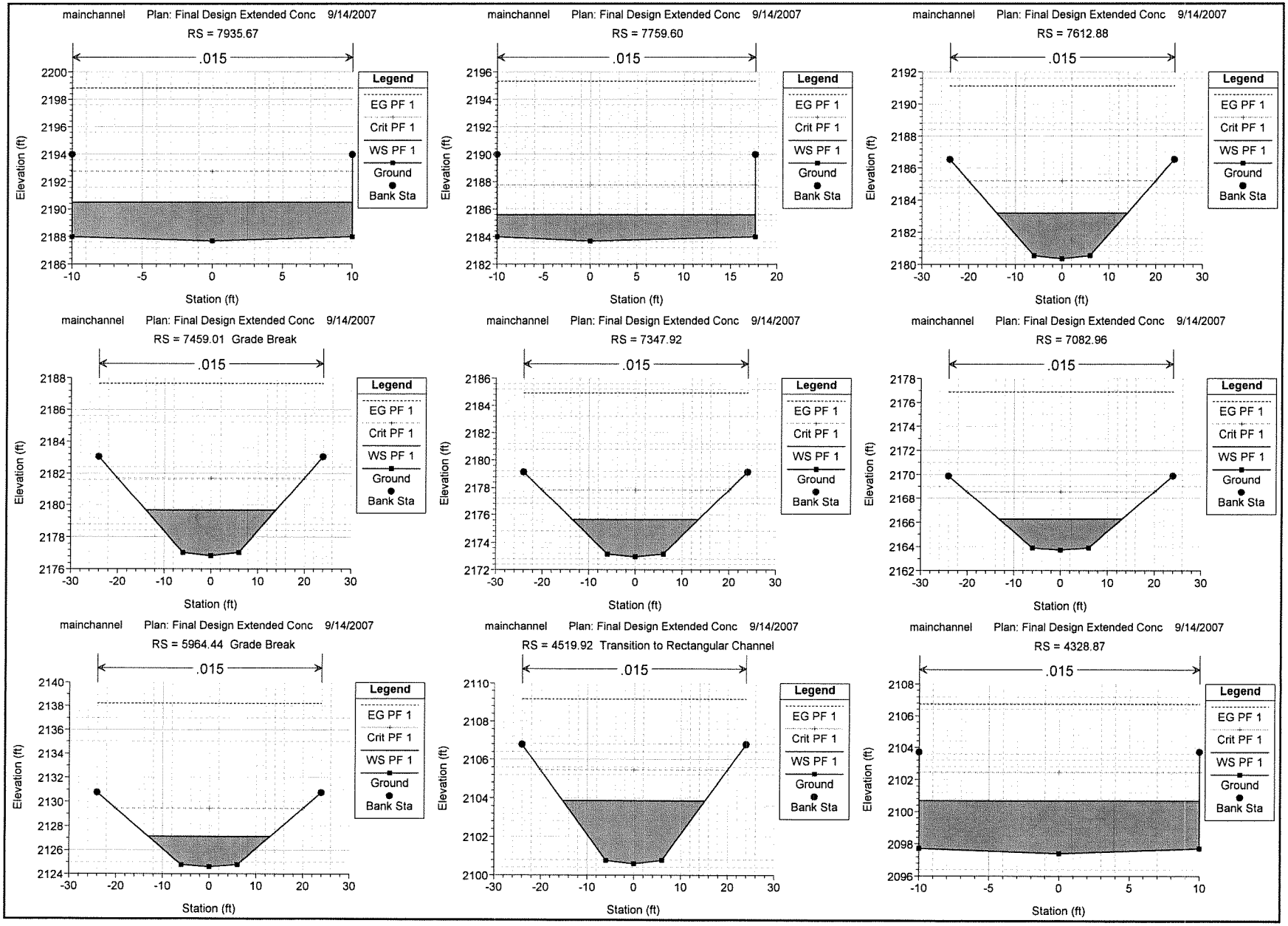
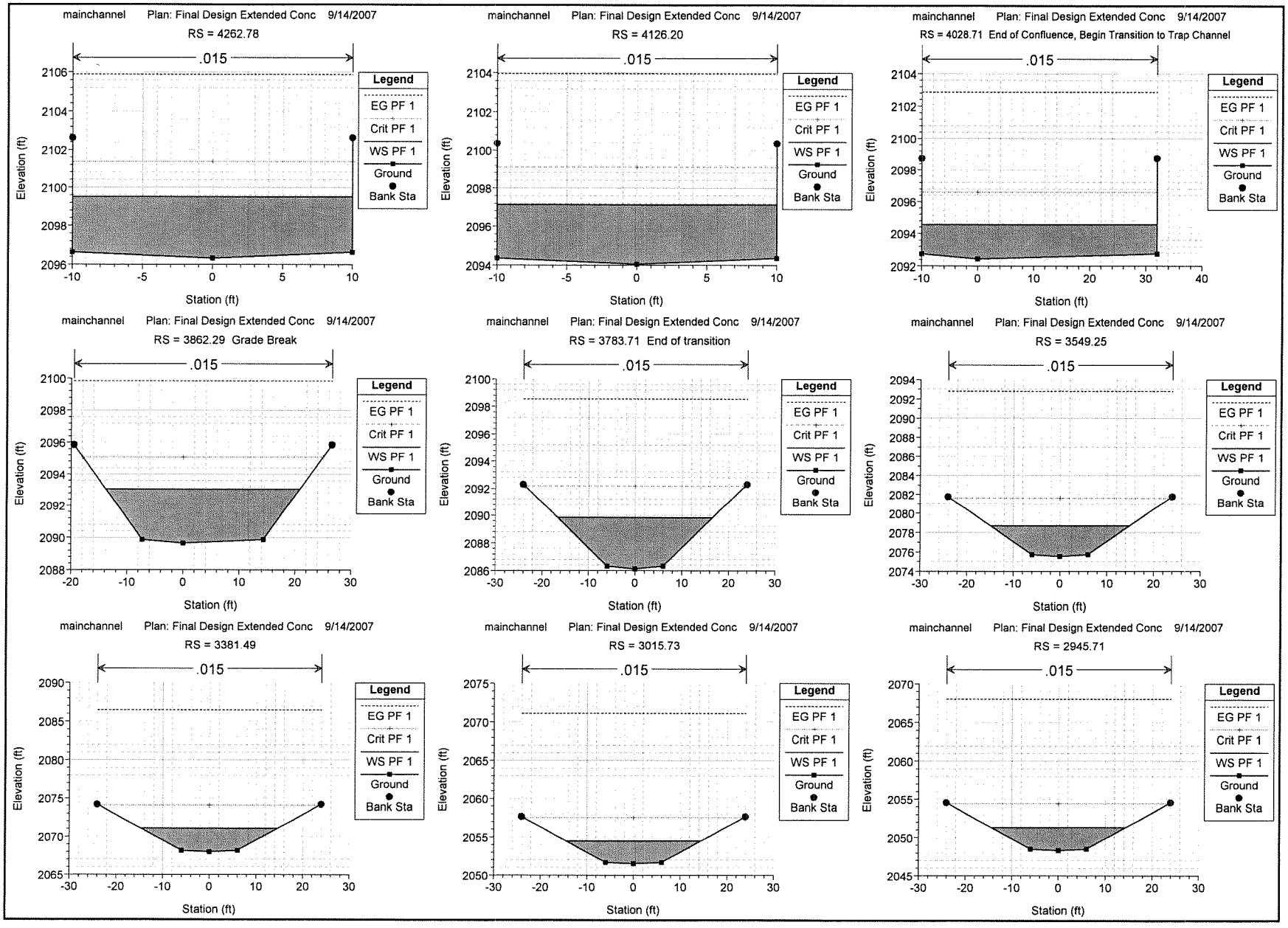
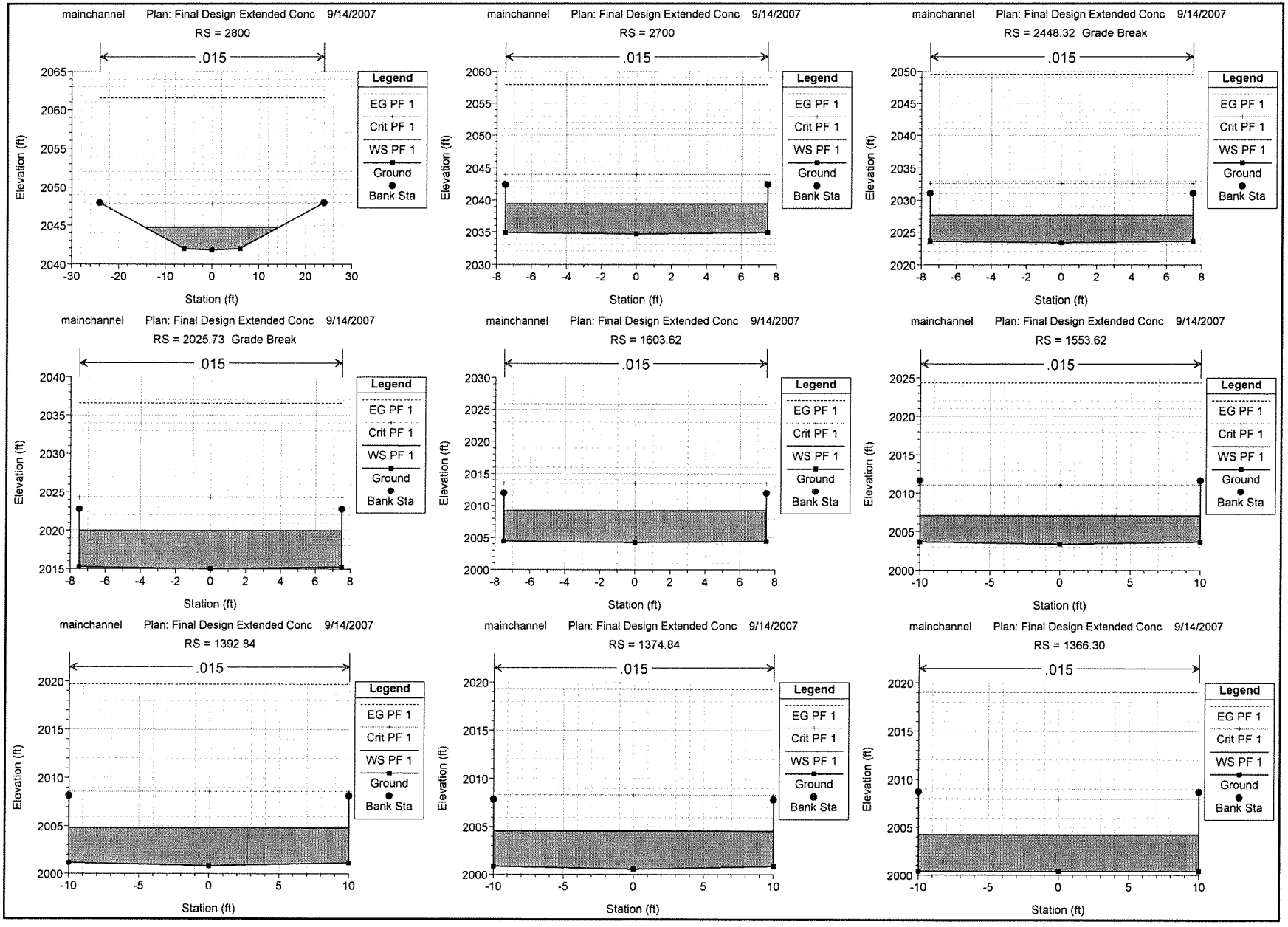
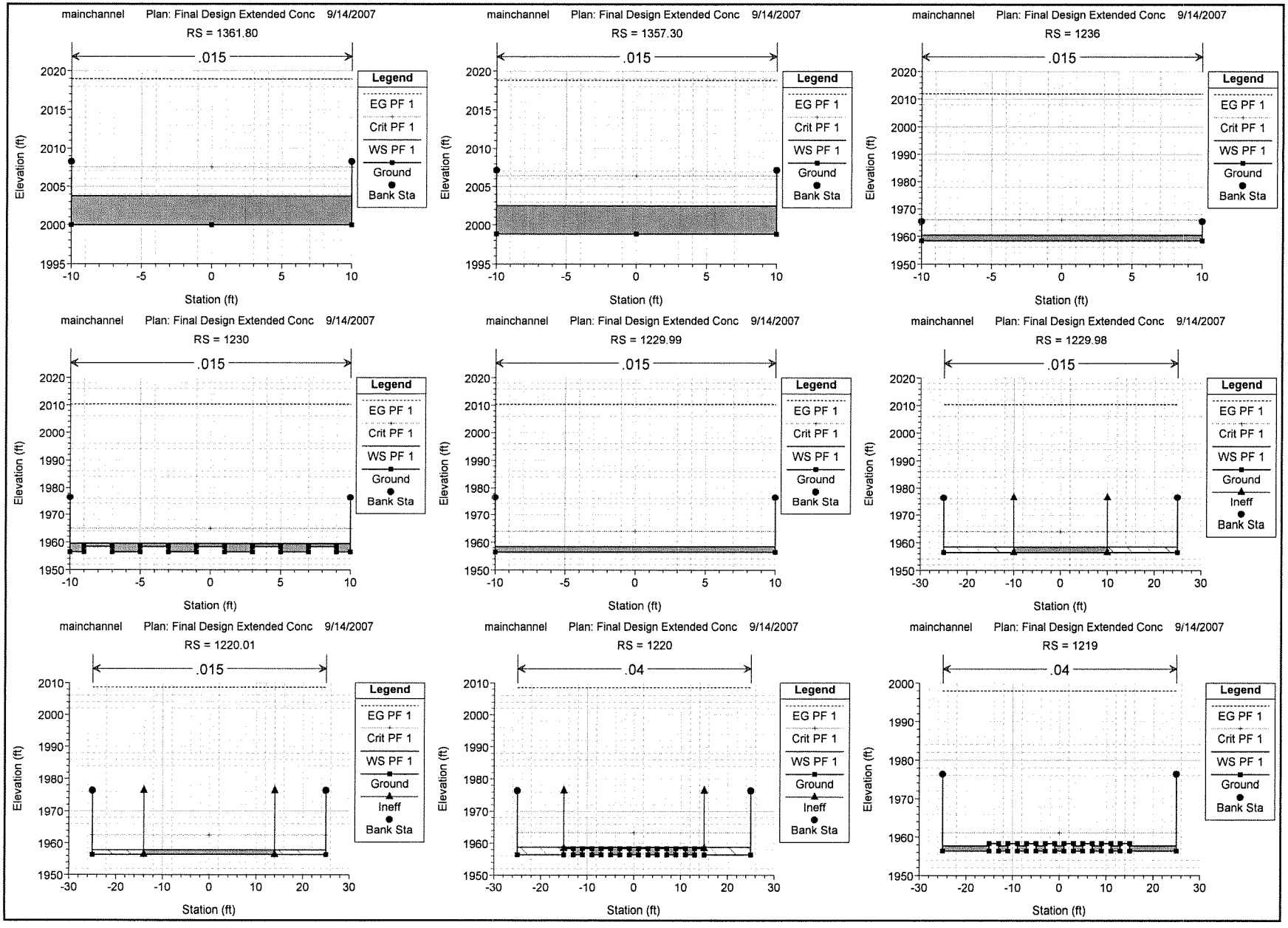
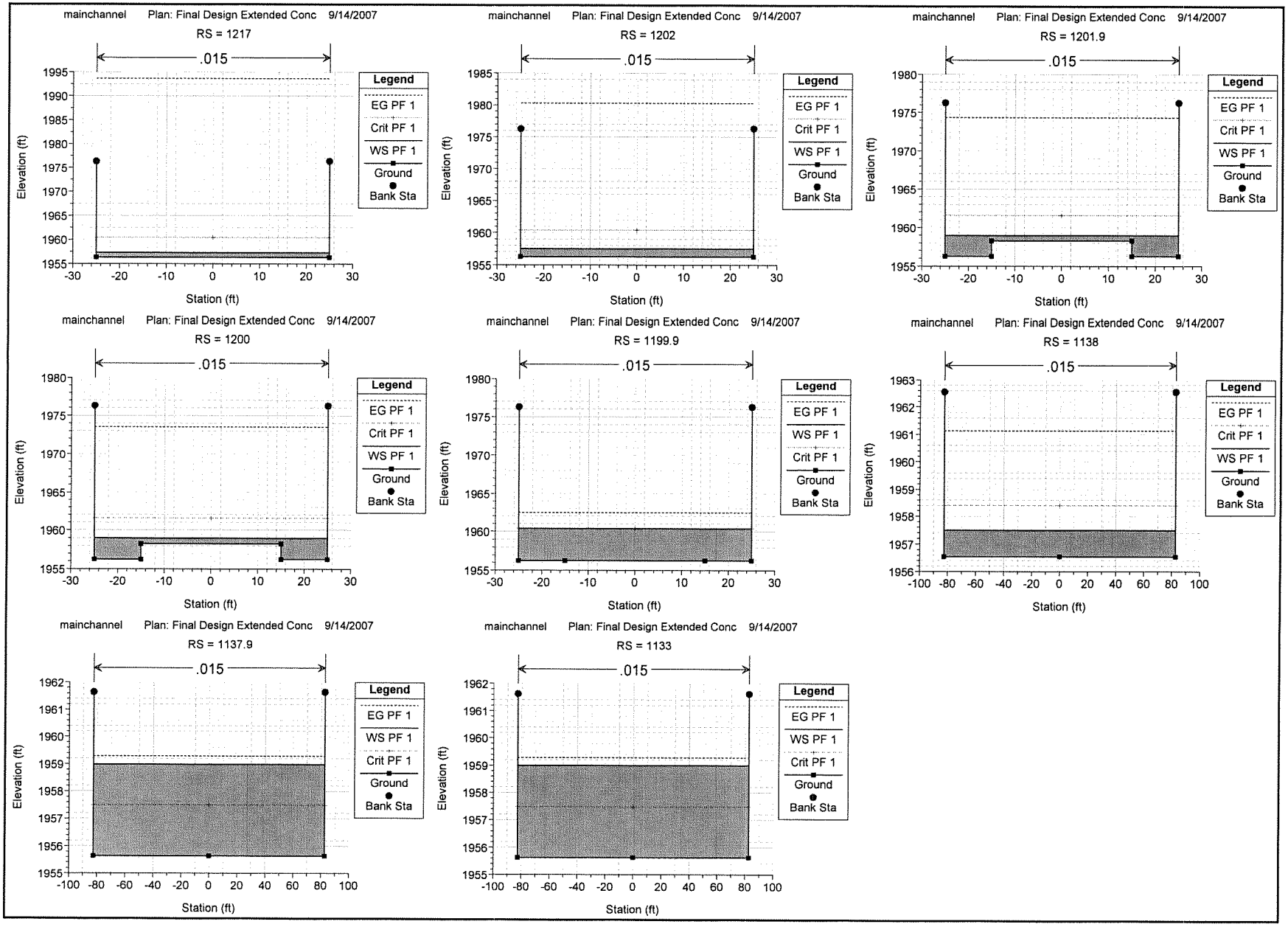

mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 9800
.02 .025 .035
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 9700
.02 .025 .035
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 9600
.02 .025 .035
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 9500
.02 .025 .035
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 9400
.02 .025 .035
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 9371.90
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 9251.9
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 8801.9 Grade Break
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 8137.21 Transition to Rectangular Channel
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta


mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 7935.67
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 7759.60
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 7612.88
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 7459.01 Grade Break
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 7347.92
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 7082.96
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 5964.44 Grade Break
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 4519.92 Transition to Rectangular Channel
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 4328.87
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 4262.78
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 4126.20
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 4028.71 End of Confluence, Begin Transition to Trap Channel
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 3862.29 Grade Break
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 3783.71 End of transition
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 3549.25
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 3381.49
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 3015.73
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 2945.71
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 2800
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 2700
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 2448.32 Grade Break
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 2025.73 Grade Break
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1603.62
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1553.62
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1392.84
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1374.84
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1366.30
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta


mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1361.80
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1357.30
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1236
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1230
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1229.99
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1229.98
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1220.01
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1220
.04
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1219
.04
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1217
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1202
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1201.9
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1200
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1199.9
.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1138
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1137.9
.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
mainchannel Plan: Final Design Extended Conc 9/14/2007
RS = 1133
.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

CHECK-RAS Program, XS Check
Cross Section Location and Alignment Review

Project File: F:\504-424\Drainage\CLOMR\HEC-RAS\mainchannel.prj
Plan File: F:\504-424\Drainage\CLOMR\HEC-RAS\mainchannel.p01
Geometry File: F:\504-424\Drainage\CLOMR\HEC-RAS\mainchannel.g01
Flow File: F:\504-424\Drainage\CLOMR\HEC-RAS\mainchannel.f01
Report File: F:\504-424\Drainage\CLOMR\HEC-RAS\mainchannel.xs
Selected profiles: PF 1
Date: 9/20/2007
Time: 11:13:08 AM

SECNO	Len Lob	Len Chl	Len Rob	TopWdthAct	Q Total	Flow Code
Main,Inflow						
9800	100	100	100	82.42	1230	C
9700	100	100	100	62.31	1230	
9600	100	100	100	81.83	1230	
9500	100	100	100	75.78	1230	
9400	28.1	28.1	28.1	68.37	1230	
9371.9	124.19	120	128.8	67.76	1230	
9251.9	450	450	450	32.82	1230	
8801.9	664.69	664.69	664.69	23.56	1230	
8137.21	202.02	201.54	202.02	27.91	1230	
7935.67	136.07	136.07	136.07	20	1230	
7759.6	147.39	146.72	146.86	27.67	1230	
7612.88	161.25	153.87	146.48	28	1230	
7459.01	116.42	111.09	105.76	27.96	1230	
7347.92	252.24	264.96	277.68	27.13	1230	
7082.96	1118.52	1118.52	1118.52	26.38	1230	
5964.44	1444.52	1444.52	1444.52	26.13	1230	
4519.92	191.57	191.05	191.57	30.47	1230	
4328.87	66.09	66.09	66.09	20	1230	
4262.78	139.31	136.58	133.85	20	1230	
4126.2	55.49	55.49	55.49	20	1230	
4028.71	166.66	166.42	166.42	42	1923	
3862.29	78.71	78.58	78.59	34.7	1923	
3783.71	234.46	234.46	234.46	33.25	1923	
3549.25	163.73	167.76	171.79	29.96	1923	
3381.49	365.76	365.76	365.76	29.37	1923	
3015.73	71.7	70.02	68.34	28.91	1923	
2945.71	145.71	145.71	145.71	28.89	1923	
2800	100	100	100	28.86	1923	
2700	251.68	251.68	251.68	15	2378	
2448.32	422.59	422.59	422.59	15	2378	
2025.73	422.11	422.11	422.11	15	2378	
1603.62	50	50	50	15	2378	
1553.62	155.99	160.78	165.99	20	2378	
1392.84	18	18	18	20	2378	
1374.84	8.54	8.54	8.54	20	2378	
1366.3	4.5	4.5	4.5	20	2378	
1361.8	4.5	4.5	4.5	20	2378	
1357.3	121.3	121.3	121.3	20	2378	
1236	6	6	6	20	2378	
1230	0.01	0.01	0.01	20	2378	
1229.99	0.01	0.01	0.01	20	2378	
1229.98	9.97	9.97	9.97	20	2378	
1220.01	0.01	0.01	0.01	28	2378	
1220	1	1	1	30	2378	
1219	2	2	2	34	2378	D
1217	15	15	15	50	2378	
1202	0.1	0.1	0.1	50	2378	
1201.9	1.9	1.9	1.9	50	2378	
1200	0.1	0.1	0.1	50	2378	
1199.9	61.9	61.9	61.9	50	2378	C
1138	0.1	0.1	0.1	165.4	2378	
1137.9	4.9	4.9	4.9	165.4	2378	
1133	0	0	0	165.4	2378	

B=blocked obstruction XS SC 05
C=critial depth XS SC 03
D=divided flow XS SC 01
E=cross section extended XS SC 02
K=known water-surface XS SC 04

DISTANCE CHECK

SPACING CHECK

INEFFECTIVE FLOW CHECK

DISCHARGE CHECK

LOCATION CHECK

BOUNDARY CONDITION CHECK

XS BC 02 The name of the stream is Main,Inflow
Known WS = 1959 is specified as the downstream boundary
for profile PF 1

XS BC 02 The name of the stream is Main,Inflow
Critical is specified as the upstream boundary
for profile PF 1

XS BC 03 Maximum number of iterations is 0
It should not be less than 20.

XS FR 02 The profile is computed as mixed flow regime.

LATERAL WEIRS CHECK

---END---

CHECK-RAS Program: NT Check
Manning's n Value and Transition Loss Coefficient Review

Project File: F:\504-424\Drainage\CLOMR\HEC-RAS\mainchannel.prj
Plan File: F:\504-424\Drainage\CLOMR\HEC-RAS\mainchannel.p01
Geometry File: F:\504-424\Drainage\CLOMR\HEC-RAS\mainchannel.g01
Flow File: F:\504-424\Drainage\CLOMR\HEC-RAS\mainchannel.f01
Report File: F:\504-424\Drainage\CLOMR\HEC-RAS\mainchannel.nt
Selected profiles: PF 1
Date: 9/20/2007
Time: 11:12:43 AM

SECNO	STRUCTURE	NLOB	NCHL	NROB	CNTR	EXP
Main,Inflow						
9800		-----	0.02	-----	0.05	0.1
		-----	0.025	-----		
		-----	0.035	-----		
9700		-----	0.02	-----	0.05	0.1
		-----	0.025	-----		
		-----	0.035	-----		
9600		-----	0.02	-----	0.05	0.1
		-----	0.025	-----		
		-----	0.035	-----		
9500		-----	0.02	-----	0.05	0.1
		-----	0.025	-----		
		-----	0.035	-----		
9400		-----	0.02	-----	0.05	0.1
		-----	0.025	-----		
		-----	0.035	-----		
9371.9		-----	0.015	0.015	0.05	0.01
		-----	0.015	-----		
9251.9		-----	0.015	0.015	0	0
		-----	0.015	-----		
8801.9		-----	0.015	0.015	0	0
		-----	0.015	-----		
8137.21		-----	0.015	0.015	0.05	0.1
		-----	0.015	-----		
7935.67		-----	0.015	0.015	0	0
		-----	0.015	-----		
7759.6		-----	0.015	0.015	0.05	0.1
		-----	0.015	-----		
7612.88		-----	0.015	0.015	0	0
		-----	0.015	-----		
7459.01		-----	0.015	0.015	0	0
		-----	0.015	-----		
7347.92		-----	0.015	0.015	0	0
		-----	0.015	-----		
7082.96		-----	0.015	0.015	0	0
		-----	0.015	-----		
5964.44		-----	0.015	0.015	0	0
		-----	0.015	-----		
4519.92		-----	0.015	0.015	0.05	0.1
		-----	0.015	-----		
4328.87		-----	0.015	0.015	0	0
		-----	0.015	-----		
4262.78		-----	0.015	0.015	0	0
		-----	0.015	-----		
4126.2		-----	0.015	0.015	0	0
		-----	0.015	-----		
4028.71		-----	0.015	0.015	0.05	0.1
		-----	0.015	-----		
3862.29		-----	0.015	0.015	0.05	0.1
		-----	0.015	-----		
3783.71		-----	0.015	0.015	0	0
		-----	0.015	-----		
3549.25		-----	0.015	0.015	0	0
		-----	0.015	-----		
3381.49		-----	0.015	0.015	0	0
		-----	0.015	-----		
3015.73		-----	0.015	0.015	0	0
		-----	0.015	-----		
2945.71		-----	0.015	0.015	0	0
		-----	0.015	-----		
2800		-----	0.015	0.015	0.05	0.1
		-----	0.015	-----		
2700		-----	0.015	0.015	0	0
		-----	0.015	-----		
2448.32		-----	0.015	0.015	0	0
		-----	0.015	-----		
2025.73		-----	0.015	0.015	0	0
		-----	0.015	-----		
1603.62		-----	0.015	0.015	0	0
		-----	0.015	-----		

1553.62	-----	0.015	0.015	0.05	0.1
	-----	0.015	-----		
1392.84	-----	0.015	0.015	0	0
	-----	0.015	-----		
1374.84	-----	0.015	0.015	0	0
	-----	0.015	-----		
1366.3	-----	0.015	0.015	0	0
	-----	0.015	-----		
1361.8	-----	0.015	0.015	0	0
	-----	0.015	-----		
1357.3	-----	0.015	0.015	0	0
	-----	0.015	-----		
1236	-----	0.015	0.015	0.05	0.1
	-----	0.015	-----		
1230	-----	0.015	0.015	0.05	0.1
	-----	0.015	-----		
1229.99	-----	0.015	0.015	0.05	0.1
	-----	0.015	-----		
1229.98	-----	0.015	0.015	0.05	0.1
	-----	0.015	-----		
1220.01	-----	0.015	0.015	0.05	0.1
	-----	0.015	-----		
1220	-----	0.04	0.04	0.6	0.8
	-----	0.04	-----		
1219	-----	0.04	0.04	0.6	0.8
	-----	0.04	-----		
1217	-----	0.015	0.015	0.6	0.8
	-----	0.015	-----		
1202	-----	0.015	0.015	0.6	0.8
	-----	0.015	-----		
1201.9	-----	0.015	0.015	0.6	0.8
	-----	0.015	-----		
1200	-----	0.015	0.015	0.6	0.8
	-----	0.015	-----		
1199.9	-----	0.015	0.015	0.6	0.8
	-----	0.015	-----		
1138	-----	0.015	0.015	0.6	0.8
	-----	0.015	-----		
1137.9	-----	0.015	0.015	0.05	0.1
	-----	0.015	-----		
1133	-----	0.015	0.015	0.05	0.1
	-----	0.015	-----		

---Summary of Statistics---

	Minimum	Maximum
Left Overbank n Value:	99999	-99999
Right Overbank n Value:	0.015	0.04
Channel n Value:	0.015	0.04
Contraction Coefficient:	0	0.6
Expansion Coefficient:	0	0.8

ROUGHNESS COEFFICIENT CHECK

RS: 9371.9
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 9371.9
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a
concrete lined channel.

RS: 9251.9
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 9251.9
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a
concrete lined channel.

RS: 8801.9
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 8801.9

```
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      8137.21
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       8137.21
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      7935.67
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       7935.67
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      7759.6
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       7759.6
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      7612.88
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       7612.88
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      7459.01
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       7459.01
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      7347.92
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       7347.92
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      7082.96
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       7082.96
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      5964.44
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
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         The n value should be reevaluated.

RS:       5964.44
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      4519.92
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       4519.92
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      4328.87
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       4328.87
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      4262.78
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       4262.78
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      4126.2
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       4126.2
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      4028.71
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       4028.71
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      3862.29
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       3862.29
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      3783.71
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       3783.71
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.
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RS:      3549.25
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       3549.25
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      3381.49
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       3381.49
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      3015.73
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       3015.73
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      2945.71
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       2945.71
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      2800
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       2800
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      2700
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       2700
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      2448.32
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       2448.32
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      2025.73
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       2025.73
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
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The n value should be reevaluated it if is not representing a
concrete lined channel.

RS: 1603.62
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 1603.62
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a
concrete lined channel.

RS: 1553.62
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 1553.62
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a
concrete lined channel.

RS: 1392.84
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 1392.84
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a
concrete lined channel.

RS: 1374.84
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 1374.84
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a
concrete lined channel.

RS: 1366.3
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 1366.3
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a
concrete lined channel.

RS: 1361.8
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 1361.8
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a
concrete lined channel.

RS: 1357.3
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 1357.3
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a
concrete lined channel.

RS: 1236
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 1236
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 1230
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 1230
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 1229.99
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 1229.99
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 1229.98
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 1229.98
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 1220.01
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 1220.01
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 1217
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 1217
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 1202
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 1202
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 1201.9
NT RC 01 Right overbank n value is less than 0.035
The n value for overbank is usually larger then 0.035.
The n value should be reevaluated.

RS: 1201.9
NT RC 03 Channel n value is equal to or less than 0.025
The n value of the channel is usually larger than 0.025.
The n value should be reevaluated it if is not representing a concrete lined channel.

RS: 1200
NT RC 01 Right overbank n value is less than 0.035

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         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       1200
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      1199.9
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       1199.9
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      1138
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       1138
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

RS:      1137.9
NT RC 01 Right overbank n value is less than 0.035
         The n value for overbank is usually larger then 0.035.
         The n value should be reevaluated.

RS:       1137.9
NT RC 03 Channel n value is equal to or less than 0.025
         The n value of the channel is usually larger than 0.025.
         The n value should be reevaluated it if is not representing a
         concrete lined channel.

TRANSITION LOSS COEFFICIENT CHECK
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RS:      9800
NT TL 02 Contraction and expansion loss coefficients are 0.05 and 0.1
         respectively. However, this cross section is not at the structure.
         They should be equal to 0.1 and 0.3.

RS:      9700
NT TL 02 Contraction and expansion loss coefficients are 0.05 and 0.1
         respectively. However, this cross section is not at the structure.
         They should be equal to 0.1 and 0.3.

RS:      9600
NT TL 02 Contraction and expansion loss coefficients are 0.05 and 0.1
         respectively. However, this cross section is not at the structure.
         They should be equal to 0.1 and 0.3.

RS:      9500
NT TL 02 Contraction and expansion loss coefficients are 0.05 and 0.1
         respectively. However, this cross section is not at the structure.
         They should be equal to 0.1 and 0.3.

RS:      9400
NT TL 02 Contraction and expansion loss coefficients are 0.05 and 0.1
         respectively. However, this cross section is not at the structure.
         They should be equal to 0.1 and 0.3.

RS:      9371.9
NT TL 02 Contraction and expansion loss coefficients are 0.05 and 0.01
         respectively. However, this cross section is not at the structure.
         They should be equal to 0.1 and 0.3.

RS:      9251.9
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
         respectively. However, this cross section is not at the structure.
         They should be equal to 0.1 and 0.3.

RS:      8801.9
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
         respectively. However, this cross section is not at the structure.
         They should be equal to 0.1 and 0.3.
```

RS: 8137.21
NT TL 02 Contraction and expansion loss coefficients are 0.05 and 0.1
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 7935.67
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 7759.6
NT TL 02 Contraction and expansion loss coefficients are 0.05 and 0.1
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 7612.88
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 7459.01
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 7347.92
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 7082.96
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 5964.44
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 4519.92
NT TL 02 Contraction and expansion loss coefficients are 0.05 and 0.1
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 4328.87
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 4262.78
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 4126.2
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 4028.71
NT TL 02 Contraction and expansion loss coefficients are 0.05 and 0.1
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 3862.29
NT TL 02 Contraction and expansion loss coefficients are 0.05 and 0.1
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 3783.71
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 3549.25
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 3381.49
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 3015.73
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2945.71
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2800
NT TL 02 Contraction and expansion loss coefficients are 0.05 and 0.1
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2700
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2448.32
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 2025.73
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1603.62
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1553.62
NT TL 02 Contraction and expansion loss coefficients are 0.05 and 0.1
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1392.84
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1374.84
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1366.3
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1361.8
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1357.3
NT TL 02 Contraction and expansion loss coefficients are 0 and 0
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1236
NT TL 02 Contraction and expansion loss coefficients are 0.05 and 0.1
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1230
NT TL 02 Contraction and expansion loss coefficients are 0.05 and 0.1
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1229.99
NT TL 02 Contraction and expansion loss coefficients are 0.05 and 0.1
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1229.98
NT TL 02 Contraction and expansion loss coefficients are 0.05 and 0.1
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1220.01
NT TL 02 Contraction and expansion loss coefficients are 0.05 and 0.1
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1220
NT TL 02 Contraction and expansion loss coefficients are 0.6 and 0.8
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1219
NT TL 02 Contraction and expansion loss coefficients are 0.6 and 0.8
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1217
NT TL 02 Contraction and expansion loss coefficients are 0.6 and 0.8
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1202
NT TL 02 Contraction and expansion loss coefficients are 0.6 and 0.8
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1201.9
NT TL 02 Contraction and expansion loss coefficients are 0.6 and 0.8
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1200
NT TL 02 Contraction and expansion loss coefficients are 0.6 and 0.8
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1199.9
NT TL 02 Contraction and expansion loss coefficients are 0.6 and 0.8
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1138
NT TL 02 Contraction and expansion loss coefficients are 0.6 and 0.8
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1137.9
NT TL 02 Contraction and expansion loss coefficients are 0.05 and 0.1
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

RS: 1133
NT TL 02 Contraction and expansion loss coefficients are 0.05 and 0.1
respectively. However, this cross section is not at the structure.
They should be equal to 0.1 and 0.3.

ROUGHNESS COEFFICIENT AT STRUCTURES

---END---

PROJECT GRADING PLANS AND DETAIL SHEETS

ELECTRONIC FILES

F:\504-424\dwg\Hydro\improv\NEDB_G01.dwg 10-17-07 13:23:01 RBlanchard

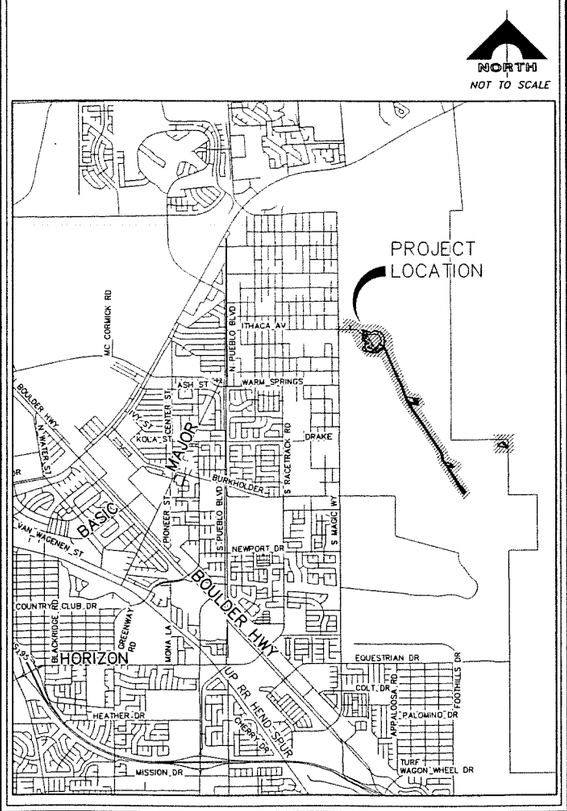
NORTHEAST C-1 DETENTION BASIN

CONTRACT NO. 131-08-FC-015-004

FUNDED BY:

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

LOCATION MAP



REVISIONS

No.	DESCRIPTION	BY	DATE	APPROVAL

CITY OF HENDERSON
CLARK COUNTY, NEVADA
DEPARTMENT OF PUBLIC WORKS

THE CITY OF HENDERSON

NOT FOR CONSTRUCTION

MAYOR
JAMES B. GIBSON

CITY COUNCIL
ANDY A. HAFEN
JACK K. CLARK
STEVEN D. KIRK
GERRI SCHRODER

CITY MANAGER
MARY KAY PECK

DIRECTOR OF PUBLIC WORKS
ROBERT MURNANE

THE AFFIXED EMBARQ APPROVAL DOES NOT ASSUME OR GUARANTEE LIABILITY FOR KNOWN OR UNKNOWN CONFLICTS WITH EXISTING OR PROPOSED IMPROVEMENTS. RESOLUTION OF ANY CONFLICT WILL BE ACCOMPLISHED PURSUANT TO LOCAL ORDINANCES, NEVADA REVISED STATUTES AND/OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

NEVADA POWER COMPANY ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. NEVADA POWER COMPANY RESERVES THE RIGHT TO ADDRESS ANY EXISTING OR FUTURE CONFLICTS ONCE THE FINAL DESIGN IS COMPLETED. THE NEW SERVICE AND THE RESOLUTION OF ANY CONFLICTS WILL BE ACCOMPLISHED PURSUANT TO THE NEVADA PUBLIC UTILITY COMMISSION'S RULES AND REGULATIONS.

WILLIAM L. HUNTER III — STATE OF NEVADA — PROFESSIONAL ENGINEER — CIVIL — No. 8833 — Exp. 06/30/2008

10/17/07

INDEX OF SHEETS

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C-1	DETENTION BASIN GRADING PLAN – NORTH HALF
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C-15	DETENTION BASIN CROSS SECTIONS
C-16	ACCESS ROAD PROFILE STA 8+46.96 TO STA 29+73.05
C-17	DETENTION BASIN BERM CROSS SECTIONS
C-18	DETENTION BASIN ENLARGED RIPRAP AREAS, SECTIONS AND DETAILS
C-18A	ENLARGED RCC STEPPED AREAS, SECTIONS AND DETAILS
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S-4	TRAPEZOIDAL CHANNEL ACCESS RAMP DETAILS
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S-7	CHANNEL TRANSITION RECTANGULAR TO TRAPEZOIDAL-STA 78+16.20
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S-10	OUTLET STRUCTURE DETAILS
S-11	NORTH AND SOUTH COLLECTION CHANNEL TRANSITIONS

APPROVAL

TITLE	APPROVED	DATE
DIRECTOR OF PUBLIC WORKS		
FLOOD CONTROL COORDINATOR		
ENGINEERING SERVICES MANAGER		
SURVEY		
RIGHT OF WAY		
NEW DEVELOPMENT		
CITY TRAFFIC ENGINEER		

AGENCY APPROVAL

AGENCY	NO SERVICE	REVIEWED BY	DATE
NEVADA POWER CO. – DISTRIBUTION			
NEVADA POWER CO. – TRANSMISSION			
EMBARQ			
SOUTHWEST GAS CORP.			
COX COMMUNICATION LAS VEGAS, INC.			
SOUTHERN NEVADA WATER AUTHORITY			

SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

APPROVAL

GALE Wm. FRASER, II, P.E.
CHIEF ENGINEER/GENERAL MANAGER
CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

NORTHEAST C-1 DETENTION BASIN

CONTRACT NO. 131-08-FC-015-004

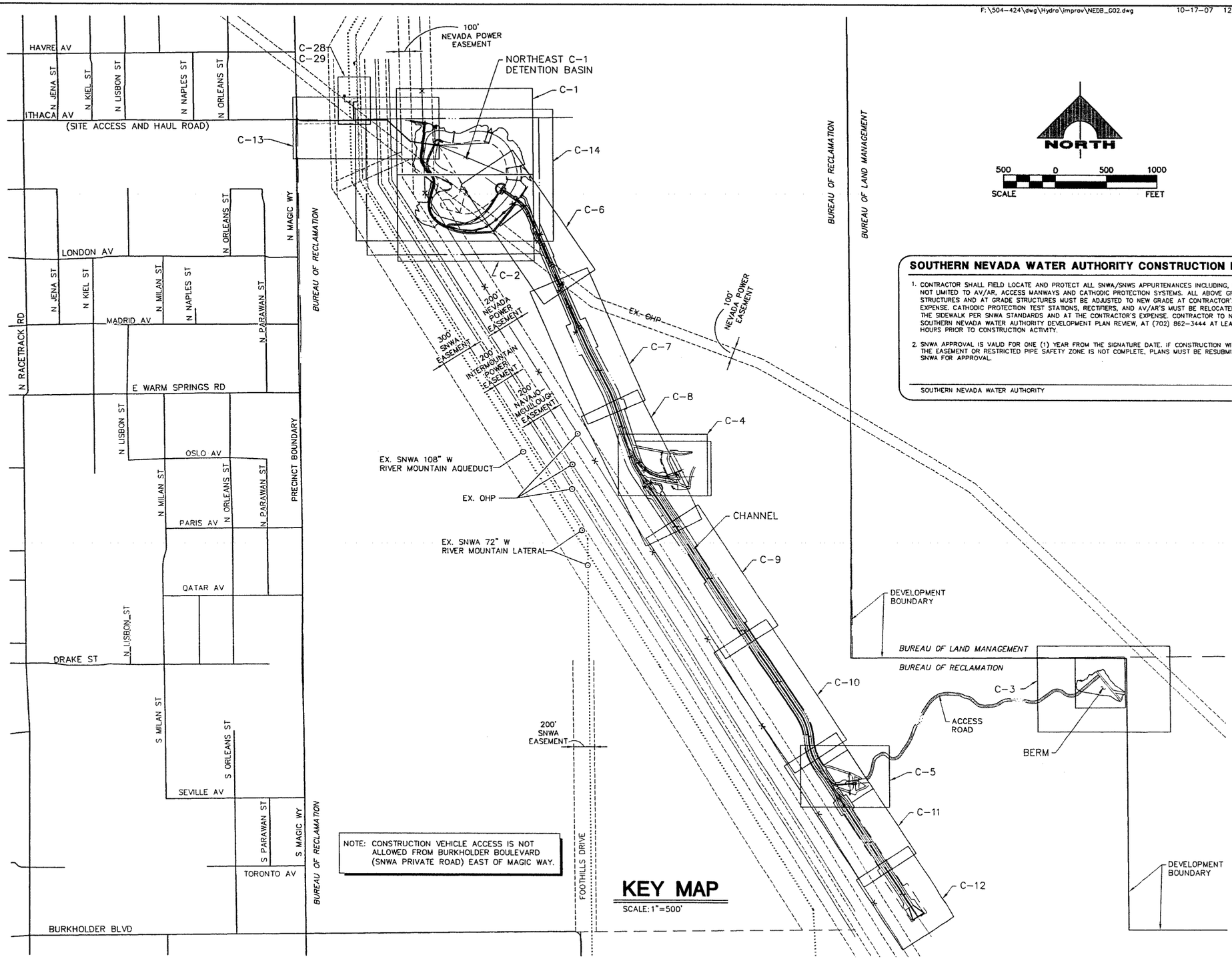
PROJECT No. 504.424

DATE : OCT 10, 2007

DRAWING No.

G-1

SHEET No. 1



KEY MAP
SCALE: 1"=500'

SOUTHERN NEVADA WATER AUTHORITY CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL SNWA/SNWS APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS AND CATHODIC PROTECTION SYSTEMS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. CATHODIC PROTECTION TEST STATIONS, RECTIFIERS, AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER SNWA STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY SOUTHERN NEVADA WATER AUTHORITY DEVELOPMENT PLAN REVIEW, AT (702) 862-3444 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
2. SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

SOUTHERN NEVADA WATER AUTHORITY DATE

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
KEY MAP

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: 1" = 500'
VERT: NONE
FIELD BOOK

DRAWING NO. G-2
SHT. OF

LEGEND & ABBREVIATIONS

LEGEND

(xxx.x) / INV	EXIST. ELEVATION
00.0 / INV	PROPOSED ELEVATION
(2459.1)	EXIST. SPOT ELEVATION
	PROPERTY OR RIGHT-OF-WAY LINE
	CENTERLINE
	GRADE BREAK
HGL	HYDRAULIC GRADE LINE (HGL)
EGL	ENERGY GRADE LINE (EGL)
	EASEMENT
T	EXISTING TELEPHONE CABLE
	EXISTING POWER POLES
SS	EXISTING SANITARY SEWER LINE
SS	PROPOSED SANITARY SEWER LINE
W	EXISTING WATER LINE
W	PROPOSED WATER LINE
G	EXISTING GAS LINE
UGE	EXISTING UNDERGROUND POWER
OHP	EXISTING OVERHEAD POWER
SD	EXISTING STORM DRAIN
CHANNEL/BOX	PROPOSED RECTANGULAR CHANNEL/BOX
	PROPOSED TRAPEZOIDAL CHANNEL
SD	PROPOSED STORM DRAIN
	PROPOSED BLOCK AND CHAIN FENCE
	PROPOSED POST AND CABLE FENCE
	PROPOSED DRAINAGE SWALE
1875	EXISTING CONTOUR

LEGEND

	SAWCUT LINE
	EXISTING MANHOLE
	PROPOSED MANHOLE
	EXISTING FIRE HYDRANT
	EXISTING VALVE
	PROPOSED VALVE
	PROPOSED DROP INLET
00	COORDINATE KEYNOTE
	TEMPORARY CONSTRUCTION EASEMENT
	EXISTING RAILROAD TRACKS
	FLOW DIRECTION
	PROPOSED SCARP
	BUREAU OF RECLAMATION BOUNDARY
	RIPRAP
	TYPE II
	PORTLAND CEMENT CONCRETE (PCC)
	ROLLER COMPACTED CONCRETE (RCC)
	CHANNEL IDENTIFIER AND WARNING SIGNS ON PROPOSED CHAIN-LINK FENCE, SEE 3/C-25 AND 4/C-25
	WARNING SIGN ON POST, SEE 8/C-25

ABBREVIATIONS

AA = ALDYL-A PIPE
AC = ASPHALTIC CONCRETE
ACP = ASBESTOS CEMENT PIPE
ALCAP = ALUMINUM CAP
ASSY = ASSEMBLY
AVAR = AIR VACUUM AIR RELIEF (VALVE)
AWWA = AMERICAN WATER WORKS ASSOCIATION
BC = BACK OF CURB
BCR = BEGIN CURB RETURN
BM = BENCHMARK
BW = BACK OF WALK
CATV = CABLE TELEVISION
CCWRD = CLARK COUNTY WATER RECLAMATION DISTRICT
CL/C = CENTERLINE
CLSM = CONTROLLED LOW STRENGTH MATERIAL
CML&C = CONCRETE MORTAR LINED AND COATED
CMP = CORRUGATED METAL PIPE
CMU = CONCRETE MASONARY UNIT
COH = CITY OF HENDERSON
CONC. = CONCRETE
D = DEPTH
DI = DROP INLET
DIP = DUCTILE IRON PIPE
DR = DRIVE OR DRAIN
EA. = EACH
EFF = EFFLUENT
EGL = ENERGY GRADE LINE
ELEV./ EL = ELEVATION
EP = EDGE OF PAVEMENT
ERW = EFFLUENT REUSE WATER
EXIST./ EX = EXISTING
FF = FINISH FLOOR
FG = FINISH GRADE
FL = FLOW LINE
FO = FIBER OPTIC CABLE
FS = FINISH SURFACE
FUT = FUTURE
G = GAS
GB = GRADE BREAK

ABBREVIATIONS (CONTINUED)

GIS = GEOGRAPHIC INFORMATION SYSTEM
HERCP = HORIZONTAL ELLIPTICAL REINFORCED CONCRETE PIPE
HGL = HYDRAULIC GRADE LINE
HP = HIGH POINT
HPG = HIGH PRESSURE GAS
HSS = HOLLOW STRUCTURAL SECTIONS
I.D. = INSIDE DIAMETER
INV = INVERT
LN = LENGTH
L / LT = LEFT OF
LF = LINEAR FEET
LP = LOW POINT
LVVWD = LAS VEGAS VALLEY WATER DISTRICT
NAVD = NORTH AMERICAN VERTICAL DATUM
NDOT = NEVADA DEPARTMENT OF TRANSPORTATION
NG = NATURAL GRADE
NO. = NUMBER
NPCO = NEVADA POWER COMPANY
OCS = ORIGIN OF CONICAL SURFACE
OHP = OVERHEAD POWER
OPP. = OPPOSITE
O.R. = OFFICIAL RECORDS
PBS = PLANTMIX BITUMINOUS SURFACE
PLS = PROFESSIONAL LAND SURVEYOR
PPCBR = PORTABLE PRECAST BARRIER RAIL
PC = POINT OF CURVE
PCC = POINT OF COMPOUND CURVE
PRC = POINT REVERSE CURVE
PROP = PROPOSED
PT = POINT OF TANGENT
PVC = POLYVINYL CHLORIDE PIPE
$Q_{ult}100$ = 100 YEAR ULTIMATE CONDITION DESIGN FLOW
(R) = RADIAL
R / RT = RIGHT OF
RCB = REINFORCED CONCRETE BOX
RCC = ROLLER COMPACTED CONCRETE
RCP = REINFORCED CONCRETE PIPE
RGRCP = RUBBER GASKET REINFORCED CONCRETE PIPE

ABBREVIATIONS (CONTINUED)

RR = RAILROAD
R/W = RIGHT-OF-WAY
SD = STORM DRAIN
SDMH = STORM DRAIN MANHOLE
SIM = SIMILAR
SNWA = SOUTHERN NEVADA WATER AUTHORITY
SS = SANITARY SEWER
SSMH = SANITARY SEWER MANHOLE
STA = STATION
STD.DWG.NO. = STANDARD DRAWING NUMBER
STL = STEEL
SW = SIDEWALK
SWG = SOUTHWEST GAS CORPORATION
T&B = TOP AND BOTTOM
TC = TOP OF BACK OF CURB
TEL = TELEPHONE
T/THK = THICK
TMH = TOP OF MANHOLE
TOE = TOE OF CHANNEL
TOP = TOP OF CHANNEL
TRANS = TRANSITION
TW = TOP OF WALL
UDACS = UNIFORM DESIGN AND CONSTRUCTION STANDARDS
USD = CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS
USGLO = UNITED STATES GENERAL LAND OFFICE
UNO = UNLESS NOTED OTHERWISE
U.S. = UNITED STATES
VAR. = VARIES
V.C. = VERTICAL CURVE
VCP = VITRIFIED CLAY PIPE
W = WATER
W/ = WITH
WP = WORKING POINT
WWF = WELDED WIRE FABRIC

CONSTRUCTION NOTES

1. CONSTRUCT ROLLER COMPACTED CONCRETE PAVEMENT. WIDTH VARIES. (SIMILAR TO 8/C-21)
2. CONSTRUCT PORTLAND CEMENT CONCRETE PAVEMENT.
3. CONSTRUCT TYPE II AGGREGATE BASE. (SIMILAR TO 7/C-21)
4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
5. CONSTRUCT PORTLAND CEMENT CONCRETE SPILLWAY WEIR. (SEE DETAIL 4/S-10)
6. CONSTRUCT 15' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 7/C-21)
7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-27)
8. CONSTRUCT 24' WIDE TYPE II ACCESS ROAD. (SIMILAR TO 7/C-21)
9. CONSTRUCT RIPRAP PER PLAN.
10. CONSTRUCT CONCRETE CHANNEL.
11. INSTALL CONDUIT AND PULL BOX. (SEE DETAIL 3/C-22)
12. INSTALL POST AND CABLE RAILING. (SEE DETAIL 5/C-25)
13. INSTALL CHAIN-LINK FENCE. (SEE DETAIL 1/C-25)
14. INSTALL OUTLET PIPE. (SEE C-13)
15. CONSTRUCT OUTLET STRUCTURE. (SEE DETAIL 1/S-10)
16. CONSTRUCT MONITORING STATION. (SEE DETAIL 1/C-22)
17. CONSTRUCT INFLOW STRUCTURE.(SEE DETAIL 1/C-24)
18. INSTALL BLOCK AND CHAIN GATE (WIDTH PER PLAN, SEE DETAIL 7/C-25)
19. INSTALL BLOCK AND CHAIN FENCE. (SEE DETAIL 7/C-25)
20. INSTALL 16' CHAIN-LINK GATE WITH SIGNS. (SEE DETAILS 2/C-25, 3/C-25 & 4/C-25)
21. CONSTRUCT DEPTH GAUGE. (SEE DETAIL 6/C-26)
22. INSTALL CHANNEL ACCESS STEPS. (SEE DETAIL 4/S-3)
23. CONSTRUCT RCC STEPS PER PLAN. (SEE DETAIL 4/S-3)
24. INSTALL CHANNEL IDENTIFIER AND WARNING SIGNS ON CHAIN-LINK FENCE. (SEE DETAILS 3/C-25 & 4/C-25)
25. INSTALL SIGN POST AND WARNING SIGN. (SEE DETAIL 8/C-25)
26. CONSTRUCT SEDIMENT GAUGE. (SEE DETAIL 5/C-27)
27. INSTALL 100 LF OF 1'x3' CLSM CUT-OFF WALL IN NEVADA POWER EASEMENT. (SEE DETAIL 6/C-27)
28. INSTALL 16' CHAIN-LINK GATE. (SEE DETAILS 2/C-25 & 5/C-27)
29. INSTALL EXPANSION JOINT BETWEEN ROLLER COMPACTED CONCRETE AND REINFORCED CONCRETE, TYPICAL. (SEE DETAIL 6/S-1)
30. INSTALL 16' CHAIN-LINK GATE WITH SIGNS. (SEE DETAILS 2/C-25, 3/C-25, 4/C-25 & 5/C-27)

STANDARD GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS FOR THIS PROJECT SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, OFF-SITE IMPROVEMENTS", CLARK COUNTY AREA, NEVADA LATEST EDITION, AND THE "UNIFORM DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, OFF-SITE IMPROVEMENTS", CLARK COUNTY AREA, NEVADA LATEST EDITION, UNLESS OTHERWISE SPECIFIED BY NOTE ON THE PLANS AND/OR SPECIAL PROVISIONS.
2. 48 HOURS PRIOR TO START OF CONSTRUCTION, THE CONTRACTOR SHALL CONTACT:

LOS ANGELES DEPARTMENT OF WATER AND POWER	PHONE	1-213-367-0557
NEVADA POWER COMPANY	PHONE	1-800-227-2600
SOUTHERN NEVADA WATER AUTHORITY	PHONE	862-3444

3. LOCATIONS OF UNDERGROUND UTILITIES SHOWN ON THE DRAWINGS WERE OBTAINED FROM INFORMATION RECEIVED FROM THE APPLICABLE UTILITY COMPANIES NEITHER THE OWNER NOR ENGINEER ASSUMES ANY RESPONSIBILITY FOR UTILITIES OR STRUCTURES NOT SHOWN, OR FOR UTILITIES OR STRUCTURES NOT SHOWN AT ACTUAL LOCATIONS ON THE DRAWINGS. EXISTING SERVICE LATERALS ARE NOT SHOWN ON THESE DRAWINGS. CONTRACTOR TO VERIFY THE EXACT LOCATION OF UTILITIES PRIOR TO START OF CONSTRUCTION. THE CONTRACTOR'S RESPONSIBILITY REGARDING UTILITIES SHALL BE AS REQUIRED UNDER SECTION 107.17 OF THE UNIFORM STANDARD SPECIFICATIONS FOR CLARK COUNTY AREA, NEVADA AND AS PROVIDED IN THE SPECIFICATIONS.
4. THE NEVADA POWER COMPANY SHALL BE RESPONSIBLE FOR THE RELOCATION OF UNDERGROUND OR OVERHEAD POWER LINES THAT INTERFERE WITH THE REQUIRED IMPROVEMENTS AS SHOWN ON THE PLANS.
5. REMOVAL OR RELOCATION'S OF POWER POLES, TELEPHONE POLES, JOINTLY-OWNED POLES, AND APPURTENANCES WHICH INTERFERE INTERFERE WITH IMPROVEMENTS REQUIRED TO BE CONSTRUCTED UNDER THIS CONTRACT, SHALL BE THE RESPONSIBILITY OF THE RESPECTIVE UTILITY COMPANY. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION WITH THE UTILITY COMPANIES FAR ENOUGH IN ADVANCE AS TO NOT IMPACT THE SCHEDULE.
6. THE PLANS DO NOT SHOW ALL SEWER LATERALS, SEWER FORCE MAINS AND WATER SERVICE LATERALS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY REPAIRS OR RELOCATION'S OF LATERALS BROKEN OR IN CONFLICT WITH THE PROPOSED CHANNEL, STORM DRAIN OR ROADWAY CONSTRUCTION. IF SEWER OR WATER LINES WITHIN THE PUBLIC UTILITY EASEMENTS REQUIRE REPAIRS, ALL SUCH REPAIRS WILL BE DONE IN ACCORDANCE WITH PUBLIC WORKS DEPARTMENT STANDARDS.
7. UNLESS OTHERWISE SHOWN ON THE CONTRACT DRAWINGS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OR RELOCATION OF ALL WATER SERVICES AND METERS WHICH INTERFERE WITH IMPROVEMENTS SHOWN ON THE CONTRACT DRAWINGS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERTICAL ADJUSTMENT OF ALL EXISTING SANITARY, WATER AND STORM SEWER MANHOLES TO THE FINAL FINISH GRADES IN ACCORDANCE WITH SECTIONS 609 AND 630 OF THE "STANDARD SPECIFICATIONS".
9. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITION BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND OF INGRESS AND EGRESS TO SAID CONSTRUCTION. EXTENT OF TRANSITIONS TO BE DETERMINED BY THE CITY ENGINEER.
10. THE CONTRACTOR SHALL DETERMINE THE LOCATION AND DEPTH OF SUSPECTED UTILITY INTERFERENCES, AND SHALL FURNISH INFORMATION ON THE SAME TO THE ENGINEER, NOT LESS THAN TEN (10) DAY PRIOR TO THE ANTICIPATED IMPACT OF THESE SUSPECTED INTERFERENCE'S ON HIS WORK. IF CONFLICTS EXIST, THE CONTRACTOR WILL IMMEDIATELY CONTACT THE ENGINEER AND PROVIDE THE ENGINEER WITH ALL THE NECESSARY DATA SUCH AS ELEVATIONS, HORIZONTAL LOCATIONS, ETC., AND PROVIDE THE ENGINEER WITH SKETCHES INDICATING THE PROPOSED IMPROVEMENT AND THE UTILITY CONFLICT. THE ENGINEER WILL EXAMINE AND REVIEW ALL THE DATA AND SKETCHES PROVIDED, AND WILL PROVIDE THE CONTRACTOR WITH AN ALTERNATIVE DESIGN WITHIN FIVE (5) DAYS AFTER RECEIPT OF DATA AND SKETCHES.
11. BEFORE ANY WORK IS STARTED IN THE RIGHT-OF-WAY, THE CONTRACTOR SHALL INSTALL ALL ADVANCE WARNING SIGNS FOR THE CONSTRUCTION ZONE. ALL CONSTRUCTION SIGNING, BARRICADING, AND TRAFFIC SHALL CONFORM TO THE "NEVADA TRAFFIC CONTROL MANUAL" - CURRENT EDITION AND TO THE "MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" - CURRENT EDITION AND BE APPROVED BY THE CITY OF HENDERSON BEFORE CONSTRUCTION BEGINS.
12. WORK IN PUBLIC STREETS, ONCE BEGUN, SHALL BE PROSECUTED TO COMPLETION WITHOUT DELAY SO AS TO PROVIDE MINIMUM INCONVENIENCE TO ADJACENT PROPERTY OWNERS AND TO THE TRAVELING PUBLIC.
13. THE CONTRACTOR SHALL TAKE REASONABLE MEASURES TO PROTECT EXISTING IMPROVEMENTS FROM DAMAGE AND ALL SUCH IMPROVEMENTS DAMAGED BY THE CONTRACTOR'S OPERATION SHALL BE REPAIRED OR RECONSTRUCTED TO THE ENGINEER'S SATISFACTION AT THE EXPENSE OF THE CONTRACTOR.
14. PROTECTION AND REPLACEMENT OF SURVEY MONUMENTS OR PROPERTY STAKES NOT DELINEATED ON THE CONTRACT DRAWINGS SHALL BE THE CONTRACTOR'S RESPONSIBILITY. REPLACEMENT OF SURVEY MONUMENTS OR PROPERTY STAKES SHALL BE DONE TO THE COH SURVEY SECTION'S SATISFACTION.
15. THE CONTRACTOR SHALL TAKE ALL NECESSARY AND PROPER PRECAUTIONS TO PROTECT ADJACENT PROPERTIES FROM ANY AND ALL DAMAGE THAT MAY OCCUR FROM STORM WATER RUNOFF AND/OR DEPOSITION OF DEBRIS RESULTING FROM ANY AND ALL WORK IN CONNECTION WITH PROJECT CONSTRUCTION.
16. ALL LENGTH OF STORM DRAIN AND SEWER PIPE IS MEASURED HORIZONTALLY FROM CENTER OF MANHOLE TO CENTER OF MANHOLE, UNLESS OTHERWISE NOTED.

BASIS OF BEARINGS

NORTH 00°27'36"EAST BETWEEN CLARK COUNTY G.I.S. MONUMENT 884 AND CLARK COUNTY G.I.S. MONUMENT 848. SAID BEARING IS BASED UPON THE NORTH AMERICAN DATUM OF 1983/94 PUBLISHED VALUES AS SHOWN BY THE CLARK COUNTY DEPARTMENT OF PUBIC WORKS SURVEY TITLED, LAS VEGAS VALLEY GEODETIC CONTROL NETWORK, RECORDED IN FILE 88, PAGE 53 OF SURVEYS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

PROJECT BENCHMARK

BENCH MARK: COH BM# 324

2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 - 585.031 METERS 1919.389 U.S. SURVEY FEET

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

GENERAL & CONSTRUCTION NOTES, LEGEND AND ABBREVIATIONS, BENCHMARK, BASIS OF BEARINGS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

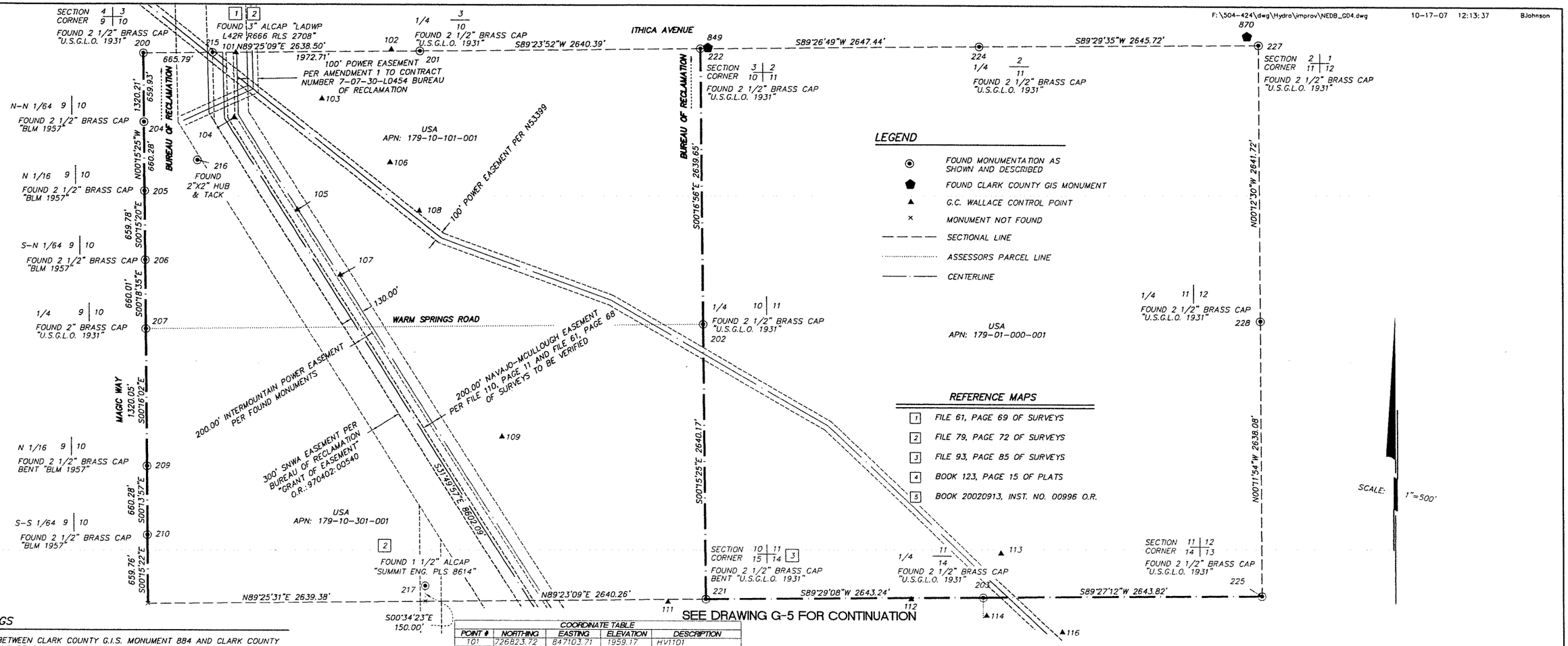
PROJECT No: 504.424 DRAWN BY: DVJ
DESIGNED BY: _____ CHECKED BY: _____
APPROVED BY _____

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. G-3
SHT. OF

F:\504-424\dwg\Hydro\improv\NEDB_G04.dwg 10-17-07 12:13:37 BJohnson



LEGEND

- FOUND MONUMENTATION AS SHOWN AND DESCRIBED
- FOUND CLARK COUNTY GIS MONUMENT
- G.C. WALLACE CONTROL POINT
- MONUMENT NOT FOUND
- SECTIONAL LINE
- ASSESSORS PARCEL LINE
- CENTERLINE

REFERENCE MAPS

1. FILE 61, PAGE 69 OF SURVEYS
2. FILE 79, PAGE 72 OF SURVEYS
3. FILE 93, PAGE 85 OF SURVEYS
4. BOOK 123, PAGE 15 OF PLATS
5. BOOK 20020913, INST. NO. 00996 O.R.

BASIS OF BEARINGS

NORTH 00°27'36"EAST BETWEEN CLARK COUNTY G.I.S. MONUMENT 884 AND CLARK COUNTY G.I.S. MONUMENT 848. SAID BEARING IS BASED UPON THE NORTH AMERICAN DATUM OF 1983/94 STATE PLANE COORDINATE PUBLISHED VALUES AS SHOWN BY THE CLARK COUNTY DEPARTMENT OF PUBIC WORKS SURVEY TITLED, LAS VEGAS VALLEY GEODETIC CONTROL NETWORK, RECORDED IN FILE 88, PAGE 53 OF SURVEYS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

849 PROJECT COORDINATES: NORTHING: 726880.59 EASTING: 856678.30 ELEVATION: 2199.27
STATE PLAVE COORDINATES: NORTHING: 8145119.521 EASTING: 259517.654
CONVERGENCE: 0°23'19.859" COMB. FACTOR: 0.999842854

870 PROJECT COORDINATES: NORTHING: 727005.22 EASTING: 856678.30 ELEVATION: 2360.62
STATE PLAVE COORDINATES: NORTHING: 8145157.519 EASTING: 261076.010
CONVERGENCE: 0°23'56.526" COMB. FACTOR: 0.999837449

SURVEYOR'S CERTIFICATE

I, DANNY E. HILL, A PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF NEVADA, CERTIFY THAT THIS MAP IS AN ACCURATE REPRESENTATION OF THE LANDS SURVEYED UNDER MY DIRECT SUPERVISION AT THE INSTANCE OF THE CITY OF HENDERSON, ALL MONUMENTS FOUND OR SET ARE CORRECTLY SHOWN, OCCUPY THE POSITIONS INDICATED AND ARE SUFFICIENT TO ENABLE THE RETRACEMENT OF THE SURVEY. THE LANDS SURVEYED LIE WITHIN SECTIONS 10, 11, 14, AND 15, ALL IN TOWNSHIP 22 SOUTH, RANGE 63 EAST, M.D.M., CLARK COUNTY, STATE OF NEVADA.

DANNY E. HILL
PROFESSIONAL LAND SURVEYOR
NEVADA LICENSE NO. 9389

COORDINATE TABLE

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
101	726823.72	847103.71	1959.17	HV1101
102	726855.83	848581.66	2063.32	HV1102
103	726381.89	847918.62	1995.14	HV1103
104	726199.19	847085.98	1974.88	HV1104
105	725319.48	847680.28	2007.87	HV1105
106	725772.17	848563.57	2021.32	HV1106
107	724896.16	848083.50	2033.28	HV1107
108	725308.41	848838.73	2057.55	HV1108
109	723146.10	849607.76	2108.54	HV1109
110	721061.15	850328.18	2153.40	HV1110
111	721563.40	851161.71	2224.23	HV1111
112	721594.57	853465.96	2308.03	HV1112
113	722038.27	854328.63	2323.47	HV1113
114	721441.36	854193.72	2317.71	HV1114
115	720711.44	854003.40	2389.77	HV1115
116	721284.09	854900.84	2341.55	HV1116
200	726817.71	846214.19	1942.38	SC4-3/9-10
201	726844.46	848852.55	2111.07	1/4 S3/10
202	724232.59	851505.80	2184.15	1/4S10-S11
203	721616.18	854160.77	2314.73	1/4S11/S14
204	726157.79	846217.15	1956.25	N-N1/64 S9-10
205	725497.52	846220.11	1966.26	N1/16 S9-10
206	724837.74	846223.05	1981.08	S-N 1/64 S9-10
207	724177.74	846226.62	1993.79	1/4 S9-10
209	722857.71	846232.77	2008.26	BASE OF PIPE
210	722197.44	846235.45	2017.49	SS1/64S9-S10
215	726824.46	846879.94	1960.09	3"ALCAP
216	725793.14	846728.89	1973.64	HUB&TACK
217	721714.14	848876.03	2100.23	1.5ALCAP
221	721592.45	851517.64	2270.78	BASE OF PIPE
222	726872.21	851492.79	2185.50	S 3-2/10-11
224	726897.76	854140.11	2320.04	1/4 S2/11
225	721641.40	856804.47	2705.70	S11-12/S14-13
227	726921.17	856785.72	2345.30	SC2-1/11-12
228	724279.47	856795.33	2590.28	1/4 S11-12

SOUTHERN NEVADA WATER AUTHORITY CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL SNWA/SNWS APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS AND CATHODIC PROTECTION SYSTEMS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. CATHODIC PROTECTION TEST STATIONS, RECTIFIERS, AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER SNWA STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY SOUTHERN NEVADA WATER AUTHORITY DEVELOPMENT PLAN REVIEW, AT (702) 862-3444 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
2. SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

SOUTHERN NEVADA WATER AUTHORITY DATE

GRAPHIC SCALE

500 0 250 500 1000 2000
(IN FEET)
1 inch = 500 ft.

BENCHMARK:

COH BM# 324 2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS
1919.389 U.S. SURVEY FEET

NOTE:

THIS FIELD SURVEY WAS PERFORMED TO ESTABLISH ALL INTERSECTIONS AND OTHER CONTROL POINTS FOR THE PROJECT IN ACCORDANCE WITH APPLICABLE STATE STATUTES AND LOCAL ORDINANCES.

SEE DRAWING G-5 FOR CONTINUATION

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

SURVEY CONTROL PLAN 1

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

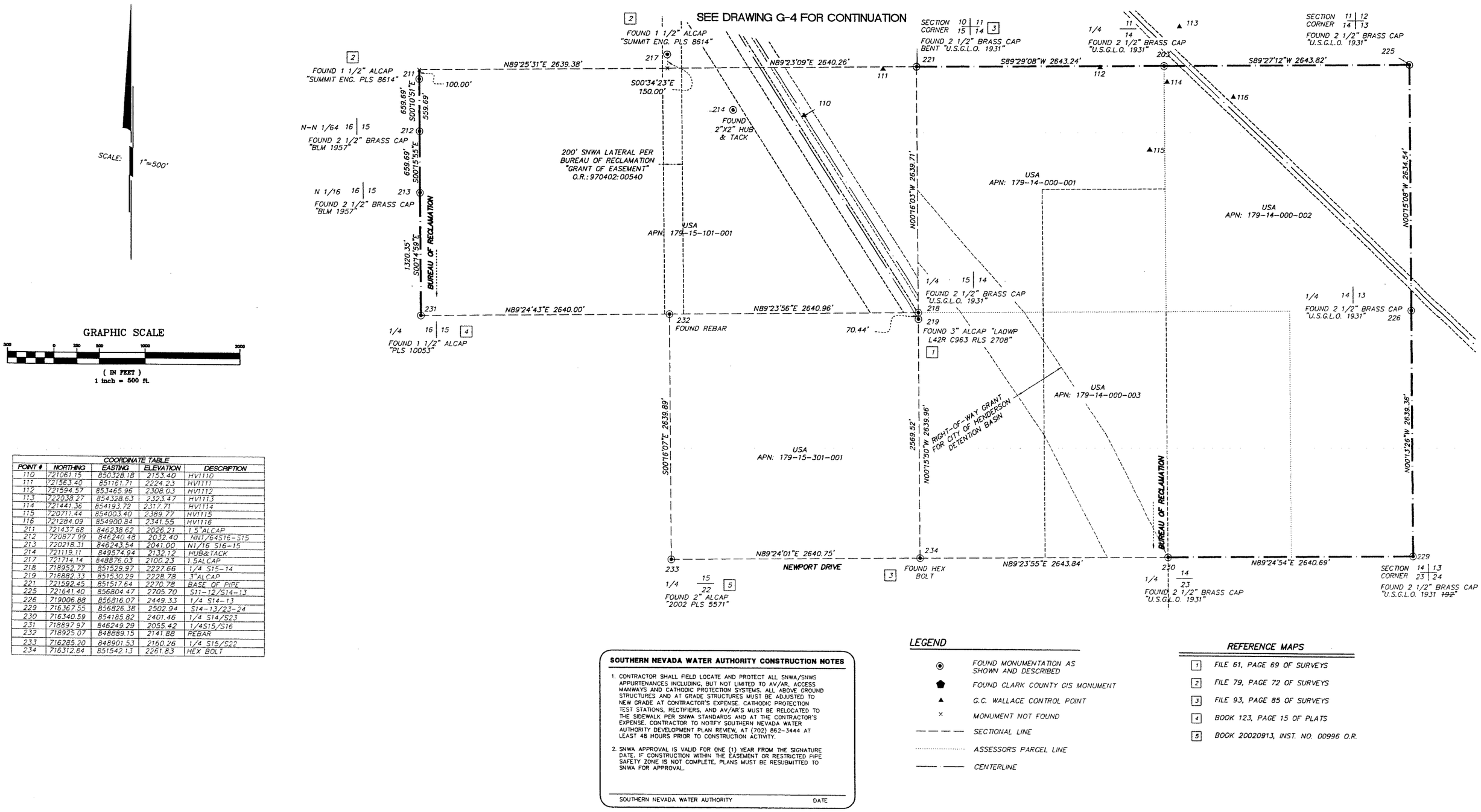
PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: KFO CHECKED BY: DEH
APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. L
G-4
SHT. OF

SCALE: 1"=500'



GRAPHIC SCALE

500 0 250 500 1000 2000

(IN FEET)
1 inch = 500 ft.

COORDINATE TABLE				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
110	721061.15	850328.18	2153.40	HV1110
111	721563.40	851761.71	2224.23	HV1111
112	721594.57	853465.96	2308.03	HV1112
113	722038.27	854328.63	2323.47	HV1113
114	721441.36	854193.72	2317.71	HV1114
115	720711.44	854003.40	2389.77	HV1115
116	721284.09	854900.84	2341.55	HV1116
211	721437.68	846238.62	2026.21	1.5"ALCAP
212	720877.99	846240.48	2032.40	NN1/64S16-S15
213	720218.31	846243.54	2041.00	N1/16 S16-15
214	721119.11	849574.94	2132.12	HUB&TACK
217	721714.14	848876.03	2100.23	1.5ALCAP
218	718952.77	851529.97	2227.66	1/4 S15-14
219	718882.33	851530.29	2228.78	3"ALCAP
221	721592.45	851517.64	2270.78	BASE OF PIPE
225	721641.40	856804.47	2705.70	S11-12/S14-13
226	719006.88	856816.07	2449.33	1/4 S14-13
229	716367.55	856826.38	2502.94	S14-13/23-24
230	716340.59	854185.82	2401.46	1/4 S14/S23
231	718897.97	846249.29	2055.42	1/4S15/S16
232	718925.07	848889.15	2141.88	REBAR
233	716285.20	848901.53	2160.26	1/4 S15/S22
234	716312.84	851542.13	2261.83	HEX BOLT

SOUTHERN NEVADA WATER AUTHORITY CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL SNWA/SNWS APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS AND CATHODIC PROTECTION SYSTEMS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. CATHODIC PROTECTION TEST STATIONS, RECTIFIERS, AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER SNWA STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY SOUTHERN NEVADA WATER AUTHORITY DEVELOPMENT PLAN REVIEW, AT (702) 862-3444 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
2. SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

SOUTHERN NEVADA WATER AUTHORITY DATE

LEGEND

- FOUND MONUMENTATION AS SHOWN AND DESCRIBED
- FOUND CLARK COUNTY GIS MONUMENT
- G.C. WALLACE CONTROL POINT
- × MONUMENT NOT FOUND
- SECTIONAL LINE
- ASSESSORS PARCEL LINE
- CENTERLINE

REFERENCE MAPS

1. FILE 61, PAGE 69 OF SURVEYS
2. FILE 79, PAGE 72 OF SURVEYS
3. FILE 93, PAGE 85 OF SURVEYS
4. BOOK 123, PAGE 15 OF PLATS
5. BOOK 20020913, INST. NO. 00996 O.R.

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

SURVEY CONTROL PLAN 2

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: KFO CHECKED BY: DEH
APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

L
DRAWING NO.
G-5
SHT. OF

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NORTH

300 0 300 600
SCALE FEET

COORDINATE TABLE			
No.	NORTHING	EASTING	DESCRIPTION
1	726872.2150	851492.7990	SEC. COR. 3/2/10/11
2	726844.4600	848852.5590	1/4 S3/10
3	726817.7190	846214.1922	SEC. COR. 4/3/9/10
4	726262.4686	848009.3187	CL-CHANNEL C1
5	726157.7940	846217.1760	N-N1/64 S9-10
6	726144.5922	848170.8896	CL-CHANNEL C1
7	726030.9351	848326.6770	CL-CHANNEL C1
8	725906.4752	848425.7254	CL-CHANNEL C1
9	725497.5240	846220.1000	N1/16 S9-10
10	724626.5830	848972.7164	CL-CHANNEL C1
11	724563.2117	849002.4644	CL-CHANNEL C1
12	724237.7550	849169.3849	CL-CHANNEL C1
13	724082.7765	849233.0931	CL-CHANNEL C1
14	723592.1957	849411.2272	CL-INFLOW
15	723532.6578	849406.9730	CL-CHANNEL C1
16	723409.6273	849465.3030	CL-CHANNEL C1
17	723355.2834	850002.2100	CL-INFLOW
18	723347.8382	849755.5115	CL-INFLOW
19	721616.1810	854160.7740	1/4S11/S14
20	721592.4540	851517.6420	SEC. COR. 10/11/15/14
21	721049.5727	851009.1844	CL-CHANNEL C1
22	720800.5350	851090.1525	CL-CHANNEL C1
23	720551.4973	851171.1205	CL-CHANNEL C1
24	720403.2690	851285.6225	CL-INFLOW
25	720380.0948	851669.3394	CL-OUTFALL
26	720358.2895	851376.7386	CL-INFLOW
27	718952.7750	851529.9720	1/4 S15-14
28	718888.5835	852258.9521	CL-CHANNEL C1
211	721434.8206	853898.6323	24' ROW CL
443	720418.8744	851646.2423	24' ROW CL

CURVE TABLE				
CURVE	DELTA	RADIUS	LENGTH	TANGENT
C1	30°44'47"	300.00	160.99	82.48
C2	4°00'43"	1000.00	70.02	35.02
C3	9°36'43"	1000.00	167.76	84.08
C4	15°39'04"	500.00	136.58	68.72
C5	30°21'43"	500.00	264.96	135.67
C6	30°21'43"	500.00	264.96	135.67
C7	74°11'17"	350.00	453.19	264.65
C8	61°04'13"	100.00	106.59	58.99

LINE TABLE		
LINE	LENGTH	BEARING
L1	392.84	S53°53'13"E
L2	1391.88	S23°08'26"E
L3	365.77	S27°09'09"E
L4	576.94	S17°32'26"E
L5	2820.18	S33°11'30"E
L6	1987.12	S33°11'30"E
L7	246.81	S88°16'17"W
L8	293.41	S85°44'17"W

NOTE: CONSTRUCTION ACCESS SHALL BE CONFINED TO RIGHT-OF-WAY LIMITS AS SHOWN

BASIS OF BEARINGS

NORTH 00°27'36""EAST BETWEEN CLARK COUNTY G.I.S. MONUMENT 884 AND CLARK COUNTY G.I.S. MONUMENT 848. SAID BEARING IS BASED UPON THE NORTH AMERICAN DATUM OF 1983/94 PUBLISHED VALUES AS SHOWN BY THE CLARK COUNTY DEPARTMENT OF PUBIC WORKS SURVEY TITLED, LAS VEGAS VALLEY GEODETIC CONTROL NETWORK, RECORDED IN FILE 88, PAGE 53 OF SURVEYS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

PROJECT BENCHMARK

BENCH MARK: COH BM# 324

2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS 1919.389 U.S. SURVEY FEET

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
HORIZONTAL CONTROL PLAN 1

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: 1"=300'
VERT: NONE
FIELD BOOK

DRAWING NO. G-6
SHT. OF

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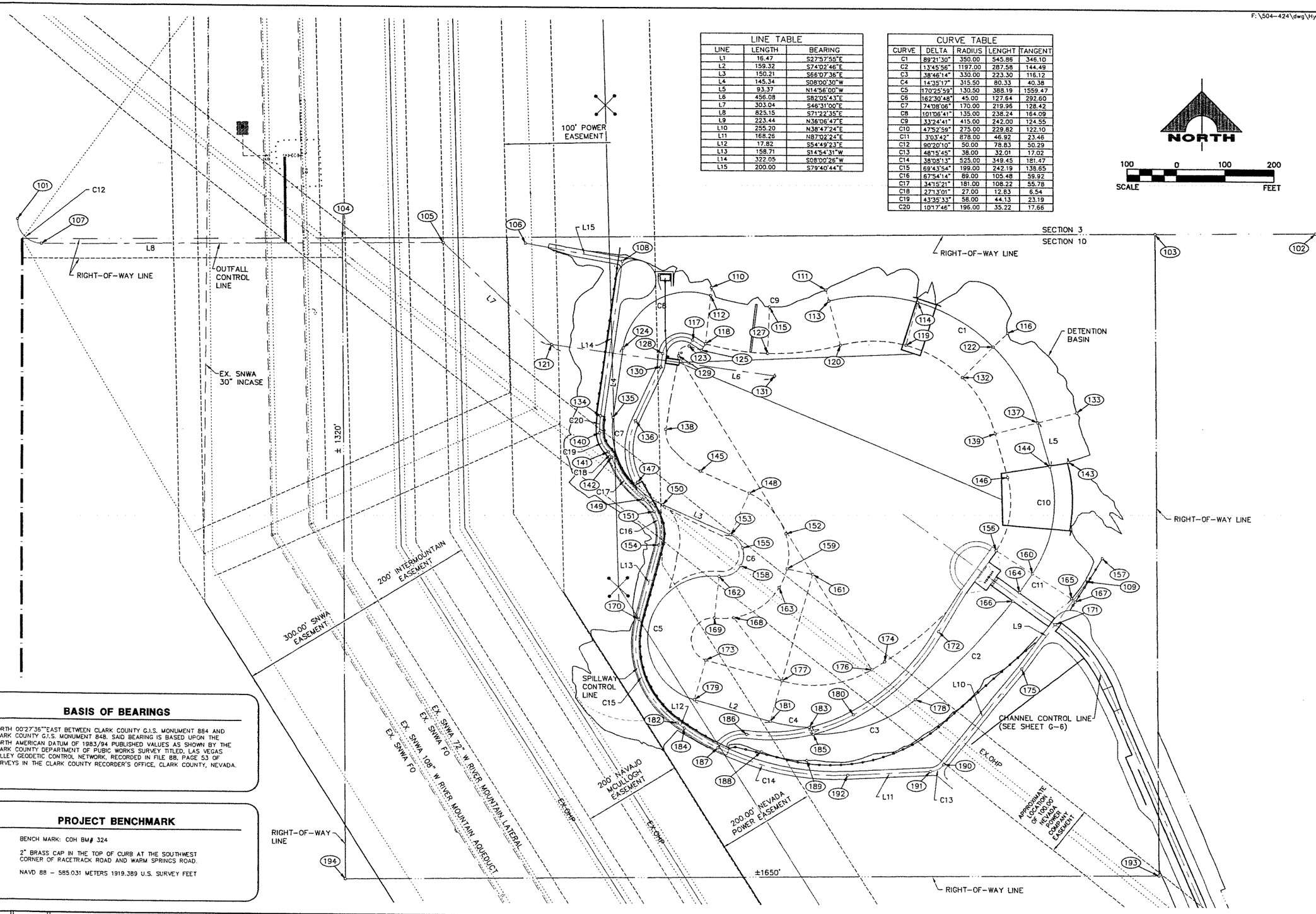


LINE TABLE		
LINE	LENGTH	BEARING
L1	16.47	S27°57'55"E
L2	159.32	S74°02'46"E
L3	150.21	S66°07'36"E
L4	145.34	S08°00'30"W
L5	93.37	N14°56'00"W
L6	456.08	S82°05'43"E
L7	303.04	S46°31'00"E
L8	825.15	S71°22'35"E
L9	223.44	N36°06'47"E
L10	255.20	N38°47'24"E
L11	168.28	N87°02'24"E
L12	17.82	S54°49'23"E
L13	158.71	S14°54'31"W
L14	322.05	S08°00'26"W
L15	200.00	S79°40'44"E

CURVE TABLE				
CURVE	DELTA	RADIUS	LENGHT	TANGENT
C1	89°21'30"	350.00	545.86	346.10
C2	13°45'56"	1197.00	287.58	144.49
C3	38°46'14"	330.00	223.30	116.12
C4	14°35'17"	315.50	80.33	40.38
C5	170°25'59"	130.50	388.19	1559.47
C6	162°30'48"	45.00	127.64	292.60
C7	74°08'06"	170.00	219.96	128.42
C8	101°06'41"	135.00	238.24	164.09
C9	33°24'41"	415.00	242.00	124.55
C10	47°52'59"	275.00	229.82	122.10
C11	3°03'42"	878.00	46.92	23.46
C12	90°20'10"	50.00	78.83	50.29
C13	48°15'45"	38.00	32.01	17.02
C14	38°08'13"	525.00	349.45	181.47
C15	69°43'54"	199.00	242.19	138.65
C16	67°54'14"	89.00	105.48	59.92
C17	34°15'21"	181.00	108.22	55.78
C18	27°13'01"	27.00	12.83	6.54
C19	43°35'33"	58.00	44.13	23.19
C20	10°17'46"	196.00	35.22	17.66

BASIS OF BEARINGS

NORTH 00°27'36""EAST BETWEEN CLARK COUNTY G.I.S. MONUMENT 884 AND CLARK COUNTY G.I.S. MONUMENT 848. SAID BEARING IS BASED UPON THE NORTH AMERICAN DATUM OF 1983/94 PUBLISHED VALUES AS SHOWN BY THE CLARK COUNTY DEPARTMENT OF PUBIC WORKS SURVEY TITLED, LAS VEGAS VALLEY GEODETIC CONTROL NETWORK, RECORDED IN FILE 88, PAGE 53 OF SURVEYS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

PROJECT BENCHMARK

BENCH MARK: COH BM# 324

2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS 1919.389 U.S. SURVEY FEET

COORDINATE TABLE			
No.	NORTHING	EASTING	DESCRIPTION
101	726857.9131	846204.0273	CL-OUTFALL
102	726844.4600	848852.5590	1/4 S3/10
103	726841.1334	848524.1105	BOUNDARY
104	726824.4088	846874.1689	BOUNDARY
105	726816.4747	847079.6433	CL-OUTFALL
106	726815.9647	847246.7231	ACCESS ROAD-CL
107	726808.1281	846254.5326	CL-OUTFALL
108	726780.1314	847443.4868	ACCESS ROAD-CL
109	726125.1286	848384.1243	ACCESS ROAD-CL
110	726727.0675	847624.2564	TOP
111	726723.0071	847855.0999	TOP
112	726710.3009	847622.5210	1985/PRC
113	726700.2512	847860.8968	1985/PRC
114	726698.3624	848040.7978	1985
115	726687.7762	847740.9711	1985
116	726635.9601	848224.8799	TOP
117	726618.3703	847585.9613	ACCESS ROAD-CL
118	726611.0067	847612.2433	TOE
119	726609.8730	848016.2665	TOE
120	726609.3473	847884.0535	TOE
121	726607.9380	847299.5242	CL-OUTFALL
122	726607.3549	848195.9931	1985
123	726606.1675	847578.5701	TOE
124	726601.5557	847444.6191	1985/PC
125	726597.5419	847603.6005	TOE
126	726597.5419	847603.6005	EG
127	726591.8813	847736.9282	TOE
128	726590.3219	847524.5591	ACCESS ROAD-CL
129	726585.8007	847557.1214	TOE
130	726562.4313	847520.8816	ACCESS ROAD-CL
131	726545.2146	847751.2658	CL-OUTFALL
132	726544.0105	848132.0250	TOE
133	726472.0580	848363.4007	TOP
134	726461.2235	847398.6259	ACCESS ROAD-CL/PC
135	726457.6372	847424.3715	1985/PT
136	726451.3230	847469.2523	ACCESS ROAD-CL
137	726451.2754	848285.4757	1985/PT
138	726433.8499	847530.2718	TOE
139	726428.4335	848139.8293	TOE
140	726426.0931	847396.8714	ACCESS ROAD-CL/PCC
141	726386.7712	847414.4487	ACCESS ROAD-CL
142	726376.0286	847421.2328	ACCESS ROAD-CL/PRC
143	726370.9011	848346.4564	TOP
144	726361.0611	848309.5358	1985/PC
145	726348.1210	847600.9004	TOE
146	726338.4171	848224.6276	TOE
147	726324.6902	847473.2100	ACCESS ROAD-CL
148	726303.3992	847699.1963	TOE
149	726289.5522	847483.5843	ACCESS ROAD-CL/PRC
150	726278.4984	847523.9119	1985/PC
151	726264.3112	847505.2570	ACCESS ROAD-CL
152	726220.0908	847773.2737	TOE
153	726217.7060	847661.2699	1985/PT
154	726195.5380	847515.8980	ACCESS ROAD-CL/PT
155	726190.8246	847685.7357	1985
156	726187.9889	848201.4094	TOE
157	726172.9314	848415.7526	FENCE
158	726154.0937	847682.0505	1985
159	726147.8724	847775.5090	TOE/GB
160	726140.6276	848274.5514	1985/PCC
161	726136.5882	847827.6155	GB
162	726131.8354	847638.0519	1985/PRC
163	726109.4618	847759.5278	TOE
164	726101.9814	848247.9864	1985
165	726089.7620	848352.9985	TOP
166	726084.3302	848234.8259	1985
167	726083.3629	848359.9944	FENCE
168	726046.8153	847667.3152	TOE/GB
169	726045.9586	847628.4392	TOE
170	726042.1724	847475.0658	ACCESS ROAD-CL/PC
171	726036.3026	848319.3199	ACCESS ROAD-CL
172	726020.1594	848082.4503	ACCESS ROAD-CL
173	725958.5746	847611.0782	TOE
174	725957.0046	847971.6198	TOE
175	725944.6228	848252.4336	ACCESS ROAD-CL
176	725940.5942	847945.5074	TOE/GB
177	725916.5891	847764.6321	TOE/GB
178	725879.0791	848034.3811	1985/PCC
179	725876.6718	847587.6654	1985/PC
180	725847.3053	847908.4151	ACCESS ROAD-CL
181	725832.8819	847740.8444	1985
182	725828.3157	847552.7225	ACCESS ROAD-CL/PT
183	725820.8196	847820.0441	1985
184	725818.0480	847567.2905	ACCESS ROAD-CL/PC
185	725806.2749	847827.7653	1985
186	725805.6325	847693.1355	ACCESS ROAD-CL
187	725777.6657	847634.8195	ACCESS ROAD-CL
188	725770.0988	847722.7400	TOP
189	725752.4231	847814.6035	TOP
190	725745.7047	848092.5571	ACCESS ROAD-CL/PT
191	725731.5607	848064.8921	ACCESS ROAD-CL/PC
192	725722.8716	847896.8554	ACCESS ROAD-CL/PT
193	725521.1256	848530.0297	BOUNDARY
194	725504.4010	846880.0881	BOUNDARY

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
HORIZONTAL CONTROL PLAN 2

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

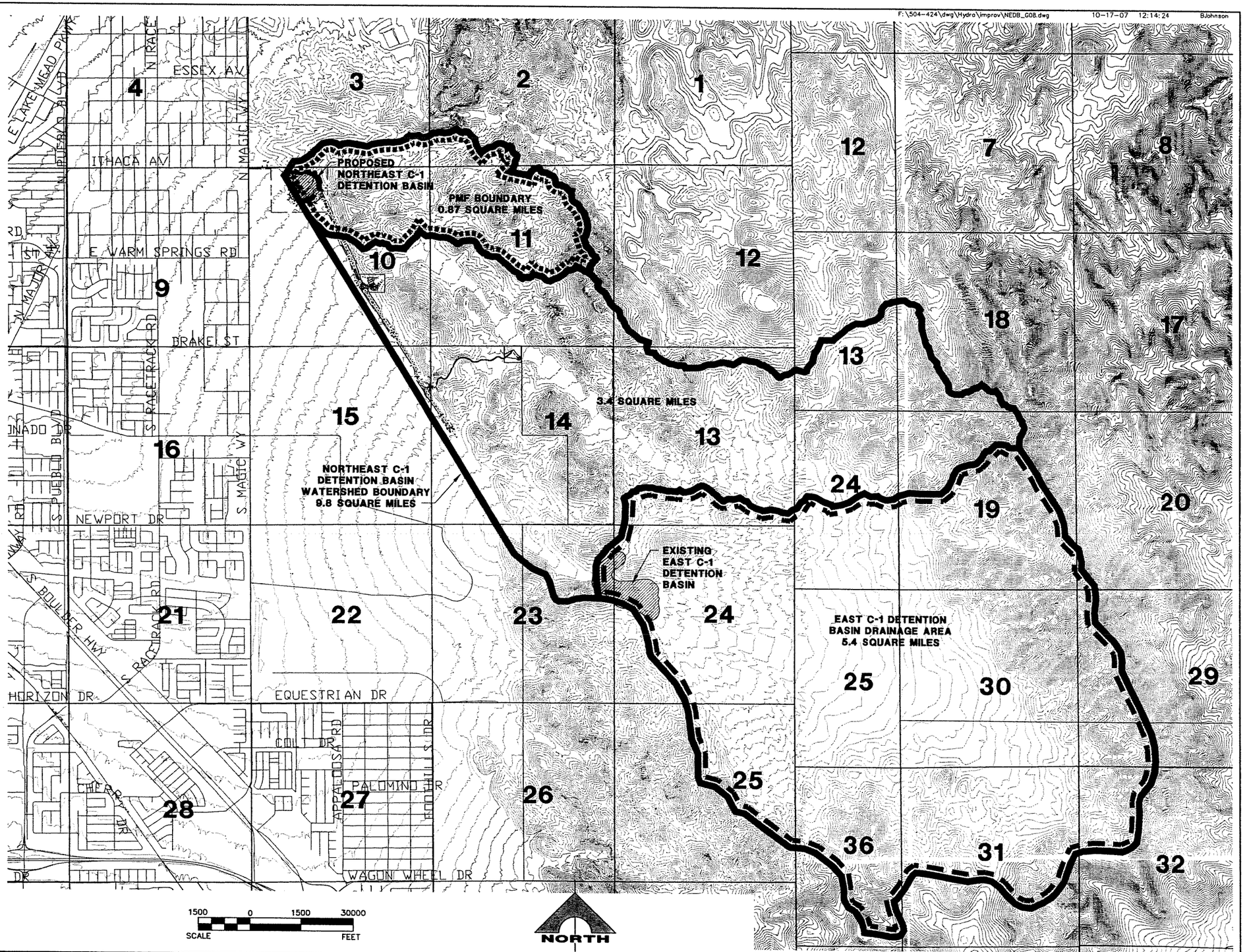
SCALE
HORIZ: 1" = 100'
VERT: NONE
FIELD BOOK

DRAWING NO.
G-7
SHT. OF

DETENTION BASIN CHARACTERISTICS

100-YEAR SUMMARY	
DESIGN CHARACTERISTIC	DESIGN PARAMETER
TRIBUTARY AREA	9.80 sq mi
PEAK INFLOW	2,211 cfs
PEAK OUTFLOW	204 cfs
ORIFICE DIAMETER	36 inches
OUTLET PIPE DIAMETER	72 inches
INVERT ELEVATION AT OUTLET	1952.00 ft
PEAK STAGE ELEVATION	1984.11 ft
OVERFLOW SPILLWAY ELEVATION	1986.00 ft
MAXIMUM WATER DEPTH AT PEAK STAGE	33.61 ft
CLEAR WATER PEAK STORAGE	321 ac ft
PEAK STORAGE WITH SEDIMENT	353 ac ft
TIME TO DRAIN	62.7 hrs

PMF SUMMARY	
DESIGN CHARACTERISTIC	DESIGN PARAMETER
TRIBUTARY AREA	9.80 sq mi
PEAK FLOW	11,660 cfs
SPILLWAY LENGTH	403 ft
SPILLWAY CREST ELEVATION	1986.00 ft
PEAK STAGE ELEVATION	1989.91 ft
PEAK CLEAR WATER STORAGE AT SPILLING CREST	408.4 ac ft
DISCHARGE COEFFICIENT	2.63
PMF PEAK STORAGE	412 ac ft
TOP OF EMBANKMENT	1991.00 ft



REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
WATERSHED BOUNDARY MAP

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

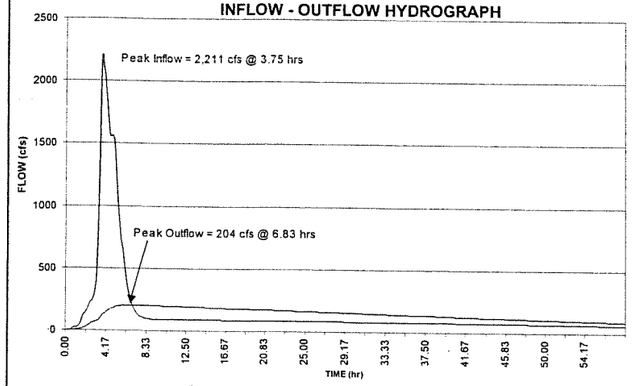
PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

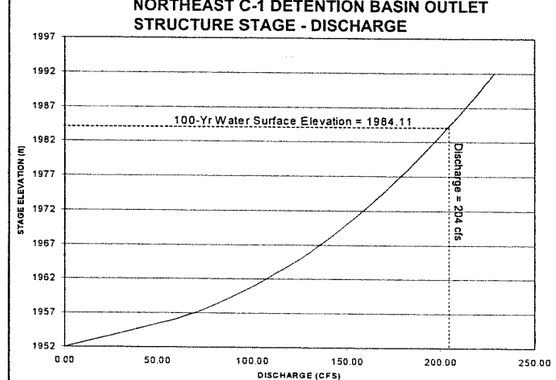
SCALE
HORIZ: 1" = 1500'
VERT. NONE
FIELD BOOK

DRAWING NO. G-8
SHT. OF

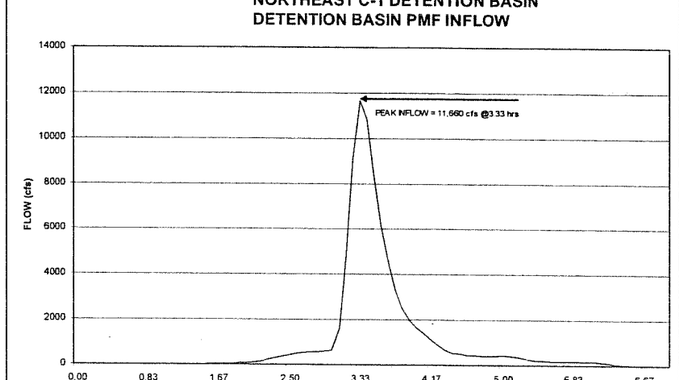
NORTHEAST C-1 DETENTION BASIN INFLOW - OUTFLOW HYDROGRAPH



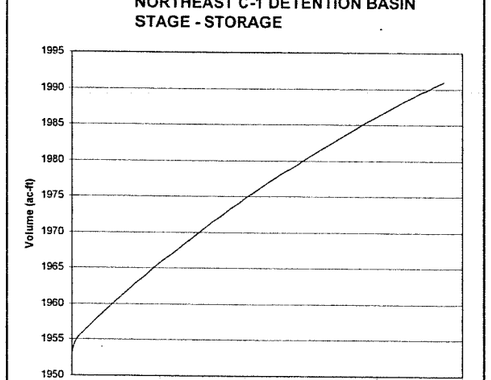
NORTHEAST C-1 DETENTION BASIN OUTLET STRUCTURE STAGE - DISCHARGE



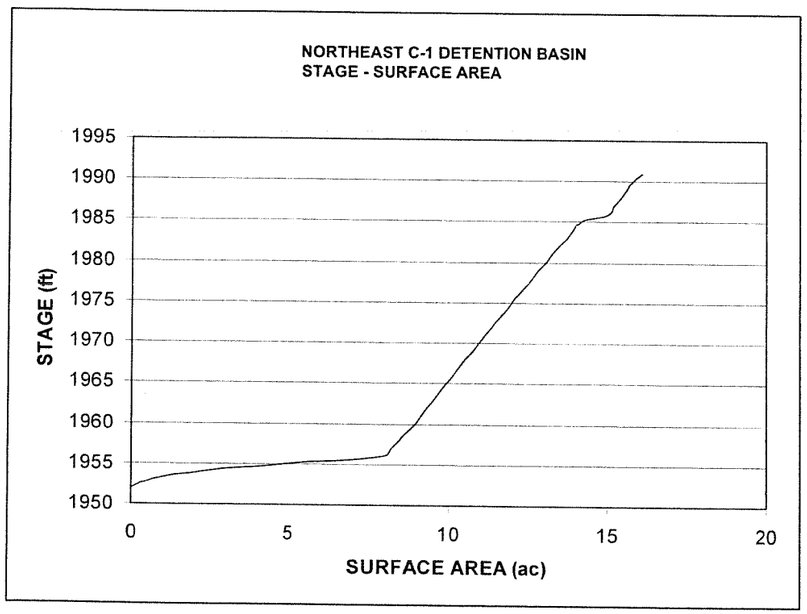
NORTHEAST C-1 DETENTION BASIN DETENTION BASIN PMF INFLOW



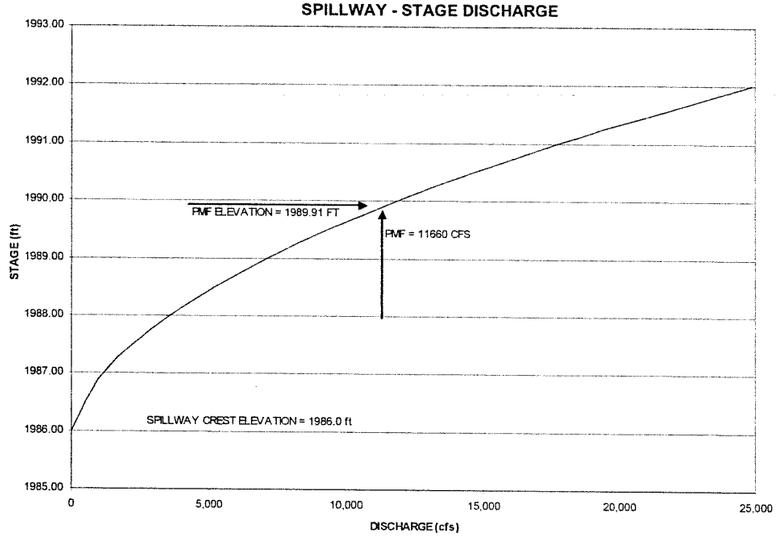
NORTHEAST C-1 DETENTION BASIN STAGE - STORAGE



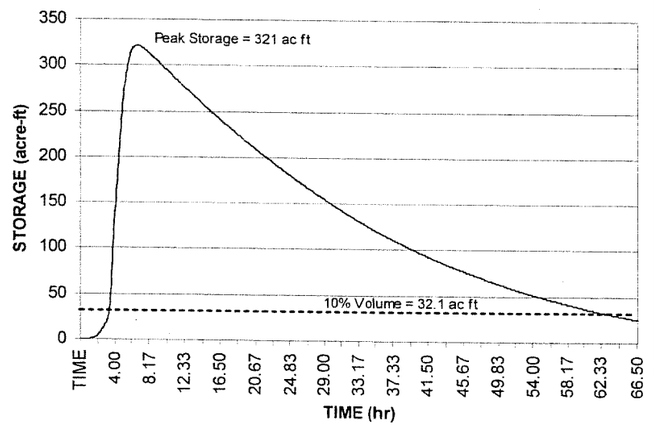
NORTHEAST C-1 DETENTION BASIN STAGE - SURFACE AREA



NORTHEAST C-1 DETENTION BASIN PMF SPILLWAY - STAGE DISCHARGE



NORTHEAST C-1 DETENTION BASIN DRAIN TIME



NOTE: GRAPHS REFLECT CLEAR WATER CONDITIONS

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

CAPACITY CURVES & HYDROLIGIC INFORMATION

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

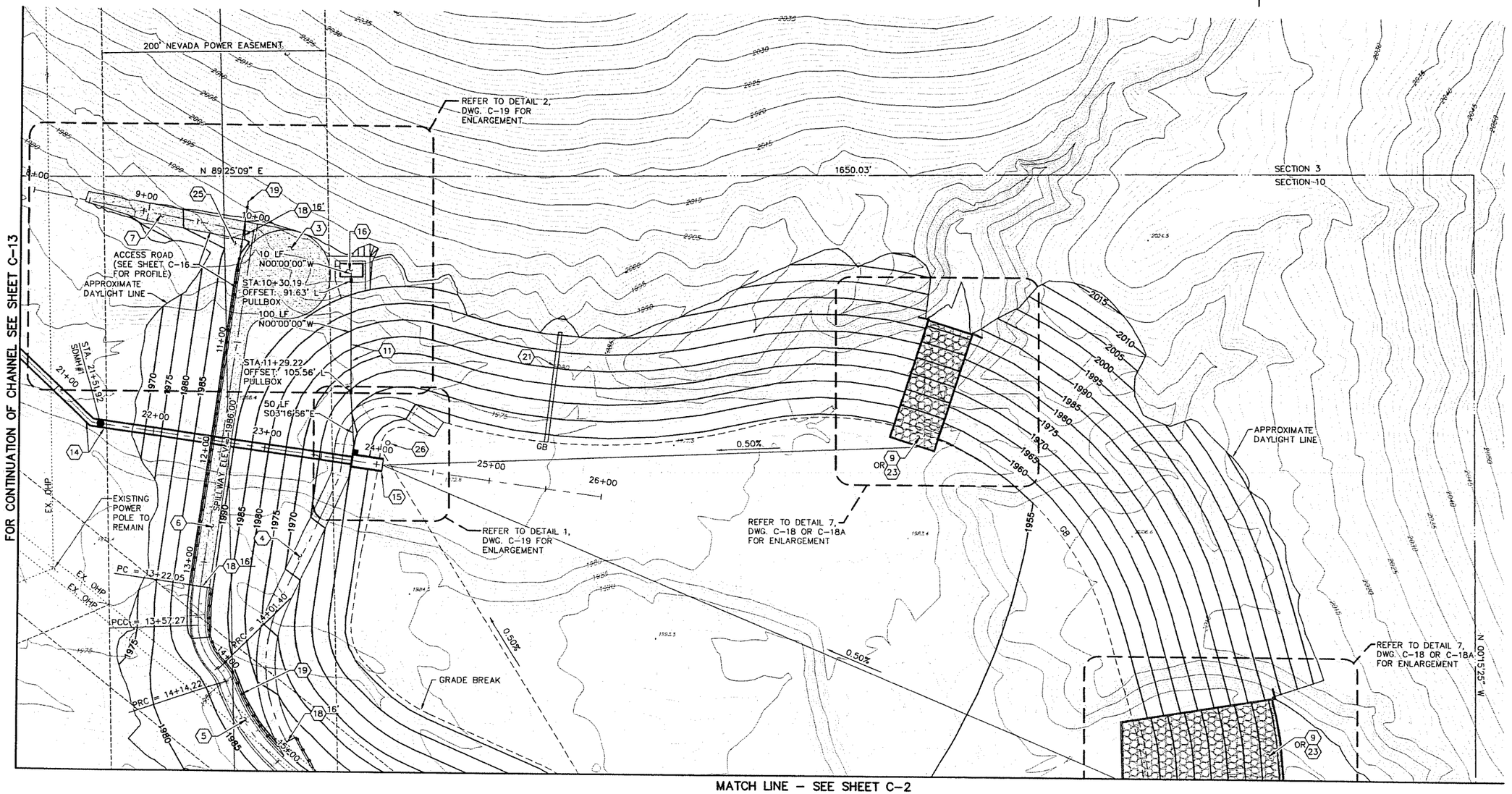
FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504-424 DRAWN BY: DVJ
DESIGNED BY: CHECKED BY:
APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

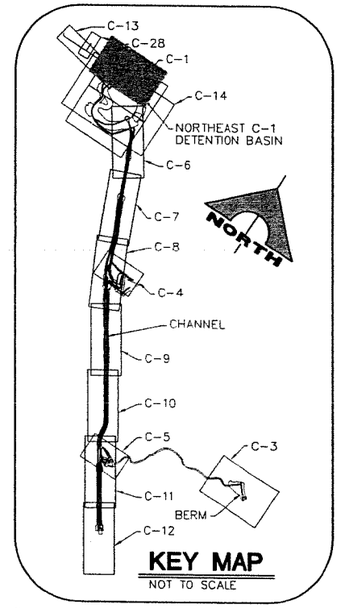
DRAWING NO. G-9
SHT. OF



MATCH LINE – SEE SHEET C-2

CONSTRUCTION NOTES

(3) CONSTRUCT TYPE II AGGREGATE BASE. (SIMILAR TO 7/C-21)
(4) CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
(5) CONSTRUCT PORTLAND CEMENT CONCRETE SPILLWAY WEIR. (SEE DETAIL 4/S-10)
(6) CONSTRUCT 15' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 7/C-21)
(7) CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
(9) CONSTRUCT RIPRAP PER PLAN. SEE SHEET C-18.
(11) INSTALL CONDUIT AND PULL BOX. (SEE DETAIL 3/C-22)
(14) INSTALL OUTLET PIPE. (SEE C-13)
(15) CONSTRUCT OUTLET STRUCTURE. (SEE DETAIL 1/S-10)
(16) CONSTRUCT MONITORING STATION. (SEE DETAIL 1/C-22)
(18) INSTALL BLOCK AND CHAIN GATE (WIDTH PER PLAN, SEE DETAIL 7/C-25)
(19) INSTALL BLOCK AND CHAIN FENCE. (SEE DETAIL 7/C-25)
(21) CONSTRUCT DEPTH GAUGE. (SEE DETAIL 6/C-25)
(25) INSTALL SIGN POST AND WARNING SIGN. (SEE DETAIL 8/C-25)
(23) CONSTRUCT RCC STEPS PER PLAN. (SEE DETAIL 4/S-3)
(26) CONSTRUCT SEDIMENT GAUGE. (SEE DETAIL 5/C-22)



KEY MAP
NOT TO SCALE

DISCLAIMER NOTE

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Call before you Dig.
1-800-227-2600
UNDERGROUND SERVICE (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.
CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

BASIS OF BEARINGS

NORTH 00°27'36"EAST BETWEEN CLARK COUNTY G.I.S. MONUMENT 884 AND CLARK COUNTY G.I.S. MONUMENT 848. SAID BEARING IS BASED UPON THE NORTH AMERICAN DATUM OF 1983/94 PUBLISHED VALUES AS SHOWN BY THE CLARK COUNTY DEPARTMENT OF PUBIC WORKS SURVEY TITLED, LAS VEGAS VALLEY GEODETIC CONTROL NETWORK, RECORDED IN FILE 88, PAGE 53 OF SURVEYS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

PROJECT BENCHMARK

BENCH MARK: COH BM# 324

2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS 1919.389 U.S. SURVEY FEET

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

DETENTION BASIN GRADING PLAN

NORTH HALF

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

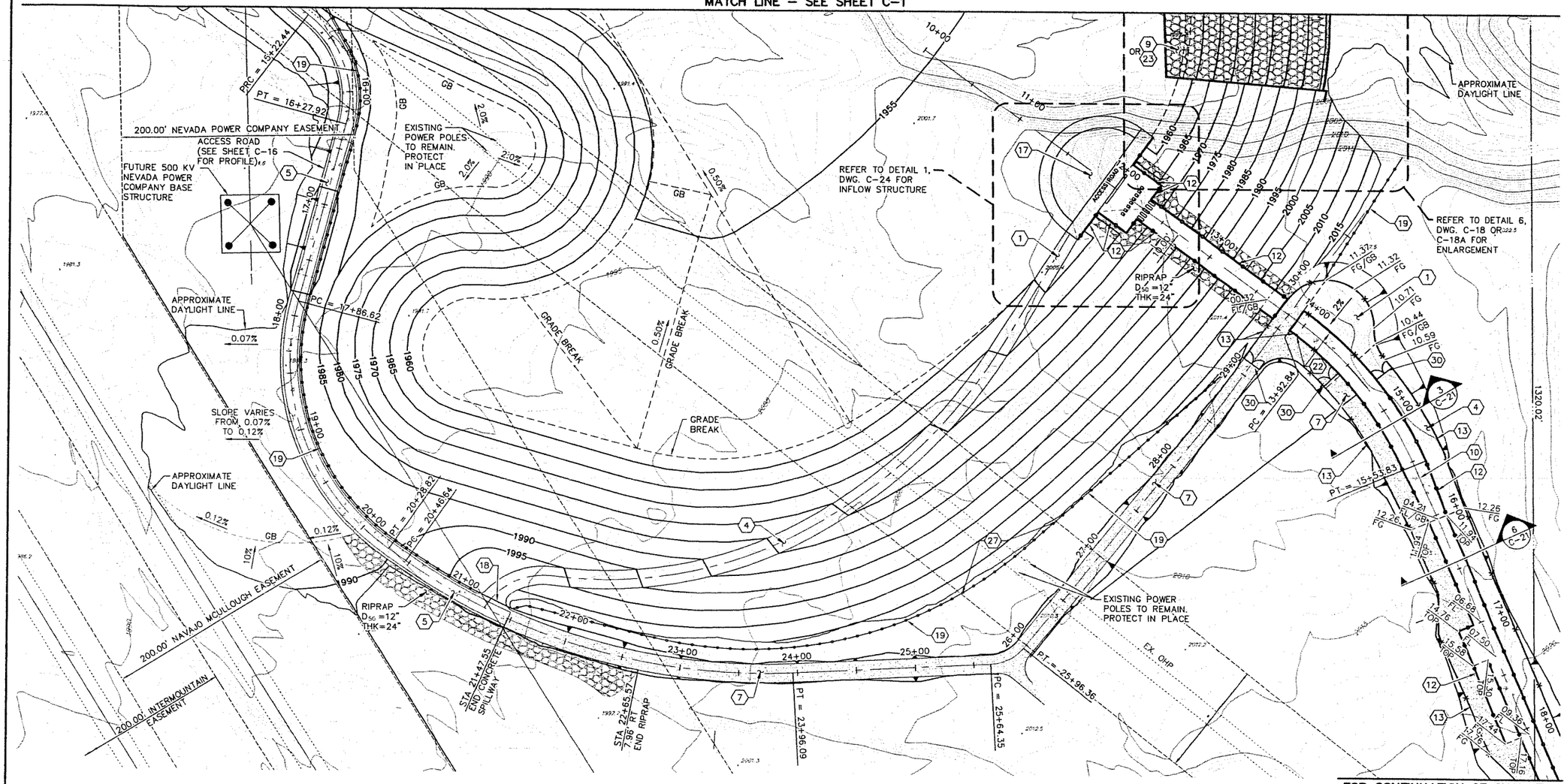
SCALE
HORIZ: 1" = 50'
VERT: NONE
FIELD BOOK

DRAWING NO. C-1
SHT. OF

NORTH

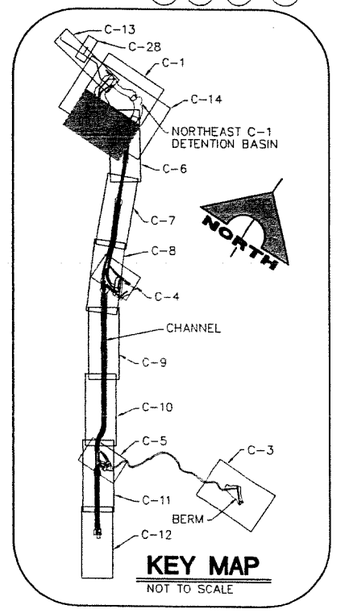
SCALE 50 0 50 100 FEET

MATCH LINE – SEE SHEET C-1



CONSTRUCTION NOTES

1. CONSTRUCT ROLLER COMPACTED CONCRETE PAVEMENT. WIDTH VARIES, (SIMILAR TO 8/C-21)
4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-27)
5. CONSTRUCT PORTLAND CEMENT CONCRETE SPILLWAY WEIR. (SEE DETAIL 4/S-19)
7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-27)
9. CONSTRUCT RIPRAP PER PLAN. SEE SHEET C-18.
10. CONSTRUCT CONCRETE CHANNEL.
12. INSTALL POST AND CABLE RAILING. (SEE DETAIL 5/C-25)
13. INSTALL CHAIN-LINK FENCE. (SEE DETAIL 1/C-25)
17. CONSTRUCT INFLOW STRUCTURE.(SEE DETAIL 1/C-24)
18. INSTALL BLOCK AND CHAIN GATE. (WIDTH PER PLAN, SEE DETAIL 7/C-25)
19. INSTALL BLOCK AND CHAIN FENCE. (SEE DETAIL 7/C-25)
20. INSTALL 16' CHAIN-LINK GATE WITH SIGNS. (SEE DETAILS 2/C-25, 3/C-25 & 4/C-25)
22. INSTALL CHANNEL ACCESS STEPS. (SEE DETAIL 4/S-3)
23. CONSTRUCT RCC STEPS PER PLAN. (SEE DETAIL 4/S-3)
27. INSTALL 100 LF OF 1'x3' CLSM CUT-OFF WALL IN NEVADA POWER EASEMENT. (SEE DETAIL 6/C-27)
30. INSTALL 16' CHAIN-LINK GATE WITH SIGNS. (SEE DETAILS 2/C-25, 3/C-25, 4/C-25 & 5/C-27)



KEY MAP
NOT TO SCALE

DISCLAIMER NOTE

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Avoid cutting underground utility lines. It's costly. Call before you Dig. 1-800-227-2600 UNDERGROUND SERVICE (USA)

AVOID HITTING OVERHEAD POWER LINES IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD 1-702-227-2929

NOTE:

U-LOCKS WILL BE INSTALLED WITH ALL GATES AT THE NEVADA POWER EASEMENT ACCESS. THE CONTRACTOR SHALL COORDINATE WITH NEVADA POWER, MARK ELINGBOE AT 252-4808, FOR ACCESS TO THE NEVADA POWER EASEMENT.

BASIS OF BEARINGS

NORTH 00°27'36"EAST BETWEEN CLARK COUNTY G.I.S. MONUMENT 884 AND CLARK COUNTY G.I.S. MONUMENT 848. SAID BEARING IS BASED UPON THE NORTH AMERICAN DATUM OF 1983/94 PUBLISHED VALUES AS SHOWN BY THE CLARK COUNTY DEPARTMENT OF PUBIC WORKS SURVEY TITLED, LAS VEGAS VALLEY GEODETIC CONTROL NETWORK, RECORDED IN FILE 88, PAGE 53 OF SURVEYS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

PROJECT BENCHMARK

BENCH MARK: COH BM# 324

2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS 1919.389 U.S. SURVEY FEET

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

DETENTION BASIN GRADING PLAN

SOUTH HALF

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

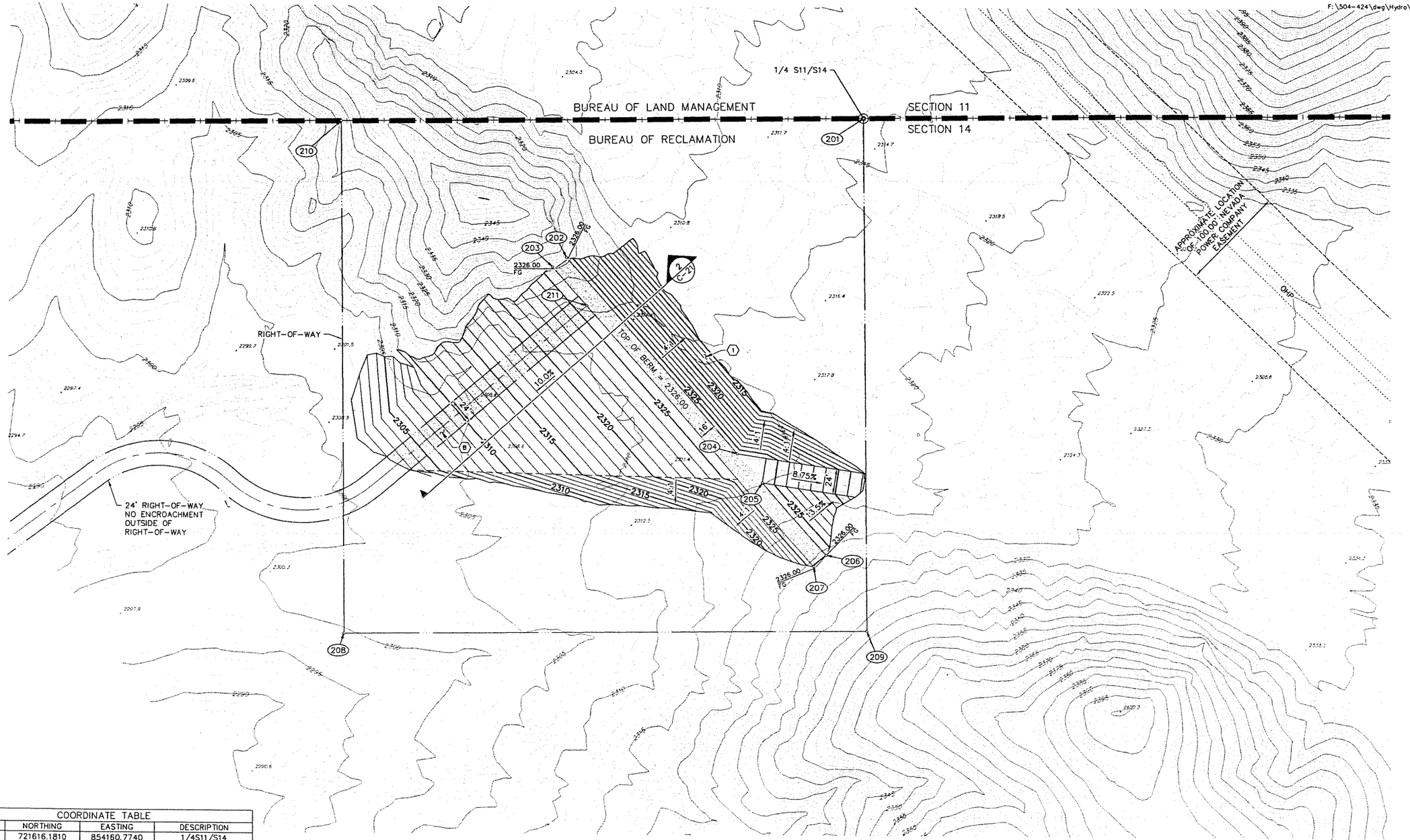
PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

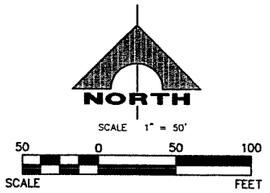
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: 1" = 50'
VERT: NONE
FIELD BOOK

DRAWING NO. C-2
SHT. OF

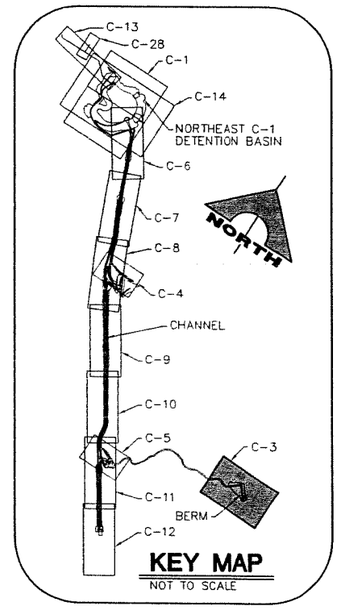
F:\504-424\dwg\Hydro\improv\NEDB_C03.dwg 10-17-07 12:15:27 BJohnson





CONSTRUCTION NOTES

1. CONSTRUCT ROLLER COMPACTED CONCRETE PAVEMENT. WIDTH VARIES, (SIMILAR TO 8/C-21)
8. CONSTRUCT 24' WIDE TYPE II ACCESS ROAD. (SIMILAR TO 7/C-21)



COORDINATE TABLE			
No.	NORTHING	EASTING	DESCRIPTION
201	721616.1810	854160.7740	1/4S11/S14
202	721481.3942	853879.7410	BERM
203	721472.0959	853866.6376	BERM
204	721292.2135	854041.9261	BERM
205	721264.1993	854065.9428	BERM
206	721194.5816	854125.6262	BERM
207	721183.5312	854114.0248	BERM
208	721116.7388	853668.1402	BOUNDARY
209	721121.1822	854163.1247	BOUNDARY
210	721611.7376	853665.7895	BOUNDARY
211	721434.8206	853898.6323	24' ROW CL

BASIS OF BEARINGS

NORTH 00°27'36"EAST BETWEEN CLARK COUNTY G.I.S. MONUMENT 884 AND CLARK COUNTY G.I.S. MONUMENT 848. SAID BEARING IS BASED UPON THE NORTH AMERICAN DATUM OF 1983/94 PUBLISHED VALUES AS SHOWN BY THE CLARK COUNTY DEPARTMENT OF PUBIC WORKS SURVEY TITLED, LAS VEGAS VALLEY GEODETIC CONTROL NETWORK, RECORDED IN FILE 88, PAGE 53 OF SURVEYS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

PROJECT BENCHMARK

BENCH MARK: COH BM# 324

2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 = 585.031 METERS 1919.389 U.S. SURVEY FEET

DISCLAIMER NOTE

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AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD 1-702-227-2929

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
BERM GRADING PLAN

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

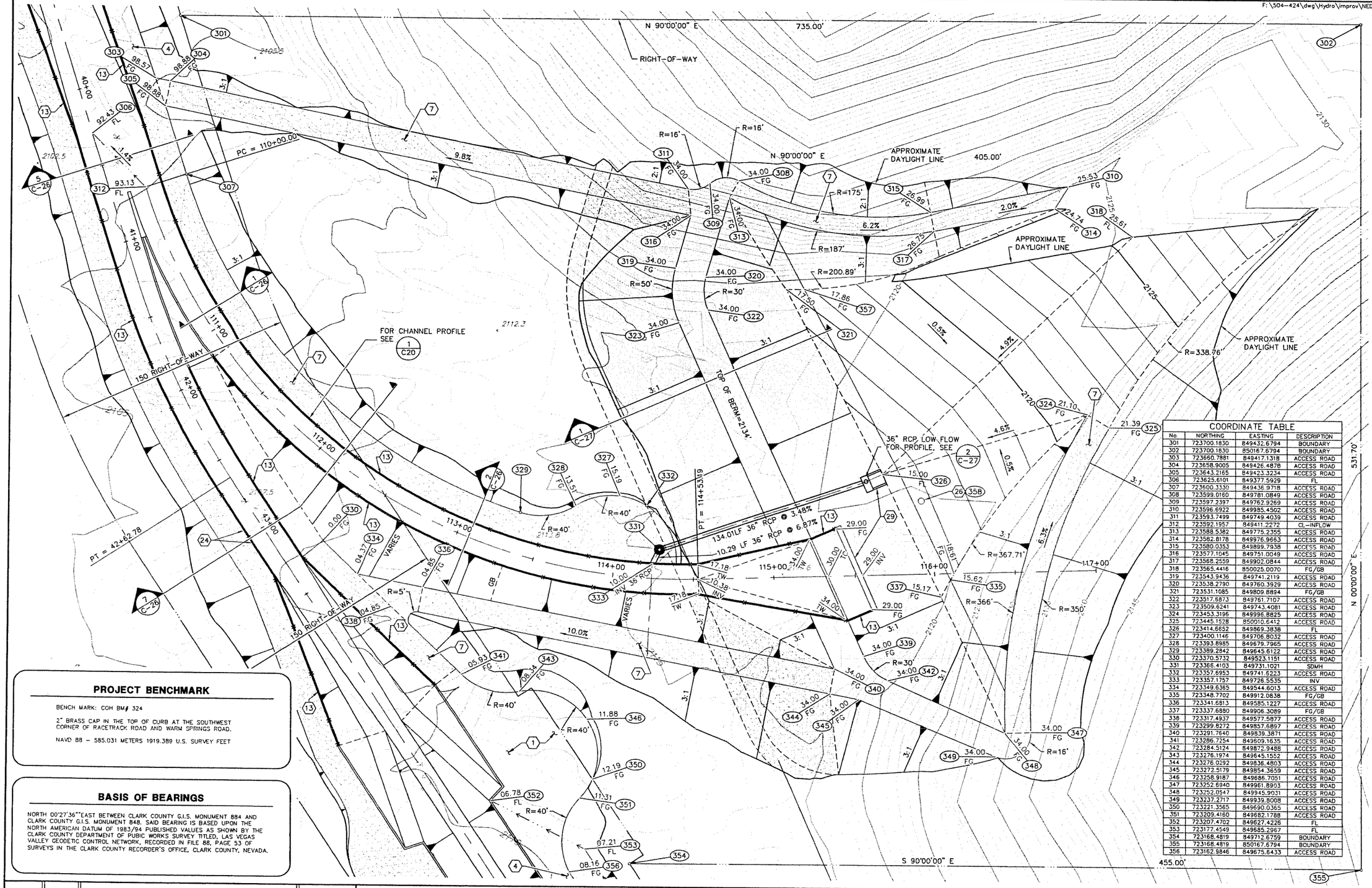
FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: 1"=50'
VERT: NONE
FIELD BOOK

DRAWING NO. C-3
SHT. OF



PROJECT BENCHMARK

BENCH MARK: COH BM# 324

2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 – 585.031 METERS 1919.389 U.S. SURVEY FEET

BASIS OF BEARINGS

NORTH 00°27'36"EAST BETWEEN CLARK COUNTY G.I.S. MONUMENT 884 AND CLARK COUNTY G.I.S. MONUMENT 848. SAID BEARING IS BASED UPON THE NORTH AMERICAN DATUM OF 1983/94 PUBLISHED VALUES AS SHOWN BY THE CLARK COUNTY DEPARTMENT OF PUBIC WORKS SURVEY TITLED, LAS VEGAS VALLEY GEODETIC CONTROL NETWORK, RECORDED IN FILE 88, PAGE 53 OF SURVEYS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

NORTH

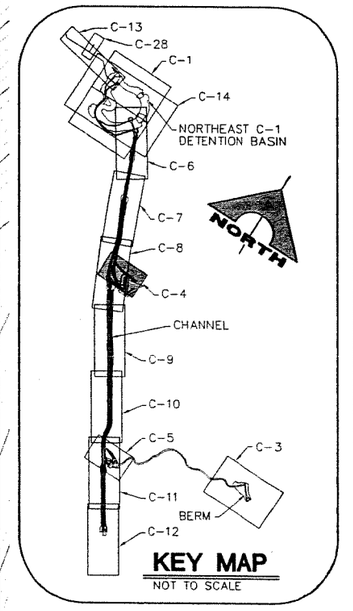
SCALE 30 0 30 60 FEET

CONSTRUCTION NOTES

1. CONSTRUCT ROLLER COMPACTED CONCRETE PAVEMENT. WIDTH VARIES. (SIMILAR TO 8/C-21)
4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
13. INSTALL CHAIN-LINK FENCE. (SEE DETAIL 1/C-25)
24. INSTALL CHANNEL IDENTIFIER AND WARNING SIGNS ON CHAIN-LINK FENCE, (SEE DETAILS 3/C-25 & 4/C-25)
26. CONSTRUCT SEDIMENT GAUGE. (SEE DETAIL 5/C-22)
29. INSTALL EXPANSION JOINT BETWEEN ROLLER COMPACTED CONCRETE AND REINFORCED CONCRETE, TYPICAL. (SEE DETAIL 6/S-17)

COORDINATE TABLE

No.	NORTHING	EASTING	DESCRIPTION
301	723700.1830	849432.6794	BOUNDARY
302	723700.1830	850167.6794	BOUNDARY
303	723660.7881	849417.1318	ACCESS ROAD
304	723658.9005	849426.4878	ACCESS ROAD
305	723643.2165	849423.3234	ACCESS ROAD
306	723625.6101	849377.5929	FL
307	723600.3330	849436.9718	ACCESS ROAD
308	723599.0160	849781.0849	ACCESS ROAD
309	723597.2397	849762.9269	ACCESS ROAD
310	723596.6922	849985.4502	ACCESS ROAD
311	723593.7499	849749.4039	ACCESS ROAD
312	723592.1957	849411.2272	CL-INFLOW
313	723588.5382	849775.2355	ACCESS ROAD
314	723562.8178	849976.9663	ACCESS ROAD
315	723580.0353	849899.7938	ACCESS ROAD
316	723577.1045	849751.0049	ACCESS ROAD
317	723568.2559	849902.0844	ACCESS ROAD
318	723565.4416	850025.0070	FG/GB
319	723543.9436	849741.2119	ACCESS ROAD
320	723538.2790	849760.3929	ACCESS ROAD
321	723531.1085	849809.8894	FG/GB
322	723517.5873	849761.7107	ACCESS ROAD
323	723509.6241	849743.4081	ACCESS ROAD
324	723453.3196	849996.8825	ACCESS ROAD
325	723445.1528	850010.6412	ACCESS ROAD
326	723414.6652	849869.3838	FL
327	723400.1145	849706.8032	ACCESS ROAD
328	723393.8985	849679.7965	ACCESS ROAD
329	723389.2842	849645.6122	ACCESS ROAD
330	723370.5732	849523.1151	ACCESS ROAD
331	723366.4103	849731.1021	SDMH
332	723357.6953	849741.5223	ACCESS ROAD
333	723357.1757	849726.5535	INV
334	723349.6365	849544.6013	ACCESS ROAD
335	723348.7702	849912.0838	FG/GB
336	723341.6813	849585.1227	ACCESS ROAD
337	723337.6880	849906.3089	FG/GB
338	723317.4937	849577.5877	ACCESS ROAD
339	723299.8272	849857.6897	ACCESS ROAD
340	723291.7640	849939.3871	ACCESS ROAD
341	723286.7254	849609.1635	ACCESS ROAD
342	723284.5124	849872.9488	ACCESS ROAD
343	723276.1974	849645.1552	ACCESS ROAD
344	723276.0292	849836.4803	ACCESS ROAD
345	723272.5179	849854.3659	ACCESS ROAD
346	723258.9187	849686.7051	ACCESS ROAD
347	723252.6940	849961.8903	ACCESS ROAD
348	723252.0547	849945.9031	ACCESS ROAD
349	723237.2717	849939.8008	ACCESS ROAD
350	723221.3565	849690.0365	ACCESS ROAD
351	723209.4160	849682.1788	ACCESS ROAD
352	723207.4702	849627.4226	FL
353	723177.4549	849685.2967	FL
354	723168.4819	849712.6759	BOUNDARY
355	723168.4819	850167.6794	BOUNDARY
356	723162.9846	849675.6433	ACCESS ROAD



KEY MAP
NOT TO SCALE

DISCLAIMER NOTE

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1-702-227-2929

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
GRADING ENLARGEMENT

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

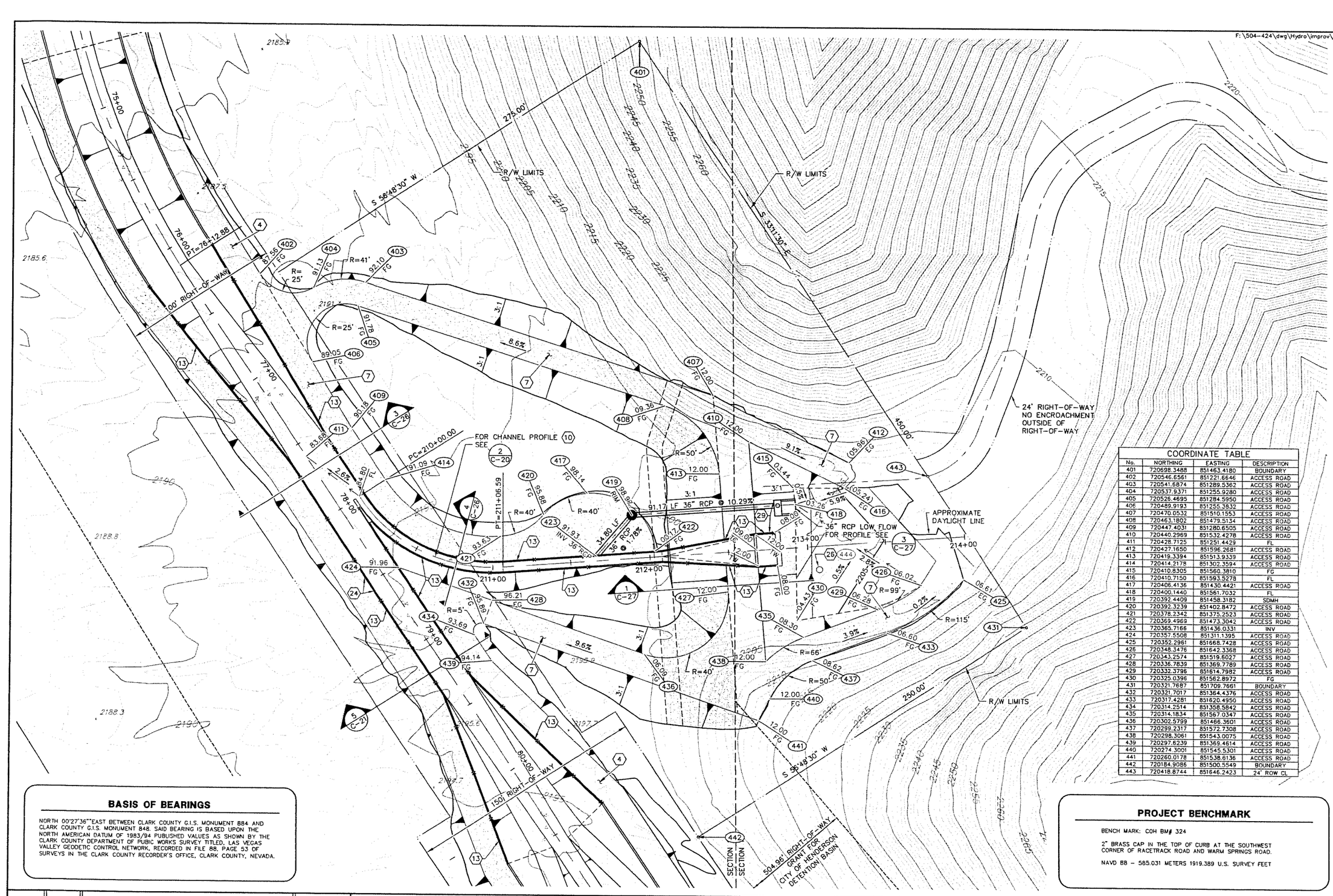
PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: 1" = 30'
VERT: NONE
FIELD BOOK

DRAWING NO. C-4
SHT. OF

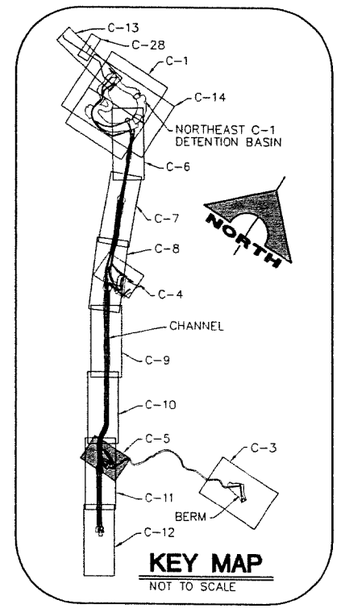
F:\504-424\dwg\Hydro\improv\NEDB_C05.dwg 10-17-07 12:15:52 BJohnson



CONSTRUCTION NOTES

4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
10. CONSTRUCT CONCRETE CHANNEL.
13. INSTALL CHAIN-LINK FENCE. (SEE DETAIL 1/C-25)
24. INSTALL CHANNEL IDENTIFIER AND WARNING SIGNS ON CHAIN-LINK FENCE, (SEE DETAILS 3/C-25 & 4/C-25)
26. CONSTRUCT SEDIMENT GAUGE. (SEE DETAIL 5/C-22)
29. INSTALL EXPANSION JOINT BETWEEN ROLLER COMPACTED CONCRETE AND REINFORCED CONCRETE, TYPICAL. (SEE DETAIL 6/S-1)

COORDINATE TABLE			
No.	NORTHING	EASTING	DESCRIPTION
401	720698.3488	851463.4180	BOUNDARY
402	720546.6561	851221.6646	ACCESS ROAD
403	720541.6874	851289.5362	ACCESS ROAD
404	720537.9371	851255.9280	ACCESS ROAD
405	720526.4695	851284.5950	ACCESS ROAD
406	720489.9193	851255.3832	ACCESS ROAD
407	720470.0532	851510.1553	ACCESS ROAD
408	720463.1802	851479.5134	ACCESS ROAD
409	720447.4031	851280.6505	ACCESS ROAD
410	720440.2969	851532.4278	ACCESS ROAD
411	720428.7125	851251.4429	FL
412	720427.1650	851596.2681	ACCESS ROAD
413	720419.3394	851513.9339	ACCESS ROAD
414	720414.2178	851302.3594	ACCESS ROAD
415	720410.8305	851560.3810	FG
416	720410.7150	851593.5278	FL
417	720406.4136	851430.4421	ACCESS ROAD
418	720400.1440	851561.7032	FL
419	720392.4409	851458.3182	SDMH
420	720392.3239	851402.8472	ACCESS ROAD
421	720378.2342	851375.2523	ACCESS ROAD
422	720369.4969	851473.3042	ACCESS ROAD
423	720365.7166	851436.0331	INV
424	720357.5508	851311.1395	ACCESS ROAD
425	720352.2961	851668.7428	ACCESS ROAD
426	720348.3476	851642.3368	ACCESS ROAD
427	720343.2574	851519.6027	ACCESS ROAD
428	720336.7839	851369.7789	ACCESS ROAD
429	720332.3796	851614.7982	ACCESS ROAD
430	720325.0396	851562.8972	FG
431	720321.7687	851709.7661	BOUNDARY
432	720321.7017	851364.4376	ACCESS ROAD
433	720317.4281	851620.4950	ACCESS ROAD
434	720314.2514	851358.5842	ACCESS ROAD
435	720314.1834	851567.0347	ACCESS ROAD
436	720302.5799	851466.3601	ACCESS ROAD
437	720299.2317	851572.7308	ACCESS ROAD
438	720298.3061	851543.0075	ACCESS ROAD
439	720297.8239	851369.4614	ACCESS ROAD
440	720274.3001	851545.5301	ACCESS ROAD
441	720260.0178	851538.6136	ACCESS ROAD
442	720184.9086	851500.5549	BOUNDARY
443	720418.8744	851646.2423	24' ROW CL



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BASIS OF BEARINGS

NORTH 00°27'36"EAST BETWEEN CLARK COUNTY G.I.S. MONUMENT 884 AND CLARK COUNTY G.I.S. MONUMENT 848. SAID BEARING IS BASED UPON THE NORTH AMERICAN DATUM OF 1983/94 PUBLISHED VALUES AS SHOWN BY THE CLARK COUNTY DEPARTMENT OF PUBIC WORKS SURVEY TITLED, LAS VEGAS VALLEY GEODETIC CONTROL NETWORK, RECORDED IN FILE 88, PAGE 53 OF SURVEYS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

PROJECT BENCHMARK

BENCH MARK: COH BM# 324

2" BRASS CAP IN THE TOP OF CURB AT THE SOUTHWEST CORNER OF RACETRACK ROAD AND WARM SPRINGS ROAD.

NAVD 88 - 585.031 METERS 1919.389 U.S. SURVEY FEET

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
GRADING ENLARGEMENT

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: 1"=30'
VERT: NONE
FIELD BOOK

DRAWING NO. C-5
SHT. OF

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NOTE:
U-LOCKS WILL BE INSTALLED WITH ALL GATES AT THE NEVADA POWER EASEMENT ACCESS. THE CONTRACTOR SHALL COORDINATE WITH NEVADA POWER, MARK ELINGBOE AT 252-4808, FOR ACCESS TO THE NEVADA POWER EASEMENT.

SCALE 1" = 50' (50 0 50 100 SCALE FEET)

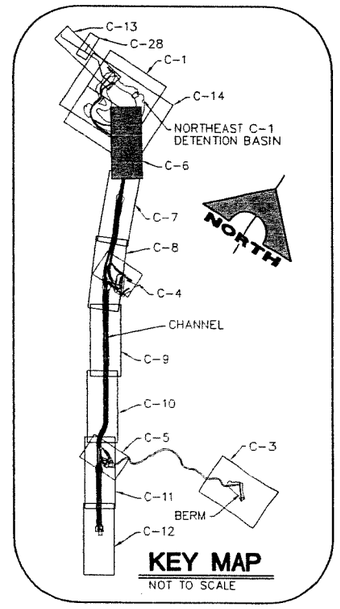
NORTH

CONSTRUCTION NOTES

1. CONSTRUCT ROLLER COMPACTED CONCRETE PAVEMENT. WIDTH VARIES, (SIMILAR TO 8/C-27)
4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-27)
7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-27)
9. CONSTRUCT RIPRAP PER PLAN. SEE SHEET C-18.
10. CONSTRUCT CONCRETE CHANNEL.
12. INSTALL POST AND CABLE RAILING. (SEE DETAIL 5/C-25)
13. INSTALL CHAIN-LINK FENCE. (SEE DETAIL 1/C-25)
17. CONSTRUCT INFLOW STRUCTURE.(SEE DETAIL 1/C-24)
19. INSTALL BLOCK AND CHAIN FENCE. (SEE DETAIL 7/C-25)
20. INSTALL 16' CHAIN-LINK GATE WITH SIGNS. (SEE DETAILS 2/C-25, 3/C-25 & 4/C-25)
22. INSTALL CHANNEL ACCESS STEPS. (SEE DETAIL 4/S-3)
24. INSTALL CHANNEL IDENTIFIER AND WARNING SIGNS ON CHAIN-LINK FENCE, (SEE DETAILS 3/C-25 & 4/C-25)
28. INSTALL 16' CHAIN-LINK GATE. (SEE DETAILS 7/C-25 & 5/C-27)
30. INSTALL 16' CHAIN-LINK GATE WITH SIGNS. (SEE DETAILS 2/C-25, 3/C-25, 4/C-25 & 5/C-27)

STA 23+00.00 MATCH LINE SEE SHEET C-7

CHANNEL R/W
APPROXIMATE DAYLIGHT LINE
APPROXIMATE LOCATION OF 100.00' NEVADA POWER EASEMENT
STA 19+50.00 END TYPE II BEGIN RCC
110' RIGHT-OF-WAY
100' RIGHT-OF-WAY
EXISTING POWER POLE TO REMAIN PROTECT-IN-PLACE
EX. OHP
EX. OHP
R=300.00'
PT = 15+53.83
PC = 13+69.84
RIPRAP D50 = 12" THK = 24"
TOP
FL
FG
EXISTING GRADE @ CENTERLINE PROPOSED CHANNEL
PROPOSED DETENTION BASIN
CONCRETE RCB WITH BARRIER RAIL
HGL
Q_{100} = 2378 cfs
1.58%
1.72%
2.56%
8.30'
7.73'
05.40 FL
SIDEWALL 1' ABOVE FINISH GRADE
STILLING BASIN
0.50%
0.50%
0.50%
DETENTION BASIN FINISHED GRADE
STA 11+33.00 RCC SILL 1955.62 FG
STA 11+38.00 END RCC SILL RCC SILL 1956.55 FG
STA 12+00.00 END RCC SILL BEGIN INFLOW STRUCTURE 1969.39 TW 1956.25 FG
STA 12+30.00 HORIZ ∠ POINT 1969.39 TW
STA 12+37.46 VERT ∠ POINT 1969.39 TW
STA 12+30 END INFLOW STRUCTURE BEGIN 20' x 10.5' RECTANGULAR CONCRETE CHANNEL 1956.39 FG
STA 13+57.30 BVCE: 1998.82
STA 13+61.80 GRADE BREAK P.V.I. EL=2000.32 FL R=30.00'
STA 13+66.30 EVCE: 2000.39
STA 13+74.84 END 20' x 10.5' RECTANGULAR CONCRETE CHANNEL BEGIN 20' x 7' RCB 2000.54 FL
STA 13+92.84 END 20' x 7' RCB BEGIN HEIGHT TRANSITION 2000.81 FL
STA 14+52.52 END HEIGHT TRANSITION BOTH SIDES STA 15+53.62 END 20' x 7' RECTANGULAR CONCRETE CHANNEL BEGIN CONCRETE TRANSITION BEGIN HEIGHT TRANSITION 2003.35 FL
STA 16+03.62 END CONCRETE TRANS. END HEIGHT TRANSITION BEGIN 15' x 7' RECTANGULAR CONCRETE CHANNEL GRADE BREAK 2004.21 FL
IDENTICAL POINT
EXISTING GRADE @ CENTERLINE PROPOSED CHANNEL
HGL
Q_{100} = 2378 cfs
2.56%
1.97%
7.73'
05.40 FL
20.41 FL
STA 17+32.21 2007.50 FL
STA 18+45.73 2010.40 FL
STA 20+25.73 GRADE BREAK 2015.00 FL
STA 21+47.03 2017.39 FL
STA 22+68.32 2019.78 FL



KEY MAP
NOT TO SCALE

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REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

CHANNEL PLAN & PROFILE

STA. 10+00.00 TO STA. 23+00.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

DRAWING NO. C-6
SHT. OF

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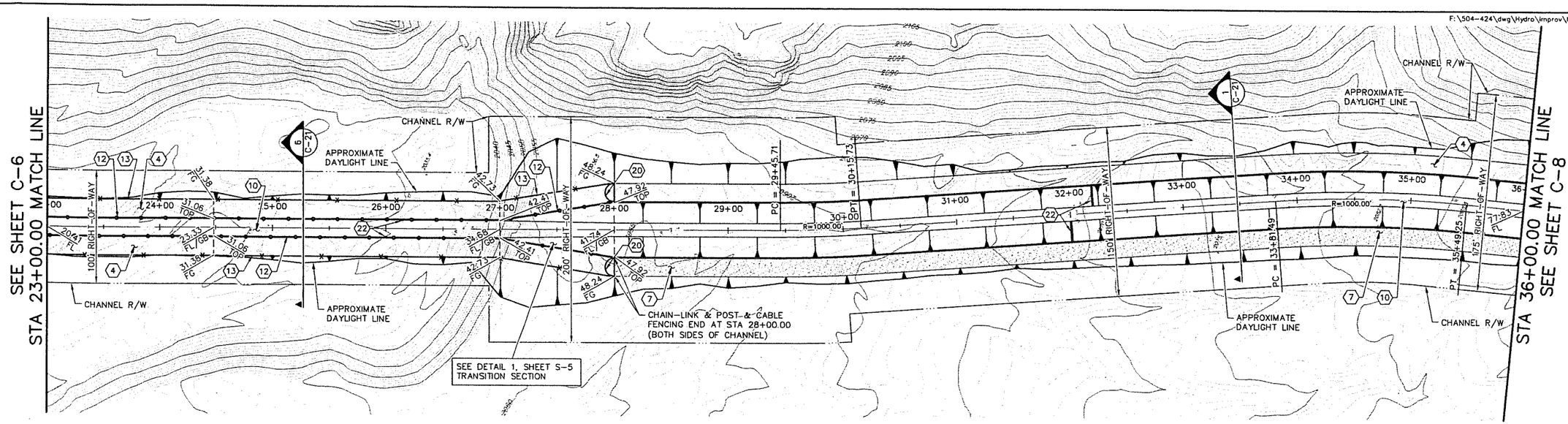

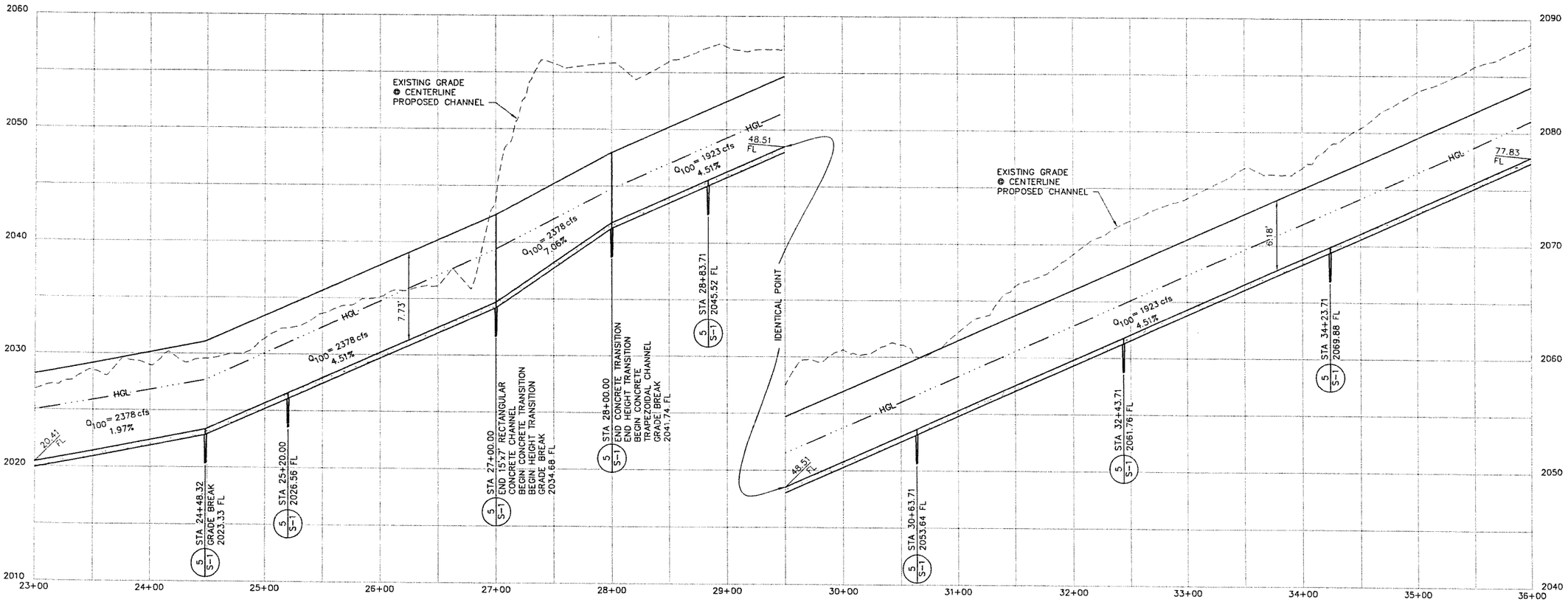

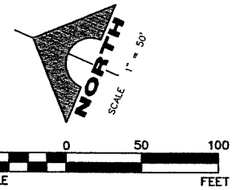

CONSTRUCTION NOTES

4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
10. CONSTRUCT CONCRETE CHANNEL.
12. INSTALL POST AND CABLE RAILING. (SEE DETAIL 5/C-25)
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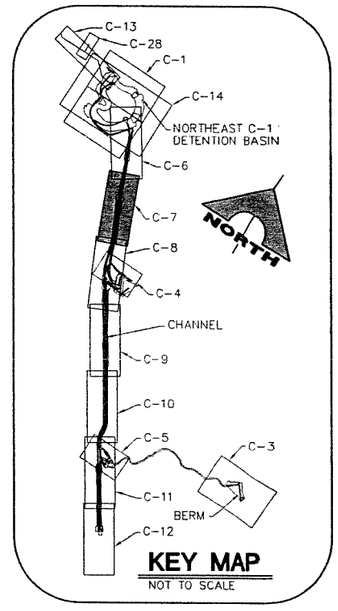
20. INSTALL 16' CHAIN-LINK GATE WITH SIGNS. (SEE DETAILS 2/C-25, 3/C-25 & 4/C-25)
22. INSTALL CHANNEL ACCESS STEPS. (SEE DETAIL 4/S-3)



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REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

CHANNEL PLAN & PROFILE

STA. 23+00.00 TO STA. 36+00.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

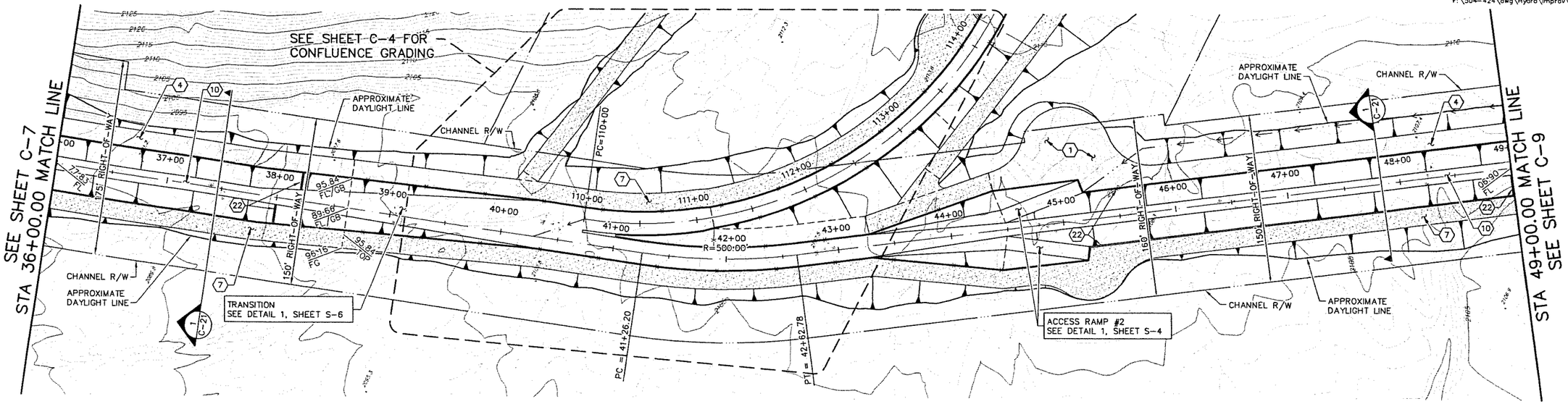
FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

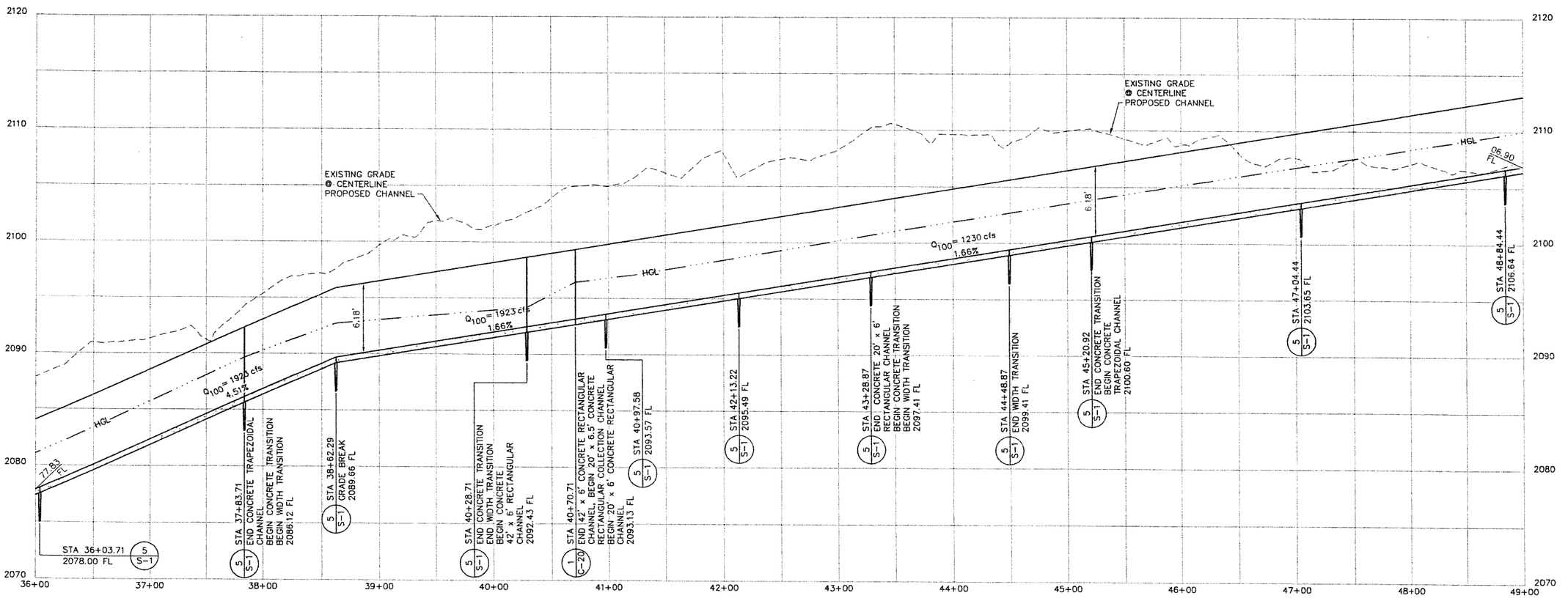
PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

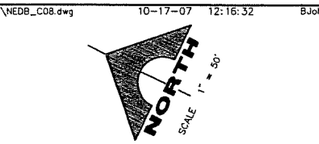
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

DRAWING NO. C-7
SHT. OF

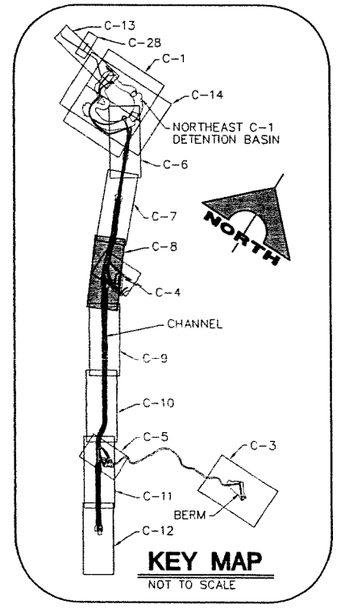






CONSTRUCTION NOTES

1. CONSTRUCT ROLLER COMPACTED CONCRETE PAVEMENT. WIDTH VARIES, (SIMILAR TO 8/C-21)
4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
10. CONSTRUCT CONCRETE CHANNEL.
22. INSTALL CHANNEL ACCESS STEPS. (SEE DETAIL 4/S-3)



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REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

CHANNEL PLAN & PROFILE

STA. 36+00.00 TO STA. 49+00.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY:
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APPROVED BY

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Engineers/Planners/Surveyors
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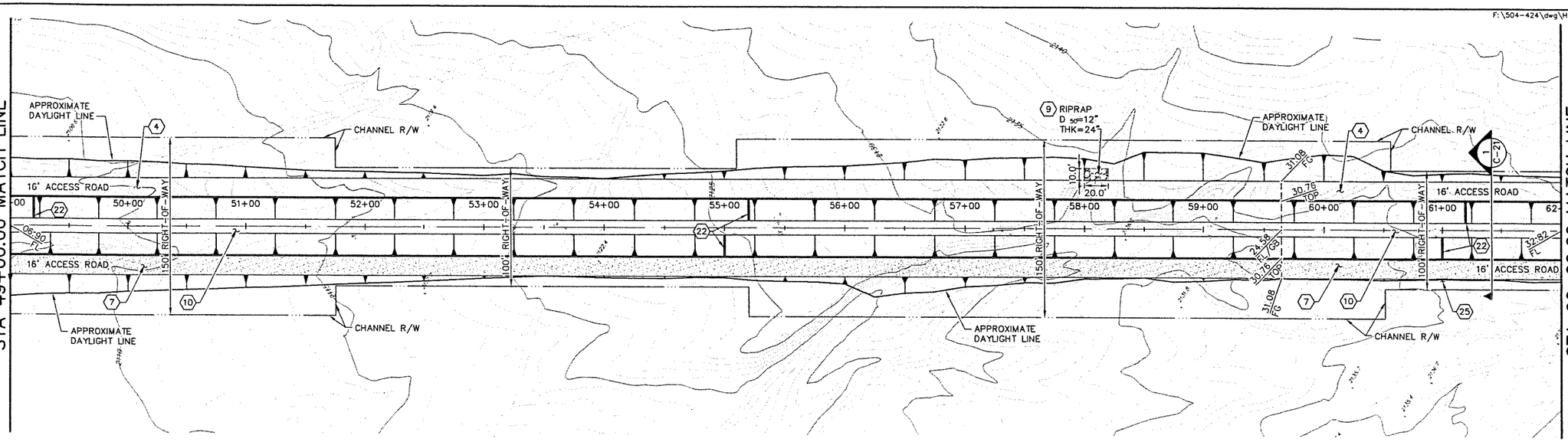
SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

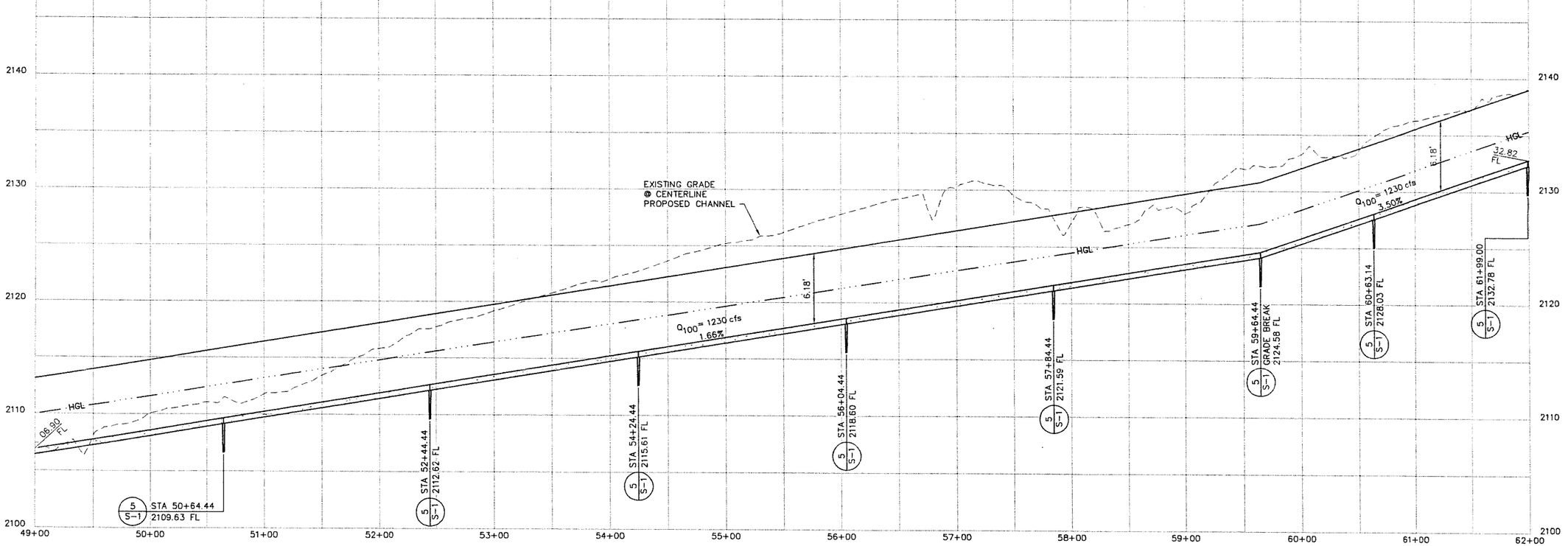
DRAWING NO. C-8
SHT. OF

F:\504-424\dwg\Hydro\improv\NEDB_C09.dwg 10-17-07 12:16:42 BJohnson

SEE SHEET C-8
STA 49+00.00 MATCH LINE

STA 62+00.00 MATCH LINE
SEE SHEET C-10



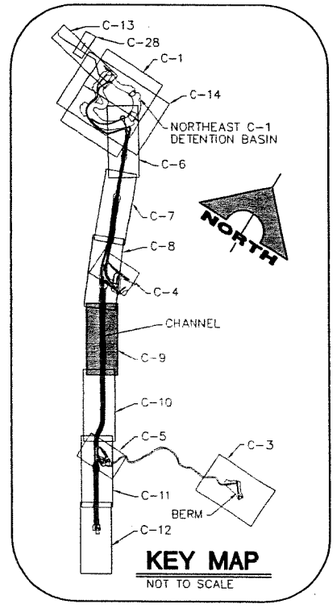


NORTH
SCALE 1" = 50'

50 0 50 100
SCALE FEET

CONSTRUCTION NOTES

4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
10. CONSTRUCT CONCRETE CHANNEL.
22. INSTALL CHANNEL ACCESS STEPS. (SEE DETAIL 4/S-1)
9. CONSTRUCT RIPRAP PER PLAN.
25. INSTALL SIGN POST AND WARNING SIGN. (SEE DETAIL 8/C-25)



KEY MAP
NOT TO SCALE

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

Avoid cutting underground utility lines. It's costly.
Call before you Dig.
1-800-227-2600
UNDERGROUND SERVICE (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.
CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

CHANNEL PLAN & PROFILE

STA. 49+00.00 TO STA. 62+00.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

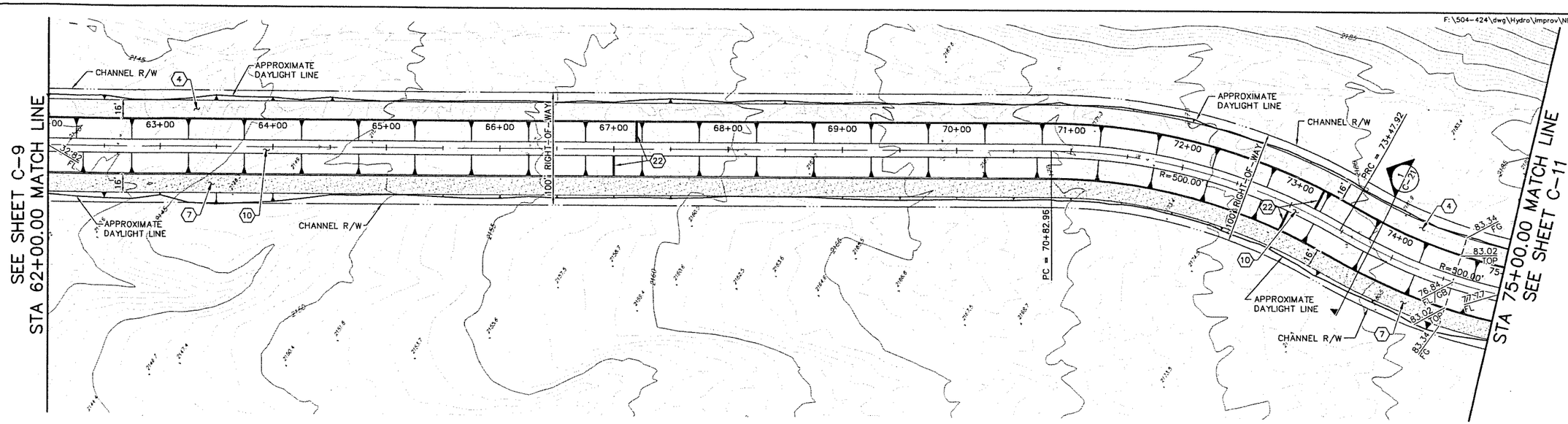
PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

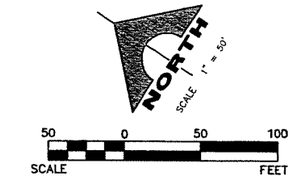
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

DRAWING NO. C-9
SHT. OF

F:\504-424\dwg\Hydro\improv\NEDB_C10.dwg 10-17-07 12:16:52 BJohnson





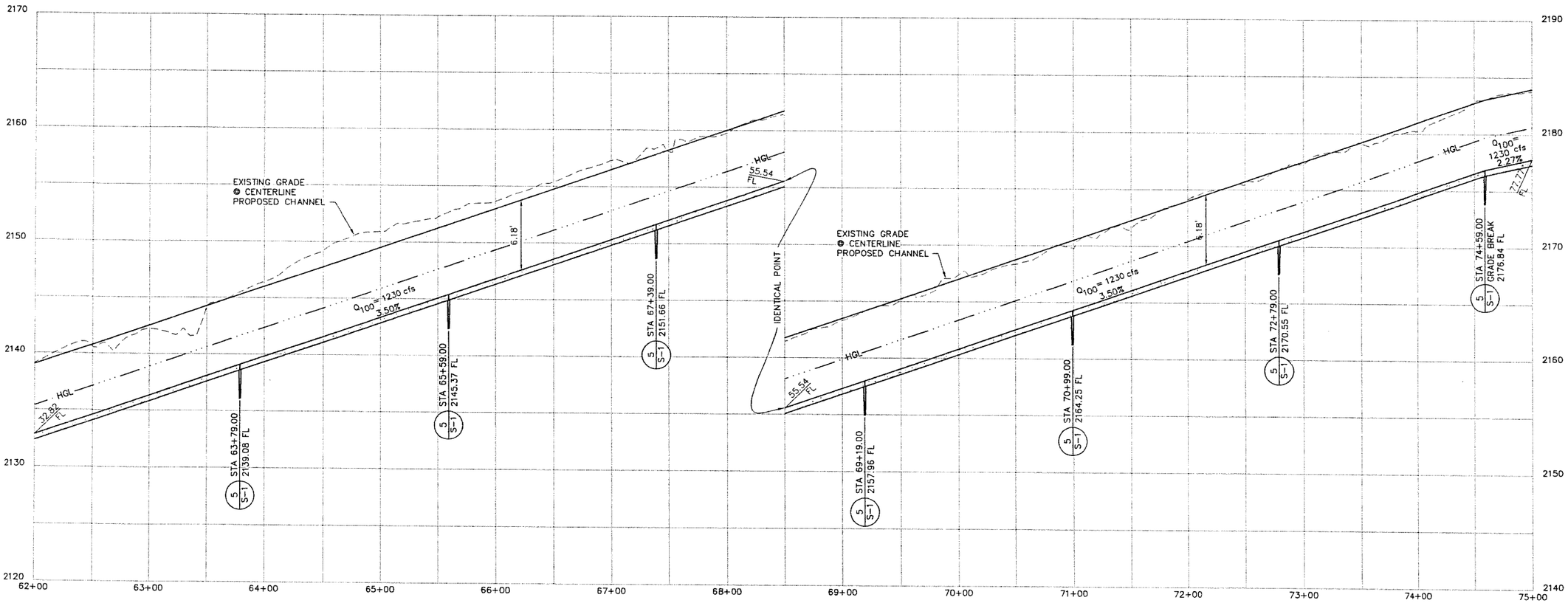
CONSTRUCTION NOTES

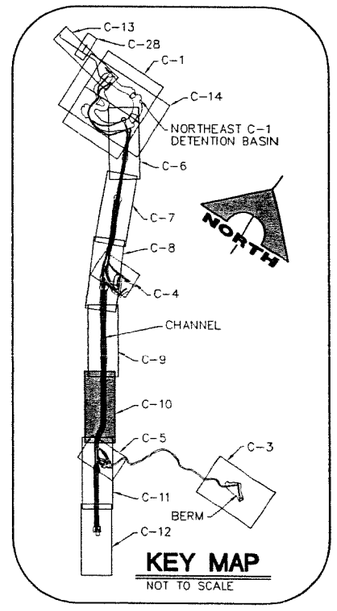
(4) CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)

(7) CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)

(10) CONSTRUCT CONCRETE CHANNEL.

(22) INSTALL CHANNEL ACCESS STEPS. (SEE DETAIL 4/S-3)





KEY MAP

NOT TO SCALE

DISCLAIMER NOTE

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1-702-227-2929

REV. NO.	DATE	DESCRIPTION	APPROVED

THE CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN

CHANNEL PLAN & PROFILE

STA. 62+00.00 TO 75+00.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

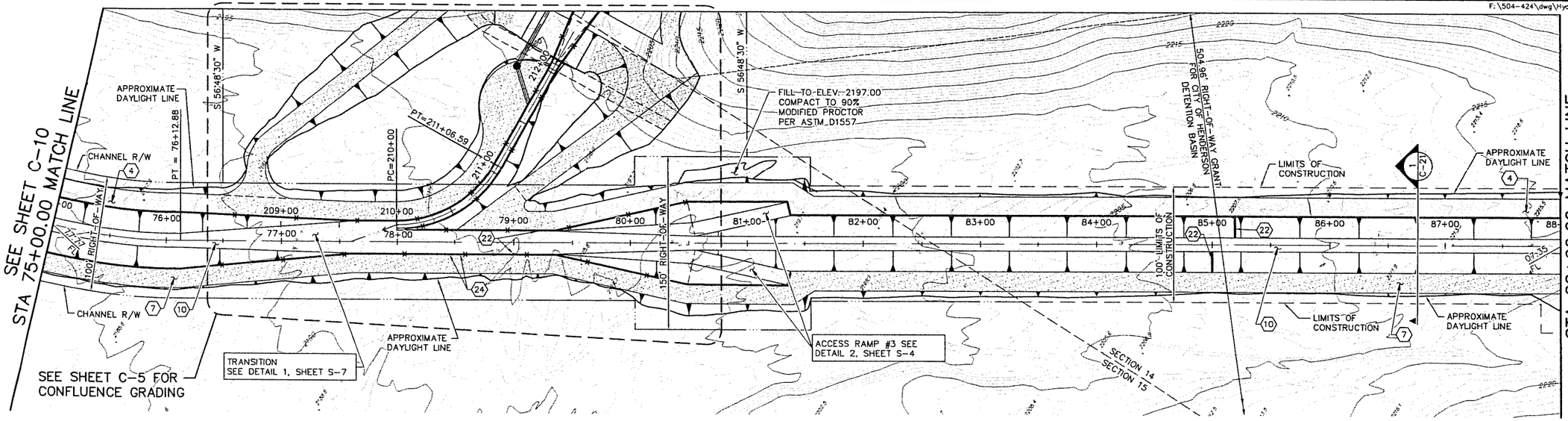
PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

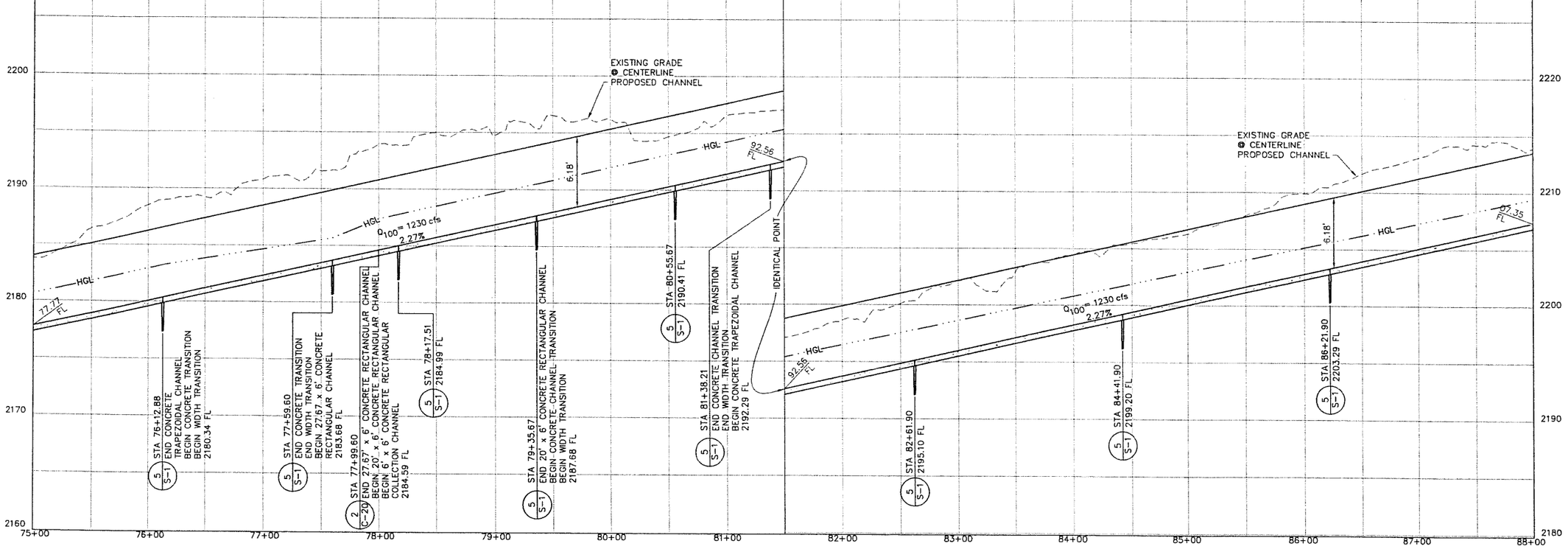
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

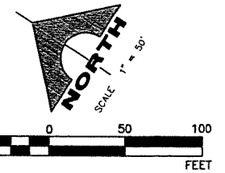
SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

DRAWING NO. C-10
SHT. OF

F:\504-424\dwg\Hydro\improv\NEDB_C11.dwg 10-17-07 12:17:03 BJohnson







CONSTRUCTION NOTES

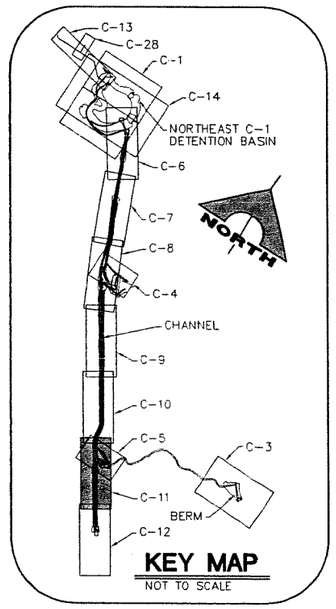
(4) CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 3/C-21)

(7) CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)

(10) CONSTRUCT CONCRETE CHANNEL.

(22) INSTALL CHANNEL ACCESS STEPS. (SEE DETAIL 4/S-3)

(24) INSTALL CHANNEL IDENTIFIER AND WARNING SIGNS ON CHAIN-LINK FENCE, (SEE DETAILS 3/C-25 & 4/C-25)



KEY MAP
NOT TO SCALE

DISCLAIMER NOTE

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UNDERGROUND SERVICE (USA)

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1-702-227-2929

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

CHANNEL PLAN & PROFILE

STA. 75+00.00 TO STA. 88+00.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

90+% SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

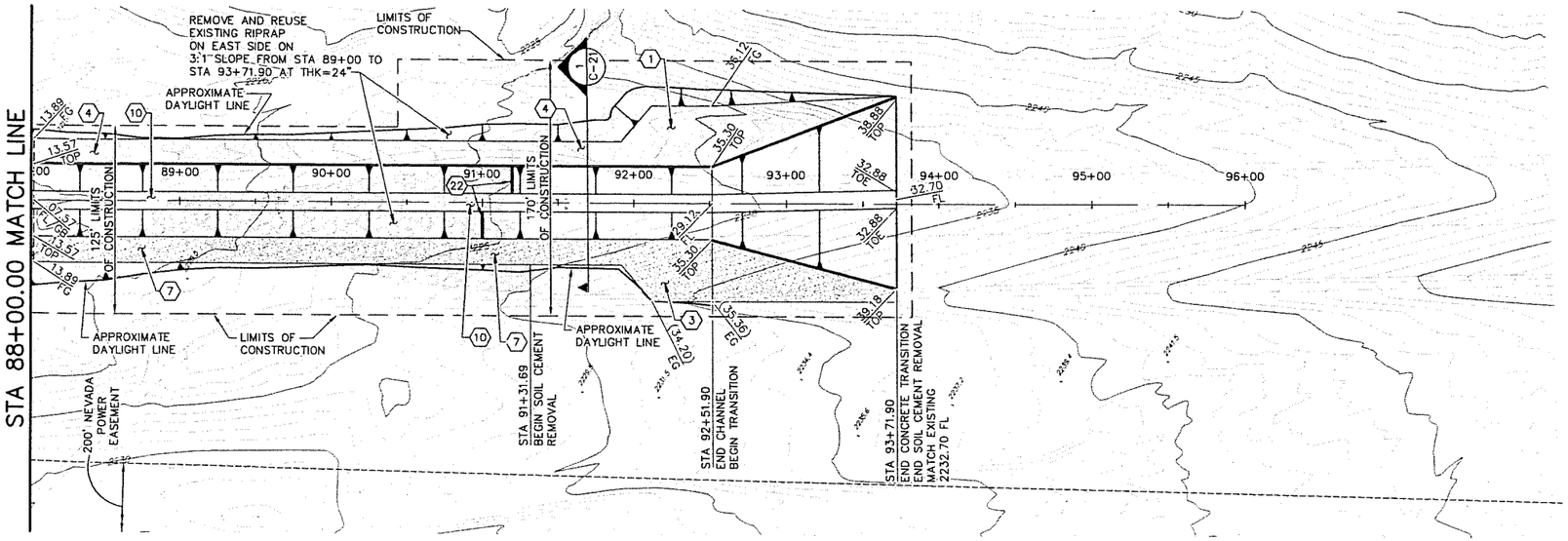
PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

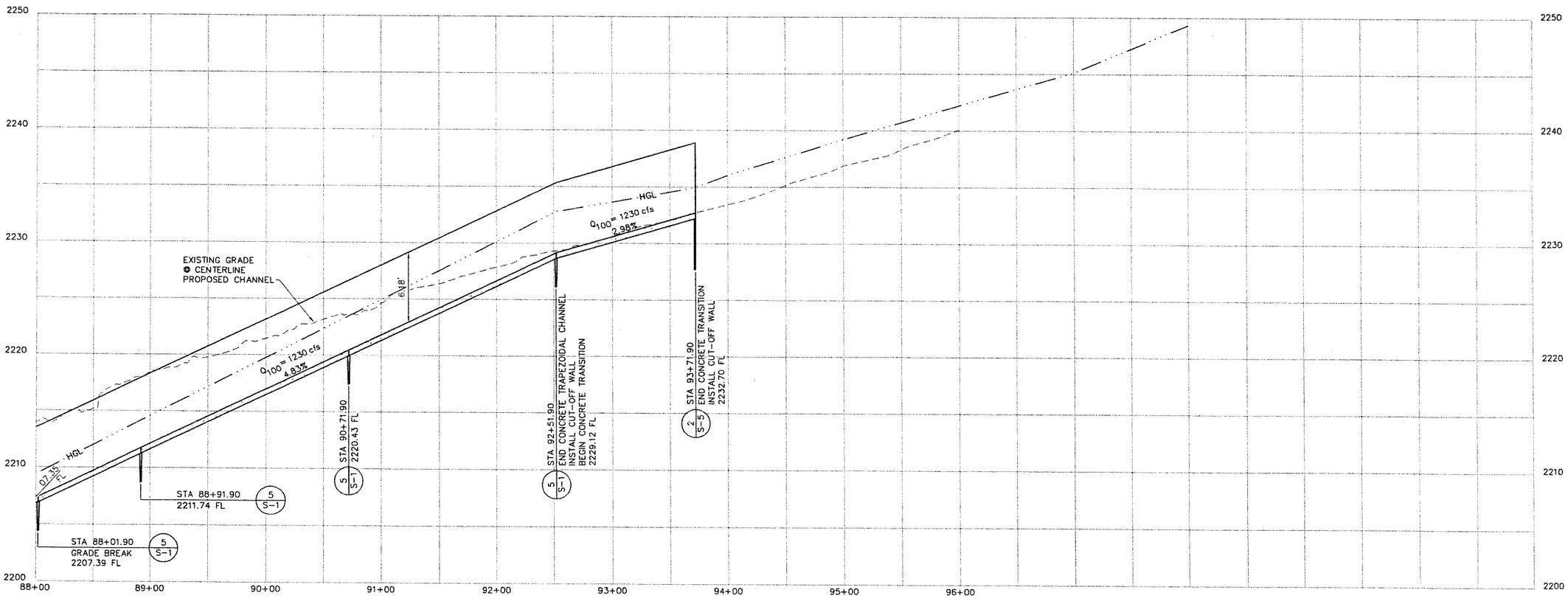
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

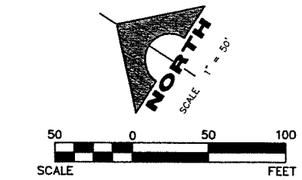
SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

DRAWING NO. C-11
SHT. OF

SEE SHEET C-11
STA 88+00.00 MATCH LINE

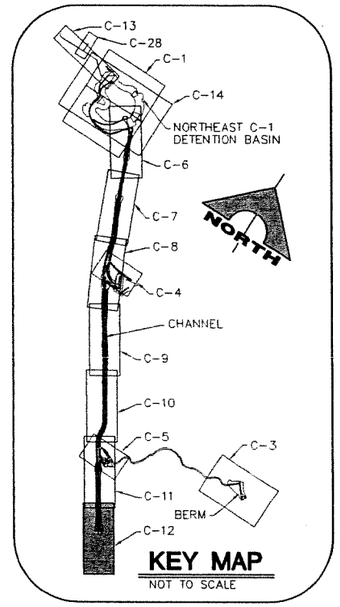






CONSTRUCTION NOTES

1. CONSTRUCT ROLLER COMPACTED CONCRETE PAVEMENT. WIDTH VARIES. (SIMILAR TO 8/C-21)
3. CONSTRUCT TYPE II AGGREGATE BASE.
4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
7. CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
10. CONSTRUCT CONCRETE CHANNEL.
22. INSTALL CHANNEL ACCESS STEPS. (SEE DETAIL 4/S-1)



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1-702-227-2929

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

CHANNEL PLAN & PROFILE

STA. 88+00.00 TO STA. 93+00.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

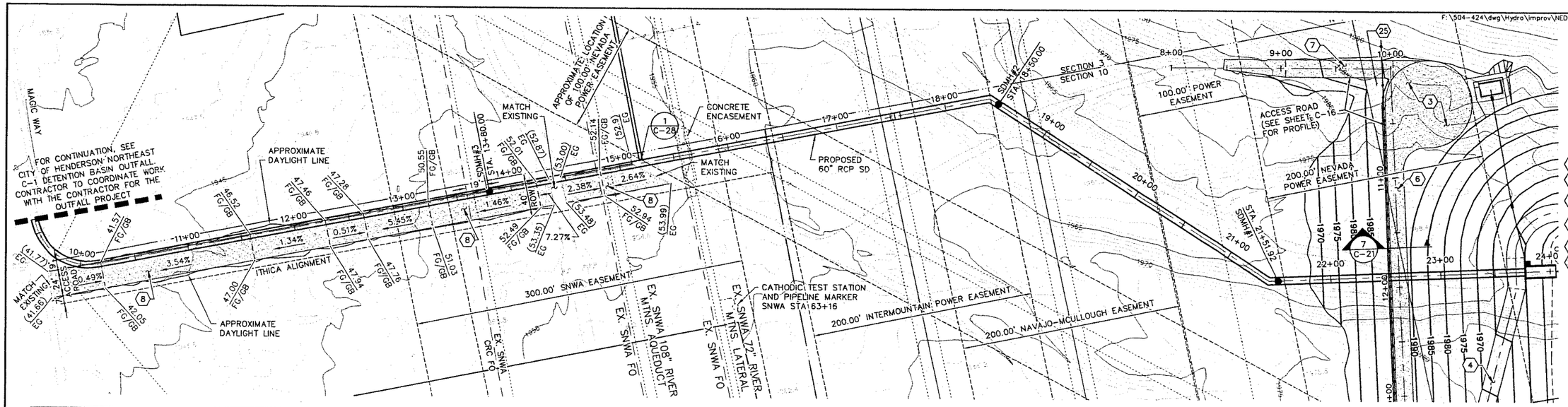
PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

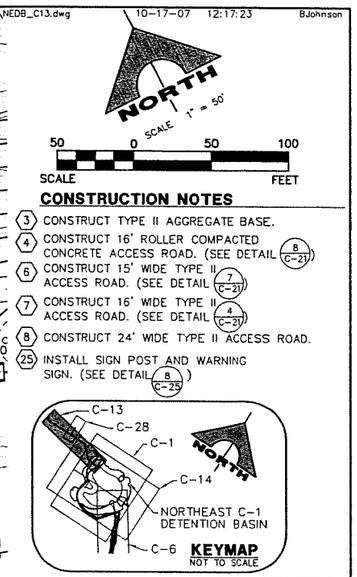
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

DRAWING NO. C-12
SHT. OF

F:\504-424\dwg\Hydro\improv\NEDB_C13.dwg 10-17-07 12:17:23 BJohnson

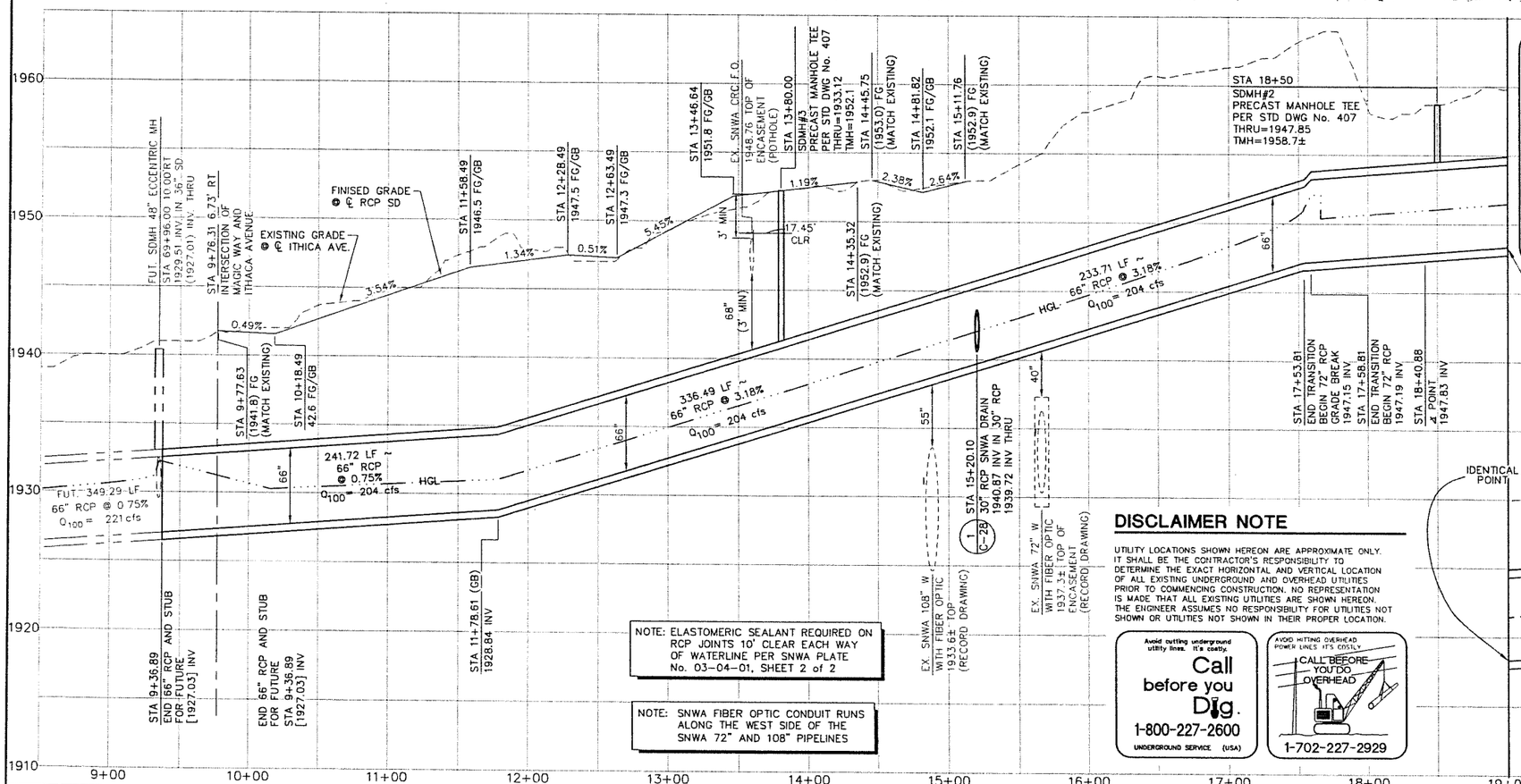




CONSTRUCTION NOTES

(3) CONSTRUCT TYPE II AGGREGATE BASE.
(4) CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
(6) CONSTRUCT 15' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 7/C-21)
(7) CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
(8) CONSTRUCT 24' WIDE TYPE II ACCESS ROAD.
(25) INSTALL SIGN POST AND WARNING SIGN. (SEE DETAIL 5/C-25)

KEYMAP
NOT TO SCALE



NOTE: ELASTOMERIC SEALANT REQUIRED ON RCP JOINTS 10' CLEAR EACH WAY OF WATERLINE PER SNWA PLATE No. 03-04-01, SHEET 2 of 2

NOTE: SNWA FIBER OPTIC CONDUIT RUNS ALONG THE WEST SIDE OF THE SNWA 72" AND 108" PIPELINES

DISCLAIMER NOTE

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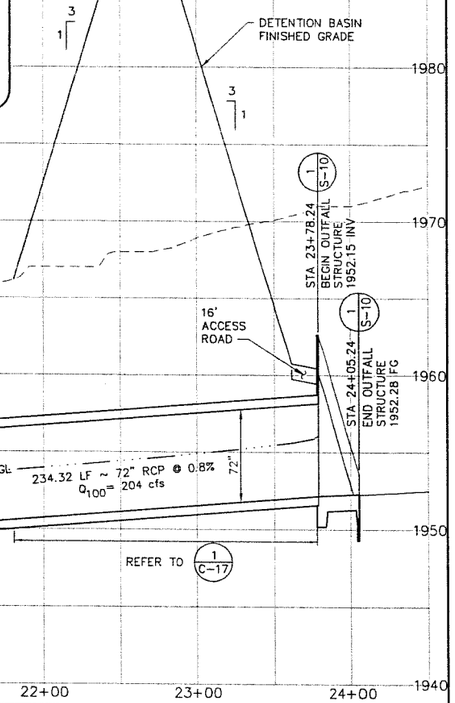
SOUTHERN NEVADA WATER AUTHORITY CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL SNWA/SNWS APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAY'S AND CATHODIC PROTECTION SYSTEMS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. CATHODIC PROTECTION TEST STATIONS, RECTIFIERS, AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER SNWA STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY SOUTHERN NEVADA WATER AUTHORITY DEVELOPMENT PLAN REVIEW AT (702) 862-3444 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
2. SNWA APPROVAL IS VAUD FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

SOUTHERN NEVADA WATER AUTHORITY DATE



REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

OUTFALL PLAN & PROFILE

STA. 9+00.00 TO STA. 24+50.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

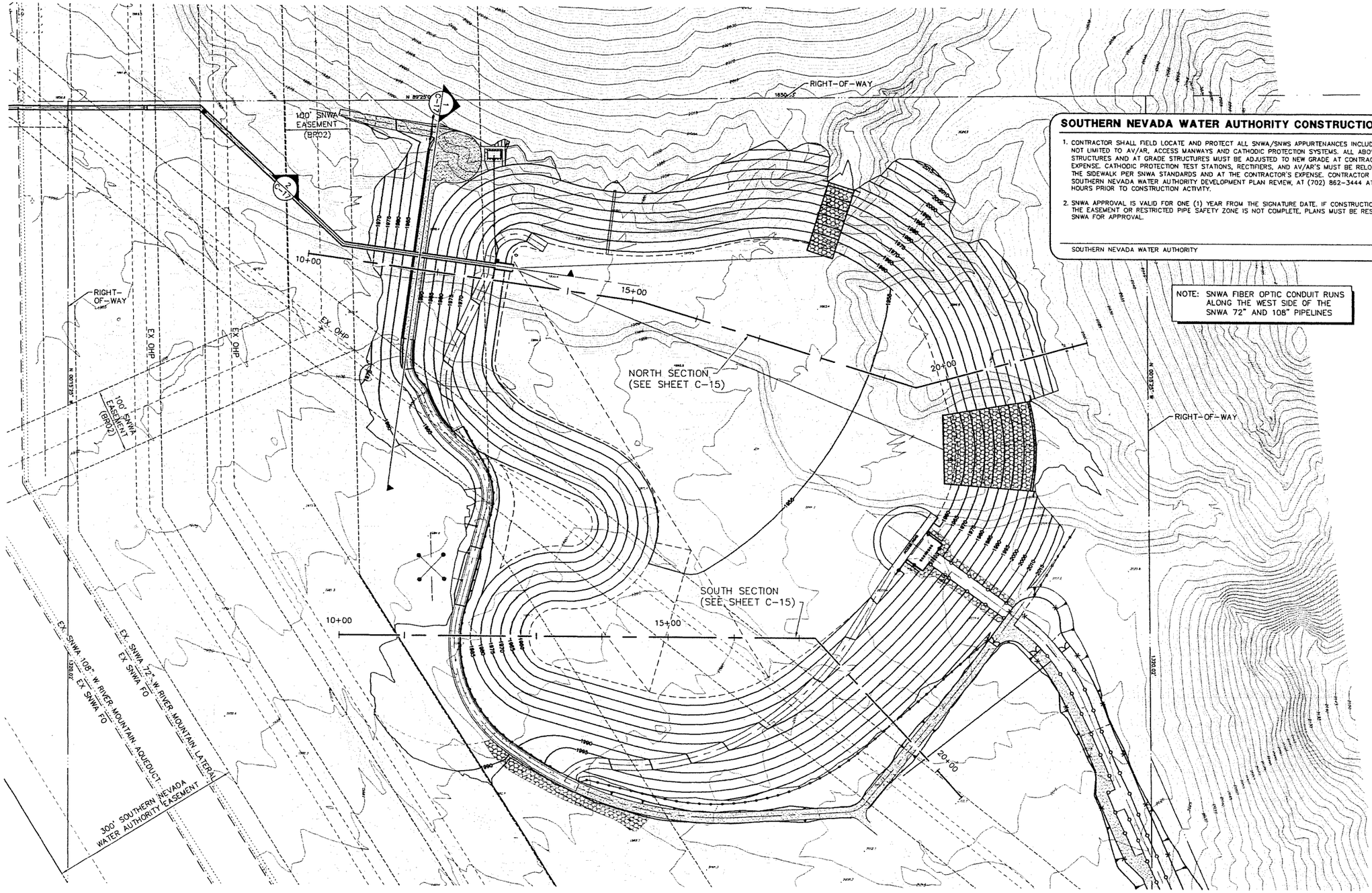
FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

DRAWING NO. C-13
SHT. OF



SOUTHERN NEVADA WATER AUTHORITY CONSTRUCTION NOTES

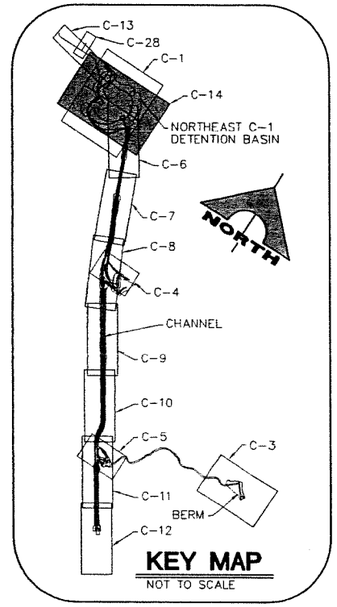
1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL SNWA/SNWS APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS AND CATHODIC PROTECTION SYSTEMS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. CATHODIC PROTECTION TEST STATIONS, RECTIFIERS, AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER SNWA STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY SOUTHERN NEVADA WATER AUTHORITY DEVELOPMENT PLAN REVIEW, AT (702) 862-3444 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
2. SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

SOUTHERN NEVADA WATER AUTHORITY DATE

NOTE: SNWA FIBER OPTIC CONDUIT RUNS ALONG THE WEST SIDE OF THE SNWA 72" AND 108" PIPELINES

NORTH

80 0 80 160
SCALE FEET



KEY MAP
NOT TO SCALE

DISCLAIMER NOTE

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REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

DETENTION BASIN CROSS SECTION
PLAN VIEW

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

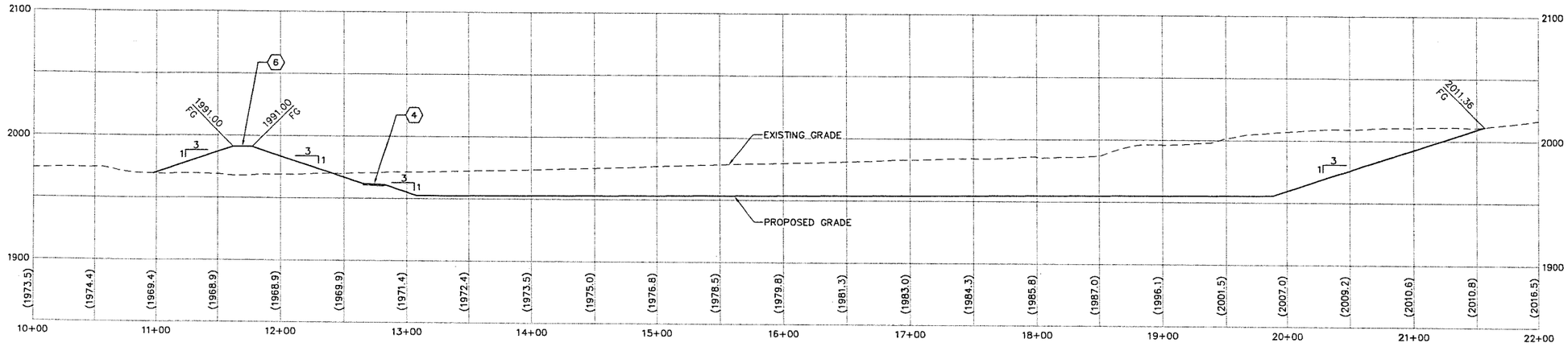
FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

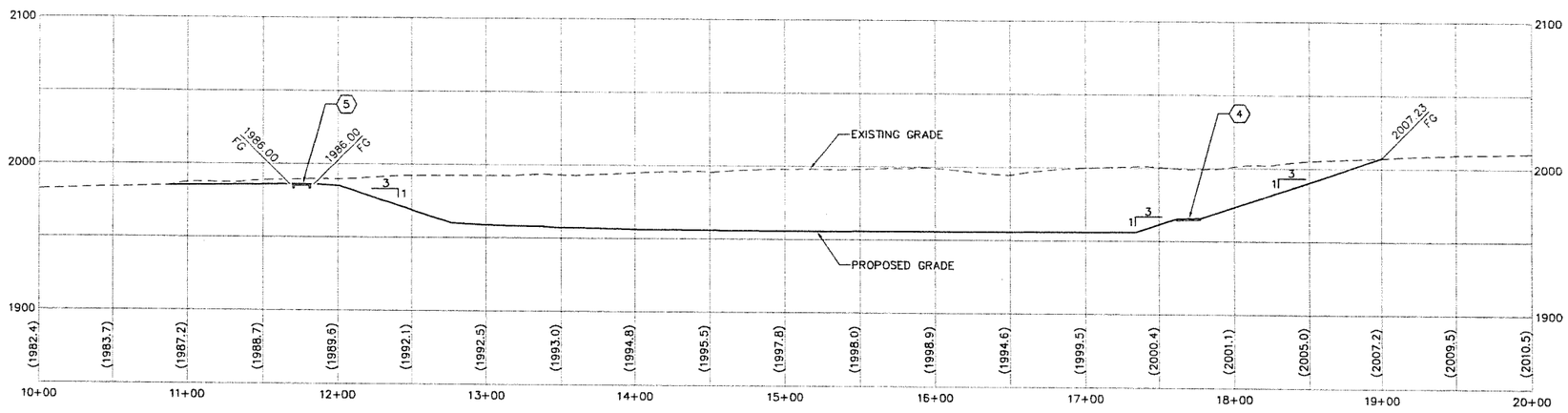
SCALE
HORIZ: 1" = 80'
VERT: NONE
FIELD BOOK

DRAWING NO. C-14
SHT. OF



NORTH SECTION

SCALE: HORIZ./VERT. 1" = 50'



SOUTH SECTION

SCALE: HORIZ./VERT. 1" = 50'

CONSTRUCTION NOTES

4. CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
5. CONSTRUCT PORTLAND CEMENT CONCRETE ACCESS ROAD. (SEE DETAIL 4/S-10)
6. CONSTRUCT 15' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 7/C-21)

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

DETENTION BASIN CROSS SECTIONS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

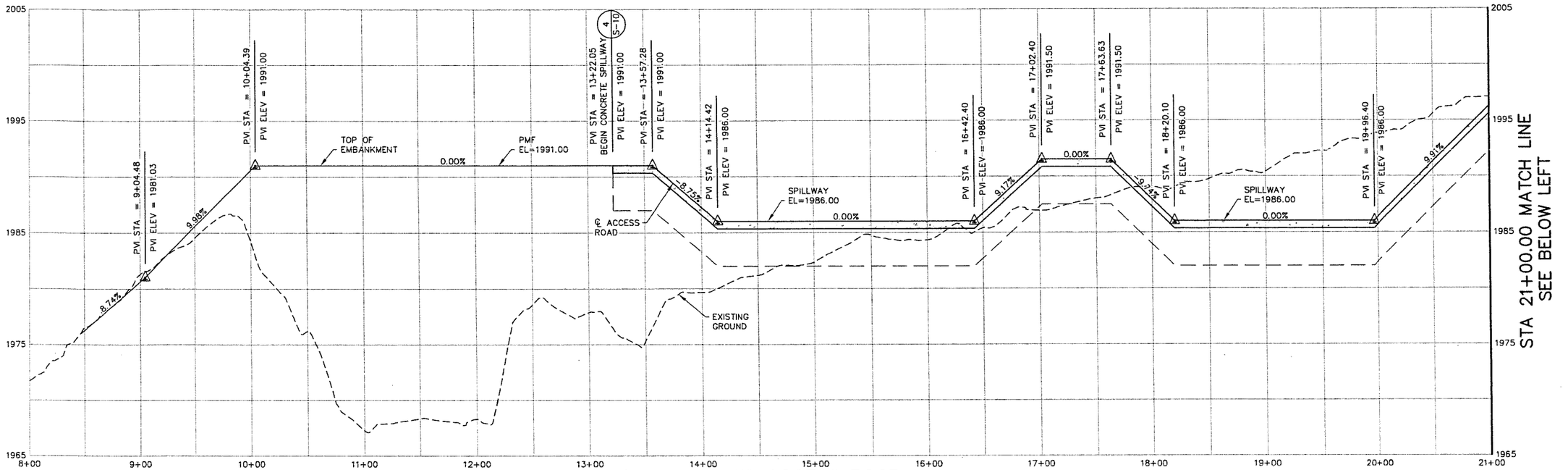
FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

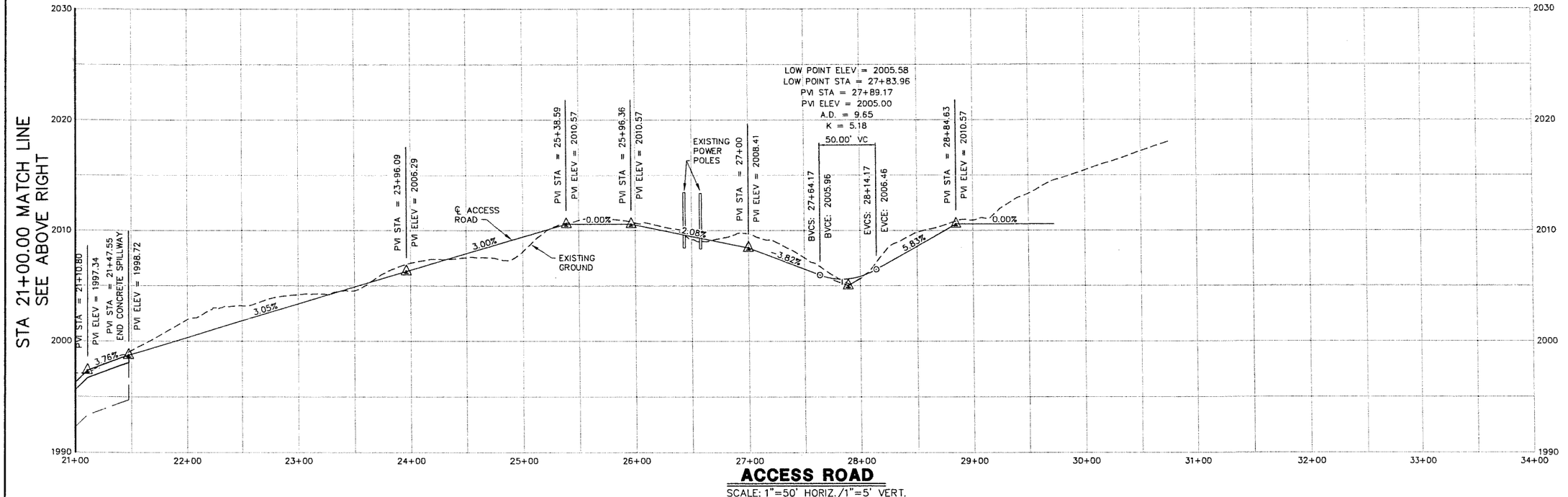
SCALE
HORIZ: 1" = 50'
VERT: 1" = 50'
FIELD BOOK

DRAWING NO. C-15
SHT. OF



SPILLWAY AND ACCESS ROAD

SCALE: 1"=50' HORIZ./1"=5' VERT.



ACCESS ROAD

SCALE: 1"=50' HORIZ./1"=5' VERT.

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REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

ACCESS ROAD PROFILE

STA 8+46.96 TO STA 29+73.05

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

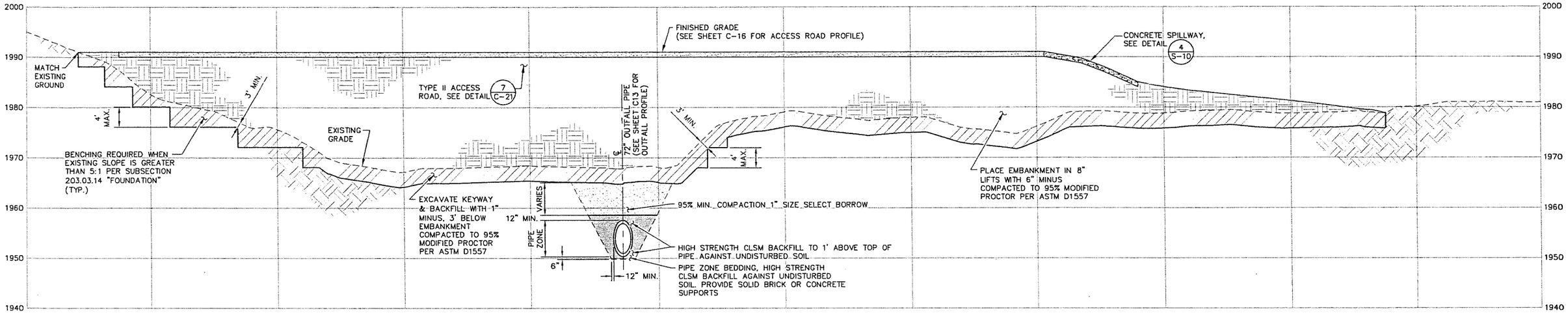
FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504-424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

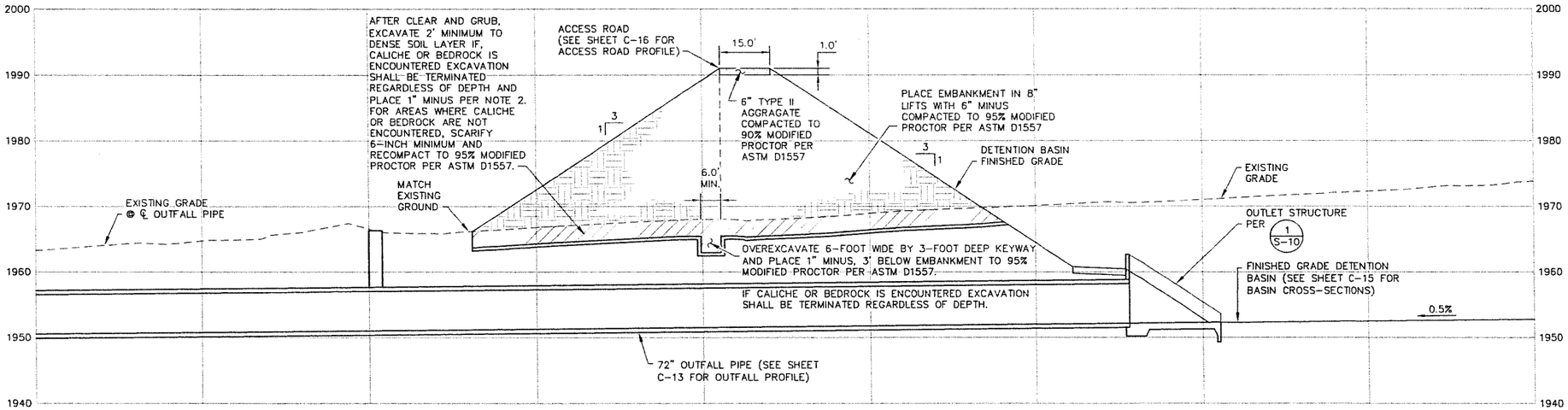
SCALE
HORIZ: 1"=50'
VERT: 1"=5'
FIELD BOOK

DRAWING NO.
C-16
SHT. OF



NORTH/SOUTH SECTION @ BERM (1 / C-17)

SCALE: HORIZ. 1" = 20'
VERT. 1" = 10'



EAST/WEST SECTION @ BERM (2 / C-17)

SCALE: HORIZ. 1" = 20'
VERT. 1" = 10'

NOTE 1
FLOODING AND JETTING NOT PERMITTED

NOTE 2
IF CEMENTED MATERIALS ARE ENCOUNTERED WITHIN THE FOOTPRINT OF THE BERM THEN 16 INCHES OF 1" SIZE SELECT BORROW SHALL BE PLACED OVER THE CEMENTED MATERIAL PER SUB SECTION 203.03.15

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
DETENTION BASIN BERM SECTIONS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

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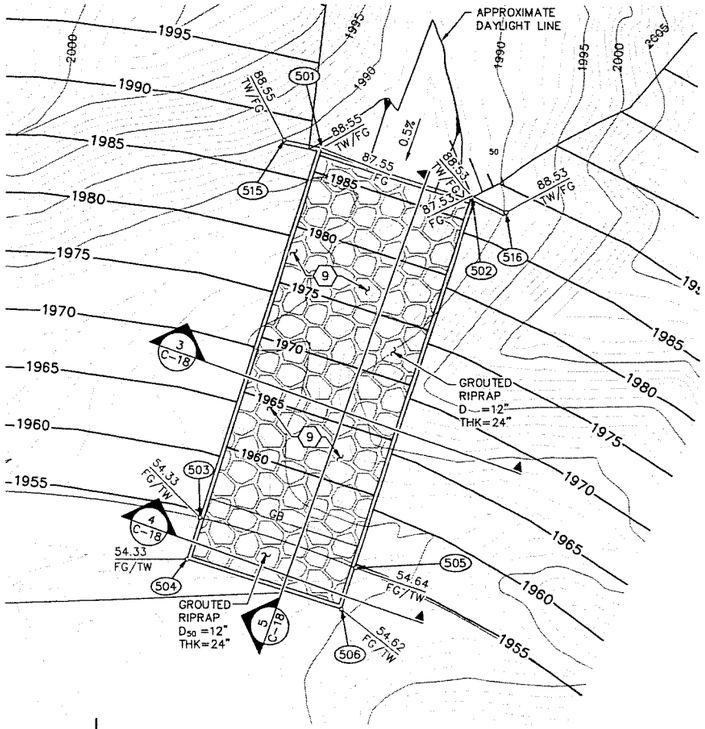
SCALE
HORIZ: 1" = 20'
VERT: 1" = 10'
FIELD BOOK

DRAWING NO. C-17
SHT. OF



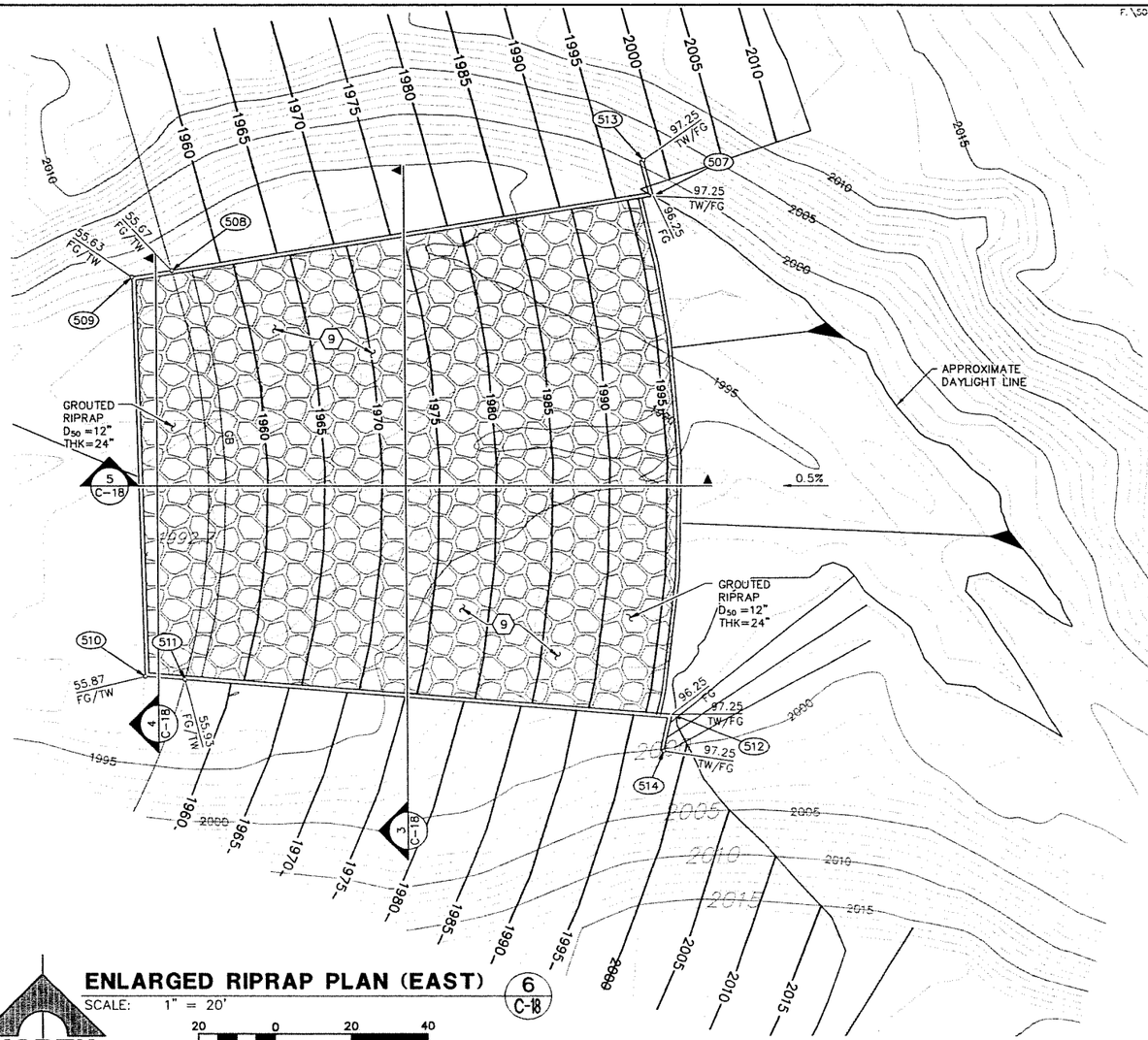
ENLARGED RIPRAP PLAN (NORTH) 7 C-18

SCALE: 1" = 20'

NORTH

20 0 20 40
SCALE FEET

COORDINATE TABLE			
No.	NORTHING	EASTING	DESCRIPTION
501	726,707.4059	848,041.3939	CUT-OFF WALL
502	726,695.1730	848,079.4774	CUT-OFF WALL
503	726,611.5371	848,009.5493	CUT-OFF WALL
504	726,600.7250	848,006.0763	CUT-OFF WALL
505	726,598.6070	848,049.7651	CUT-OFF WALL
506	726,587.8804	848,046.0640	CUT-OFF WALL
507	726,368.5770	848,348.5849	CUT-OFF WALL
508	726,348.7563	848,221.7066	CUT-OFF WALL
509	726,347.0276	848,211.2466	CUT-OFF WALL
512	726,229.9609	848,352.5103	RIPRAP WALL
513	726,378.2393	848,346.0080	CUT-OFF WALL
514	726,220.2127	848,350.2805	CUT-OFF WALL
515	726,709.4235	848,031.5996	CUTOFF WALL
516	726,690.8853	848,088.5116	CUTOFF WALL



ENLARGED RIPRAP PLAN (EAST) 6 C-18

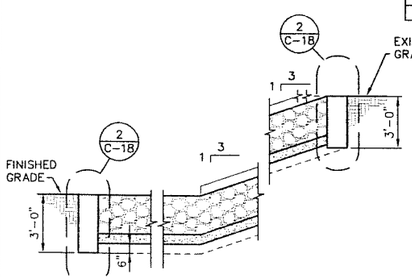
SCALE: 1" = 20'

NORTH

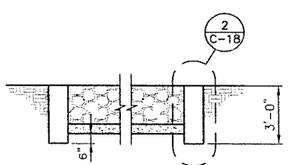
20 0 20 40
SCALE FEET

CONSTRUCTION NOTES

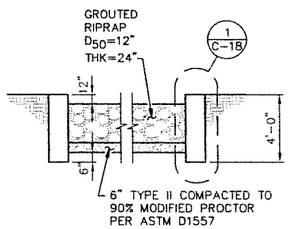
(9) CONSTRUCT RIPRAP PER PLAN.



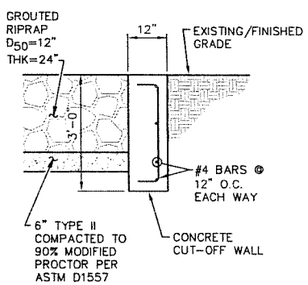
SECTION 5 C-18
NOT TO SCALE



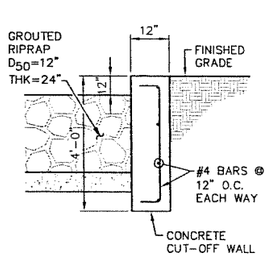
SECTION 4 C-18
NOT TO SCALE



SECTION 3 C-18
NOT TO SCALE



DETAIL 2 C-18
NOT TO SCALE



DETAIL 1 C-18
NOT TO SCALE

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REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

DETENTION BASIN

ENLARGED RIPRAP AREAS, SECTIONS AND DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY:
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APPROVED BY:

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Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
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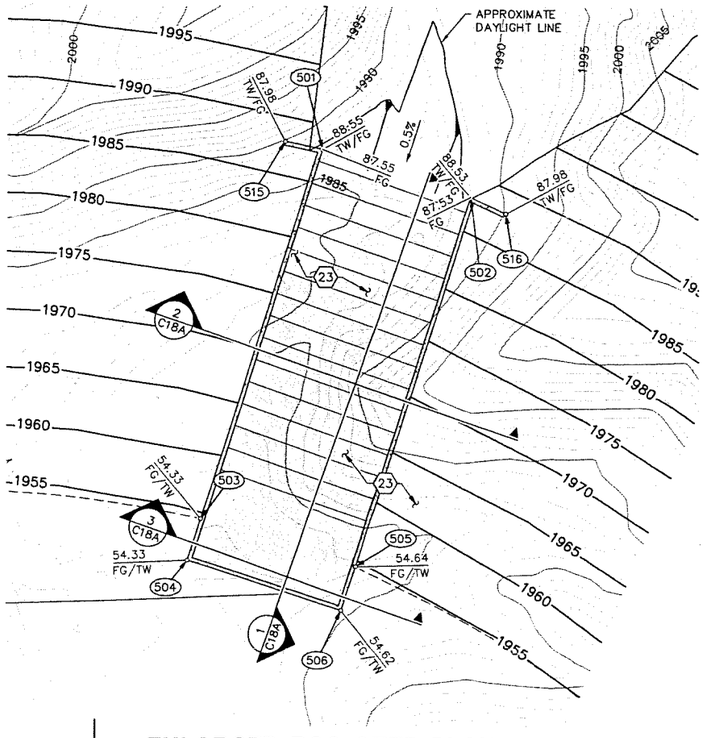
SCALE
HORIZ: 1" = 20'
VERT: NONE
FIELD BOOK

DRAWING NO. C-18

SHT. OF



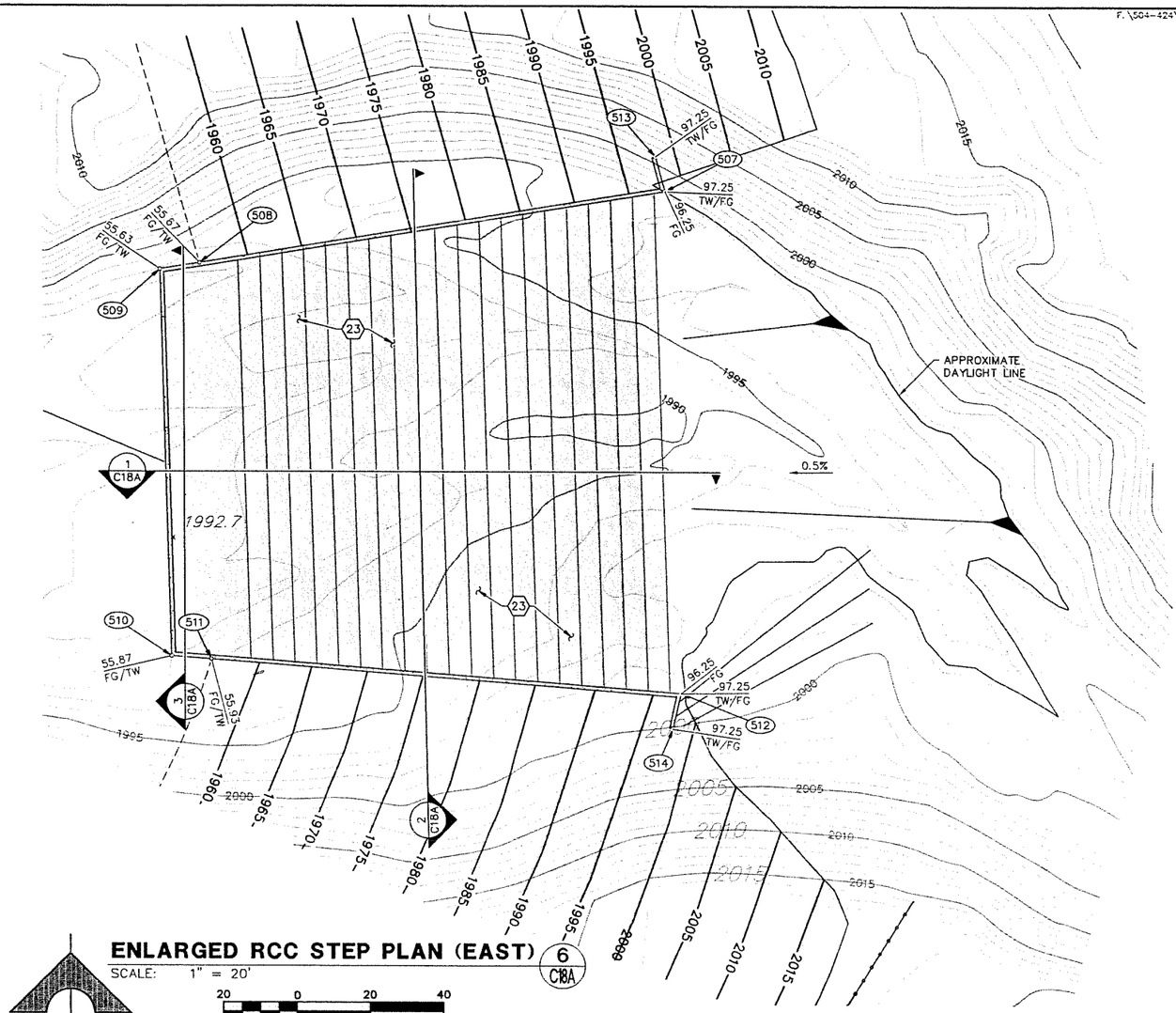
ENLARGED RCC STEP PLAN (NORTH) 7 C18A

SCALE: 1" = 20'

NORTH

SCALE 20 0 20 40 FEET

COORDINATE TABLE			
No.	NORTHING	EASTING	DESCRIPTION
501	726,707.4059	848,041.3939	CUT-OFF WALL
502	726,695.1730	848,079.4774	CUT-OFF WALL
503	726,611.5371	848,009.5493	CUT-OFF WALL
504	726,600.7250	848,006.0763	CUT-OFF WALL
505	726,598.6070	848,049.7651	CUT-OFF WALL
506	726,587.8804	848,046.0640	CUT-OFF WALL
507	726,368.5770	848,348.5849	CUT-OFF WALL
508	726,348.7563	848,221.7066	CUT-OFF WALL
509	726,347.0276	848,211.2466	CUT-OFF WALL
512	726,229.9609	848,352.5103	RIPRAP WALL
513	726,378.2393	848,346.0080	CUT-OFF WALL
514	726,220.2127	848,350.2805	CUT-OFF WALL
515	726,709.4235	848,031.5996	CUTOFF WALL
516	726,690.8853	848,088.5116	CUTOFF WALL



ENLARGED RCC STEP PLAN (EAST) 6 C18A

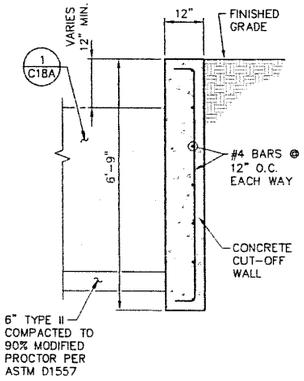
SCALE: 1" = 20'

NORTH

SCALE 20 0 20 40 FEET

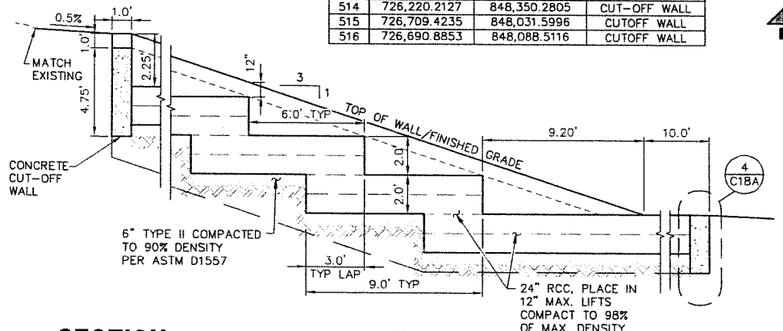
CONSTRUCTION NOTES

(23) CONSTRUCT RCC STEPS PER PLAN.



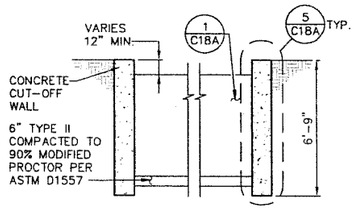
DETAIL 5 C18A

NOT TO SCALE



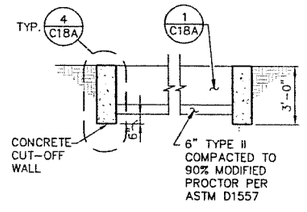
SECTION 1 C18A

NOT TO SCALE



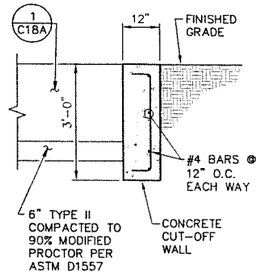
SECTION 2 C18A

NOT TO SCALE



DETAIL 3 C18A

NOT TO SCALE



DETAIL 4 C18A

NOT TO SCALE

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REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

DETENTION BASIN

ENLARGED RCC STEPPED AREAS, SECTIONS AND DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

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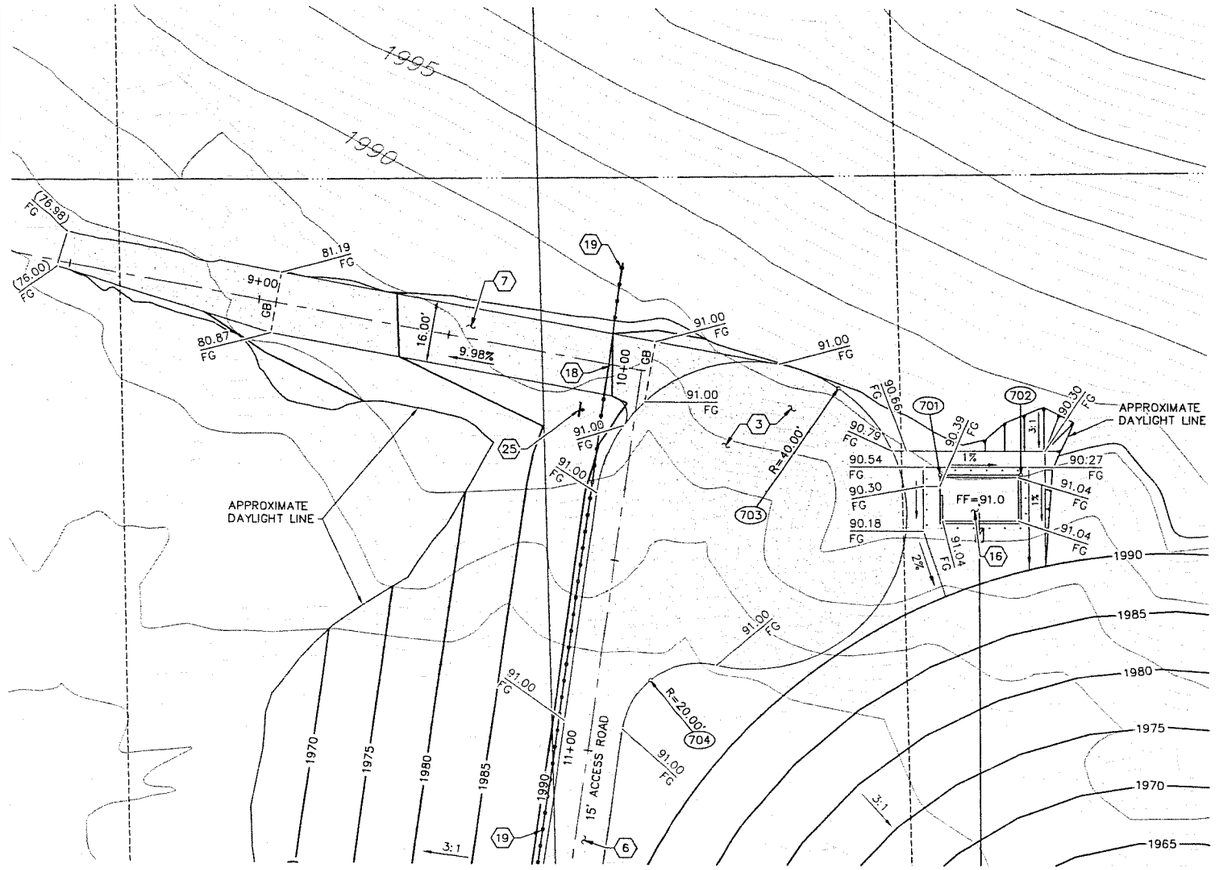
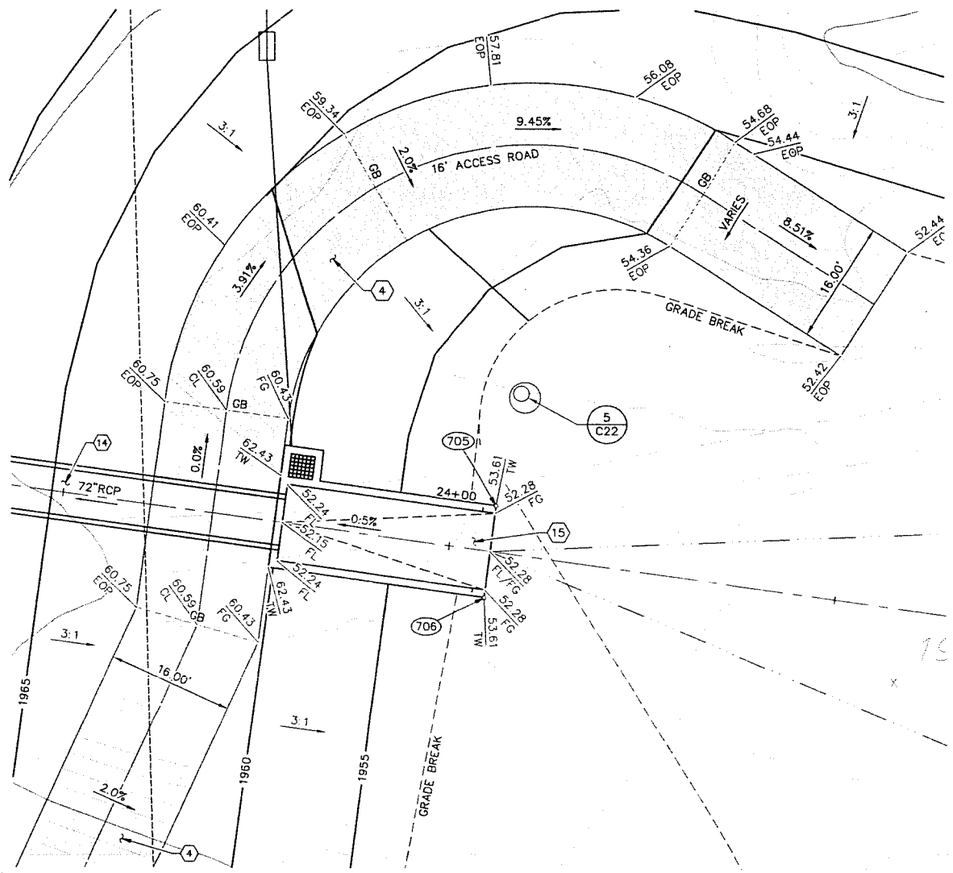
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: 1" = 20'
VERT: NONE
FIELD BOOK

DRAWING NO. C18A

SHT. OF





CONSTRUCTION NOTES

(3) CONSTRUCT TYPE II AGGREGATE BASE. (SIMILAR TO 7/C-21)
(4) CONSTRUCT 16' ROLLER COMPACTED CONCRETE ACCESS ROAD. (SEE DETAIL 8/C-21)
(6) CONSTRUCT 15' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 7/C-21)
(7) CONSTRUCT 16' WIDE TYPE II ACCESS ROAD. (SEE DETAIL 4/C-21)
(14) INSTALL OUTLET PIPE. (SEE C-13)
(15) CONSTRUCT OUTLET STRUCTURE. (SEE DETAIL 1/S-10)
(16) CONSTRUCT MONITORING STATION. (SEE DETAIL 1/C-22)
(18) INSTALL BLOCK AND CHAIN GATE (WIDTH PER PLAN, SEE DETAIL 7/C-25)
(19) INSTALL BLOCK AND CHAIN FENCE. (SEE DETAIL 7/C-25)
(25) INSTALL SIGN POST AND WARNING SIGN. (SEE DETAIL 8/C-24)

COORDINATE TABLE			
No.	NORTHING	EASTING	DESCRIPTION
701	726753.1380	847519.9419	MONITORING STATION
702	726753.1380	847540.6006	MONITORING STATION
703	726742.5008	847471.5172	CENTER
704	726683.9887	847458.2381	CENTER
705	726577.9041	847559.1750	OUTFALL STRUCTURE
706	726566.0180	847557.5251	OUTFALL STRUCTURE

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ACCESS ROAD

SCALE: 1" = 20' (2/C-19)

OUTFALL STRUCTURE

SCALE: 1" = 10' (1/C-19)

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

ACCESS ROAD AND OUTFALL STRUCTURE ENLARGEMENT

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

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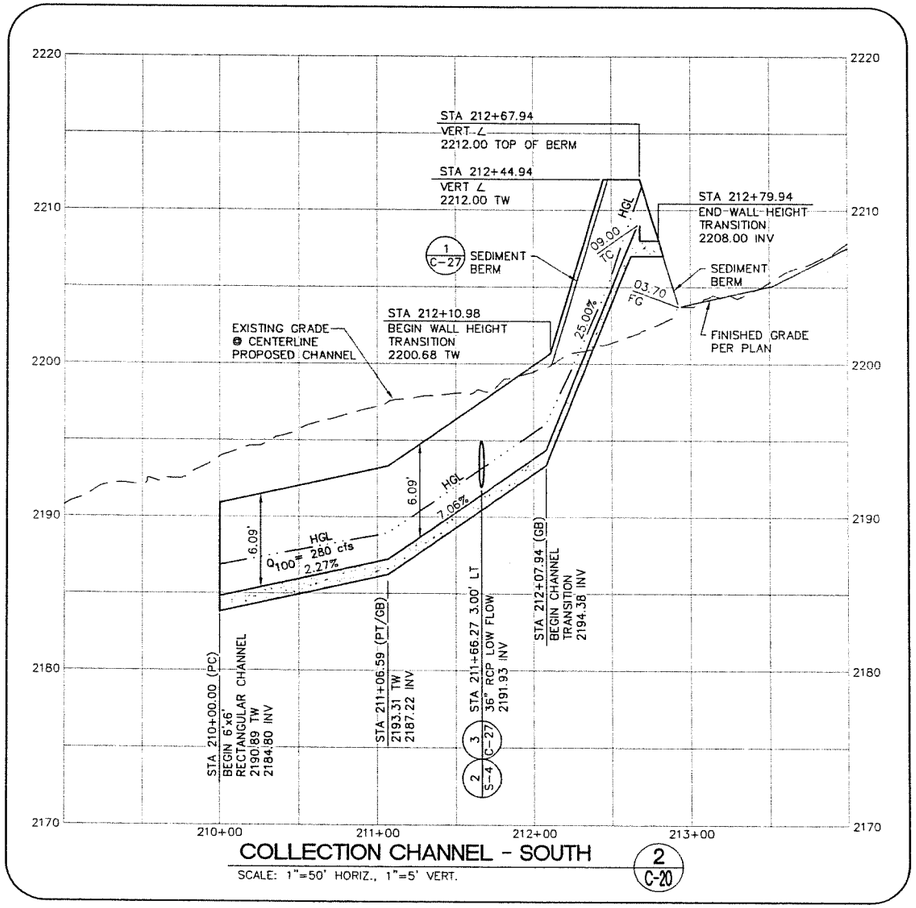
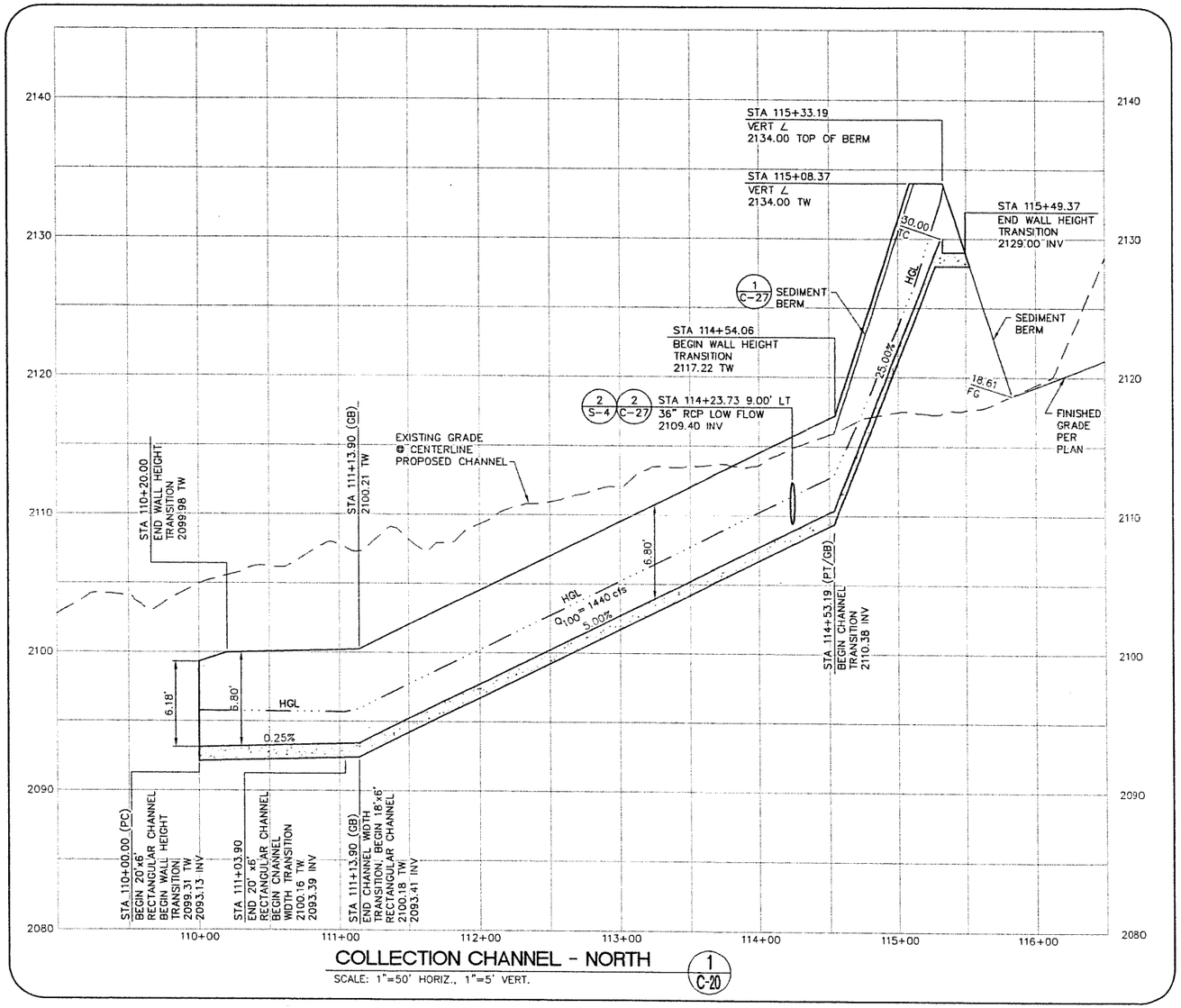
SCALE
HORIZ: AS SHOWN
VERT: NONE
FIELD BOOK

DRAWING NO. C-19
SHT. OF



COLLECTION CHANNEL - SOUTH (2 C-20)

SCALE: 1"=50' HORIZ., 1"=5' VERT.



COLLECTION CHANNEL - NORTH (1 C-20)

SCALE: 1"=50' HORIZ., 1"=5' VERT.

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

COLLECTION CHANNEL PROFILES

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

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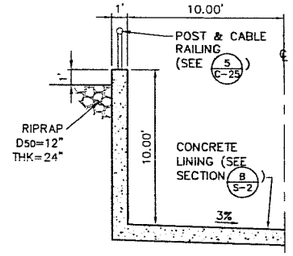
SCALE
HORIZ: 1"=50'
VERT: 1"=5'
FIELD BOOK

DRAWING NO. C-20

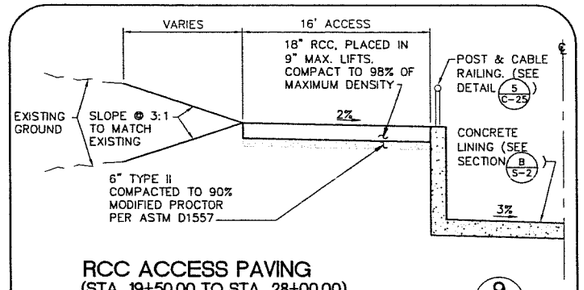
SHT. OF



SECTION (STA 12+30.21 TO STA 13+74.84)

NOT TO SCALE

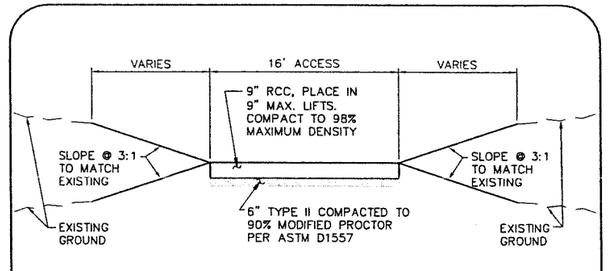
10 C-21



RCC ACCESS PAVING (STA 19+50.00 TO STA 28+00.00)

NOT TO SCALE

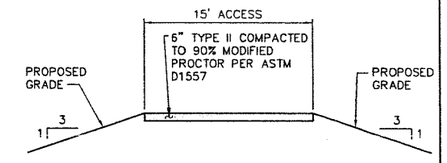
9 C-21



16' RCC ACCESS ROAD SECTION

NOT TO SCALE

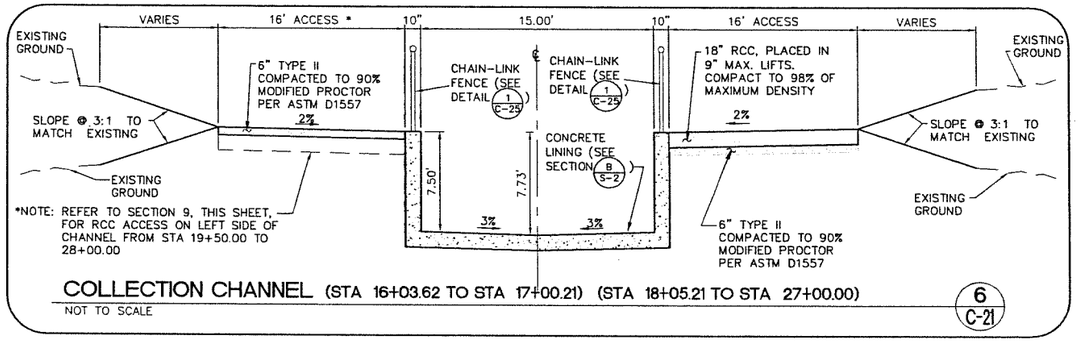
8 C-21



15' TYPE II ACCESS ROAD SECTION

NOT TO SCALE

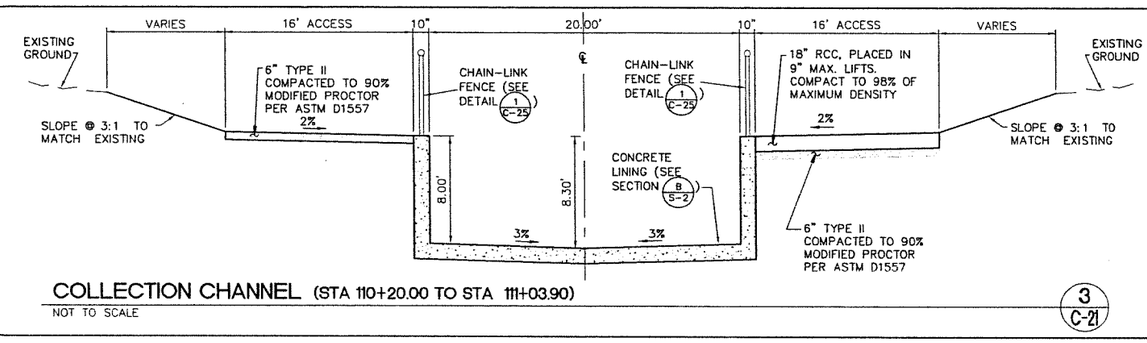
7 C-21



COLLECTION CHANNEL (STA 16+03.62 TO STA 17+00.21) (STA 18+05.21 TO STA 27+00.00)

NOT TO SCALE

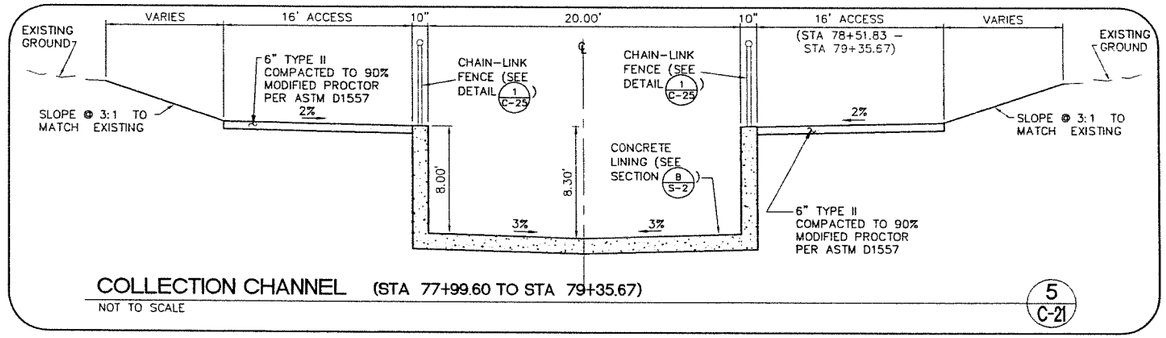
6 C-21



COLLECTION CHANNEL (STA 110+20.00 TO STA 111+03.90)

NOT TO SCALE

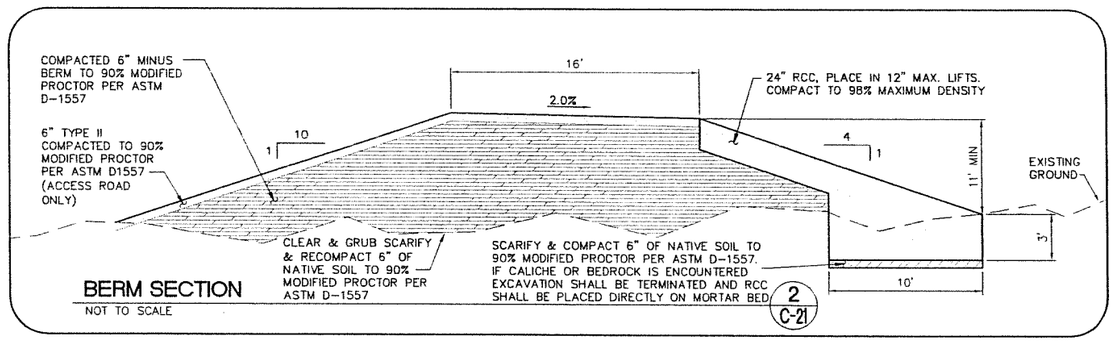
3 C-21



COLLECTION CHANNEL (STA 77+99.60 TO STA 79+35.67)

NOT TO SCALE

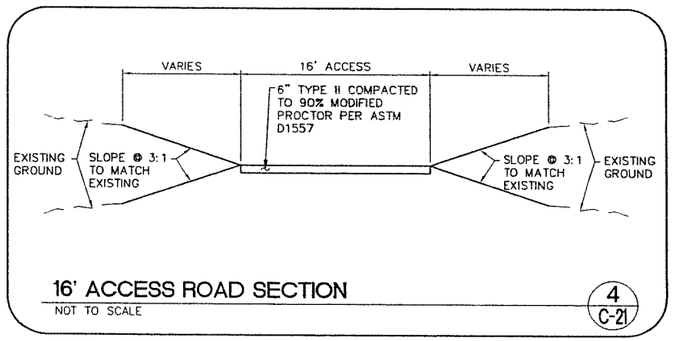
5 C-21



BERM SECTION

NOT TO SCALE

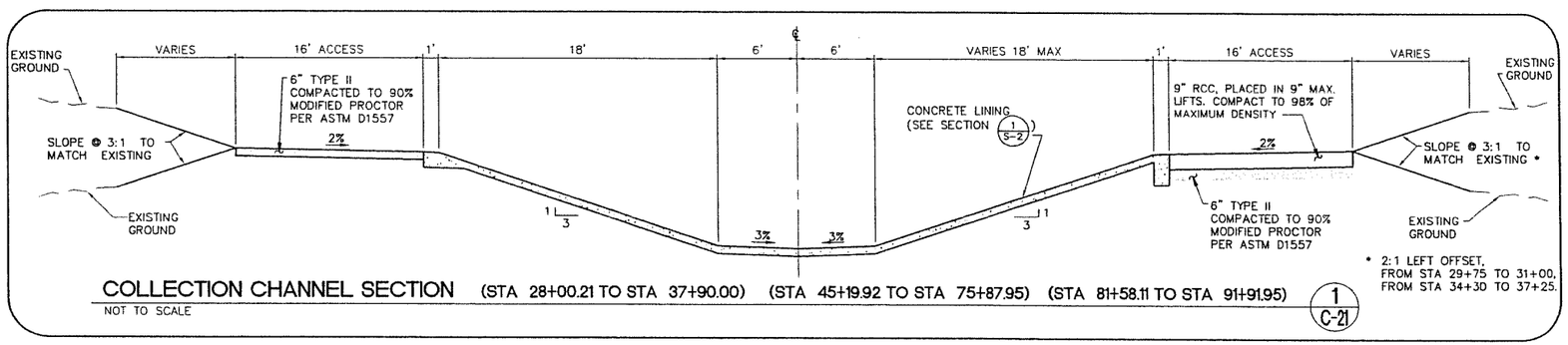
2 C-21



16' ACCESS ROAD SECTION

NOT TO SCALE

4 C-21



COLLECTION CHANNEL SECTION (STA 28+00.21 TO STA 37+90.00) (STA 45+19.92 TO STA 75+87.95) (STA 81+58.11 TO STA 91+91.95)

NOT TO SCALE

1 C-21

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

CHANNEL AND BERM SECTIONS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY:

DESIGNED BY: CHECKED BY:

APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE

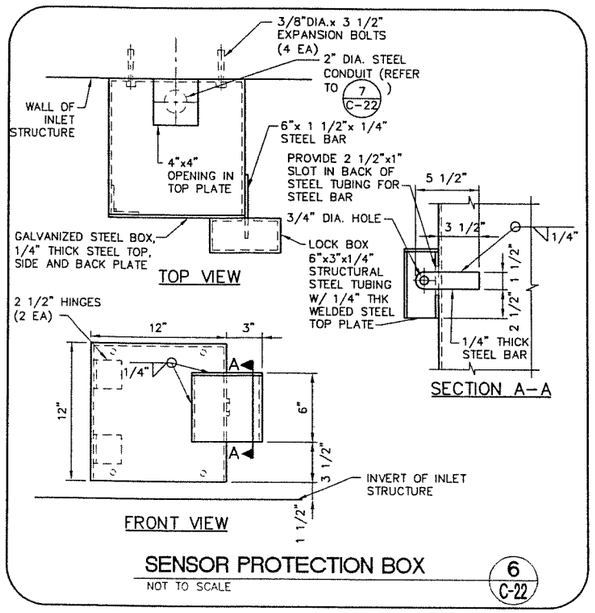
HORIZ: NONE

VERT: NONE

FIELD BOOK

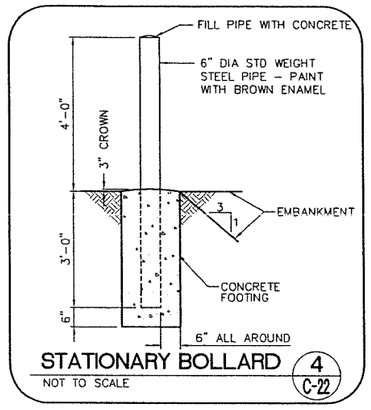
DRAWING NO. C-21

SHT. OF



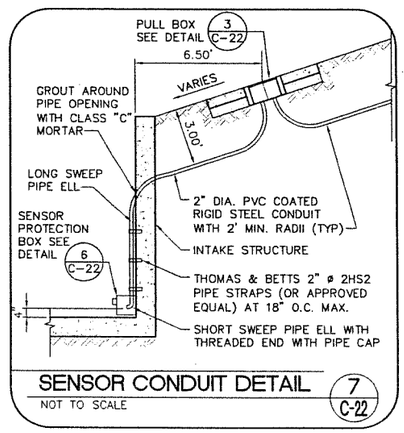
SENSOR PROTECTION BOX

NOT TO SCALE — 6 / C-22



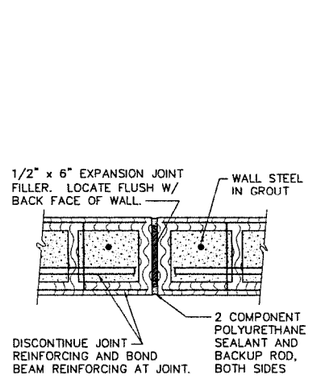
STATIONARY BOLLARD

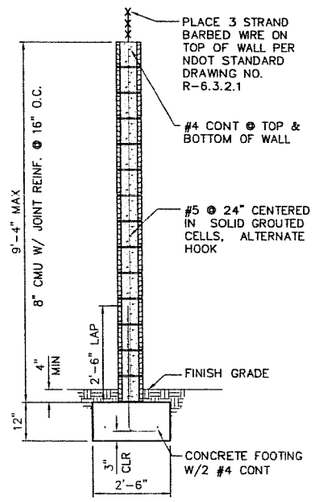
NOT TO SCALE — 4 / C-22



SENSOR CONDUIT DETAIL

NOT TO SCALE — 7 / C-22





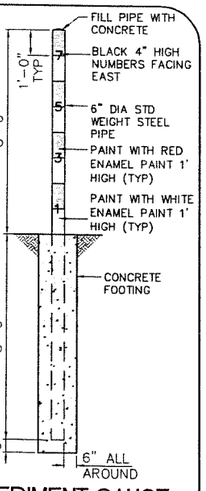
WALL CROSS SECTION

NOT TO SCALE — 2 / C-22

GENERAL STRUCTURAL NOTES:

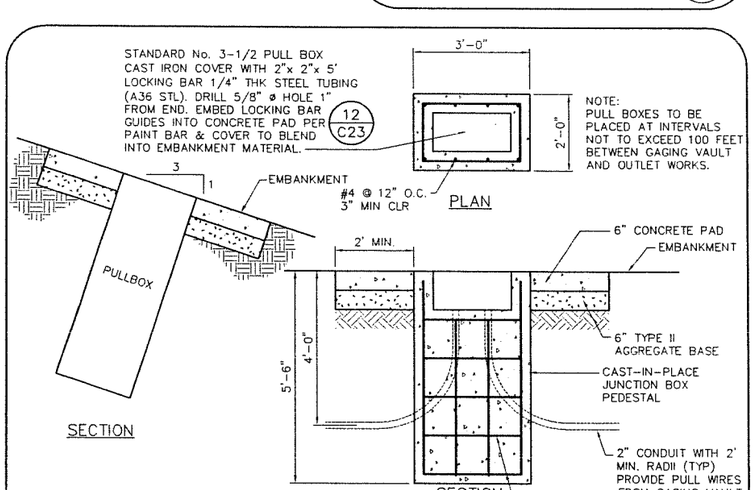
1. REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60.
2. CONCRETE SHALL HAVE A MINIMUM STRENGTH OF 3000 psi AT 28 DAYS USING TYPE V CEMENT PER ASTM C-150. (DESIGN BASED ON f'c=2500 psi, NO SPECIAL INSPECTION IS REQUIRED)
3. MASONRY UNITS SHALL BE ASTM C-90, GRADE N-1 HOLLOW CONCRETE UNITS. MASONRY DESIGN STRESS IS AS FOLLOWS: f'm=1500 psi. HALF STRESSES ARE USED. SPECIAL INSPECTION IS NOT REQUIRED.
4. MORTAR SHALL BE ASTM C270, TYPE "M" OR "S" WITH A MINIMUM STRENGTH OF 1800 psi AT 28 DAYS.
5. GROUT SHALL HAVE A MINIMUM STRENGTH OF 2000 psi AT 28 DAYS USING TYPE V CEMENT PER ASTM C-150.
6. HORIZONTAL JOINT REINFORCING, WHERE REQUIRED, SHALL BE 9-GA. LADDER TYPE WITH LAP SPLICES OF 12" MINIMUM; INCLUDING CORNERS AND INTERSECTIONS.
7. UNLESS OTHERWISE NOTED, ALL CONSTRUCTION SHALL CONFORM TO THE UNIFORM BUILDING CODE, LATEST EDITION, AND PER STANDARD SPECIFICATIONS FOR THE CITY OF HENDERSON, NEVADA, BUILDING DEPARTMENT.
8. ALL WALLS ARE SUBJECT TO APPROVAL BY THE CITY OF HENDERSON, NEVADA, BUILDING DEPARTMENT.
9. SOLID GROUT ALL MASONRY UNITS THAT ARE BELOW THE HIGHEST FINISH GRADE AT THE WALL.
10. ALL CORNERS OR ANGLES SHALL BE TIED TOGETHER WITH REINFORCING STEEL AND GROUTED SOLID.
11. WHERE VERTICAL GROUT POURS ARE NOT CONTINUOUS FOR THE ENTIRE HEIGHT OF THE WALL, TERMINATE LIFT 1 1/2" BELOW TOP OF TOP BLOCK TO FORM A KEY FOR FUTURE LIFTS.
12. LOCATE CONSTRUCTION JOINT IN WALL AT A MAXIMUM SPACING OF 24'-0".
13. BOND BEAMS AND JOINT REINFORCING SHALL NOT BE CONTINUOUS THROUGH WALL CONSTRUCTION JOINTS.
14. WHERE RETAINING WALLS ARE SHOWN ON PERIMETER STREETS, USE DECORATIVE BLOCK TO MATCH THOSE OF THE PERIMETER WALLS.
15. SOILS REPORT PREPARED BY WESTERN TECHNOLOGIES, INC., PROJECT No. 4125JD022 DATED JUNE 29, 2005.

ALLOWABLE SOILS BEARING PRESSURE = 3000
psf SOIL ACTIVE PRESSURE = 30 psf/ft (LEVEL)
SOIL PASSIVE PRESSURE = 300 psf/ft
COEFFICIENT OF FRICTION = 0.35



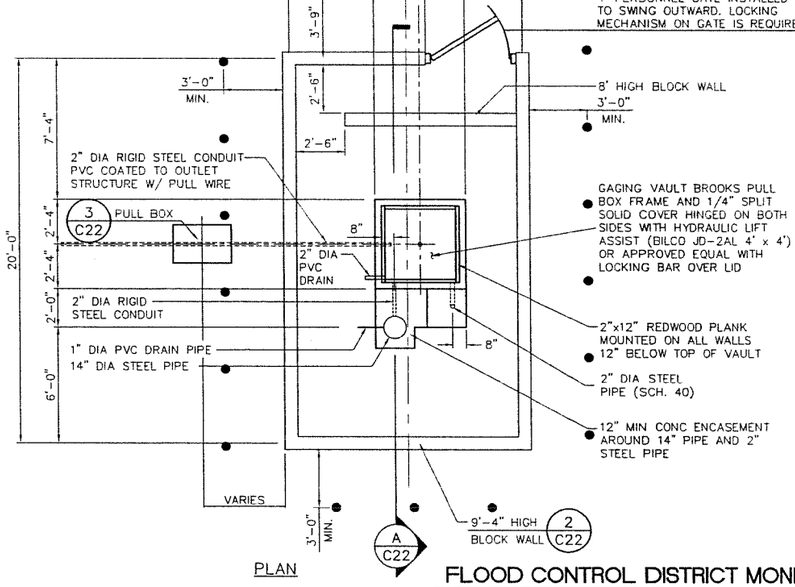
SEDIMENT GAUGE DETAIL

NOT TO SCALE — 5 / C-22



PULL BOX PEDESTAL DETAIL

NOT TO SCALE — 3 / C-22



FLOOD CONTROL DISTRICT MONITORING STATION

NOT TO SCALE — 1 / C-22

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

FLOOD CONTROL DISTRICT MONITORING STATION AND DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

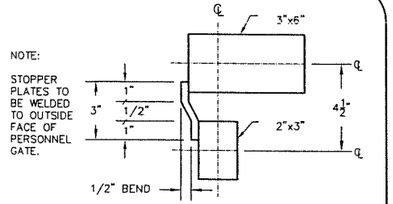
FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504-424 DRAWN BY: DWJ
DESIGNED BY: _____ CHECKED BY: _____
APPROVED BY _____

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

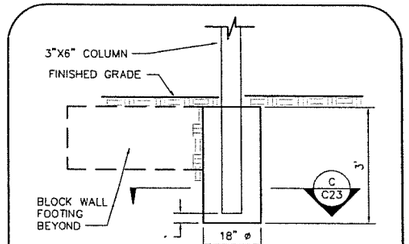
SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. C-22
SHT. OF



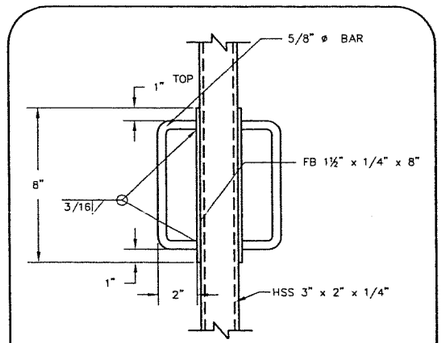
SECTION
NOT TO SCALE

D C-23



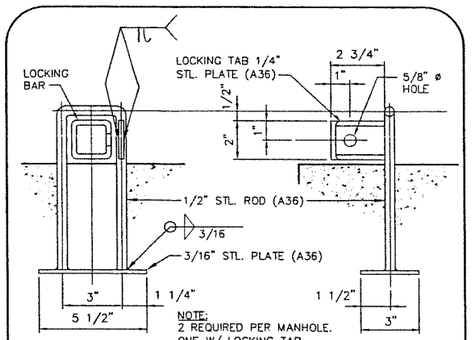
COLUMN - SECTION
NOT TO SCALE

13 C-23



PERSONAL GATE HANDLES
NOT TO SCALE (TYPICAL ON BOTH SIDES)

8 C-23

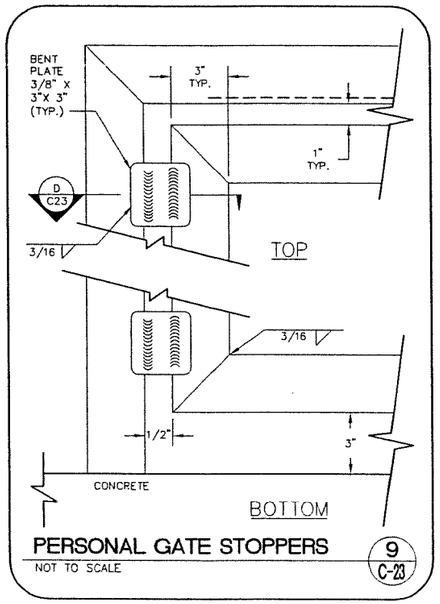


NOTE:
2 REQUIRED PER MANHOLE.
ONE W/ LOCKING TAB,
ONE W/O LOCKING TAB

-PADLOCK PROVIDED BY DISTRICT

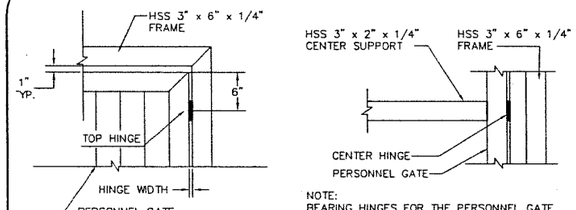
LOCKING BAR DETAIL
NOT TO SCALE

12 C-23



PERSONAL GATE STOPPERS
NOT TO SCALE

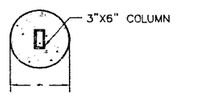
9 C-23



NOTE:
BEARING HINGES FOR THE PERSONNEL GATE SHALL BE 83353 BARREL TYPE BALL BEARING AS SUPPLIED BY BUILDERS FENCE COMPANY OR APPROVED EQUAL. 3 PAIR TOTAL. CAPACITY - 600LB PER PAIR.

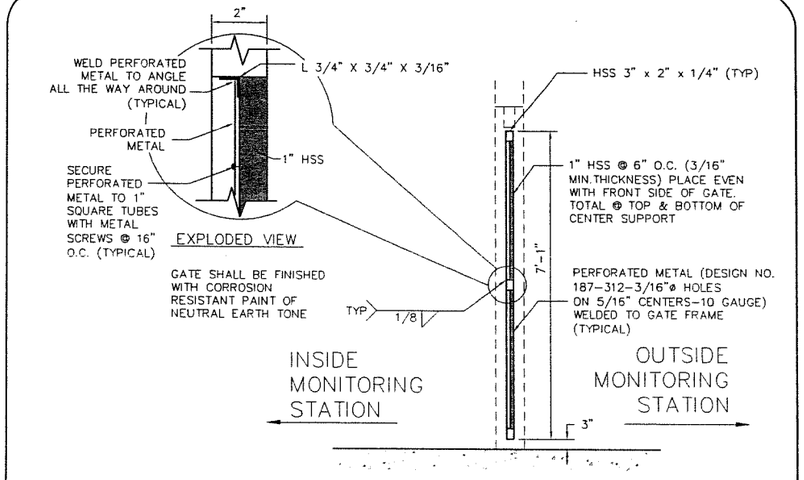
PERSONNEL GATE HINGE DETAIL
NOT TO SCALE

6 C-23



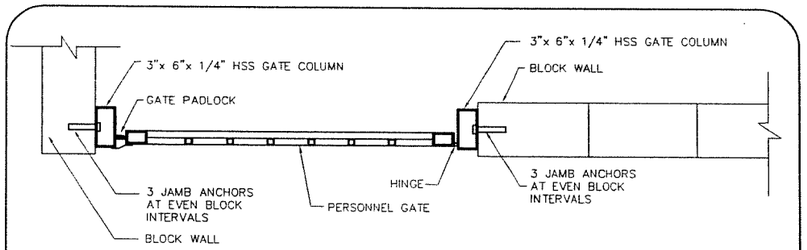
SECTION
NOT TO SCALE

C C-23



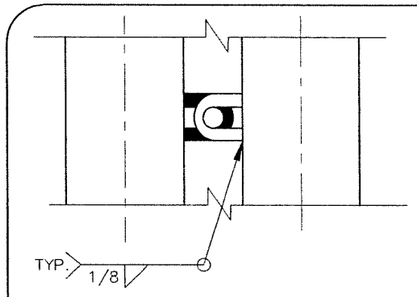
SWING GATE - SECTION
NOT TO SCALE

11 C-23

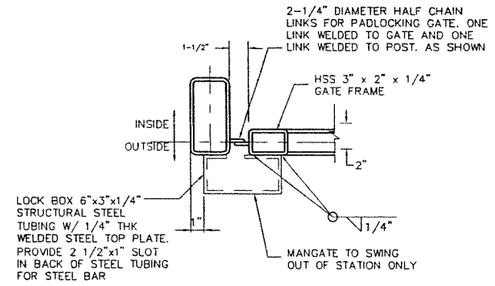


FRAME CROSS SECTION
NOT TO SCALE

10 C-23

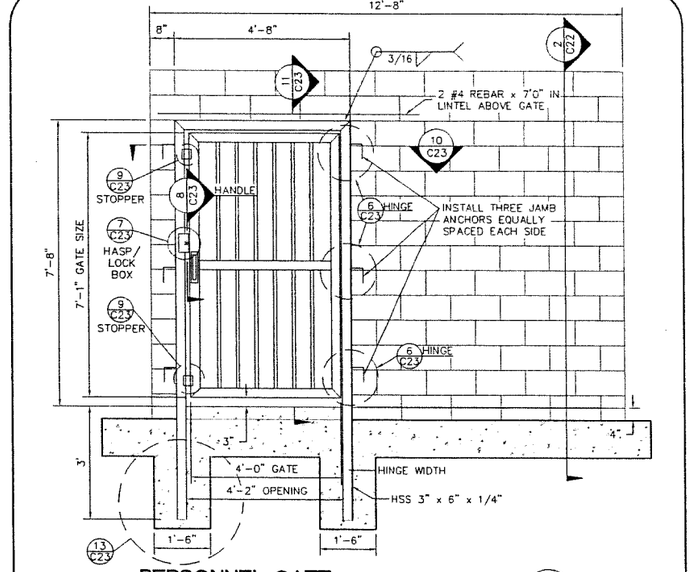


NOTE: HASP TO BE LOCATED 3" MINIMUM ABOVE HANDLE TO INSURE SUFFICIENT SPACE FOR OPERATION OF LOCK.



HASP/LOCK BOX ASSEMBLY
NOT TO SCALE

7 C-23



PERSONNEL GATE
NOT TO SCALE

2 C-23

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
FLOOD CONTROL DISTRICT
MONITORING STATION AND DETAILS
CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

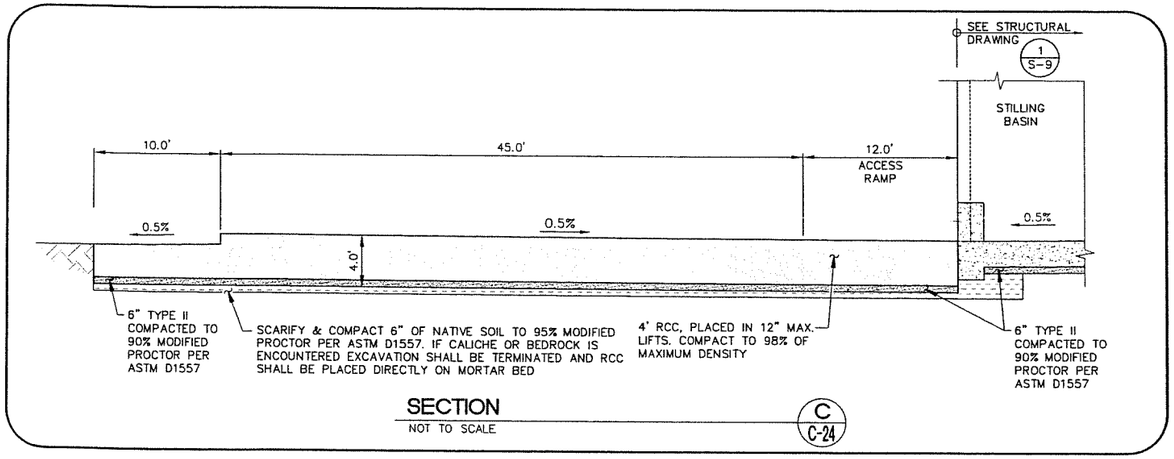
FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

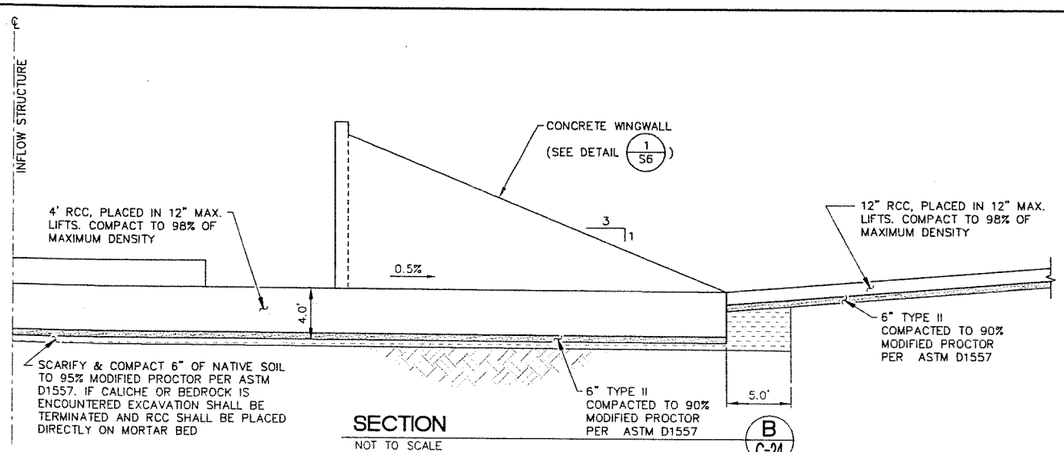
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. C-23
SHT. OF



SECTION
NOT TO SCALE
C
C-24



SECTION
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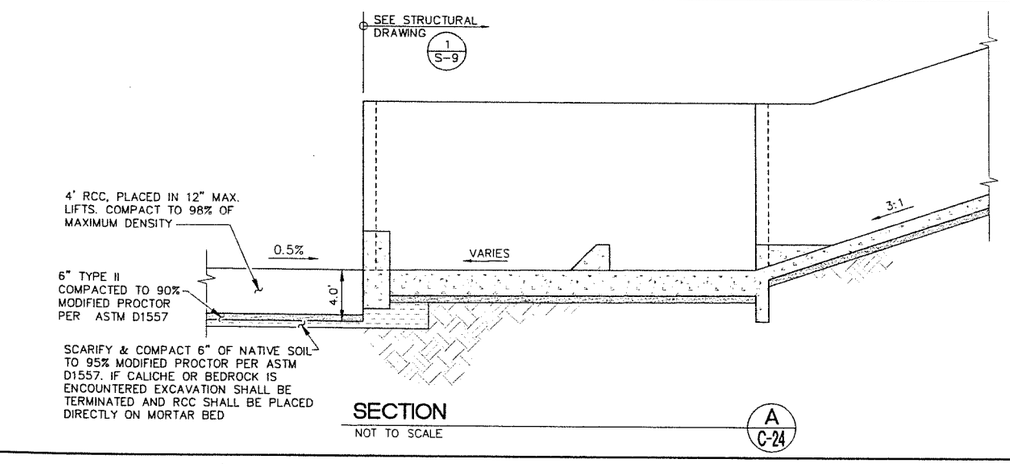
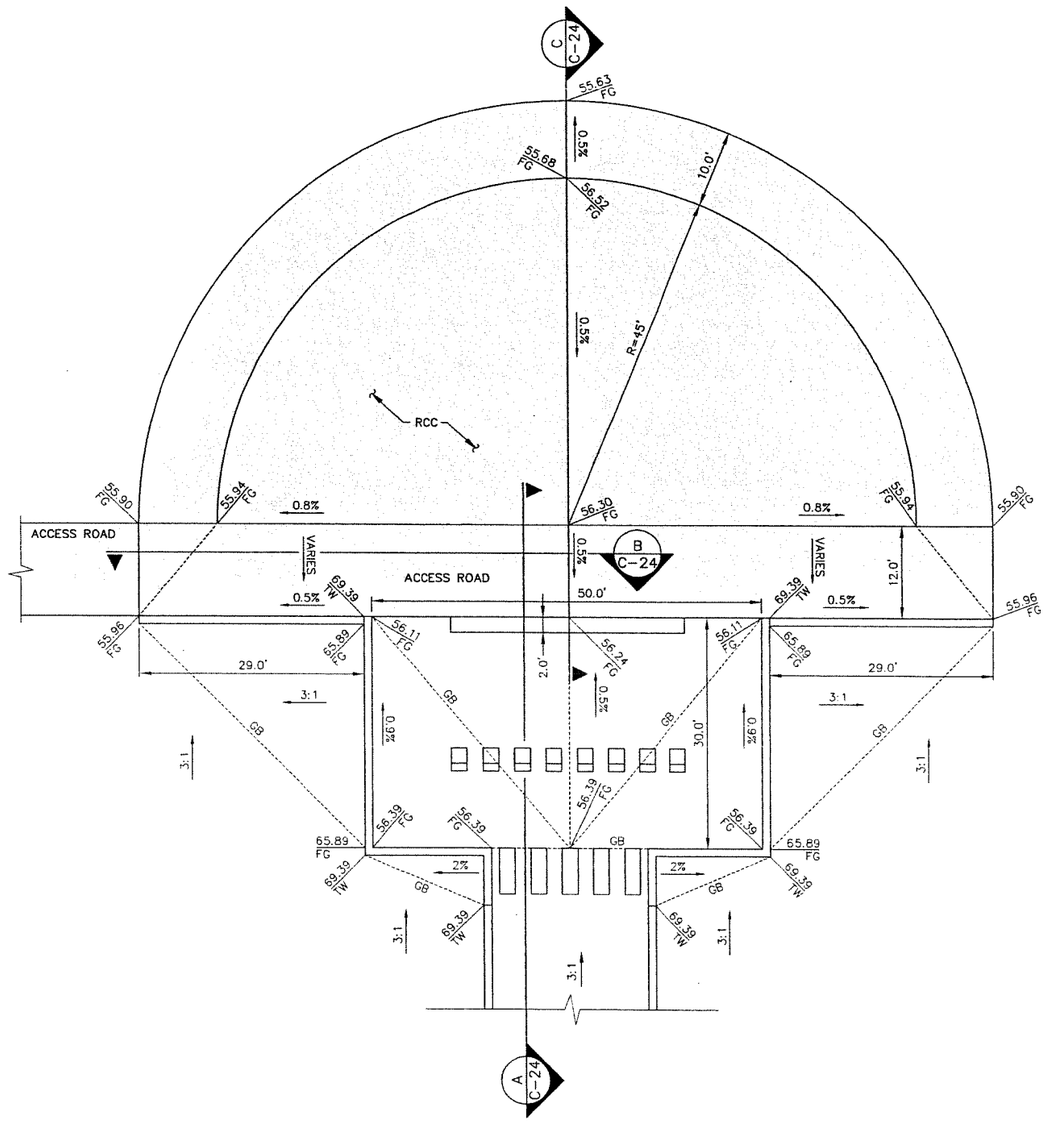
C-24



SECTION
NOT TO SCALE
A
C-24



INFLOW STRUCTURE
NOT TO SCALE
1
C-24

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
INFLOW STRUCTURE DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

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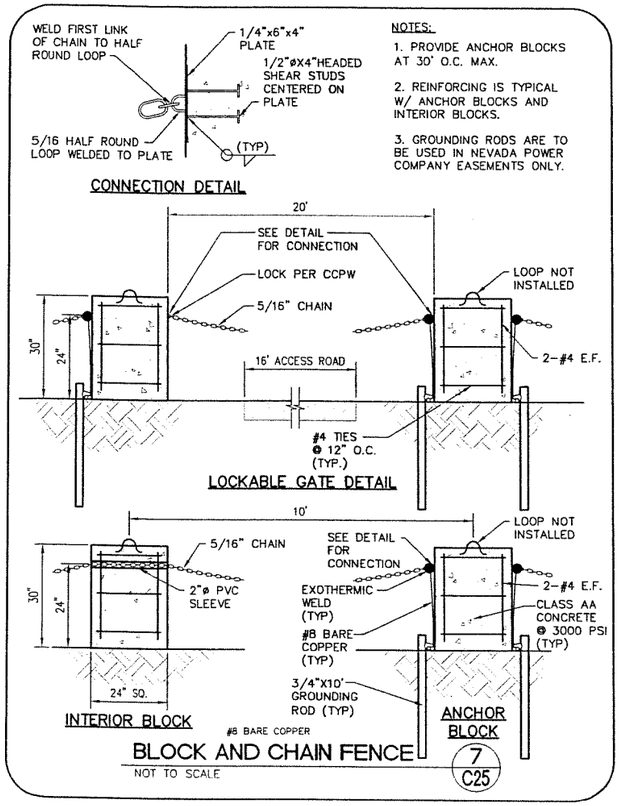
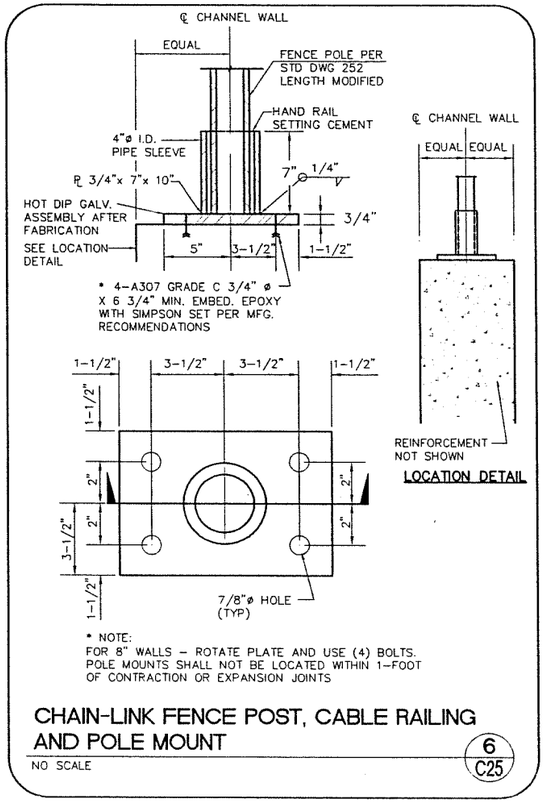
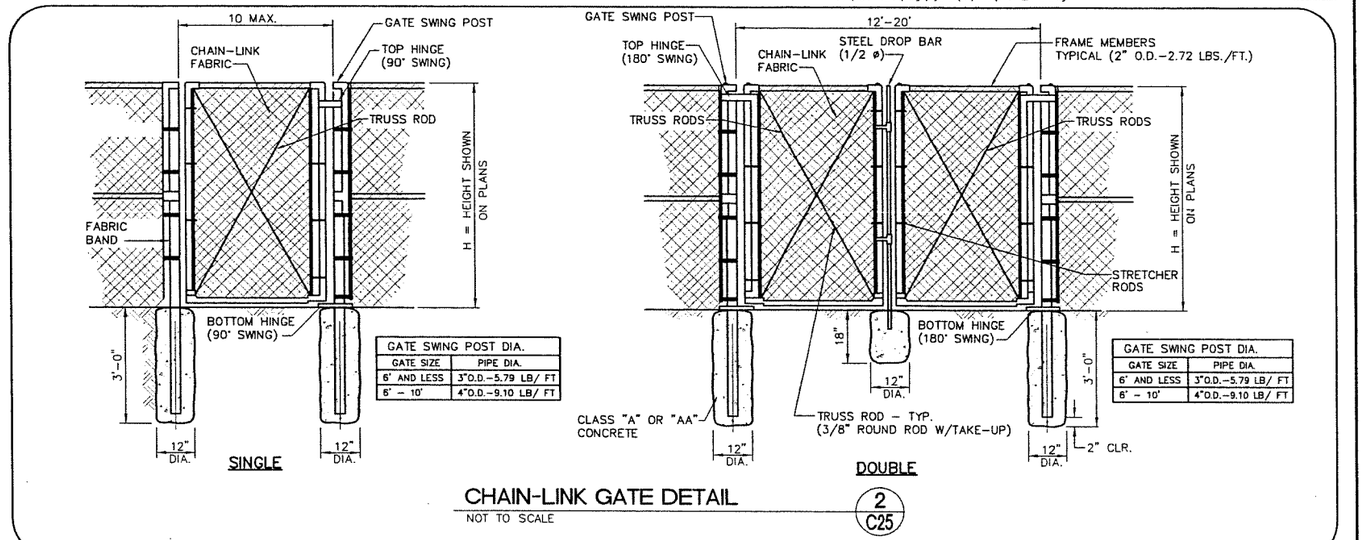
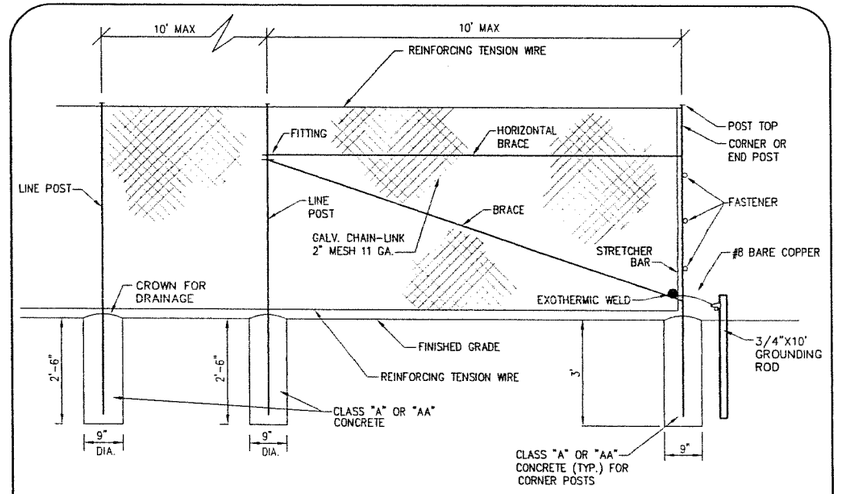
SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO.
C-24
SHT. OF







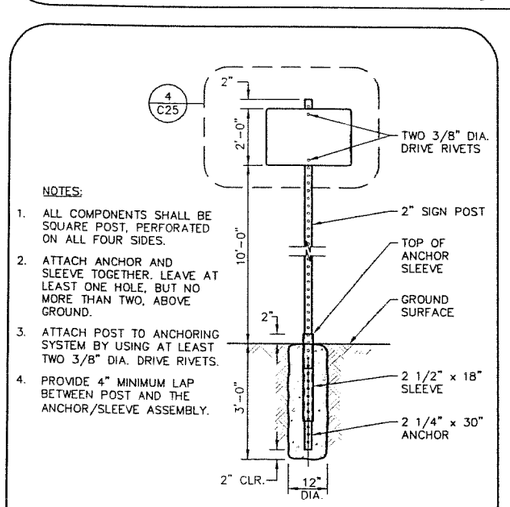


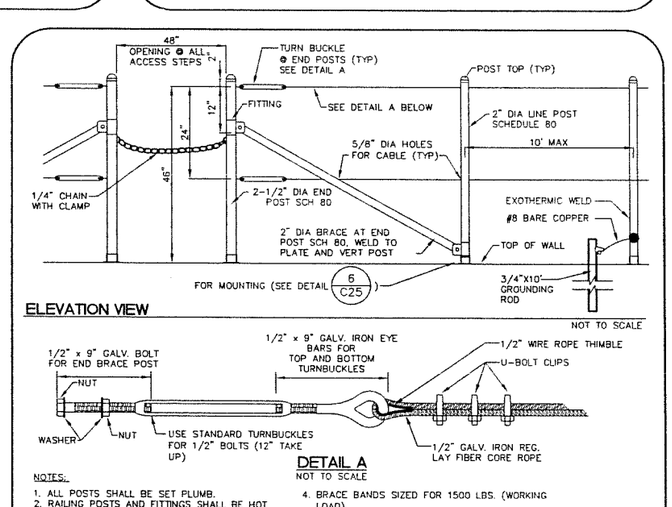
NOTES:
1. FENCING SHALL BE CHAIN-LINK AND SHALL CONSIST OF GALVANIZED CHAIN-LINK FABRIC ON STEEL POSTS.
   (A) ALL POST TOPS SHALL BE FITTED WITH SUITABLE FINIALS.
   (B) BRACES SHALL BE SPACED APPROXIMATELY 12' BELOW TOP OF TERMINAL POSTS AND SHALL EXTEND FROM END, GATE, OR CORNER POSTS TO FIRST ADJACENT LINE POST.
   (C) ALL FITTINGS SHALL BE HOT DIPPED GALVANIZED MALLEABLE, CAST IRON, OR PRESSED STEEL
   (D) TOP AND BOTTOM SELVAGES OF THE FENCE SHALL HAVE A TWISTED AND BARBED FINISH.
5. 2 GROUNDING RODS MIN. PER POWER EASEMENT. 100' O.C. MAX. SPACING. GROUNDING RODS ARE TO BE USED IN NEVADA POWER COMPANY EASEMENTS ONLY.

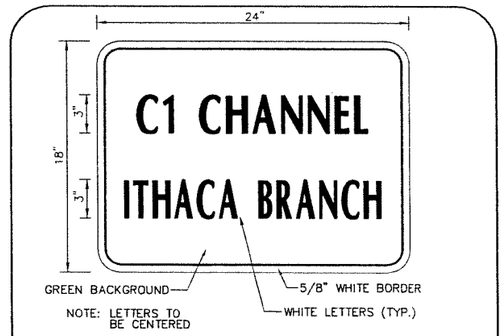
TABLE I
FOR 6' HIGH CHAIN-LINK FENCE

LOCATION	MIN. SIZE	MIN. WEIGHT
END, CORNER AND PULL	2.351 O.D.	3.10
LINE	2.00 O.D.	2.72
BRACES	1.63 O.D.	2.27
TOP RAIL	1.63 O.D.	2.27

CHAIN-LINK FENCE DETAIL
NOT TO SCALE
1
C25







REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
FENCING DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

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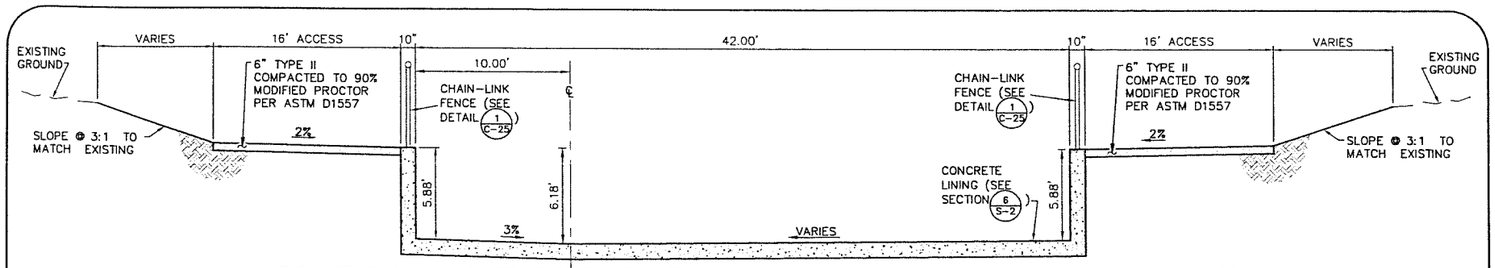
SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO.
C-25

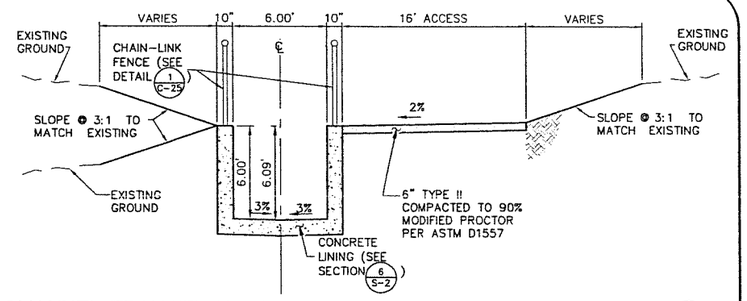
SHT. OF



COLLECTION CHANNEL CONFLUENCE SECTION (STA 40+28.71 TO STA 40+70.71)

NOT TO SCALE

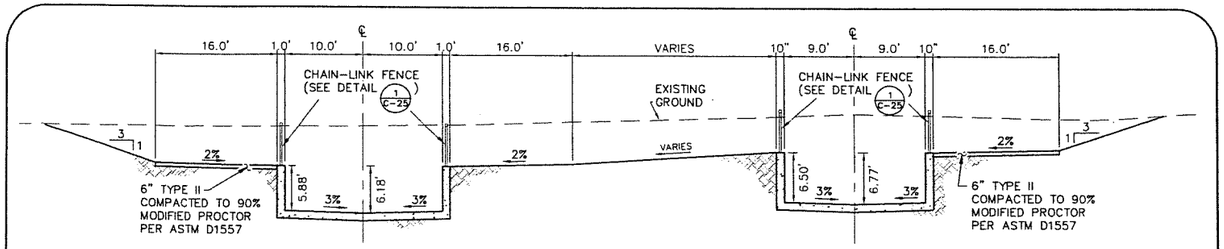
5 C-26



COLLECTION CHANNEL TRANSITION SECTION (STA 210+00.00 TO STA 212+07.94)

NOT TO SCALE

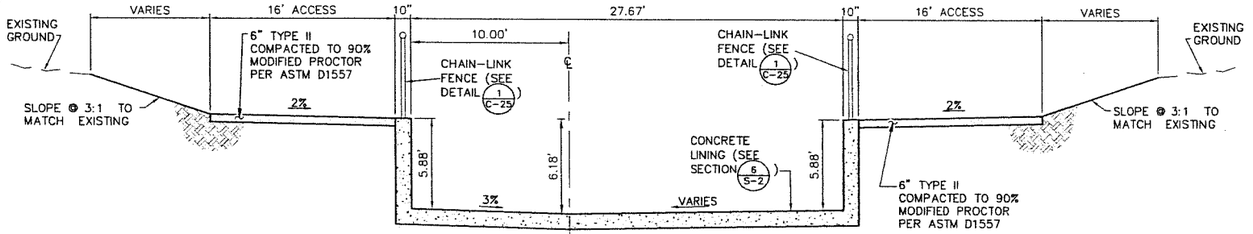
4 C-26



COLLECTION CHANNEL CONFLUENCE SECTION (STA 41+88.96 TO STA 43+56.39)

NOT TO SCALE

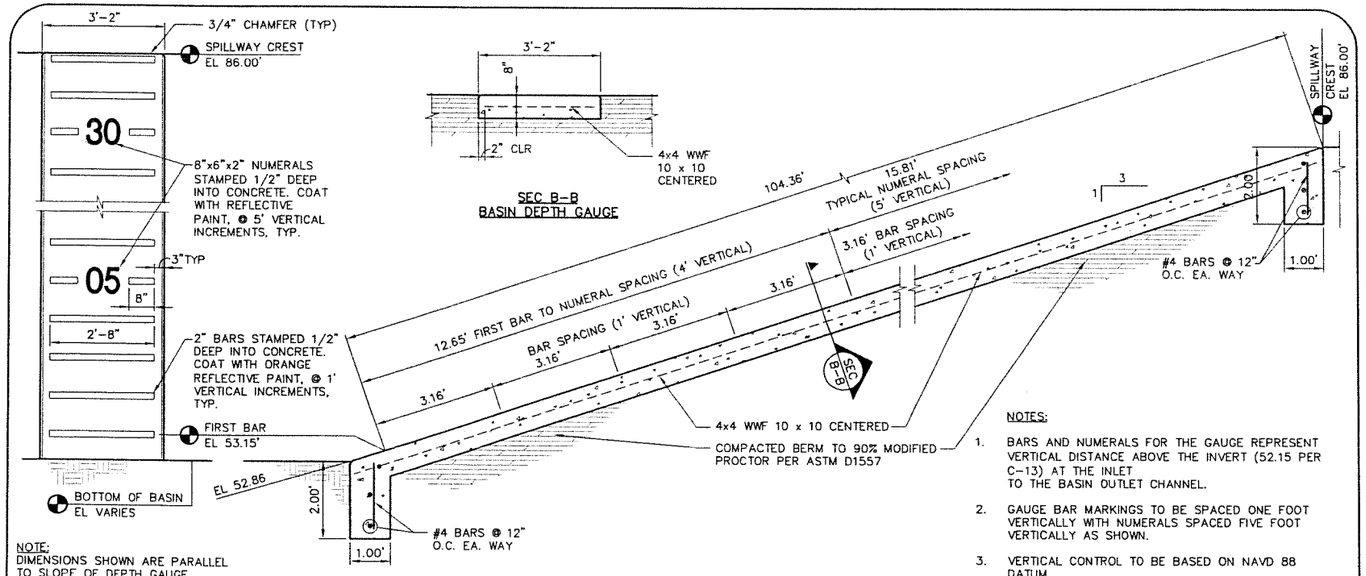
7 C-26



COLLECTION CHANNEL CONFLUENCE SECTION (STA 77+59.60 TO STA 77+99.60)

NOT TO SCALE

3 C-26



NOTE:
DIMENSIONS SHOWN ARE PARALLEL TO SLOPE OF DEPTH GAUGE.

DETAIL 'A' NUMERICAL MARKINGS

BASIN DEPTH GAUGE PROFILE

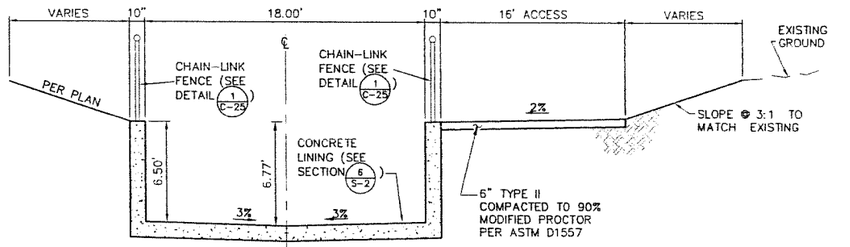
NOTES:

1. BARS AND NUMERALS FOR THE GAUGE REPRESENT VERTICAL DISTANCE ABOVE THE INVERT (52.15 PER C-13) AT THE INLET TO THE BASIN OUTLET CHANNEL.
2. GAUGE BAR MARKINGS TO BE SPACED ONE FOOT VERTICALLY WITH NUMERALS SPACED FIVE FOOT VERTICALLY AS SHOWN.
3. VERTICAL CONTROL TO BE BASED ON NAVD 88 DATUM.
4. BASIN DEPTH GAUGES CONSTRUCTED TO READ DEPTHS IN FEET BASED ON DEPTHS ABOVE BASIN OUTLET.

DEPTH GAUGE DETAIL

NOT TO SCALE

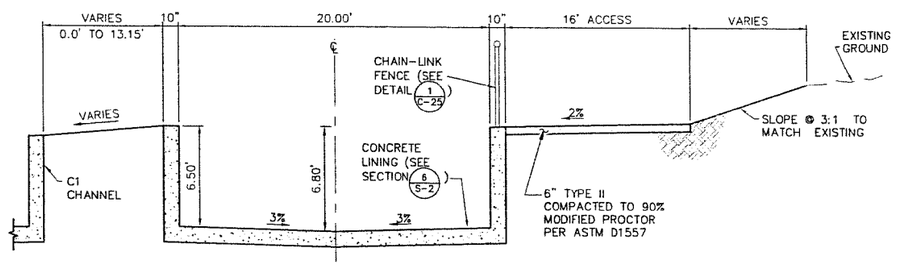
6 C-26



COLLECTION CHANNEL TRANSITION SECTION (STA 111+13.90 TO STA 114+53.19)

NOT TO SCALE

2 C-26



COLLECTION CHANNEL TRANSITION SECTION (STA 110+00.00 TO STA 111+03.90)

NOT TO SCALE

1 C-26

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

COLLECTION CHANNEL TRANSITIONAL SECTIONS AND DEPTH GAUGE DETAIL

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

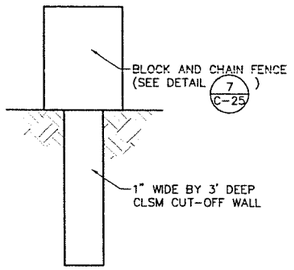
FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

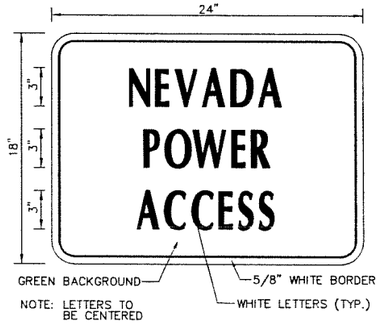
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. C-26
SHT. OF

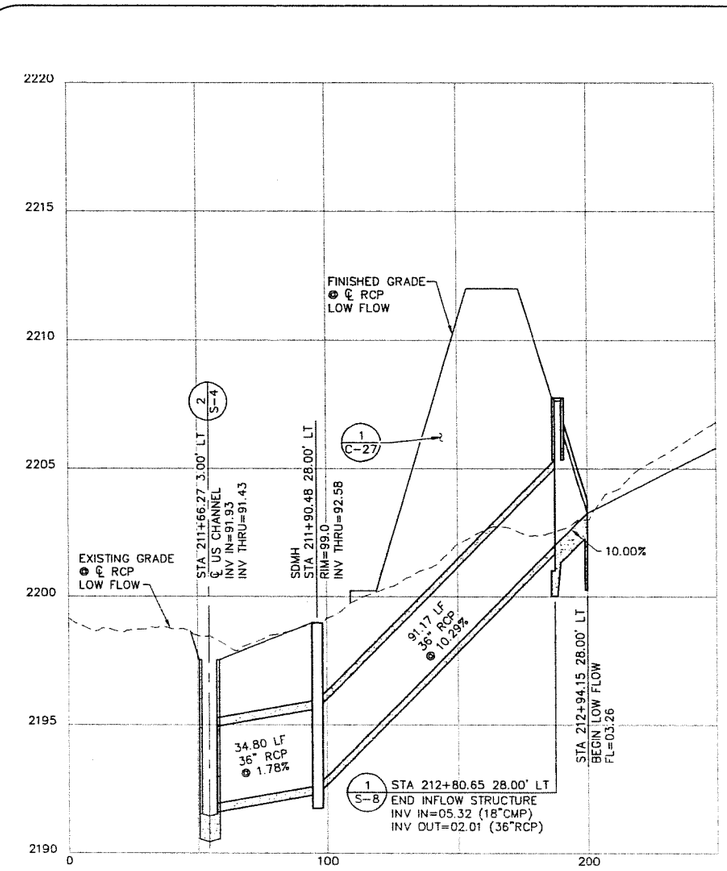


CLSM CUT-OFF WALL (6 C-27)
NOT TO SCALE

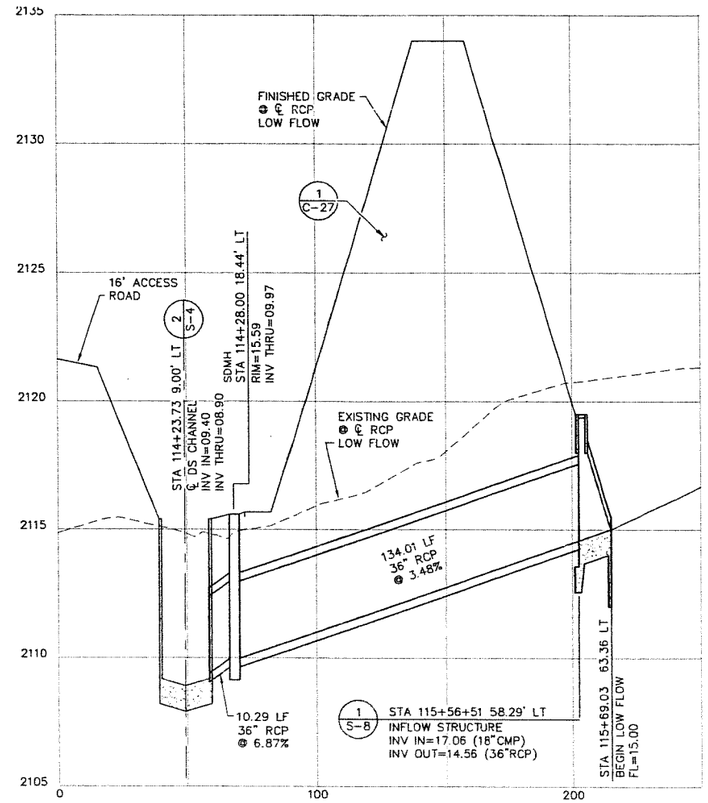


NOTE: ACCESS SIGNS SHALL BE PLACED ON BOTH SIDES OF GATE ON EACH SIDE OF CHANNEL.

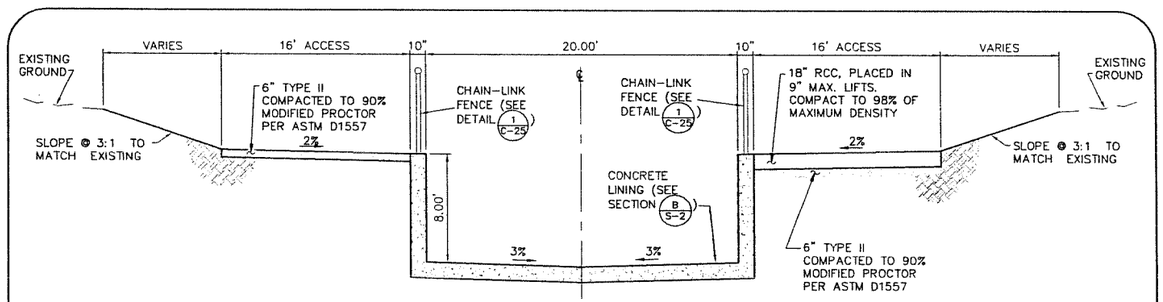
IDENTIFIER SIGN DETAIL (5 C-27)
NOT TO SCALE



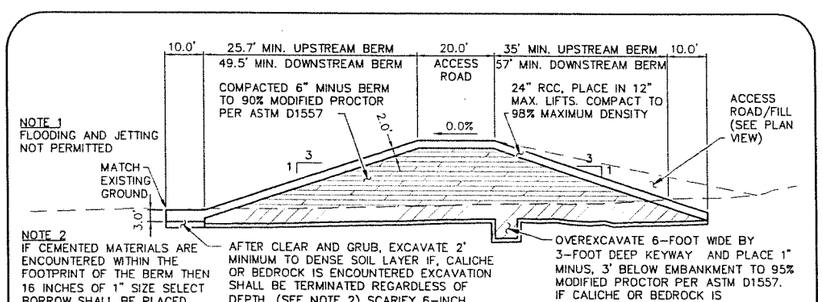
US CHANNEL LOW FLOW (3 C-27)
SCALE: 1"=30' HORIZ, 1"=3' VERT.



DS CHANNEL LOW FLOW (2 C-27)
SCALE: 1"=30' HORIZ, 1"=3' VERT.



COLLECTION CHANNEL (STA. 14+52.52 TO STA. 15+53.62) (4 C-27)
NOT TO SCALE



BERM SECTION (1 C-27)
NOT TO SCALE

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
COLLECTION CHANNEL BERM SECTIONS AND LOW FLOW PROFILES
CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

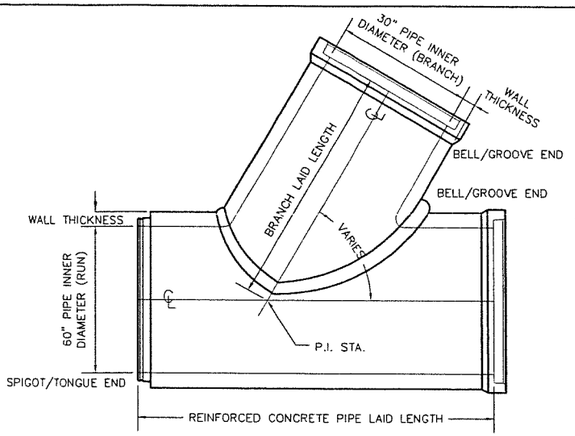
FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: AS SHOWN
VERT: AS SHOWN
FIELD BOOK

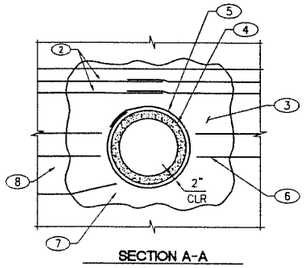
DRAWING NO. C-27
SHT. OF



PRECAST REINFORCED CONCRETE WYE

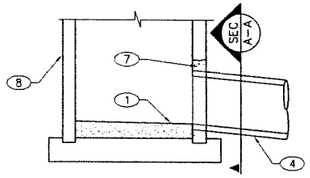
NOT TO SCALE

1 C-28



SECTION A-A

NOT TO SCALE



DETAIL

NOT TO SCALE

1. GROUT BOTTOM OF DRAIN STRUCTURE TO DRAIN
2. EXISTING REINFORCING TO REMAIN ABOVE RCP. CONTRACTOR OPTION: IF EXISTING REINFORCING CANNOT BE SALVAGED, DRILL AND EPOXY (PER MFR'S INSTRUCTIONS) REINFORCING BARS AS REQUIRED TO MATCH NUMBER AND SIZE OF BARS REMOVED OVER RCP
3. BREAK OUT EXISTING DRAIN STRUCTURE AS REQUIRED
4. NEW 30" RCP
5. 2 - #4 (MIN) HOOP BARS WITH 12" MIN LAP
6. CUT EXISTING REINFORCING 2" MIN CLEAR OF RCP AS SHOWN
7. CONCRETE FILL: f'c = 2500 PSI @ 28 DAYS
8. EXISTING DRAIN STRUCTURE

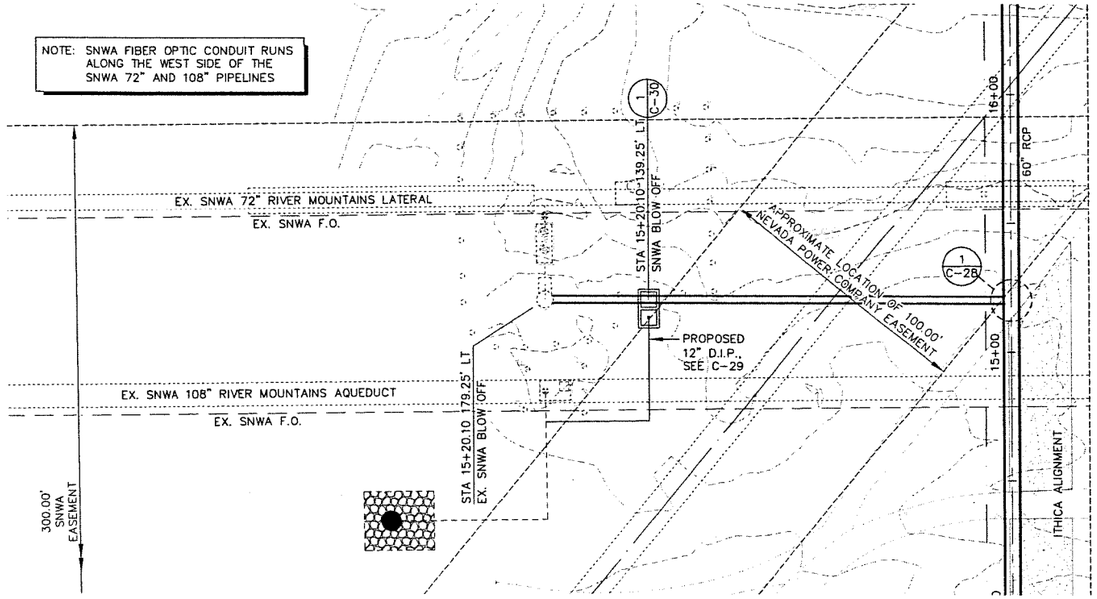
REFER TO CLARK COUNTY UNIFORM STANDARD DRAWING 406 FOR ADDITIONAL INFORMATION

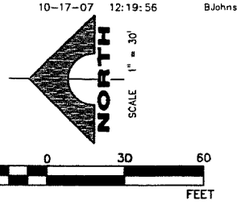
30" OUTLET AT EXISTING DRAIN STRUCTURE

NOT TO SCALE

2 C-28

NOTE: SNWA FIBER OPTIC CONDUIT RUNS ALONG THE WEST SIDE OF THE SNWA 72" AND 108" PIPELINES

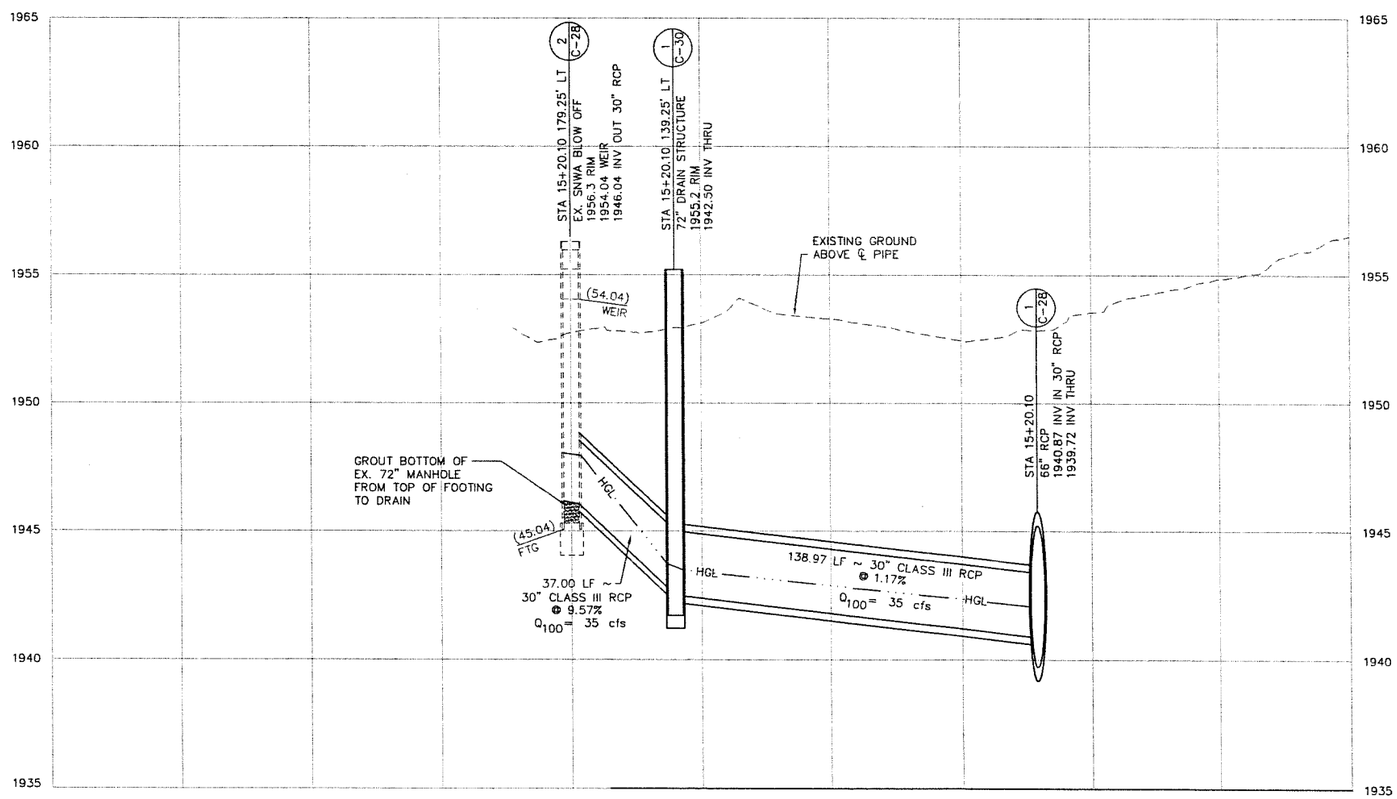


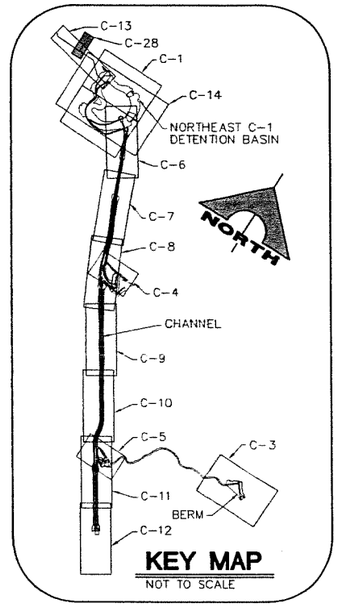


SOUTHERN NEVADA WATER AUTHORITY CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL SNWA/SNWS APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS AND CATHODIC PROTECTION SYSTEMS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. CATHODIC PROTECTION TEST STATIONS, RECTIFIERS, AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER SNWA STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY SOUTHERN NEVADA WATER AUTHORITY DEVELOPMENT PLAN REVIEW, AT (702) 862-3444 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
2. SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

SOUTHERN NEVADA WATER AUTHORITY DATE





KEY MAP

NOT TO SCALE

DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

SNWA BLOW OFF

PLAN AND PROFILE

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY:

DESIGNED BY: CHECKED BY:

APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE	
HORIZ:	1"=30'
VERT:	1"=3'
FIELD BOOK	

L

DRAWING NO. C-28

SHT. OF

SOUTHERN NEVADA WATER AUTHORITY CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL SNWA/SNWS APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS AND CATHODIC PROTECTION SYSTEMS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. CATHODIC PROTECTION TEST STATIONS, RECTIFIERS, AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER SNWA STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY SOUTHERN NEVADA WATER AUTHORITY DEVELOPMENT PLAN REVIEW, AT (702) 862-3444 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
2. SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

SOUTHERN NEVADA WATER AUTHORITY DATE

NOTE:

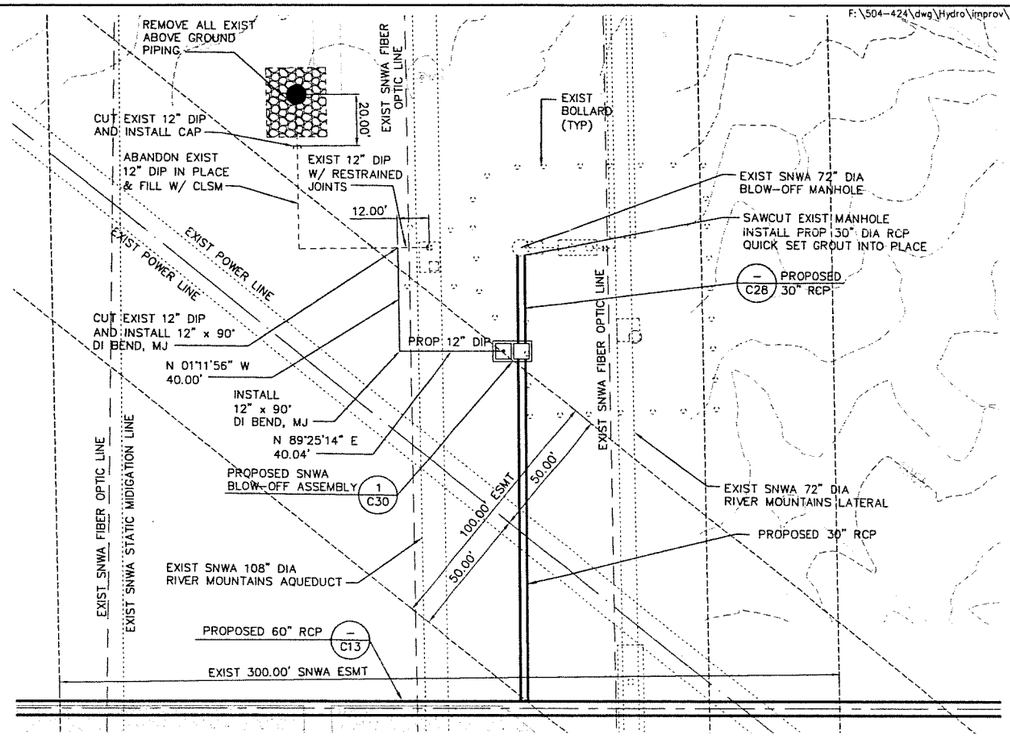
NON-POTABLE WATER AND SEWER PIPELINE CROSSING
AS PER SNWA PLATE NUMBER 03-04-01 - SHEET 2 OF 3

NOTE 1
"ALL NON-POTABLE WATER AND SEWER LINES CROSSING SNWS PIPELINES MUST MAINTAIN A MINIMUM OF THREE (3) FEET SEPARATION WHEN INSTALLED OVER SNWS PIPELINES."

THE PIPELINE IN THE DESIGN CROSSING ABOVE THE EXISTING SNWS PIPELINE IS IN EXCESS OF THE MINIMUM THREE (3) FOOT SEPARATION.

NOTE 2
"ALL NON-POTABLE WATER OR SEWER LINE CROSSINGS AT ANY DISTANCE ABOVE SNWS PIPELINE WILL BE CONSTRUCTED USING ONE OF THE FOLLOWING OPTIONS."
OPTION B
"THE LINE WILL BE CONSTRUCTED OF WATER QUALITY MATERIALS MEETING AWWA STANDARDS."

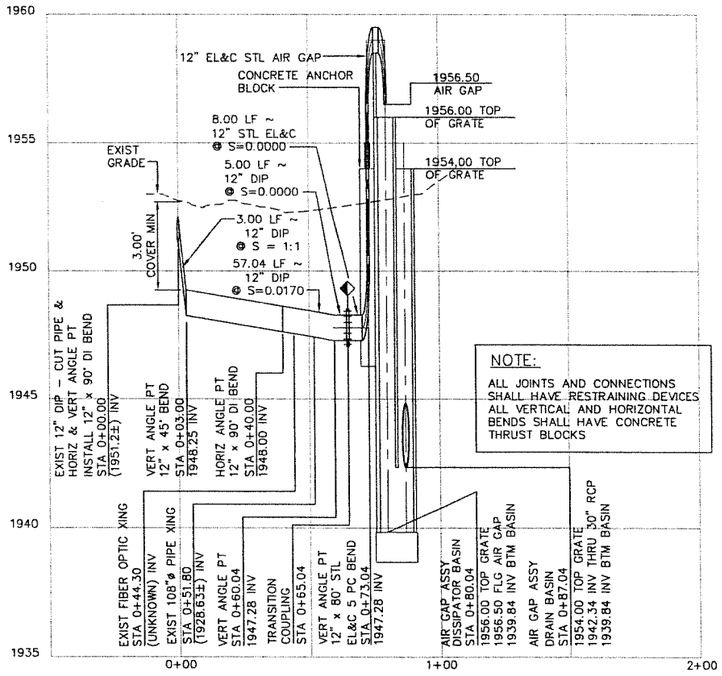
THE CROSSING LINE WILL BE CONSTRUCTED OF DUCTILE IRON PIPE WITH RESTRAINED MECHANICAL JOINT FITTINGS

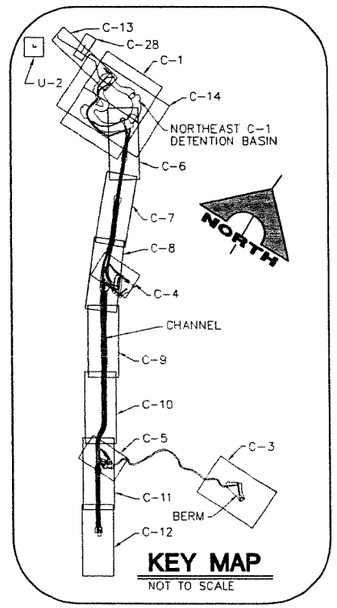


NOTE: SNWA FIBER OPTIC CONDUIT RUNS ALONG THE WEST SIDE OF THE SNWA 72" AND 108" PIPELINES

NOTES:

1. CONTRACTOR SHALL EXERCISE EXTREME CAUTION WHEN WORKING IN THE VICINITY OF THE STATIC MIGRATION FIBER OPTIC CABLE. DAMAGE TO THE CABLE RESULTING FROM THE CONTRACTOR'S CONSTRUCTION ACTIVITIES SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S SOLE EXPENSE.
2. CONTRACTOR SHALL VERIFY OVERHEAD CLEARENCE AND SEPARATION REQUIREMENTS PRIOR TO PREFORMING WORK IN THE VICINITY OF THE ELECTRICAL TRANSMISSION LINES AND EXERCISE EXTREME CAUTION WITH HIGH PROFILE EQUIPMENT.





DISCLAIMER NOTE

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Avoid cutting underground utility lines. It's costly. Call before you Dig. 1-800-227-2600 UNDERGROUND SERVICE (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD 1-702-227-2929

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
12" DIP BLOW OFF
PLAN AND PROFILE
CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE	
HORIZ:	1"=30'
VERT:	1"=3'
FIELD BOOK	

L

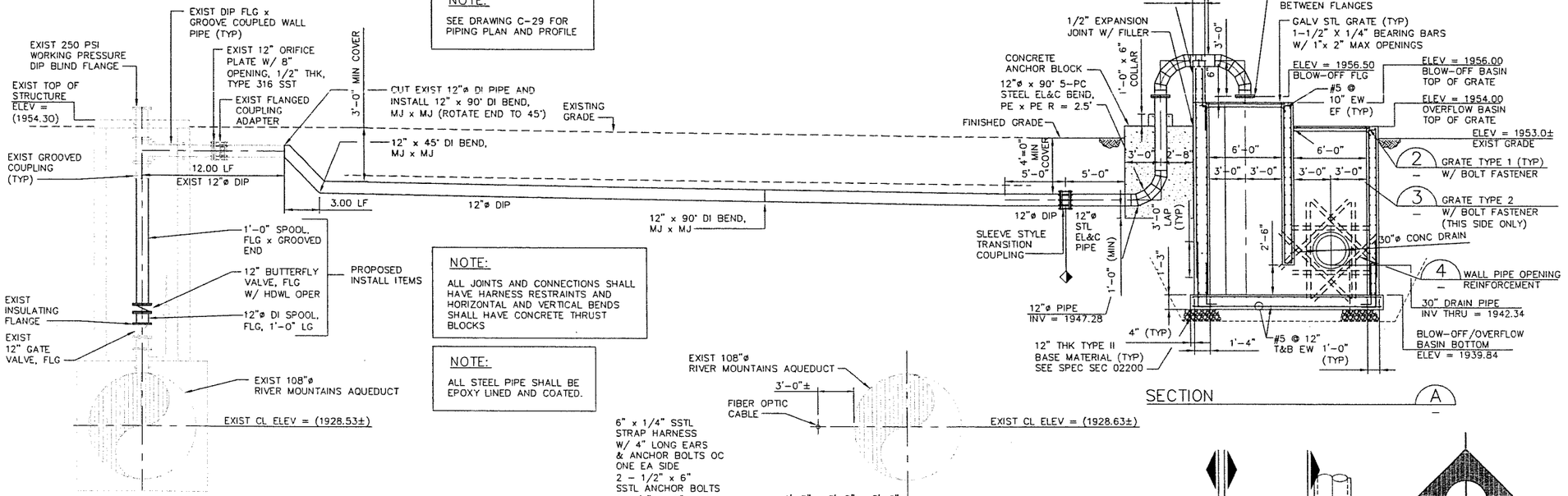
DRAWING NO. C-29

SHT. 1 OF

NOTE:
SEE DRAWING C-29 FOR PIPING PLAN AND PROFILE

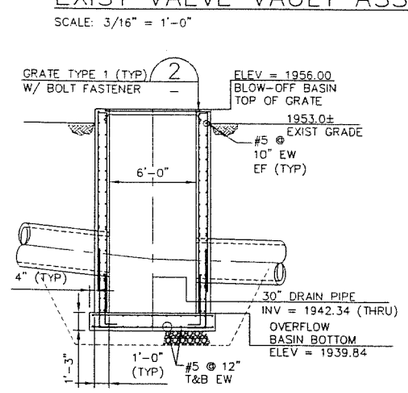
NOTE:
ALL JOINTS AND CONNECTIONS SHALL HAVE HARNESS RESTRAINTS AND HORIZONTAL AND VERTICAL BENDS SHALL HAVE CONCRETE THRUST BLOCKS

NOTE:
ALL STEEL PIPE SHALL BE EPOXY LINED AND COATED.

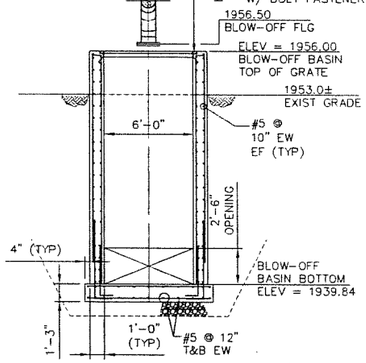


EXIST VALVE VAULT ASSEMBLY

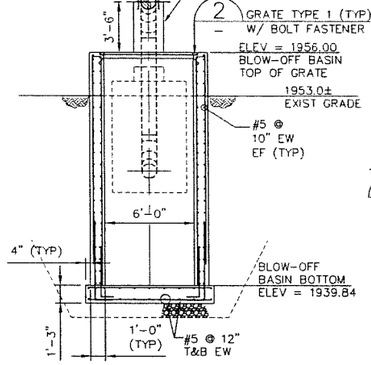
SCALE: 3/16" = 1'-0"



SECTION B



SECTION C



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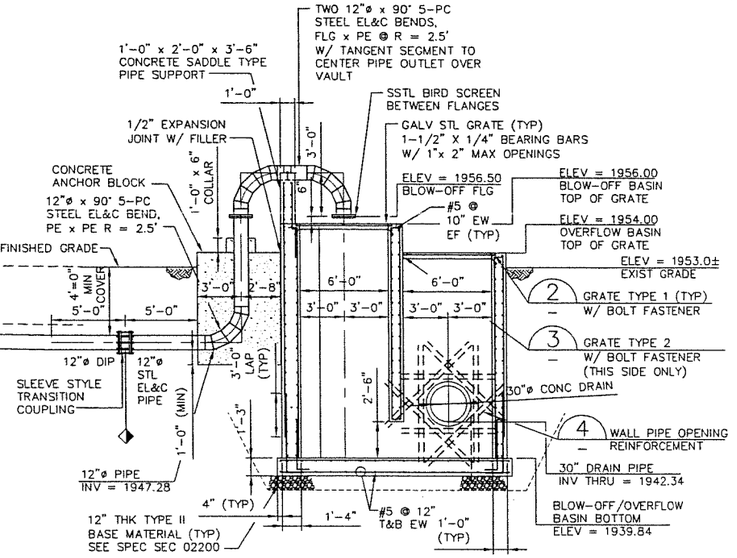

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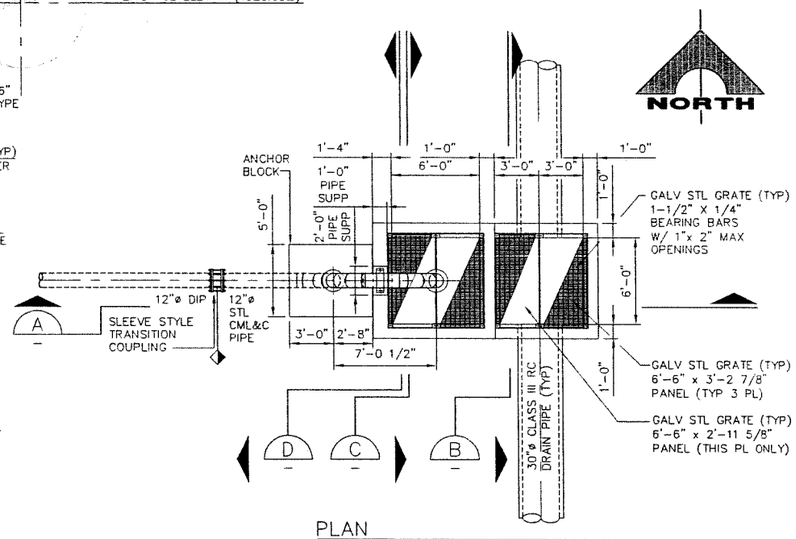
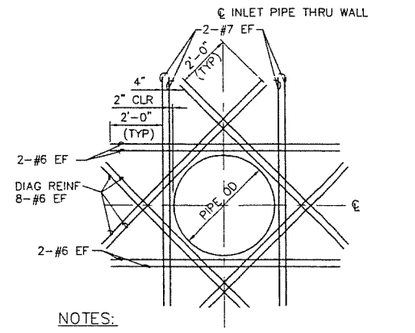


PLAN

BLOW OFF ASSEMBLY 1

SCALE: 3/16" = 1'-0"

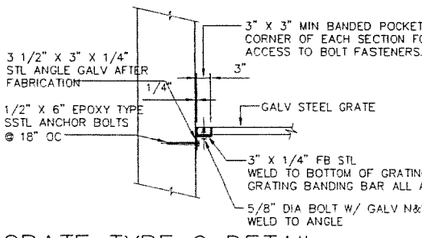


NOTES:

1. ALL REINFORCING STEEL SHOWN IS ADDITIONAL TO TYPICAL REINFORCING OF WALL.
2. CUT TYPICAL WALL REINFORCING 2" CLEAR OF PIPE.

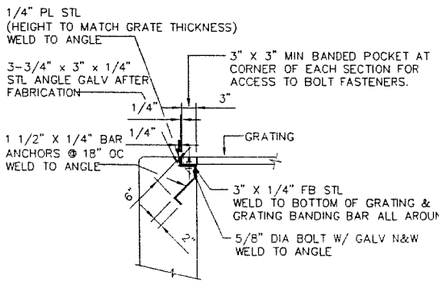
WALL PIPE OPENING REINFORCEMENT DETAIL 4

NOT TO SCALE



GRATE TYPE 2 DETAIL W/ BOLT FASTENER 3

NOT TO SCALE



GRATE TYPE 1 DETAIL W/ BOLT FASTENER 2

NOT TO SCALE

SOUTHERN NEVADA WATER AUTHORITY CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL SNWA/SNWS APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS AND CATHODIC PROTECTION SYSTEMS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. CATHODIC PROTECTION TEST STATIONS, RECTIFIERS, AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER SNWA STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY SOUTHERN NEVADA WATER AUTHORITY DEVELOPMENT PLAN REVIEW, AT (702) 862-3444 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
2. SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

SOUTHERN NEVADA WATER AUTHORITY DATE

NOTES:

1. CONTRACTOR SHALL PROVIDE A SITE GRADING DRAWING FOR APPROVAL OF THE INSTALLATION AFTER VERIFYING EXISTING TOPOGRAPHY.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF PIPE LOCATIONS AND INVERTS PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF CHANGES. DESIGN SUBJECT TO MODIFICATION DUE TO THESE CHANGES.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF FIBER OPTIC LOCATIONS PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER OF CHANGES. DESIGN SUBJECT TO MODIFICATION DUE TO THESE CHANGES.
4. BREAKS IN CABLES DUE TO CONSTRUCTION SHALL BE REPAIRED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

MISCELLANEOUS DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY: J.C. LITTLE
DESIGNED BY: _____ CHECKED BY: _____
APPROVED BY _____

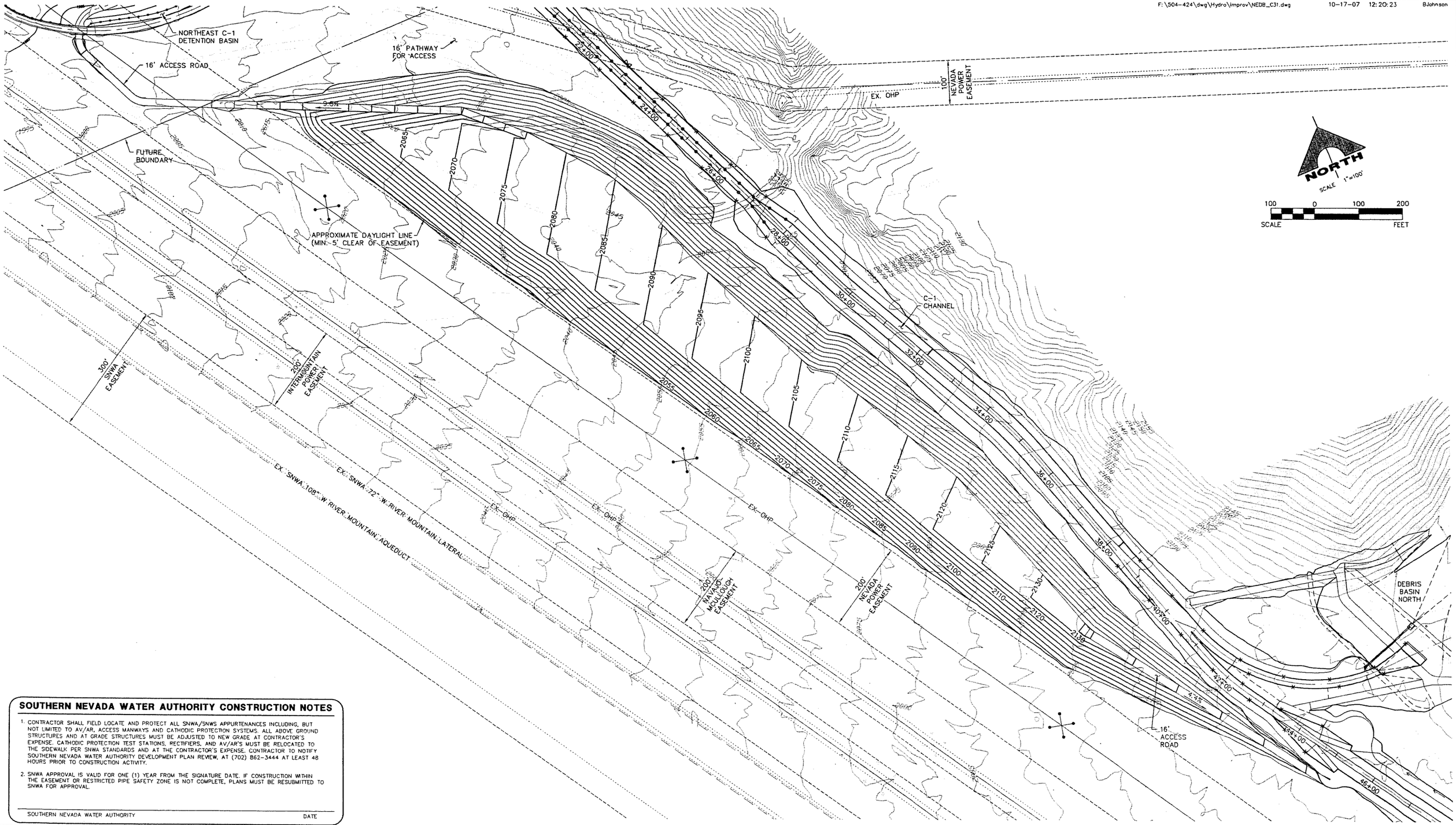
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: (SEE DETAIL)
VERT:
FIELD BOOK

DRAWING NO. C-30

SHT. OF

F:\504-424\dwg\Hydro\improv\NEDB_C31.dwg 10-17-07 12:20:23 BJohnson



SOUTHERN NEVADA WATER AUTHORITY CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL SNWA/SNWS APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS AND CATHODIC PROTECTION SYSTEMS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. CATHODIC PROTECTION TEST STATIONS, RECTIFIERS, AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER SNWA STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY SOUTHERN NEVADA WATER AUTHORITY DEVELOPMENT PLAN REVIEW, AT (702) 862-3444 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
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SOUTHERN NEVADA WATER AUTHORITY DATE

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
STOCKPILE

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

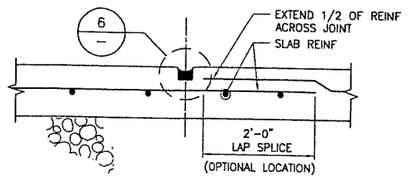
FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504-424 DRAWN BY: WHJ
DESIGNED BY: WHJ CHECKED BY:
APPROVED BY WEH

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

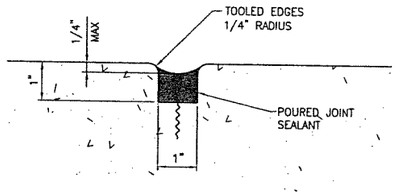
SCALE
HORIZ: 1"=100'
VERT: NONE
FIELD BOOK

L
DRAWING NO.
C-31
SHT. OF



NOTE:
SPRAY GALVANIZE REINFORCING BARS 9" EACH SIDE OF WEAKENED PLANE JOINT

7 INVERT WEAKENED PLANE JT
SCALE: NTS



6 SEALANT DETAIL
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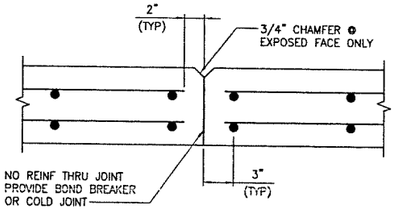
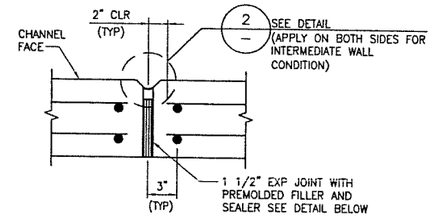
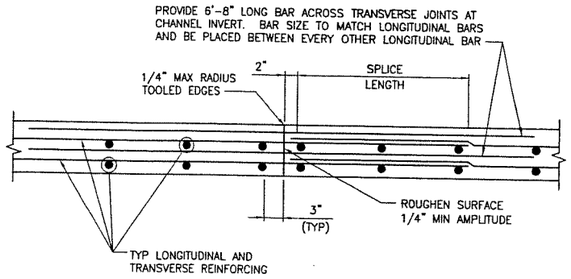


3 WALL CONTRACTION JOINT
SCALE: NTS



1 WALL EXPANSION JOINT
SCALE: NTS



8 CONSTRUCTION JOINT DETAIL
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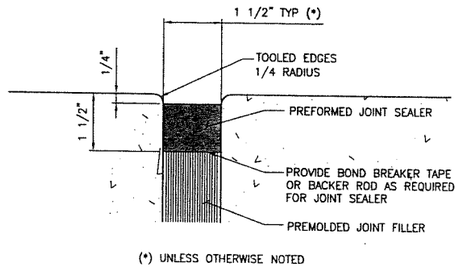
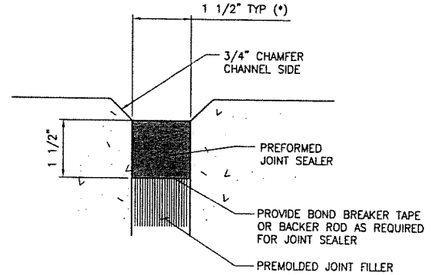


(*) UNLESS OTHERWISE NOTED

4 SLAB EXPANSION JOINT
SCALE: NTS



(*) UNLESS OTHERWISE NOTED

2 DETAIL
SCALE: NTS

STRUCTURE NOTES:

1. DESIGN SPECIFICATIONS: INTERNATIONAL BUILDING CODE (IBC 2000). AASHTO "STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, 2002. REINFORCED CONCRETE DESIGN BASED ON LOAD FACTOR DESIGN.
2. CONSTRUCTION SPECIFICATIONS: UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA.
3. LIVE LOAD: TRAFFIC SURCHARGE FROM MAINTENANCE VEHICLES (2' OF SOIL) AS PER AASHTO SPECIFICATIONS.
4. CONCRETE:
   INVERT SLAB: CLASS A TYPE V FOR CONCRETE IN CONTACT WITH SOIL. 0.45 MAXIMUM BY WEIGHT WATER TO CEMENT RATIO, UNLESS NOTED OTHERWISE. 28 DAY MINIMUM COMPRESSIVE STRENGTH SHALL BE THE FOLLOWING:

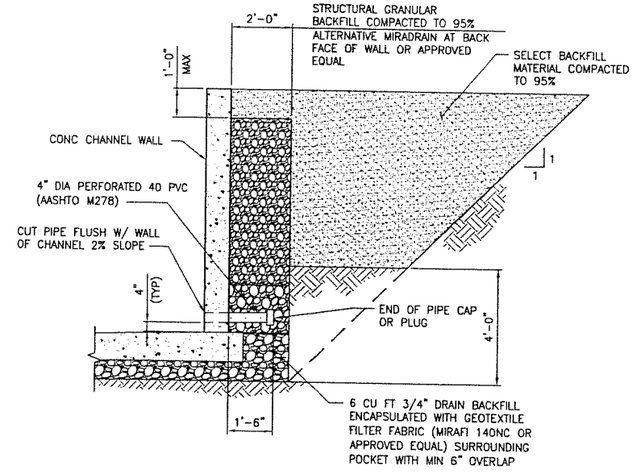
LOCATION	f'c(PSI)
STA 12+30.00 TO STA 38+62.29	6000
CHUTE BLOCKS	6000
END SILL	6000
ALL OTHER INVERT SLABS	4500

   WALL AND ALL OTHER STRUCTURES: CLASS D. f'c = 4500 PSI FOR 28 DAY MINIMUM COMPRESSIVE STRENGTH BY WEIGHT. 0.45 MAXIMUM WATER TO CEMENT RATIO. SEE DETAIL BELOW.

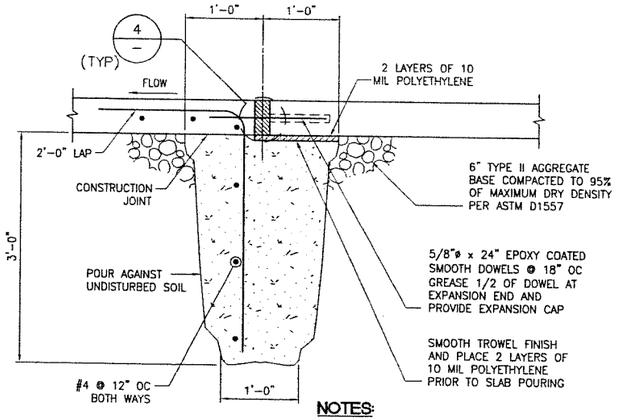
   REINFORCING STEEL: ALL REINFORCING STEEL SHALL BE ASTM A615 REINFORCING STEEL STRENGTH, Fy = 60,000 PSI.
5. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" UNLESS OTHERWISE INDICATED.
6. TRANSVERSE JOINTS IN INVERT SLAB AND WALLS FOR RECTANGULAR CHANNELS WILL BE REQUIRED AT THE END OF EACH CONTINUOUS POURING OPERATION. TRANSVERSE CONSTRUCTION JOINTS SHALL NOT BE PLACED WITHIN 10-FEET OF AN EXPANSION JOINT OR PIPE PENETRATION.
7. ALL TRANSVERSE JOINTS IN WALLS AND SLABS (CONSTRUCTION, WEAKENED, CONTRACTION AND EXPANSION) SHALL BE IN THE SAME PLANE. NO STAGGERING OF JOINTS WILL BE PERMITTED UNLESS SHOWN OTHERWISE. TRANSVERSE CONSTRUCTION JOINTS SHALL BE NORMAL OR RADIAL TO CENTERLINE OF CONSTRUCTION.
8. ALL SINGLE LAYER REINFORCEMENT SHALL BE PLACED IN THE CENTER OF CONCRETE UNLESS NOTED OTHERWISE.
9. IN CURVED CHANNEL SECTIONS TRANSVERSE BARS SHALL BE PLACED NORMAL TO THE CHANNEL CENTERLINE.
10. IN CURVED CHANNEL SECTIONS, THE MAXIMUM SPACING OF BARS SHALL NOT EXCEED THAT SHOWN FOR TYPICAL SECTIONS. STEEL SHALL BE PLACED RADIALLY FROM THE MAXIMUM SPACING.
11. AT THE BEGINNING AND ENDING OF ALL POURS, A COMPLETE CURTAIN OF MAIN REINFORCEMENT SHALL BE PLACED 3-INCHES FROM THE TRANSVERSE CONSTRUCTION, CONTRACTION AND EXPANSION JOINTS.
12. CHANNEL ELEVATIONS: FOR CHANNEL INVERT ELEVATIONS REFER TO THE CHANNEL PLAN AND PROFILE SHEETS LOCATED ELSEWHERE IN THIS DRAWING SET.
13. SOILS REPORT: PROVIDED BY WESTERN TECHNOLOGIES, INC. PROJECT NO. 4125JD022, DATED JANUARY 3, 2006.
    SITE CLASS = D
    BEARING = 3000 psf
    EFPa = 35 pcf (LEVEL)
    = 45 pcf (3:1 SLOPE)
    COEF OF FRICTION = 0.35
    EFPp = 300 pcf
    Kh = 0.14 g

DRAWING LIST

S-1 CHANNEL NOTES AND TYPICAL DETAILS
S-2 CHANNEL TYPICAL PLANS AND SECTIONS
S-3 RECTANGULAR CHANNEL ACCESS RAMP DETAILS AND STEP DETAILS
S-4 TRAPEZOIDAL CHANNEL ACCESS RAMP DETAILS AND PIPE INLET DETAILS
S-5 CHANNEL TRANSITION TRAPEZOIDAL TO RECTANGULAR-STA 27+00.00 AND CUT-OFF WALL DETAILS
S-6 CHANNEL TRANSITION RECTANGULAR TO TRAPEZOIDAL-STA 40+97.58
S-7 CHANNEL TRANSITION RECTANGULAR TO TRAPEZOIDAL-STA 78+16.20
S-8 BOX-BRIDGE STRUCTURE AND DEBRIS BASIN
S-9 INFLOW STRUCTURE DETAILS
S-10 OUTLET STRUCTURE DETAILS
S-11 NORTH AND SOUTH COLLECTION CHANNEL TRANSITIONS

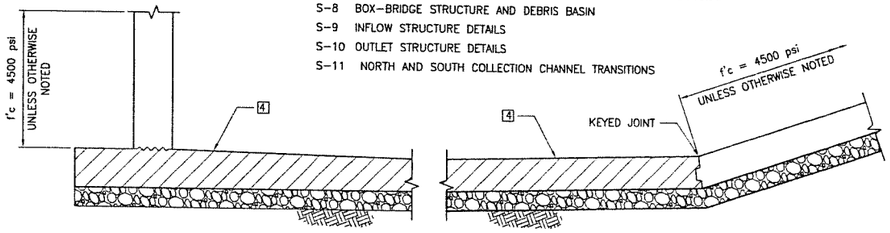


9 CHANNEL WEEPHOLE W/ BACKFILL AND COMPACTION
SCALE: NTS



NOTES:
1. CONTRACTOR TO VERIFY THAT ALL DOWELS ARE IN PLANE AND PERPENDICULAR TO JOINT PRIOR TO POURING CONCRETE.
2. CONTRACTOR TO ENSURE UPSTREAM AGGREGATE IS COMPACTED WITH NO CONCRETE SLAB SEEPAGE BEHIND CUT-OFF WALL.

5 TRANVERSE CUT-OFF WALL EXPANSION
SCALE: NTS



RECTANGULAR CHANNEL OR RCB

TRAPEZOIDAL CHANNEL

10 CONCRETE STRENGTH
SCALE: NTS

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
CHANNEL NOTES AND TYPICAL DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY: NO/JMH
DESIGNED BY: RDB CHECKED BY:
APPROVED BY FEV

G.C. WALLACE, INC.
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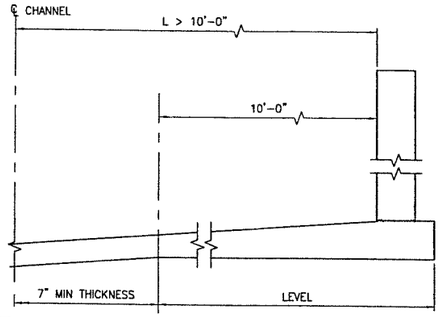
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

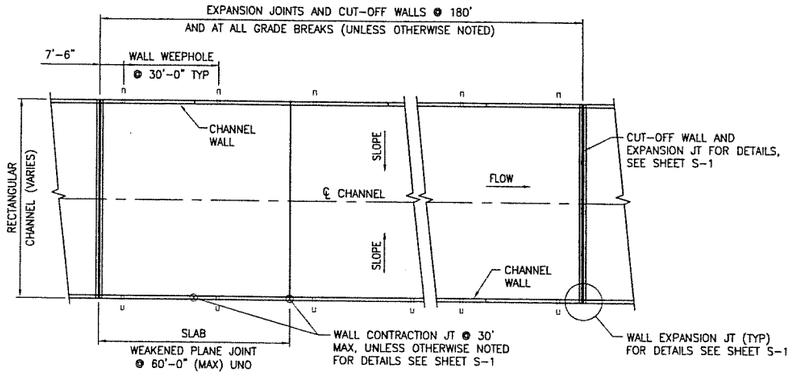
SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. S-1

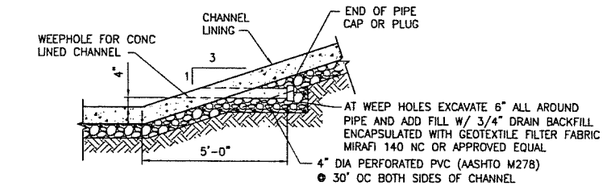
SHT. 35 OF 42



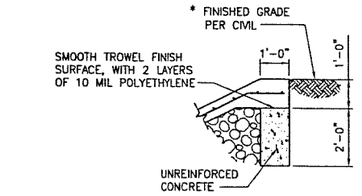
6 WIDE RECTANGULAR CHANNEL
SCALE: NTS



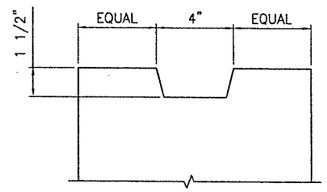
4 RECTANGULAR CHANNEL PLAN
SCALE: NTS



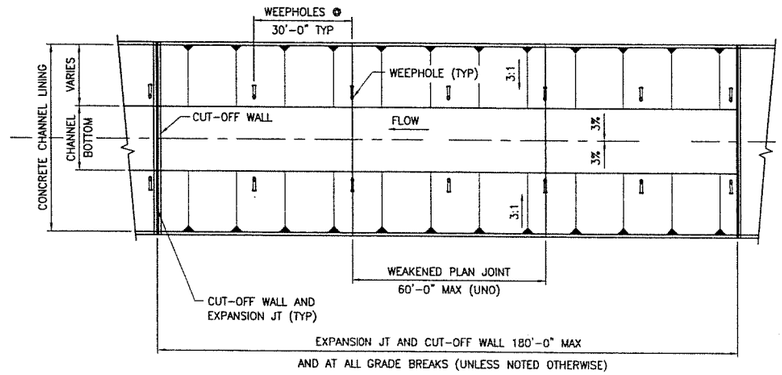
3 TRAPEZOIDAL CHANNEL WEEPHOLE
SCALE: NTS



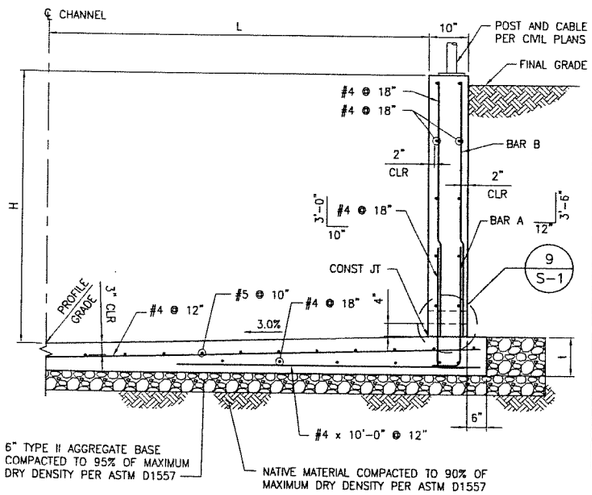
2 LONGITUDINAL CUT-OFF WALL
SCALE: 3/8" = 1'-0"



5 KEYED JOINT
SCALE: NTS



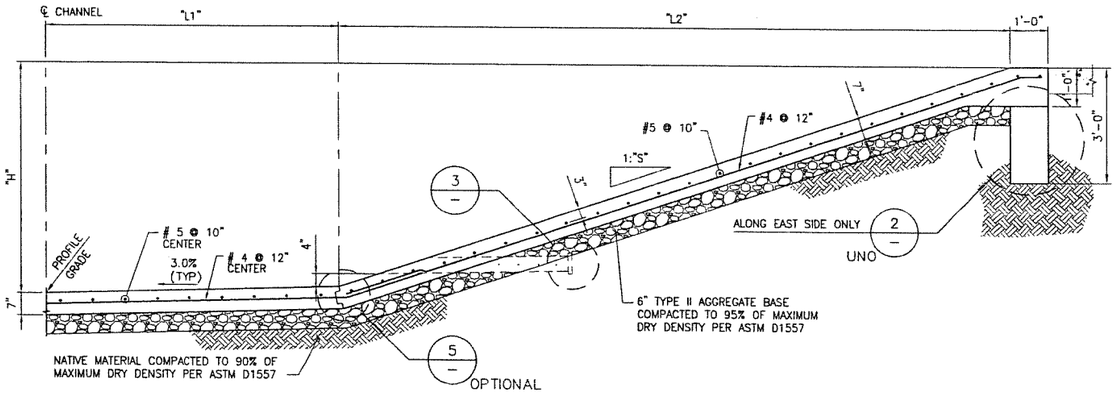
1 TRAPEZOIDAL CHANNEL PLAN
SCALE: NTS



	STATION	L * LEFT	L * RIGHT	H	BAR A	BAR B	t
MAIN CHANNEL	13+92.84 TO 14+52.52	10'-0"	10'-0"	10'-0" TO 8'-3 5/8"	#5 @ 8"	#4 @ 8"	1'-6"
	14+52.52 TO 15+53.62	10'-0"	10'-0"	8'-3 5/8"	#5 @ 10"	#4 @ 10"	1'-0"
	15+53.62 TO 16+03.62	10'-0" TO 7'-6"	10'-0" TO 7'-6"	8'-3 5/8" TO 7'-8 3/4"	#5 @ 10"	#4 @ 10"	1'-0"
	16+03.62 TO 27+00.00	7'-6"	7'-6"	7'-8 3/4"	#5 @ 12"	#4 @ 12"	1'-0"
	40+28.71 TO 40+70.71	32'-0"	10'-0"	6'-2 1/8"	#5 @ 12"	#4 @ 12"	1'-0"
	40+97.58 TO 43+28.87	10'-0"	10'-0"	6'-2 1/8"	#5 @ 12"	#4 @ 12"	1'-0"
	77+59.60 TO 77+99.60	10'-0"	10'-0"	6'-2 1/8"	#5 @ 12"	#4 @ 12"	1'-0"
	78+07.83 TO 79+35.67	10'-0"	10'-0"	6'-2 1/8"	#5 @ 12"	#4 @ 12"	1'-0"
SOUTH CHANNEL	210+00.00 TO 212+07.94	3'-0"	3'-0"	6'-2 1/8"	#5 @ 12"	#4 @ 12"	1'-0"
	212+07.94 TO 212+10.98	3'-0" TO 3'-4"	3'-0" TO 3'-4"	6'-2 1/8"	#5 @ 12"	#4 @ 12"	1'-0"
	212+1098 TO 212+44.94	3'-4" TO 7'-4"	3'-4" TO 7'-4"	6'-2 1/8"	#5 @ 12"	#4 @ 12"	1'-0"
	212+44.94 TO 212+79.94	---	---	SEE SHEET 2/S-11	---	---	---
NORTH CHANNEL	110+00.00 TO 110+20.00	10'-0"	10'-0"	6'-2" TO 6'-10"	#5 @ 12"	#4 @ 12"	1'-0"
	110+20.00 TO 111+03.90	10'-0"	10'-0"	6'-10"	#5 @ 12"	#4 @ 12"	1'-0"
	111+03.90 TO 111+13.90	10'-0" TO 9'-0"	10'-0" TO 9'-0"	6'-10" TO 6'-9"	#5 @ 12"	#4 @ 12"	1'-0"
	111+13.90 TO 114+53.19	9'-0"	9'-0"	6'-9"	#5 @ 12"	#4 @ 12"	1'-0"
	114+53.19 TO 114+53.94	9'-0" TO 9'-2"	9'-0" TO 9'-2"	6'-9" TO 6'-8"	#5 @ 12"	#4 @ 12"	1'-0"
	114+53.94 TO 115+49.37	---	---	SEE SHEET 1/S-11	---	---	---

* FOR L > 10' SEE DETAIL 6

B RECTANGULAR CHANNEL TYPICAL SECTION
SCALE: NTS



STATION	"L1"	"L2" LEFT	"L2" RIGHT	"H" LEFT	"H" RIGHT	"S" LEFT	"S" RIGHT	STATION ℄ TO CHANNEL ℄ OFFSET
28+00.00 TO 37+83.71	6'-0"	18'-0"	18'-0"	6'-2"	6'-2"	1:3	1:3	0
45+20.92 TO 76+12.88	6'-0"	18'-0"	18'-0"	6'-2"	6'-2"	1:3	1:3	0
79+35.67 TO 92+51.90	6'-0"	18'-0"	18'-0"	6'-2"	6'-2"	1:3	1:3	0
92+51.90 TO 93+71.90	6'-0"	18'-0" TO 67'-8"	18'-0" TO 59'-2"	6'-2"	6'-2" TO 6'-6"	1:3 TO 1:11.3	1:3 TO 1:9.6	0 TO 3.20' L

A TRAPEZOIDAL CHANNEL TYPICAL SECTION
SCALE: NTS

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
CHANNEL TYPICAL PLAN AND SECTIONS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

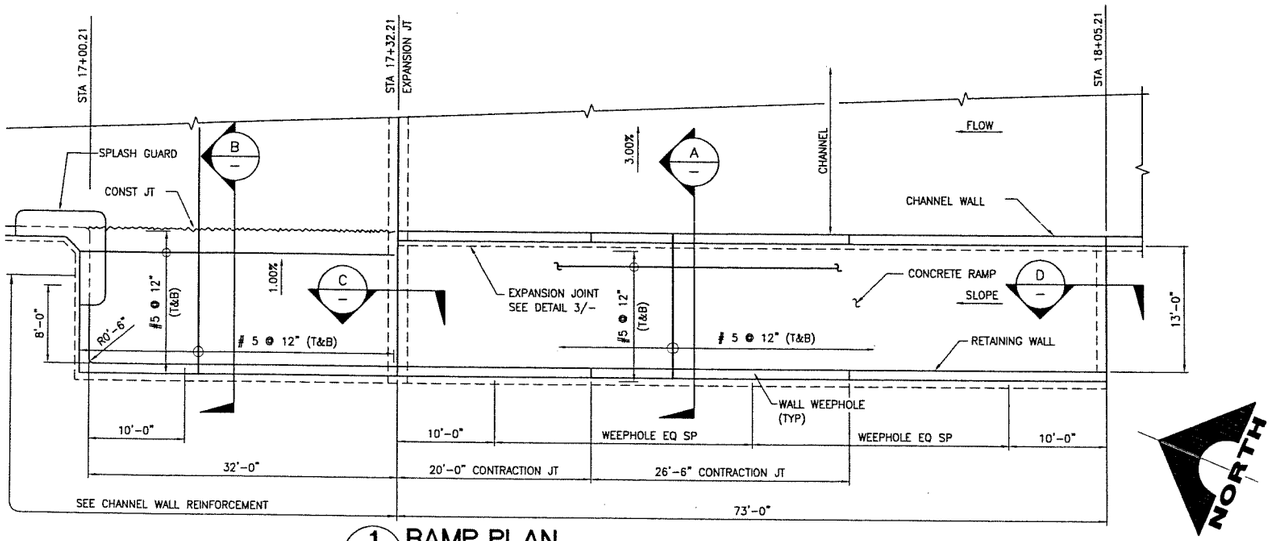
FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY: NO/JMH
DESIGNED BY: RDB CHECKED BY:
APPROVED BY FEV

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

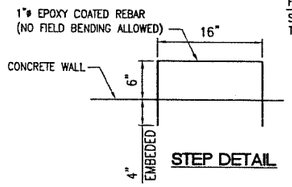
DRAWING NO. S-2
SHT. 36 OF 42



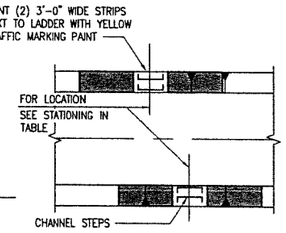
1 RAMP PLAN
SCALE: 1/8" = 1'-0"

RECTANGULAR CHANNEL	
LEFT OFFSET	RIGHT OFFSET
STA 14+19.40	STA 14+00.00
STA 20+15.00	STA 20+00.00
STA 26+15.00	STA 26+00.00
STA 43+20.00	STA 43+00.00
STA 79+20.00	STA 79+00.00

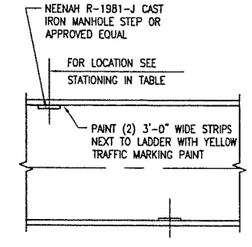
TRAPEZOIDAL CHANNEL	
LEFT OFFSET	RIGHT OFFSET
STA 32+20.00	STA 32+00.00
STA 38+18.67	STA 38+01.31
STA 49+20.00	STA 49+00.00
STA 55+20.00	STA 55+00.00
STA 61+20.00	STA 61+00.00
STA 67+20.00	STA 67+00.00
STA 73+19.14	STA 73+00.00
STA 85+20.00	STA 85+00.00
STA 91+20.00	STA 91+00.00



STEP DETAIL



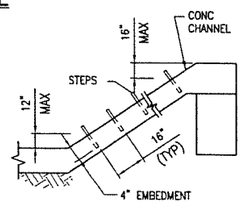
TRAPEZOIDAL CHANNEL



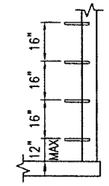
RECTANGULAR CHANNEL

NOTES:

1. AT CONTRACTOR'S OPTION STEPS MAY BE INSTALLED BY DRILLING AND EPOXY GROUTING
2. STEP LOCATION PER CIVIL DRAWINGS

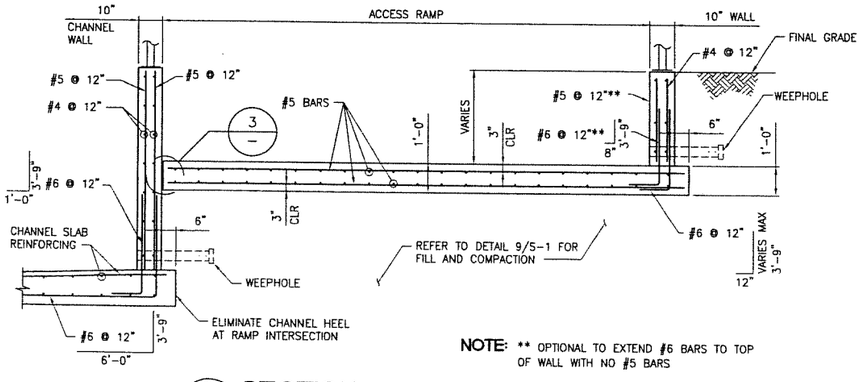


SECTION



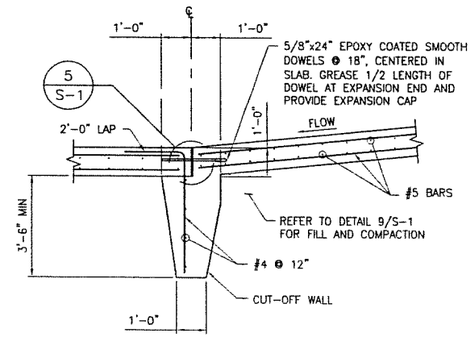
SECTION

4 CHANNEL STEP DETAILS
SCALE: NTS

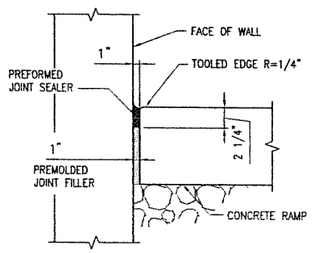


NOTE: ** OPTIONAL TO EXTEND #6 BARS TO TOP OF WALL WITH NO #5 BARS

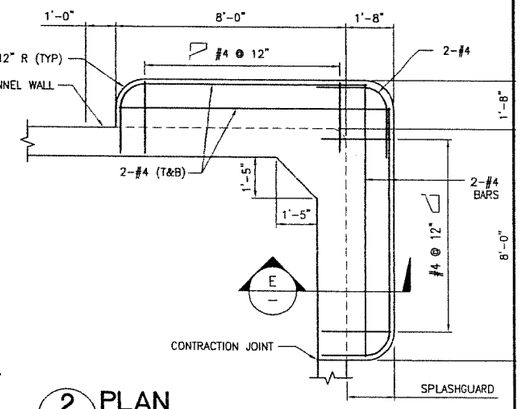
A SECTION
SCALE: 3/8" = 1'-0"



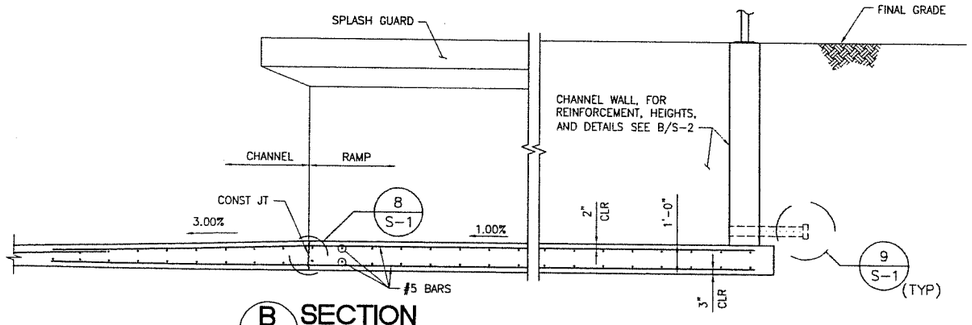
C SECTION
SCALE: 3/8" = 1'-0"



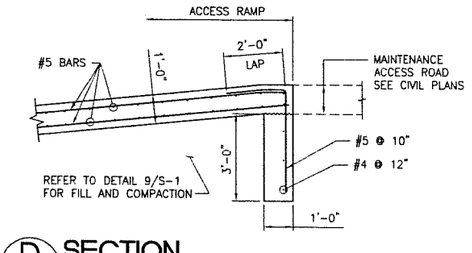
3 SECTION
SCALE: 3/8" = 1'-0"



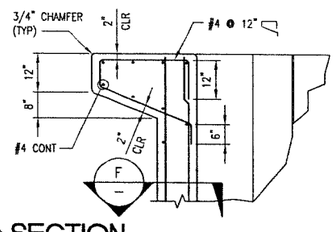
2 PLAN
SCALE: 3/8" = 1'-0"



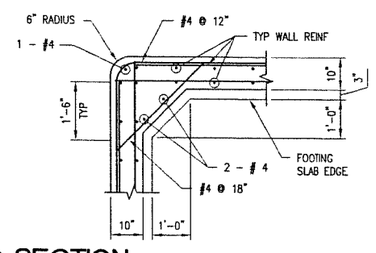
B SECTION
SCALE: 3/8" = 1'-0"



D SECTION
SCALE: 3/8" = 1'-0"



E SECTION
SCALE: 1/2" = 1'-0"



F SECTION
SCALE: 1/2" = 1'-0"

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
RECTANGULAR CHANNEL ACCESS RAMP DETAILS AND STEP DETAILS
CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

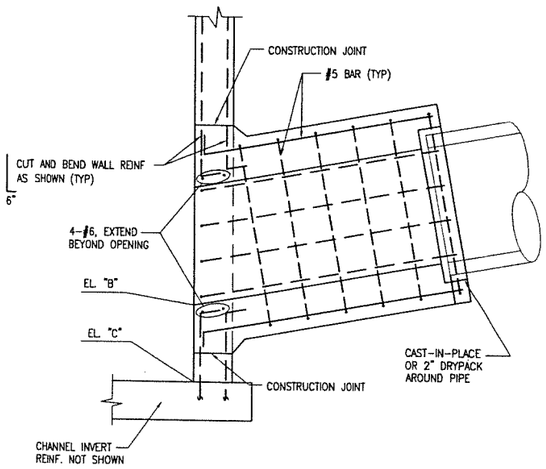
FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY: NO
DESIGNED BY: RDB CHECKED BY:
APPROVED BY FEV

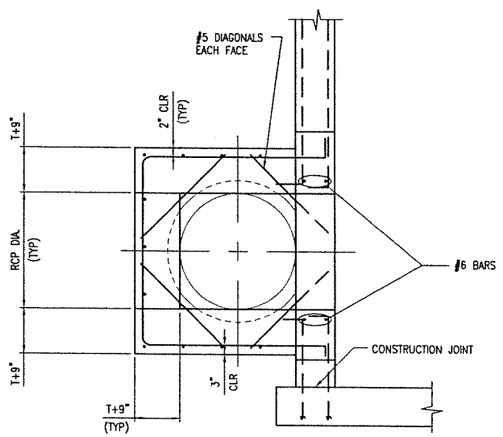
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

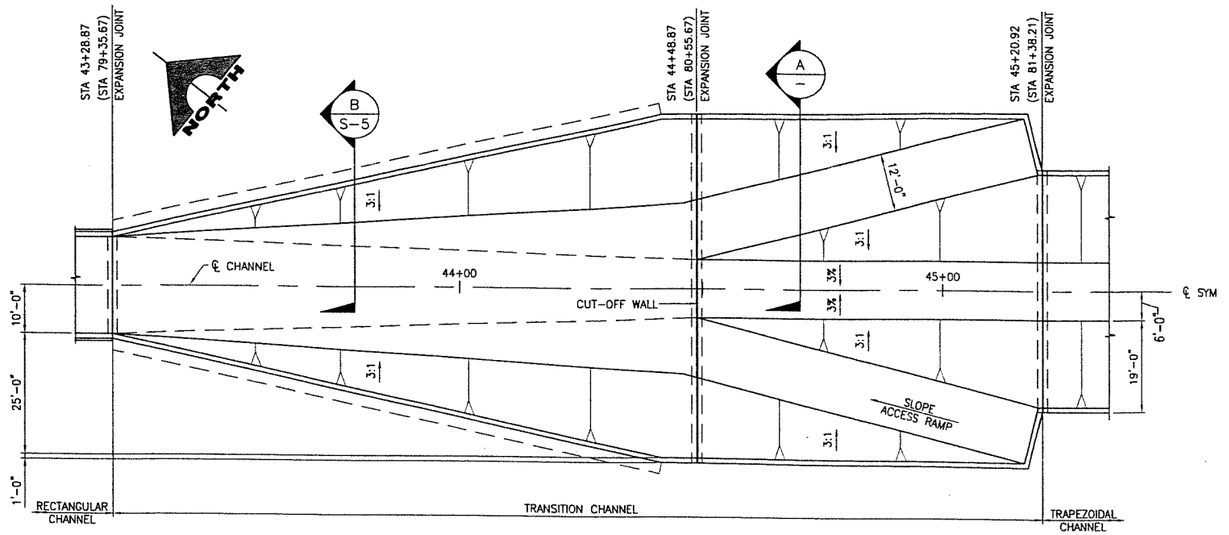
DRAWING NO. S-3



B SECTION
SCALE: 1/2" = 1'-0"

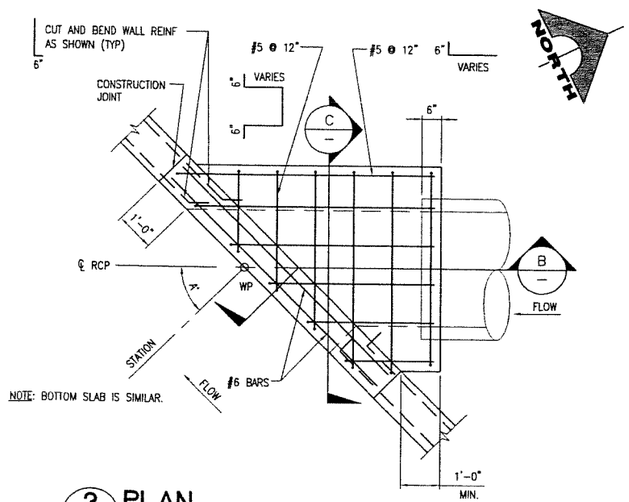


C SECTION
SCALE: 1/2" = 1'-0"



( ) PARENTHESIS VALUES ARE DIFFERENT MEASUREMENTS FOR RAMP FROM STA 79+35.67 TO STA 81+38.21

1 TRAPEZOIDAL CHANNEL TRANSITION
SCALE: 1/16" = 1'-0"



NOTE: BOTTOM SLAB IS SIMILAR.

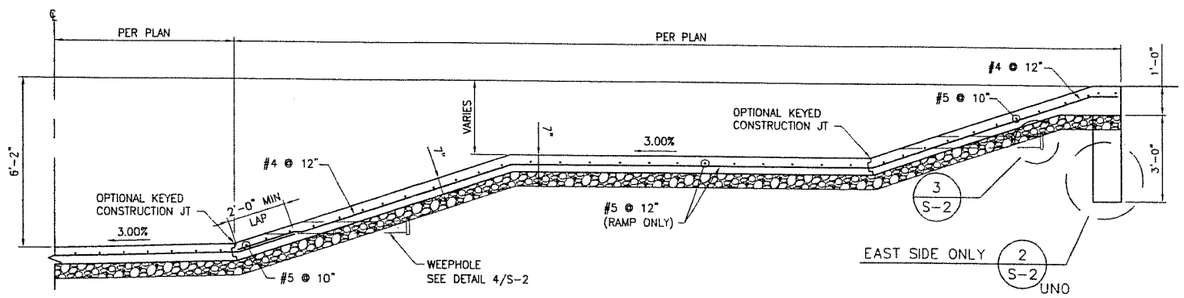
3 PLAN
SCALE: 1/2" = 1'-0"

WALL PENETRATION SCHEDULE					
CHANNEL STATION	WALL	PIPE DIA. (IN)	A'	EL. "B"	EL. "C"
"CHAN-NORTH" 114+36.42	LT	36	23.20'	2110.50	2110.00
"CHAN-SOUTH" 211+66.27	LT	36	44.09'	2192.43	2191.93

NOTES:

1. OPENINGS IN CHANNEL WALL SHALL BE CHAMFERED 3/4-INCH UNLESS OTHERWISE NOTED.
2. CUT WALL REINFORCEMENT 2-INCHES FROM OPENING IN CHANNEL WALL EXCEPT WHEN NOTED OTHERWISE.
3. "T" EQUALS WALL THICKNESS OF PIPE. WHERE HDPE PIPE IS USE ASSUME T=3".
4. ALL REINFORCEMENT SHALL HAVE A MINIMUM OF 2-INCHES CLEARANCE UNLESS OTHERWISE NOTED.
5. ALL REINFORCING STEEL SHALL BE #5 @ 12" UNLESS NOTED OTHERWISE.

2 PIPE INLET DETAIL
SCALE: 1/2" = 1'-0"



A SECTION
SCALE: 3/8" = 1'-0"

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN

TRAPEZOIDAL CHANNEL ACCESS RAMP DETAILS AND PIPE INLET DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

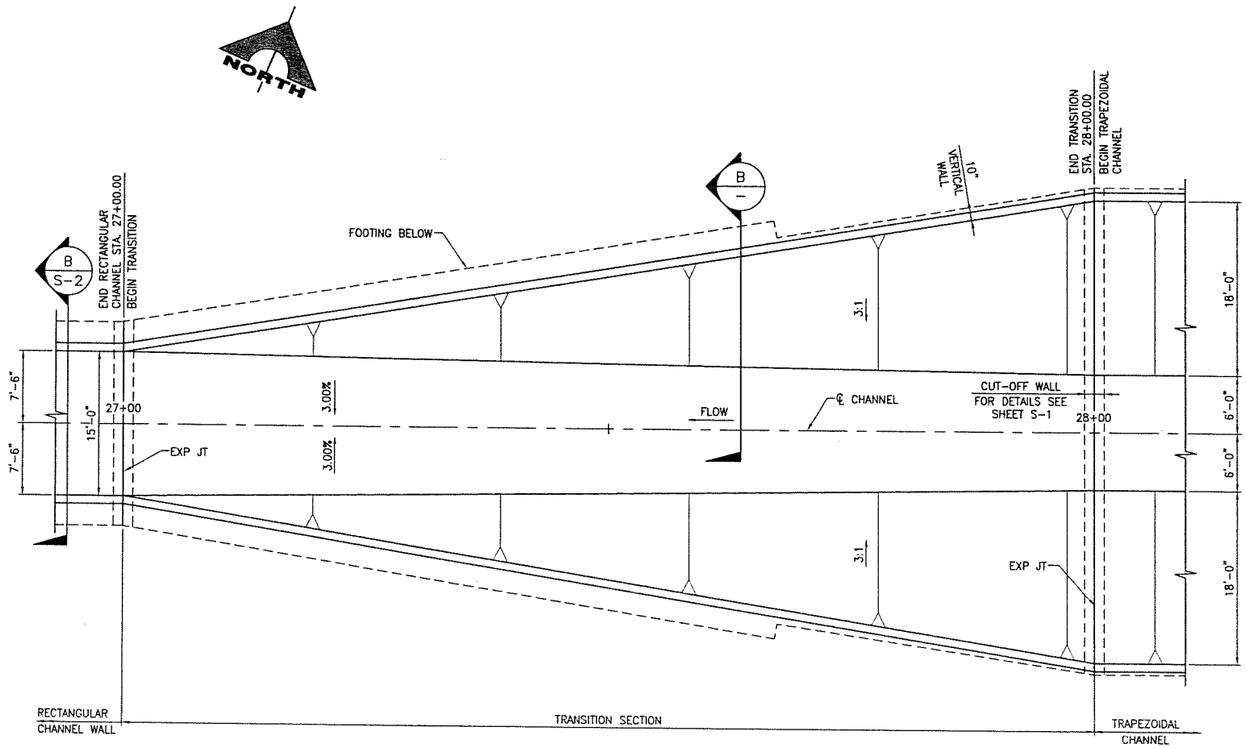
FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY: NO
DESIGNED BY: RDB CHECKED BY:
APPROVED BY FEV

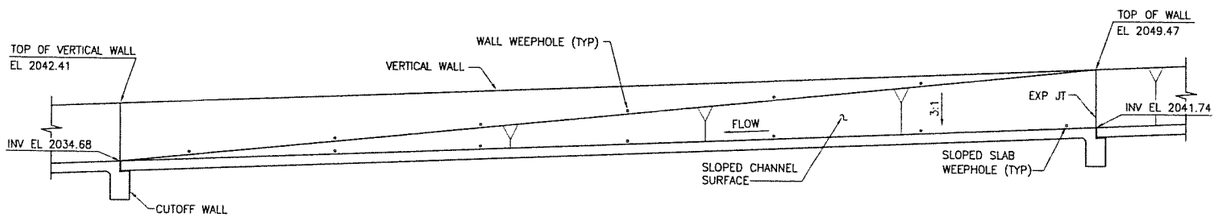
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

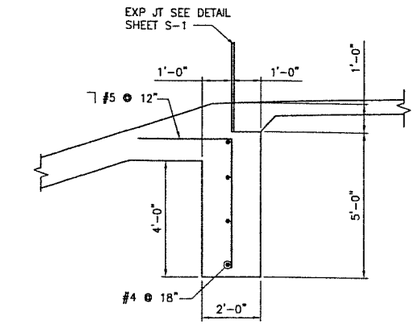
DRAWING NO. S-4
SHT. 39 OF 42



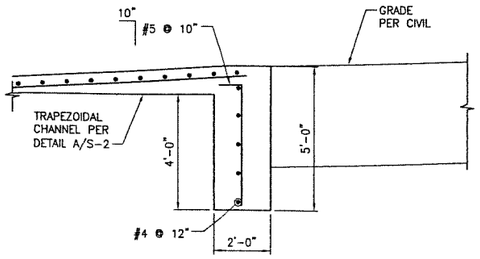
1 PLAN
SCALE: 1/8" = 1'-0"



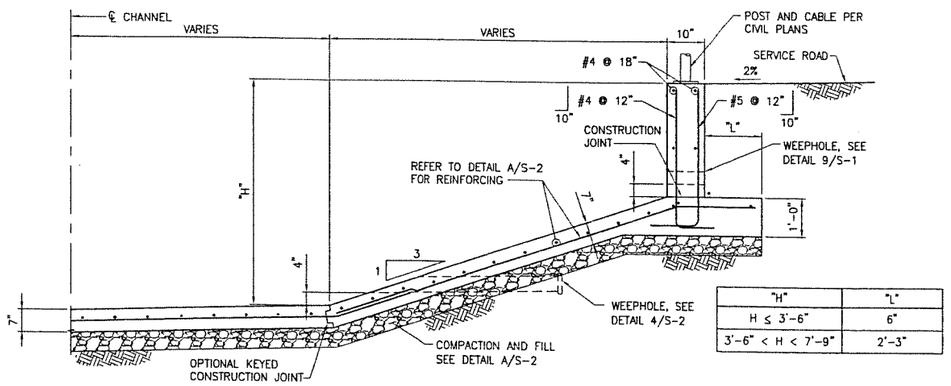
A ELEVATION
SCALE: 1/8" = 1'-0"



3 CUT-OFF WALL DETAIL AT INFLOW
SCALE: 3/8" = 1'-0"



2 CUT-OFF WALL AT STA 93+71.90
SCALE: 3/8" = 1'-0"



"H"	"L"
H ≤ 3'-6"	6"
3'-6" < H < 7'-9"	2'-3"

B SECTION
SCALE: 1/2" = 1'-0"

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
CHANNEL TRANSITION TRAPEZOIDAL TO RECTANGULAR STA 27+00.00 AND CUT-OFF WALL DETAILS
CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

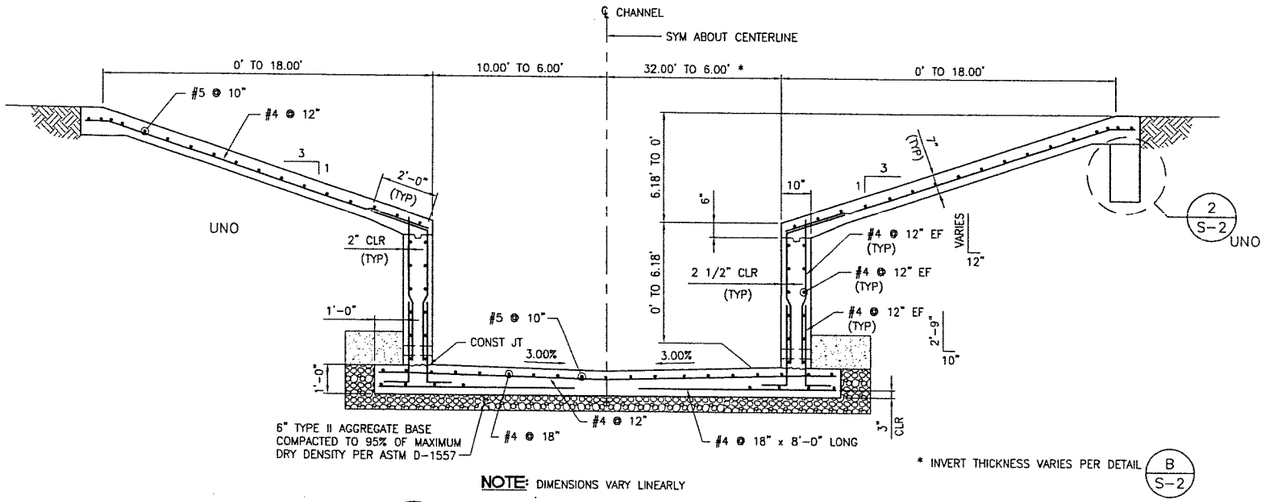
FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY: RDB/NO
DESIGNED BY: RDB CHECKED BY:
APPROVED BY FEV

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

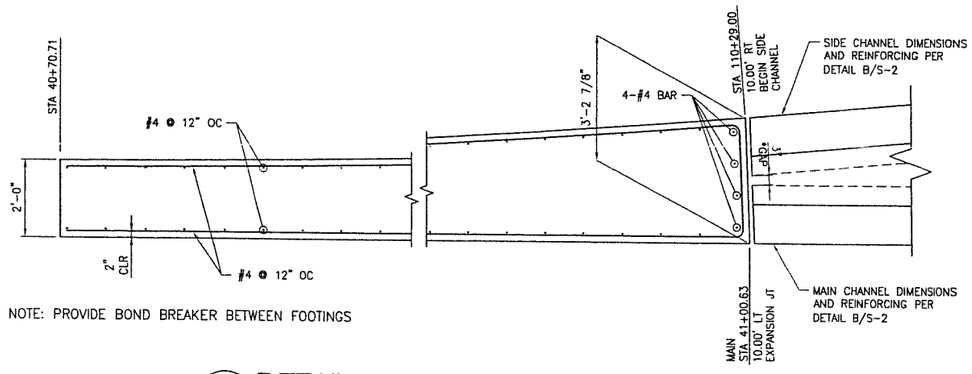
DRAWING NO. S-5



NOTE: DIMENSIONS VARY LINEARLY

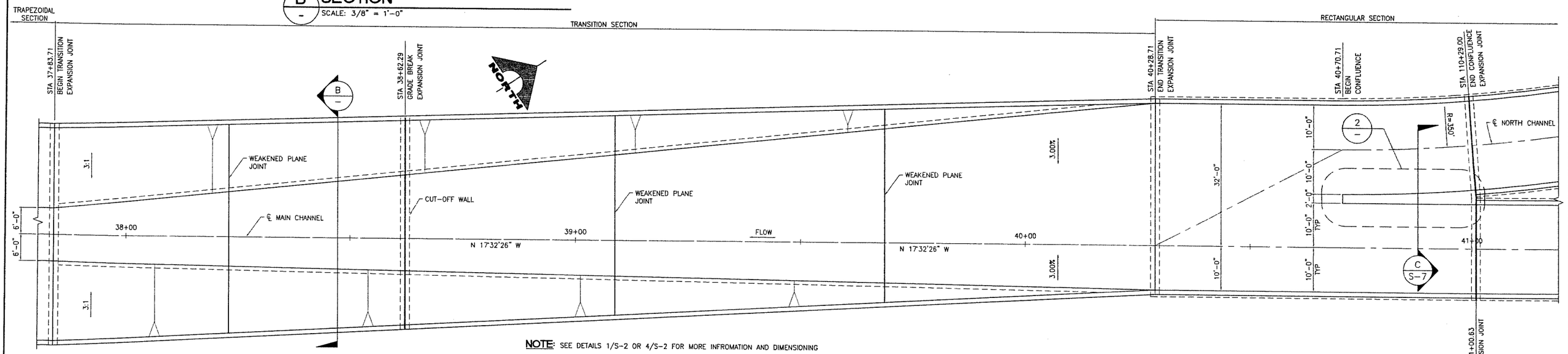
* INVERT THICKNESS VARIES PER DETAIL B S-2

B SECTION
SCALE: 3/8" = 1'-0"



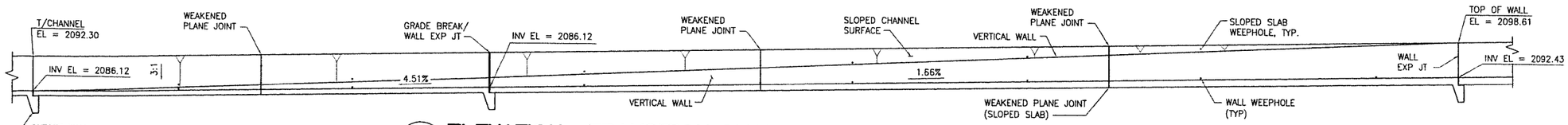
* NOTE: PROVIDE BOND BREAKER BETWEEN FOOTINGS

2 DETAIL
SCALE: 1/2" = 1'-0"



NOTE: SEE DETAILS 1/S-2 OR 4/S-2 FOR MORE INFROMATION AND DIMENSIONING

1 PLAN - TRAPEZOIDAL CHANNEL TRANSITION AND CONFLUENCE CHANNEL STA 37+83.71 TO STA 40+97.58
SCALE: 3/32" = 1'-0"



A ELEVATION - TRANSITION CHANNEL STA 37+83.71 TO STA 40+28.71
SCALE: 3/32" = 1'-0"

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
CHANNEL TRANSITION RECTANGULAR TO TRAPEZOIDAL
STA 40+97.58
CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

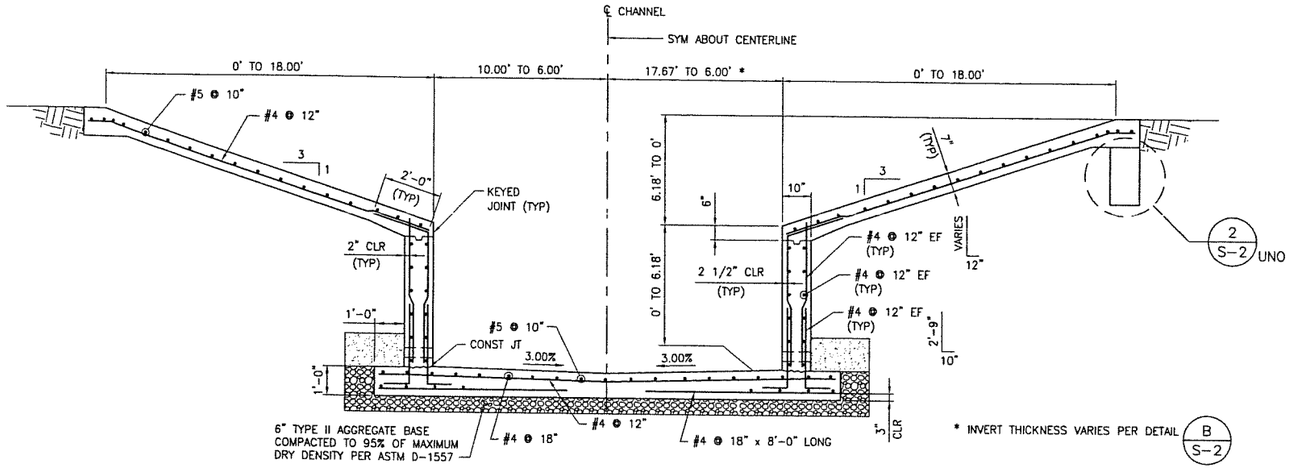
FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY: JMH
DESIGNED BY: RDB CHECKED BY:
APPROVED BY FEV

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

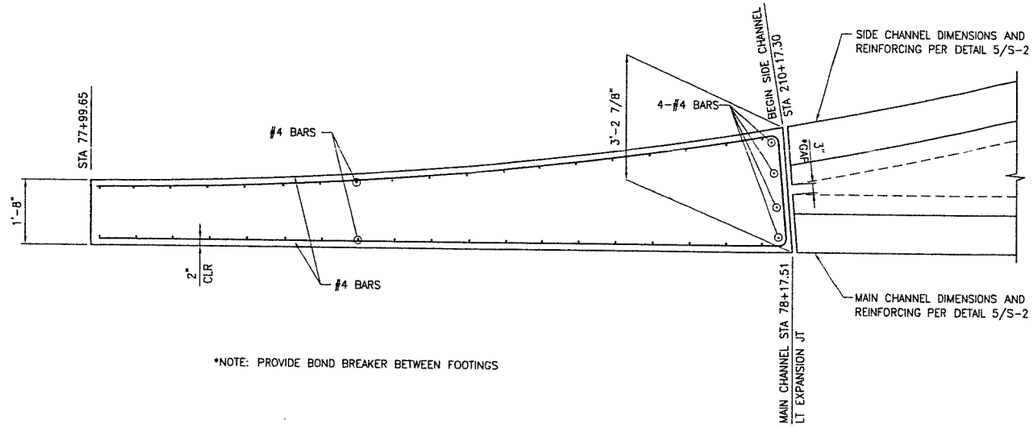
SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. S-6



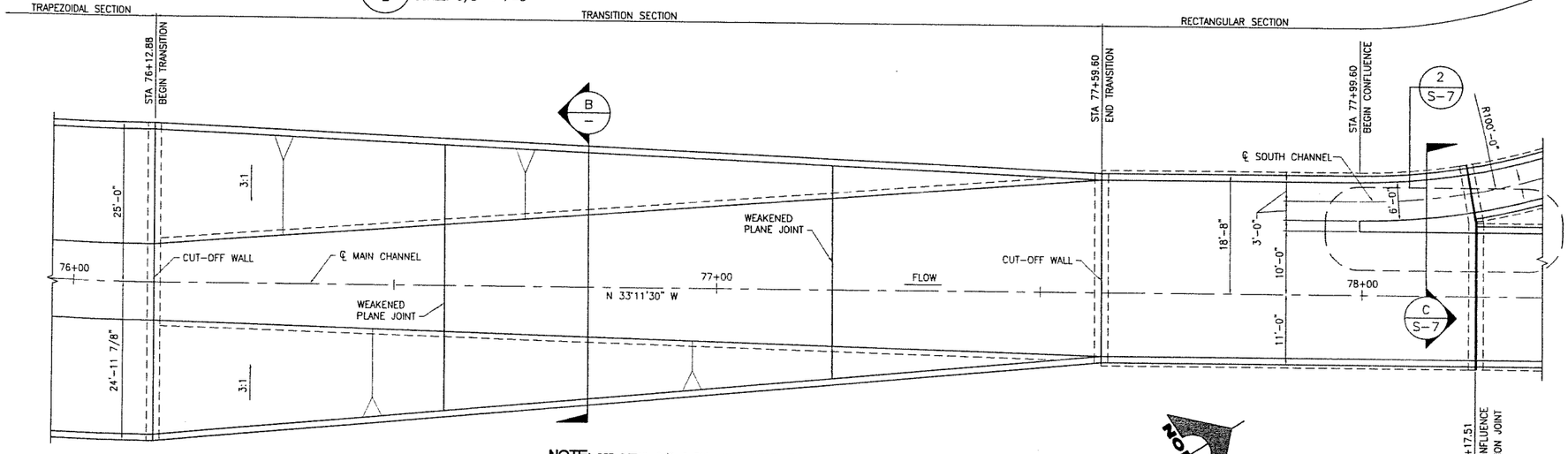
NOTE: DIMENSIONS VARY LINEARLY

B / - SECTION
SCALE: 3/8" = 1'-0"



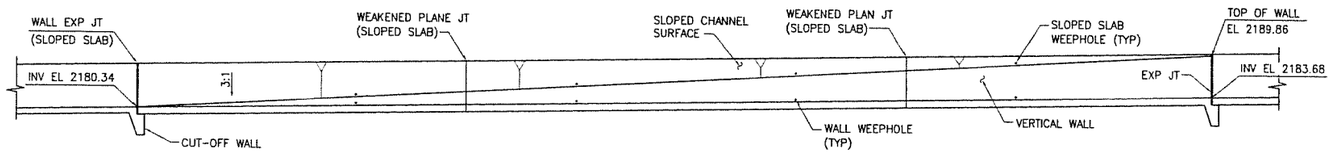
*NOTE: PROVIDE BOND BREAKER BETWEEN FOOTINGS

2 / - DETAIL
SCALE: 1/2" = 1'-0"

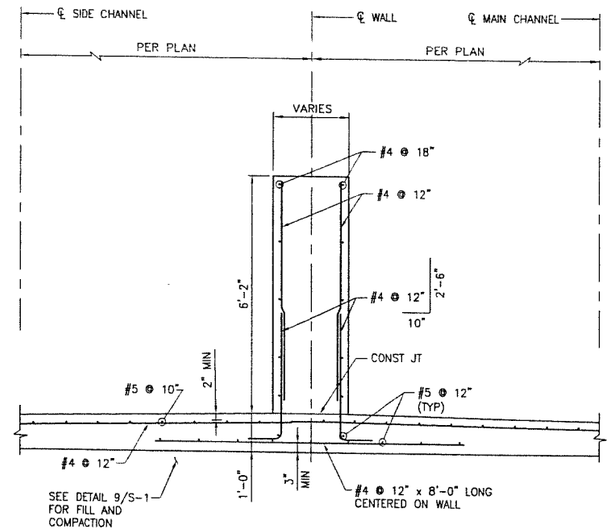


NOTE: SEE DETAIL 2/S-2 FOR MORE INFORMATION AND DIMENSIONING

1 / - PLAN - TRANSITION CHANNEL STA 76+12.88 TO STA 78+16.20
SCALE: 3/32" = 1'-0"



A / - ELEVATION - TRANSITION CHANNEL STA 76+12.88 TO STA 77+59.60
SCALE: 3/32" = 1'-0"



C / - SECTION
SCALE: 1/2" = 1'-0"

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
CHANNEL TRANSITION RECTANGULAR TO TRAPEZOIDAL STA 78+16.20
CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

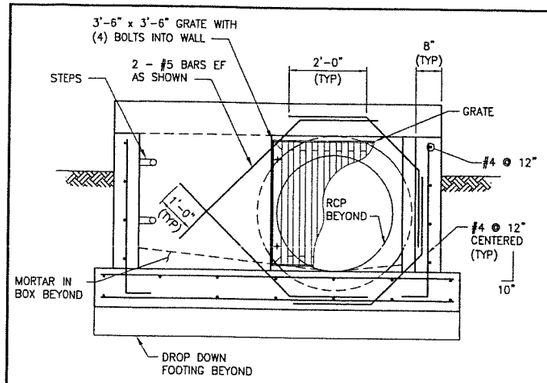
FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY: JMH
DESIGNED BY: RDB CHECKED BY:
APPROVED BY FEV

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

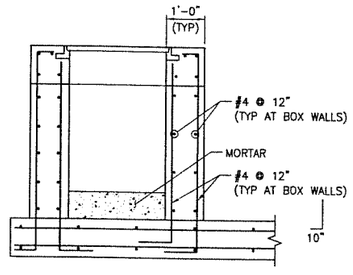
DRAWING NO. S-7



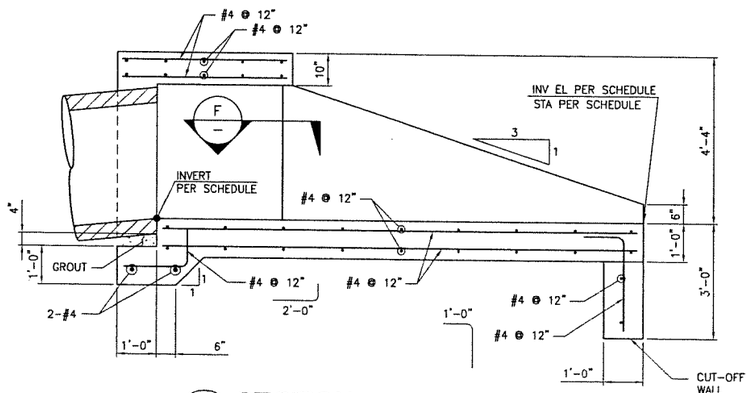
D SECTION
SCALE: 1/2" = 1'-0"

LOCATION	END OF LOW FLOW		END INLFLOW STRUCTURE (RCP)	
	STATION	END INVERT EL	STATION	END INVERT EL
UPSTREAM	212+94.15~28.0' LT	2103.26	212+80.65~28.0' LT	2102.01
DOWNSTREAM	115+67.03~63.4' LT	2115.00	115+56.51~58.3' LT	2114.56

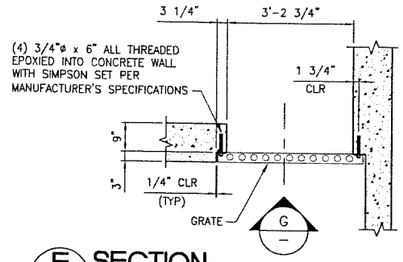
H LOW FLOW SCHEDULE
SCALE: NTS



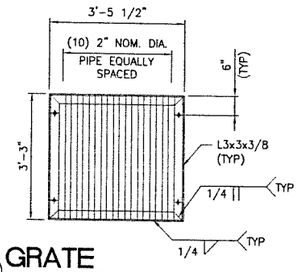
E SECTION
SCALE: 1/2" = 1'-0"



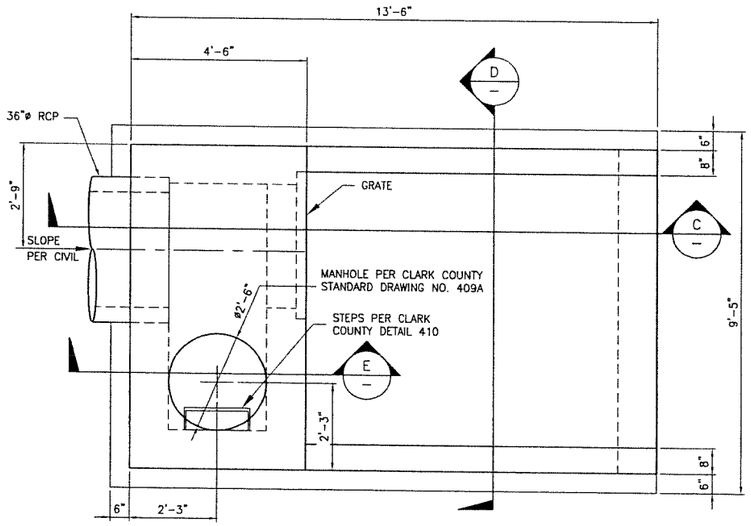
C SECTION
SCALE: 1/2" = 1'-0"



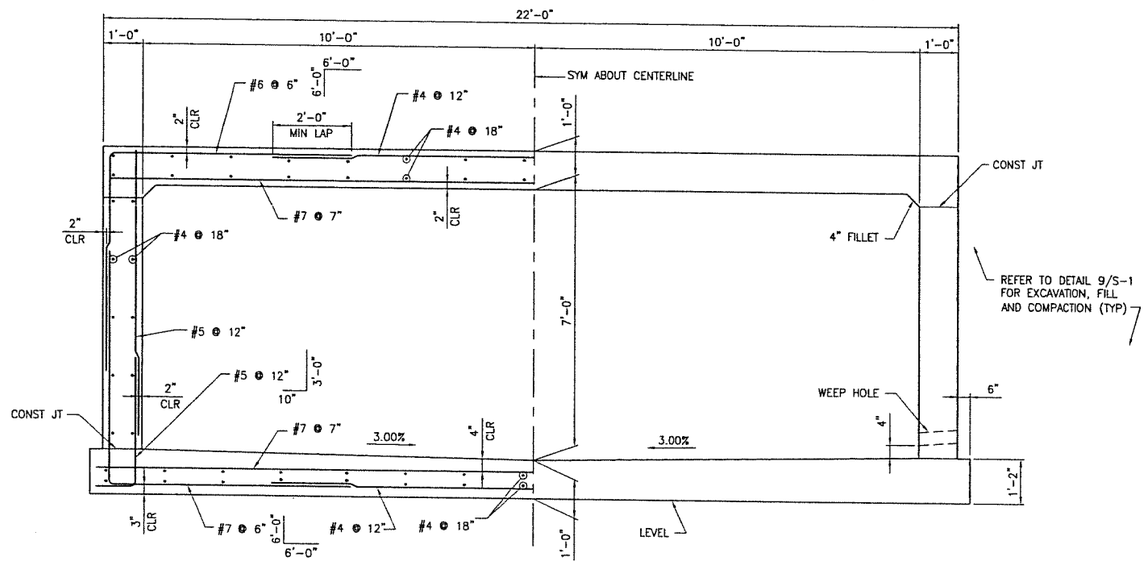
F SECTION
SCALE: 1/2" = 1'-0"



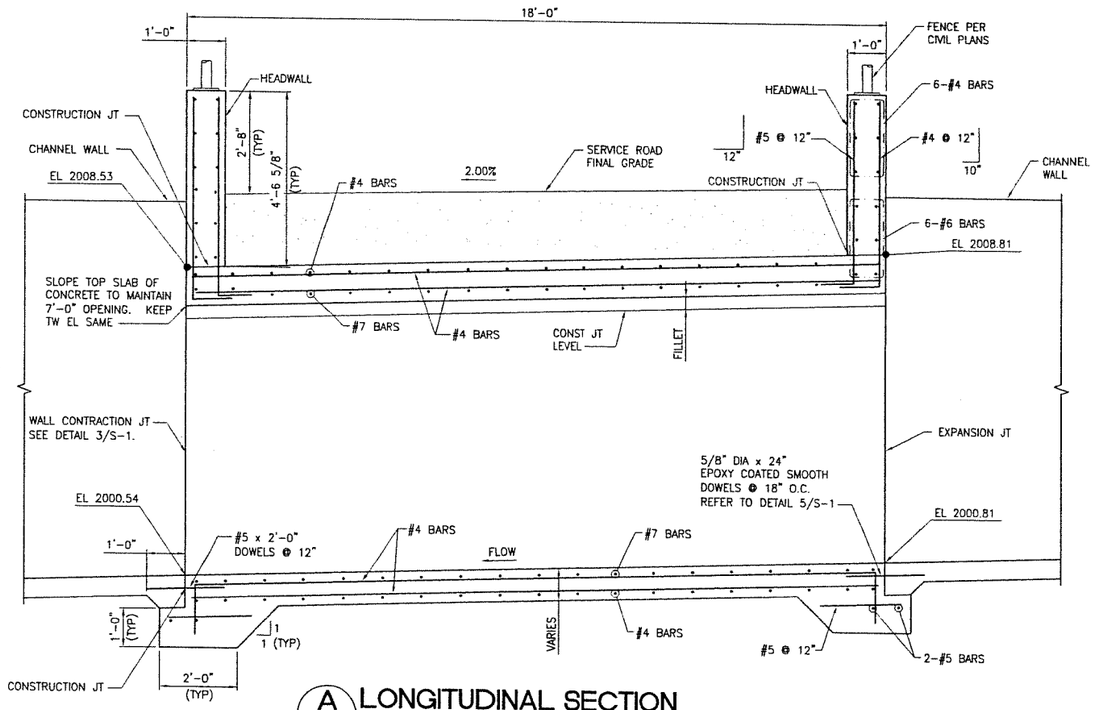
G GRATE
SCALE: 1/2" = 1'-0"



1 PLAN - DEBRIS BASIN
SCALE: 1/2" = 1'-0"



B TRANSITION BOX SECTION
SCALE: 1/2" = 1'-0"



A LONGITUDINAL SECTION
SCALE: 1/2" = 1'-0"

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
BOX - BRIDGE STRUCTURE AND DEBRIS BASIN
CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

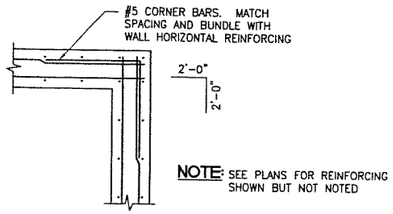
FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY: DJ/NO
DESIGNED BY: RDB CHECKED BY:
APPROVED BY FEV

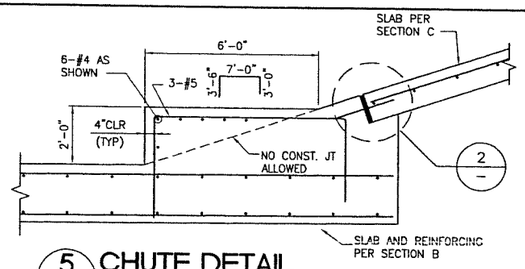
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

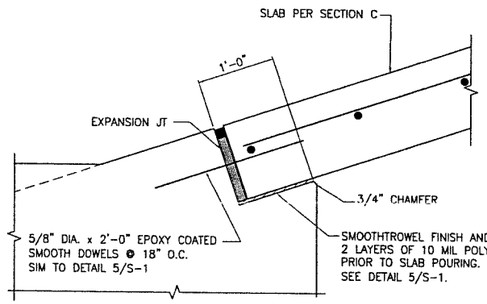
DRAWING NO.
S-8
SHT. 42 OF 42



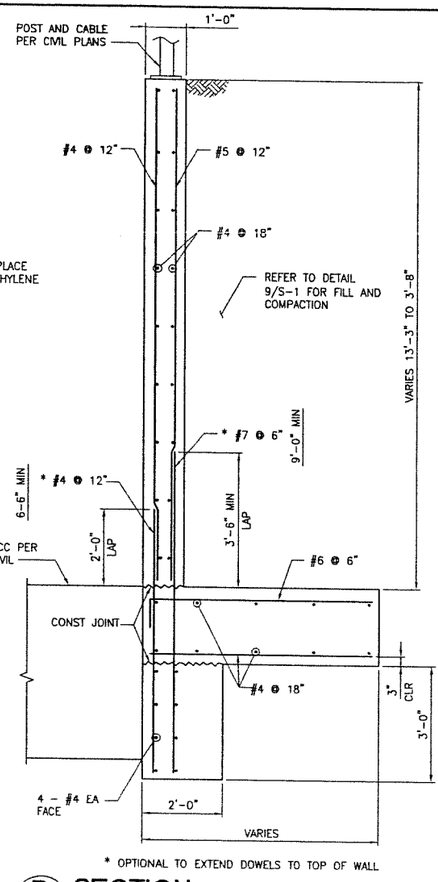
4 DETAIL
SCALE: 1/2" = 1'-0"



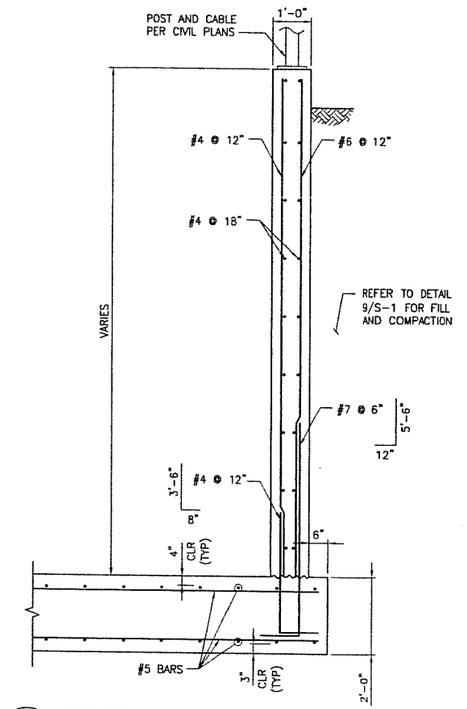
5 CHUTE DETAIL
SCALE: 3/8" = 1'-0"



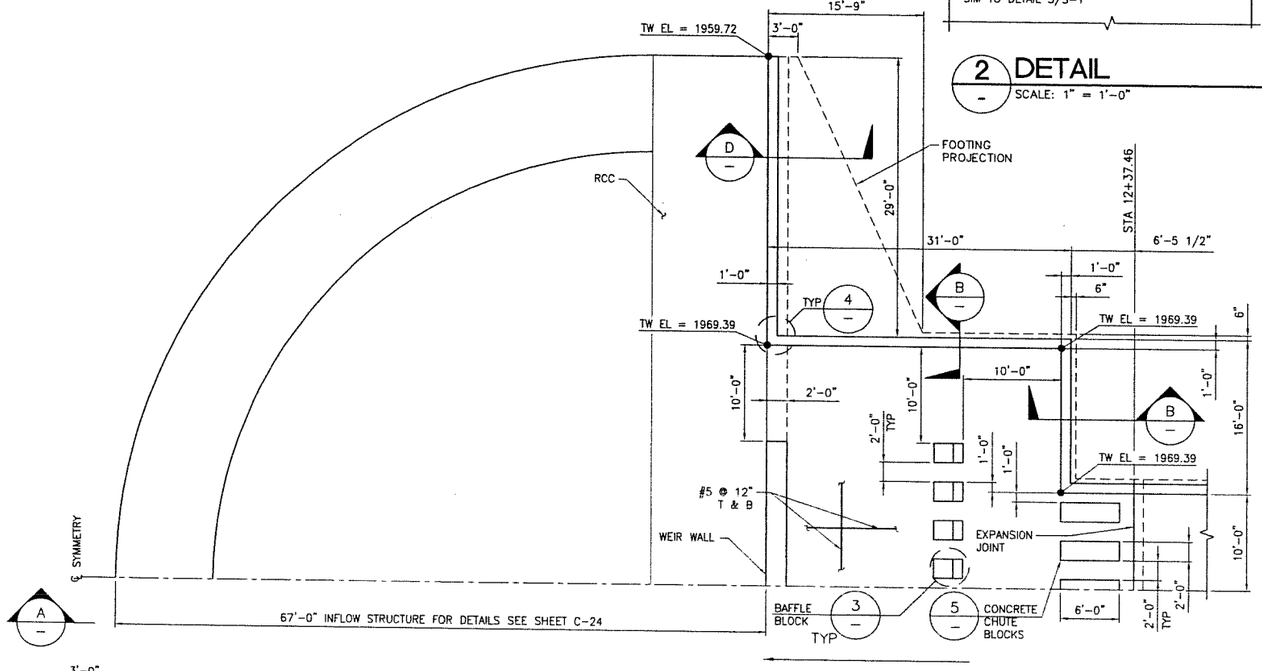
2 DETAIL
SCALE: 1" = 1'-0"



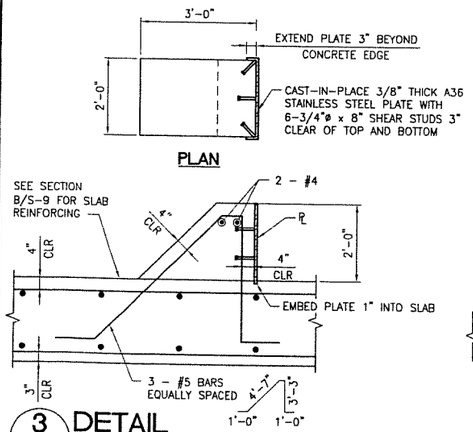
D SECTION
SCALE: 1/2" = 1'-0"



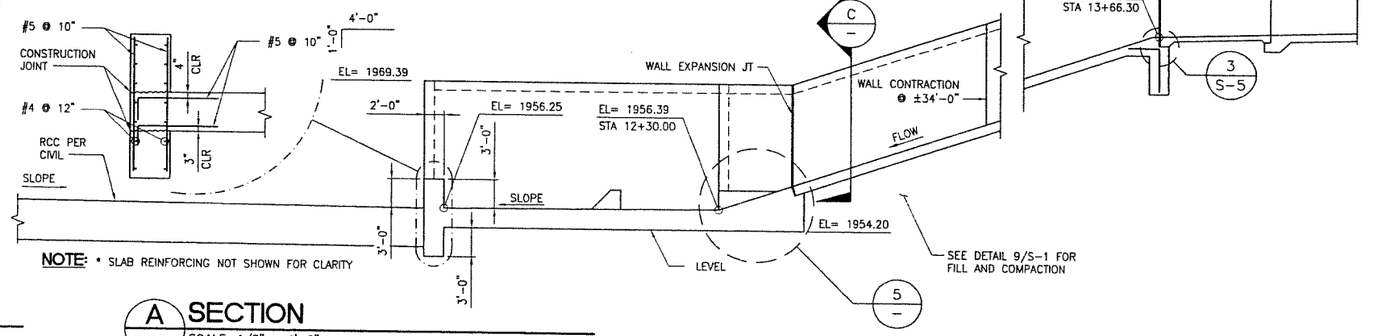
B SECTION
SCALE: 1/2" = 1'-0"



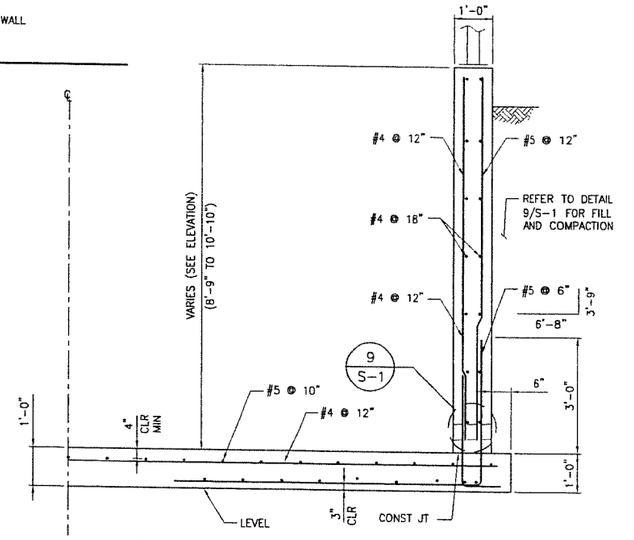
1 INFLOW PLAN
SCALE: 1/8" = 1'-0"



3 DETAIL
SCALE: 1/2" = 1'-0"



A SECTION
SCALE: 1/8" = 1'-0"



C SECTION
SCALE: 1/2" = 1'-0"

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
INFLOW STRUCTURE DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

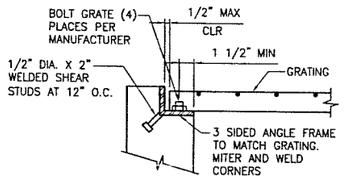
PROJECT No: 504.424 DRAWN BY: NO/JMH
DESIGNED BY: RDB CHECKED BY:
APPROVED BY FEV

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

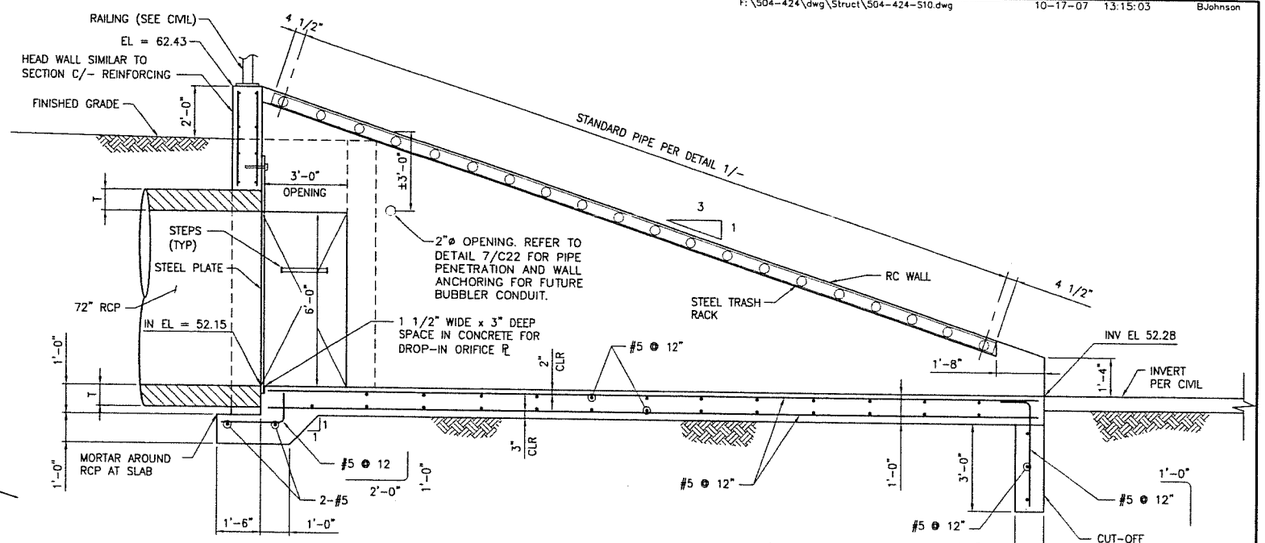
SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO. S-9

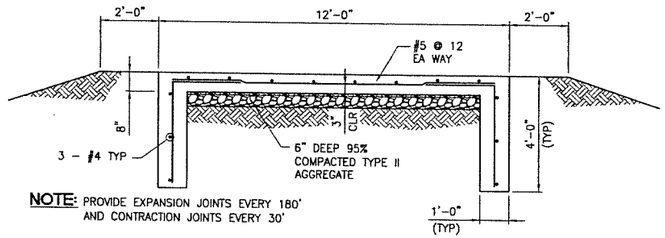
SHT. 40 OF 42



D SECTION
SCALE: NOT TO SCALE

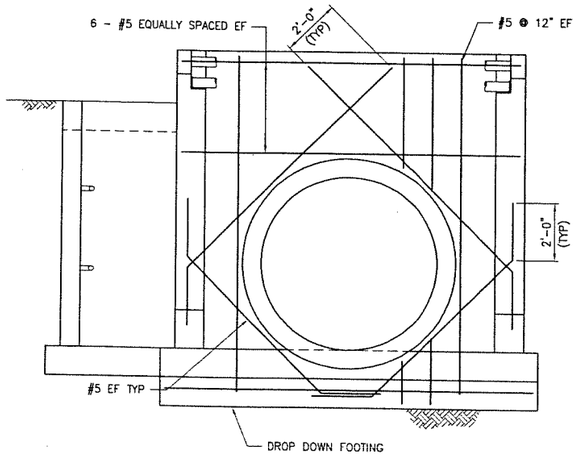


A SECTION
SCALE: 3/8" = 1'-0"



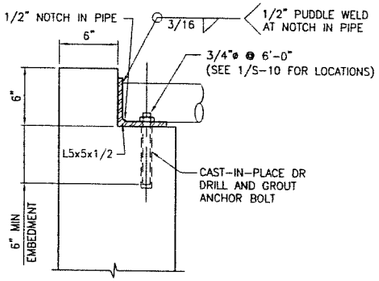
NOTE: PROVIDE EXPANSION JOINTS EVERY 180' AND CONTRACTION JOINTS EVERY 30'

4 SPILLWAY DETAIL
SCALE: 3/8" = 1'-0"

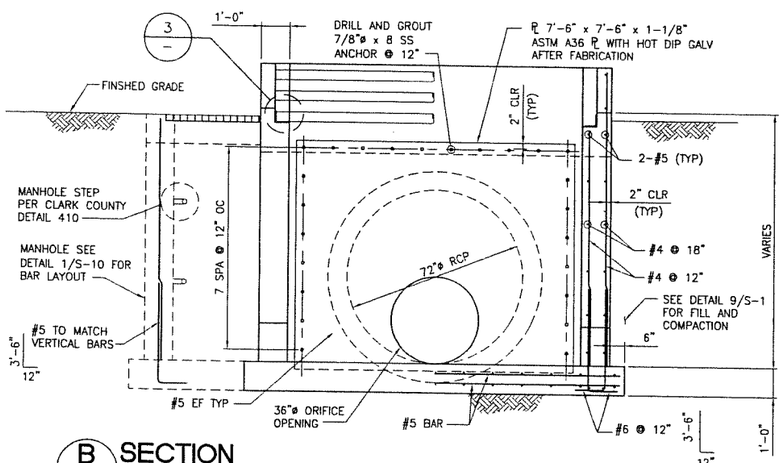


NOTE: ITEMS NOT SHOWN FOR CLARITY, SEE SECTION B/- FOR MORE INFORMATION

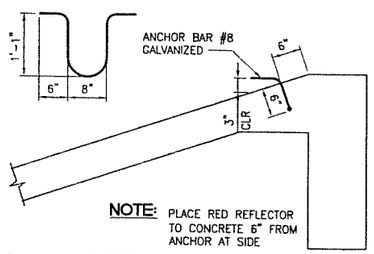
C SECTION
SCALE: 3/8" = 1'-0"



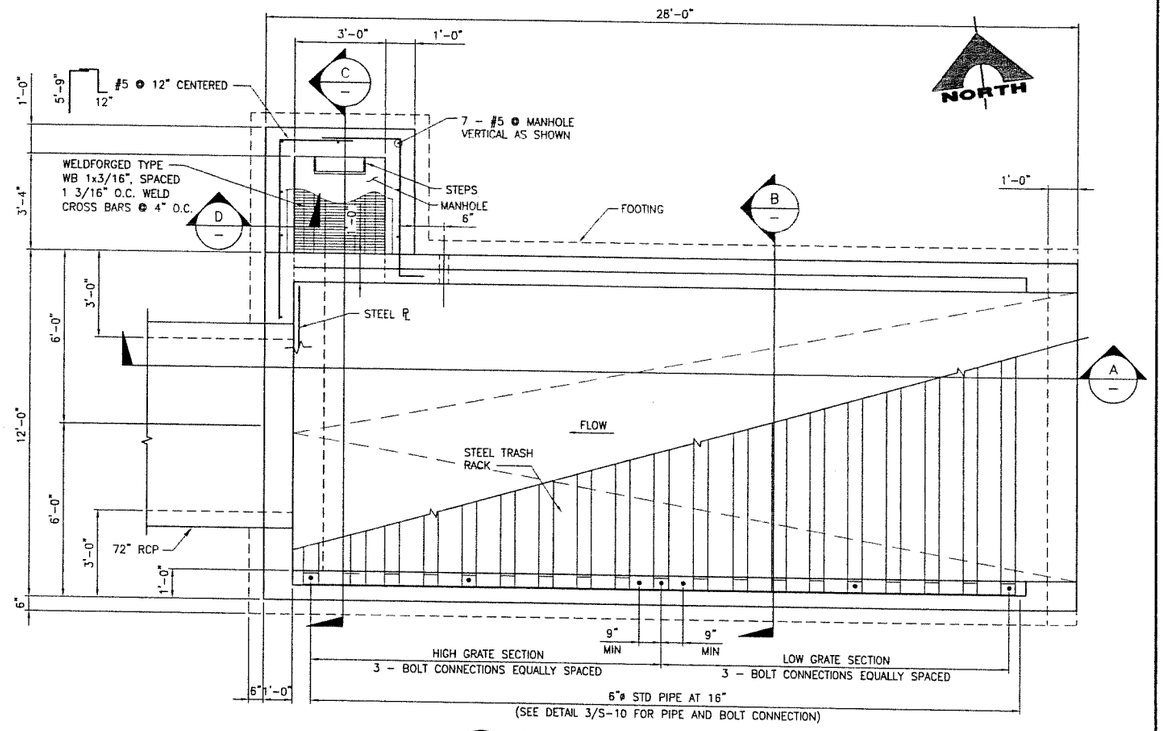
3 DETAIL
SCALE: 1 1/2" = 1'-0"



B SECTION
SCALE: 3/8" = 1'-0"



2 EMERGENCY ANCHOR
SCALE: 3/4" = 1'-0"



1 OUTLET STRUCTURE
SCALE: 3/8" = 1'-0"

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
OUTLET STRUCTURE DETAILS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

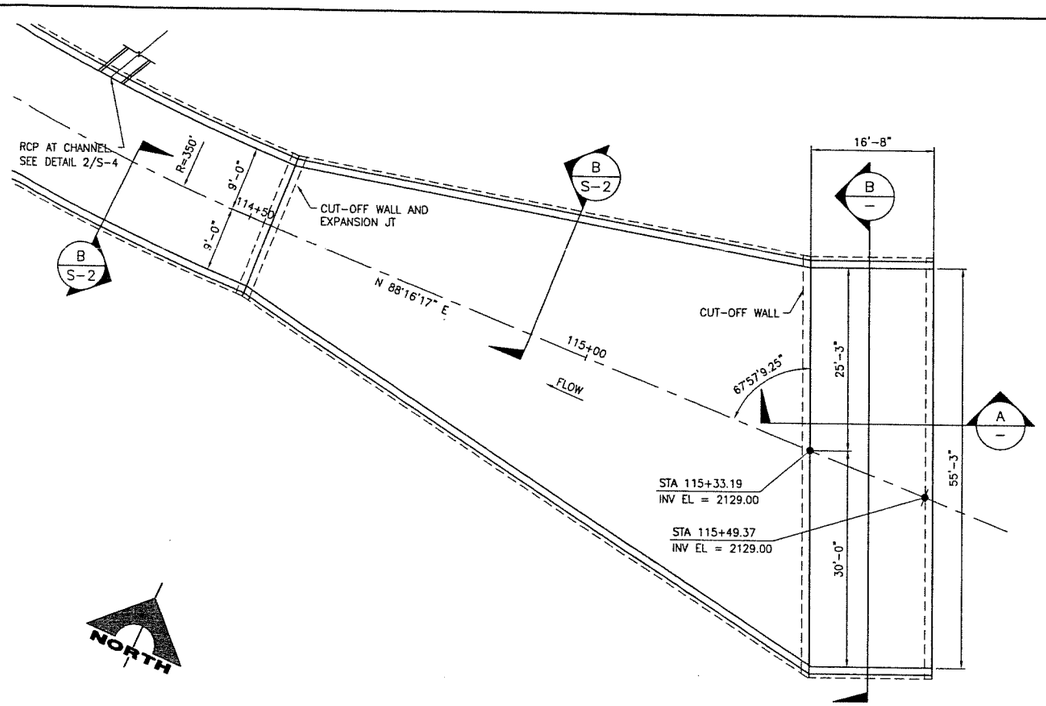
PROJECT No: 504.424 DRAWN BY: RDB/NO/JMH
DESIGNED BY: RDB CHECKED BY:
APPROVED BY FEV

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

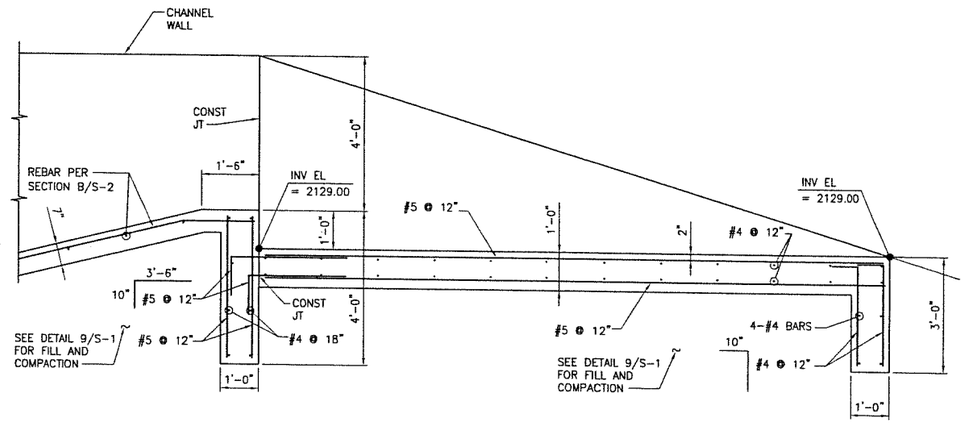
SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO.
S-10

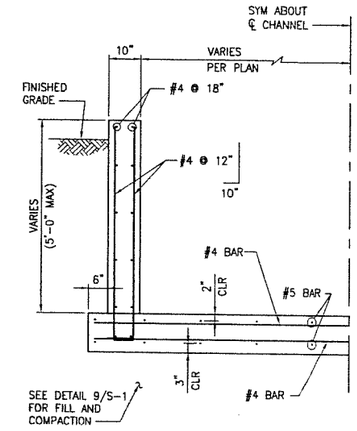
SHT 41 OF 42



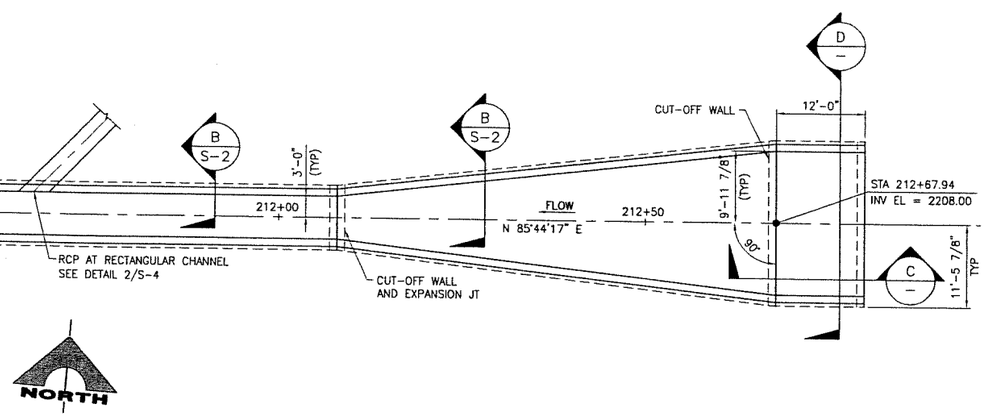
1 COLLECTION CHANNEL NORTH TRANSITION
SCALE: 3/32" = 1'-0"



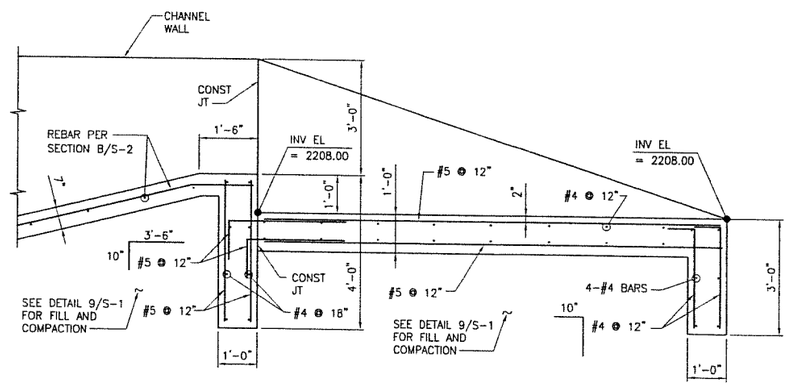
A SECTION
SCALE: 1/2" = 1'-0"



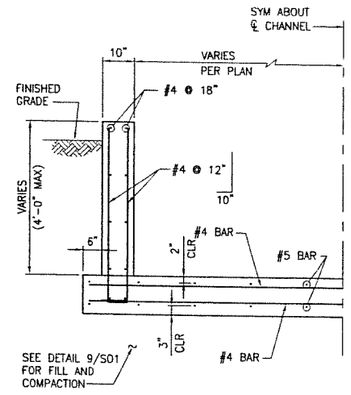
B SECTION
SCALE: 1/2" = 1'-0"



2 COLLECTION CHANNEL SOUTH TRANSITION
SCALE: 3/32" = 1'-0"



C SECTION
SCALE: 1/2" =1'-0"



D SECTION
SCALE: 1/2" =1'-0"

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN
NORTH AND SOUTH COLLECTION CHANNEL TRANSITIONS

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

FINAL SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.424 DRAWN BY: RDB/NO
DESIGNED BY: RDB CHECKED BY:
APPROVED BY FEV

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

SCALE
HORIZ: NONE
VERT: NONE
FIELD BOOK

DRAWING NO.
S-11

SHT. 38 OF 42

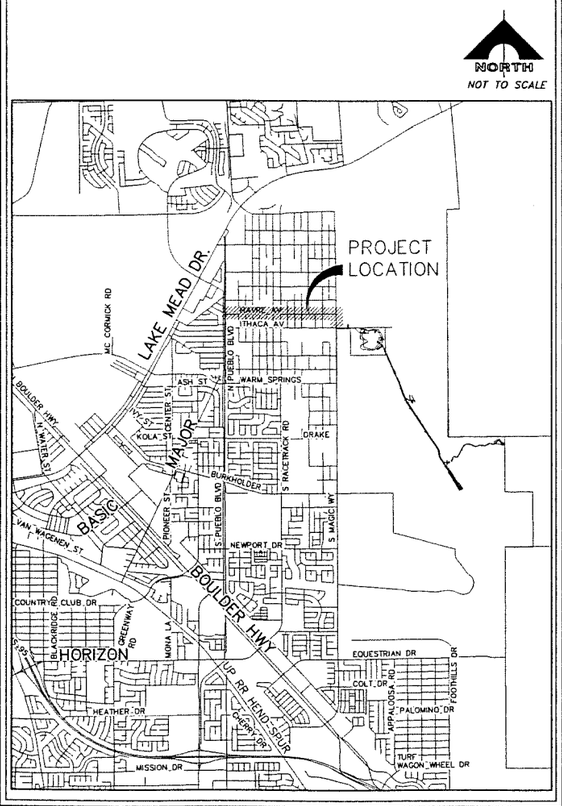
NORTHEAST C-1 DETENTION BASIN OUTFALL

CONTRACT No. 2006-86-0038

FUNDED BY:

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

LOCATION MAP



REVISIONS

No.	DESCRIPTION	BY	DATE	APPROVAL

CITY OF HENDERSON
CLARK COUNTY, NEVADA
DEPARTMENT OF PUBLIC WORKS

MAYOR
JAMES B. GIBSON

CITY COUNCIL
GERRI SCHRODER
ANDY A. HAFEN
JACK K. CLARK
STEVEN D. KIRK

CITY MANAGER
MARY KAY PECK

THE AFFIXED EMBARQ APPROVAL DOES NOT ASSUME OR GUARANTEE LIABILITY FOR KNOWN OR UNKNOWN CONFLICTS WITH EXISTING OR PROPOSED IMPROVEMENTS. RESOLUTION OF ANY CONFLICT WILL BE ACCOMPLISHED PURSUANT TO LOCAL ORDINANCES, NEVADA REVISED STATUTES AND/OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

NEVADA POWER COMPANY ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. NEVADA POWER COMPANY RESERVES THE RIGHT TO ADDRESS ANY EXISTING OR FUTURE CONFLICTS ONCE THE FINAL DESIGN IS COMPLETED. THE NEW SERVICE AND THE RESOLUTION OF ANY CONFLICTS WILL BE ACCOMPLISHED PURSUANT TO THE NEVADA PUBLIC UTILITY COMMISSION'S RULES AND REGULATIONS.

DIRECTOR OF PUBLIC WORKS
ROBERT MURNANE

10/17/07

PROFESSIONAL ENGINEER STATE OF NEVADA WILLIAM E. HUNTER III Exp. 04/30/2008 CIVIL No. 8833

NOT FOR CONSTRUCTION

INDEX OF SHEETS

No.	DESCRIPTION
G1	COVER SHEET, LOCATION MAP, & INDEX OF SHEETS
G2	KEY MAP
G3	FIRE, TRAFFIC, SEWER, AND WATER NOTES BENCHMARK AND BASIS OF BEARING
G4	GENERAL AND CONSTRUCTION NOTES LEGEND, ABBREVIATIONS, AND QUANTITIES
G5	HORIZONTAL CONTROL PLAN
G6	RIGHT-OF-WAY MAP
C1	PLAN & PROFILE STA. 10+00.00 TO 22+50.00
C2	PLAN & PROFILE STA. 22+50.00 TO 35+50.00
C3	PLAN & PROFILE STA. 35+50.00 TO 48+50.00
C4	PLAN & PROFILE STA. 48+50.00 TO 61+50.00
C5	PLAN & PROFILE STA. 61+50.00 TO 71+50.00
C6	ENLARGED PLANS
C7	ENLARGED PLANS
C8	LATERAL PROFILES
C9	PLAN & PROFILE 8" WATER RELOCATION
C10	DETAILS
C11	DETAILS
C12	MODIFIED NDOT TYPE 2A DROP INLET
S1	DETAILS
S2	DETAILS
S3	DETAILS
S4	DETAILS

APPROVAL

TITLE	APPROVED	DATE
DIRECTOR OF PUBLIC WORKS		
FLOOD CONTROL COORDINATOR		
ENGINEERING SERVICES MANAGER		
SURVEY		
RIGHT OF WAY		
NEW DEVELOPMENT		
CITY TRAFFIC ENGINEER		

AGENCY APPROVAL

AGENCY	NO SERVICE	REVIEWED BY	DATE
NEVADA POWER CO. - DISTRIBUTION			
NEVADA POWER CO. - TRANSMISSION			
EMBARQ			
SOUTHWEST GAS CORP.			
COX COMMUNICATION LAS VEGAS, INC.			
BASIC WATER COMPANY			
SOUTHERN NEVADA WATER AUTHORITY			

SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

GALE Wm. FRASER, II. P.E.
CHIEF ENGINEER/GENERAL MANAGER
CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT

NORTHEAST C-1 DETENTION BASIN OUTFALL
CONTRACT No. 2006-86-0038

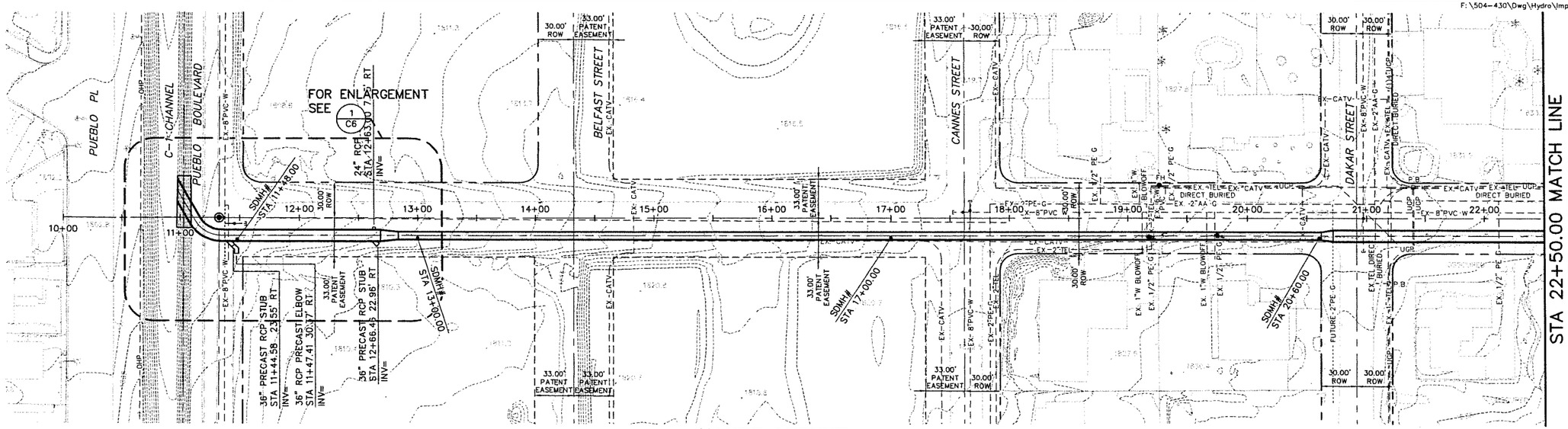
PROJECT No. 504.430

DATE : XX. XX, 2007

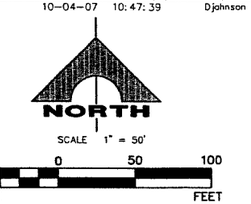
DRAWING No.
G1

SHEET No. 1

F:\504-430\Dwg\Hydro\Improv\430_C01.dwg 10-04-07 10:47:39 Djohnson



STA 22+50.00 MATCH LINE SEE SHEET C2



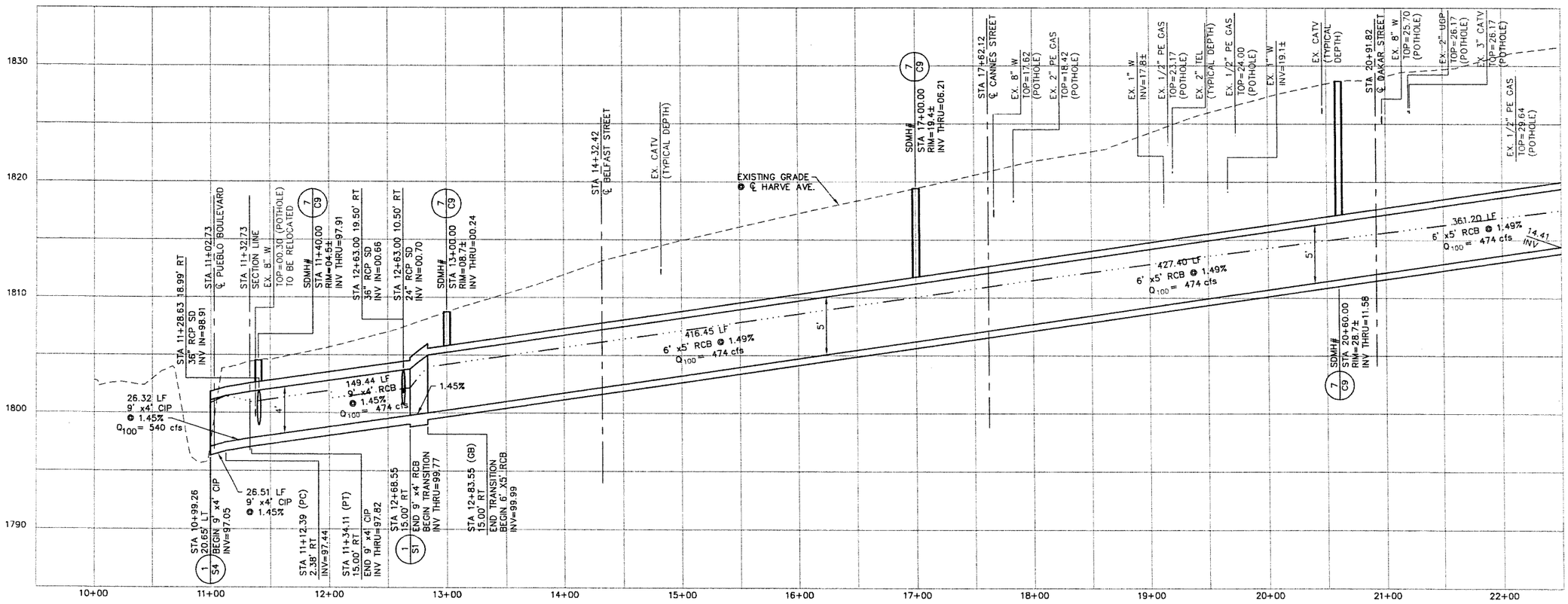
REMOVAL NOTES

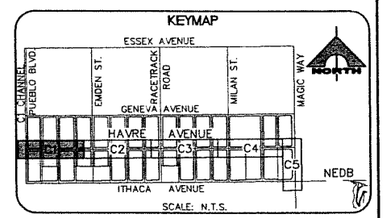
1. REMOVE EXISTING WATERLINE
2. REMOVE EXISTING 38"x60" HERCP
3. REMOVE EXISTING HEADWALL
4. REMOVE EXISTING AC PAVEMENT

CONSTRUCTION NOTES

1. CONSTRUCT RCB MANHOLE RISER PER (7/C9)
2. CONSTRUCT PREFABRICATED ECCENTRIC MANHOLE TEE PER (5/C9)
3. CONSTRUCT TYPE I SDMH PER USDCCA DWG 403
4. INSTALL PRECAST REINFORCED CONCRETE WYE PER (4/C9)
5. CONSTRUCT RCP PLUG PER (SEE DETAIL 2/C9)
6. CONSTRUCT DROP INLET PER DWG. C12
7. CONSTRUCT MODIFIED TYPE 'C' DROP INLET PER USDCCA DWG 412A
8. CONSTRUCT TRANSITION STRUCTURE (SEE DETAIL 1/S3)
9. CONSTRUCT TRANSITION STRUCTURE (SEE DETAIL 1/S4)

HAVRE AVENUE





DISCLAIMER NOTE

UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT HORIZONTAL AND VERTICAL LOCATION OF ALL EXISTING UNDERGROUND AND OVERHEAD UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATION.

REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN OUTFALL

PLAN & PROFILE

STA. 10+00.00 TO STA. 22+50.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

90% SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.430 DRAWN BY:

DESIGNED BY: CHECKED BY:

APPROVED BY

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

SCALE

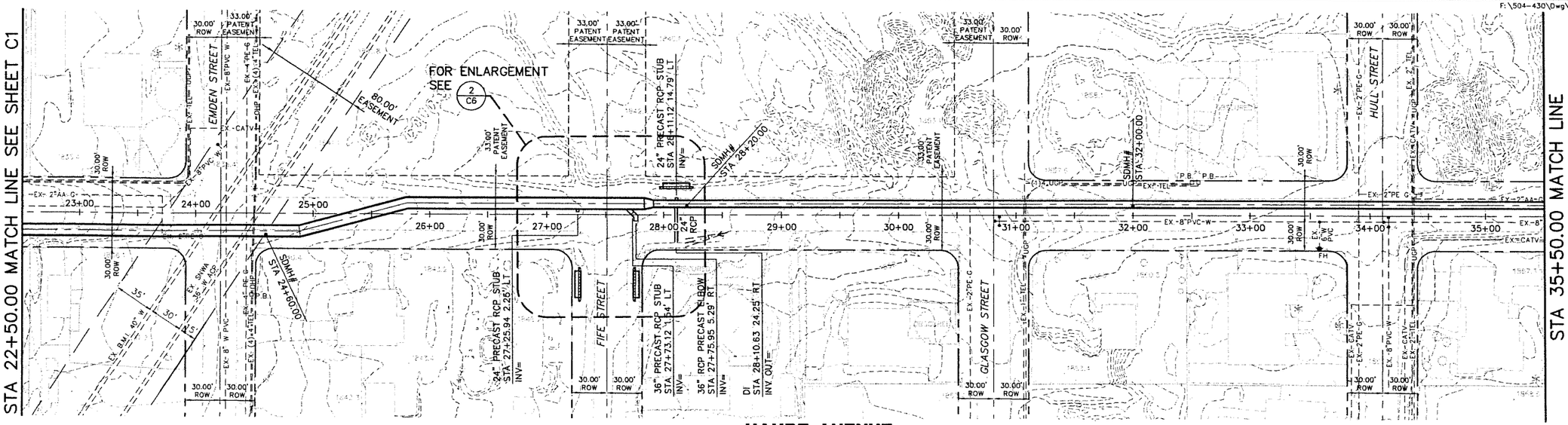
HORIZ: 1" = 50'

VERT: 1" = 5'

FIELD BOOK

DRAWING NO. C1

SHT. OF



REMOVAL NOTES

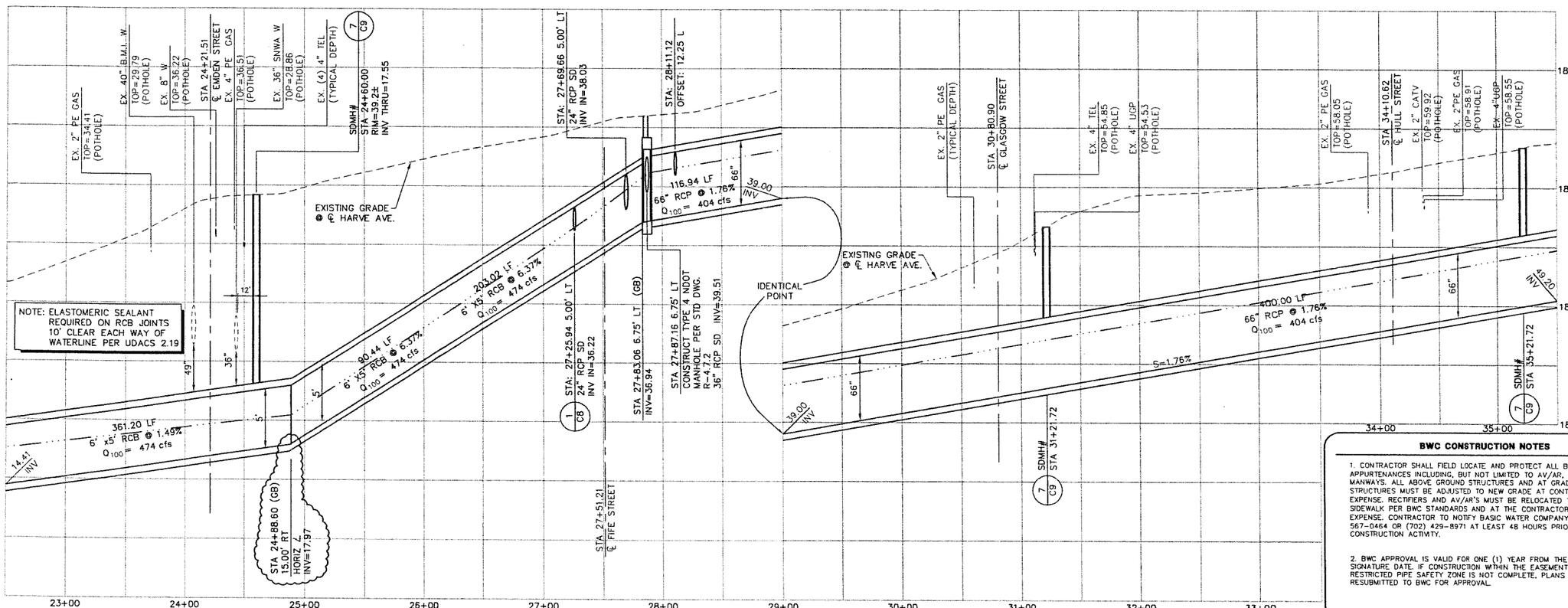
1. REMOVE EXISTING WATERLINE
2. REMOVE EXISTING 38"x60" HERCP
3. REMOVE EXISTING HEADWALL
4. REMOVE EXISTING AC PAVEMENT

CONSTRUCTION NOTES

1. CONSTRUCT RCB MANHOLE RISER PER (7/C9)
2. CONSTRUCT PREFABRICATED ECCENTRIC MANHOLE TEE PER (5/C9)
3. CONSTRUCT TYPE I SDMH PER USDCCA DWG 403
4. INSTALL PRECAST REINFORCED CONCRETE WYE PER (4/C9)
5. CONSTRUCT RCP PLUG PER (SEE DETAIL 2/C9)
6. CONSTRUCT DROP INLET PER DWG. C12
7. CONSTRUCT MODIFIED TYPE 'C' DROP INLET PER USDCCA DWG 412A
8. CONSTRUCT TRANSITION STRUCTURE (SEE DETAIL 1/S3)
9. CONSTRUCT TRANSITION STRUCTURE (SEE DETAIL 1/S4)

NORTH
SCALE 1" = 50'
50 0 50 100
SCALE FEET

HAVRE AVENUE

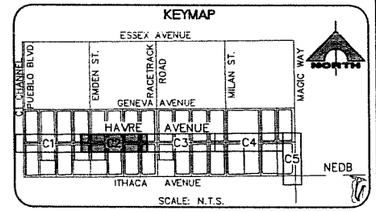


SOUTHERN NEVADA WATER AUTHORITY CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL SNWA/SNWS APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS AND CATHODIC PROTECTION SYSTEMS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. CATHODIC PROTECTION TEST STATIONS, RECTIFIERS, AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER SNWA STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY SOUTHERN NEVADA WATER AUTHORITY DEVELOPMENT PLAN REVIEW, AT (702) 862-3444 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
2. SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

SOUTHERN NEVADA WATER AUTHORITY DATE

KEYMAP



BWC CONSTRUCTION NOTES

1. CONTRACTOR SHALL FIELD LOCATE AND PROTECT ALL BWC APPURTENANCES INCLUDING, BUT NOT LIMITED TO AV/AR, ACCESS MANWAYS. ALL ABOVE GROUND STRUCTURES AND AT GRADE STRUCTURES MUST BE ADJUSTED TO NEW GRADE AT CONTRACTOR'S EXPENSE. RECTIFIERS AND AV/AR'S MUST BE RELOCATED TO THE SIDEWALK PER BWC STANDARDS AND AT THE CONTRACTOR'S EXPENSE. CONTRACTOR TO NOTIFY BASIC WATER COMPANY AT (702) 567-0464 OR (702) 429-8971 AT LEAST 48 HOURS PRIOR TO CONSTRUCTION ACTIVITY.
2. BWC APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE, PLANS MUST BE RESUBMITTED TO BWC FOR APPROVAL.

BASIC WATER COMPANY DATE

DISCLAIMER NOTE

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REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN OUTFALL

PLAN & PROFILE

STA 22+50.00 TO STA 35+50.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

90% SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.430 DRAWN BY:
DESIGNED BY: CHECKED BY:
APPROVED BY

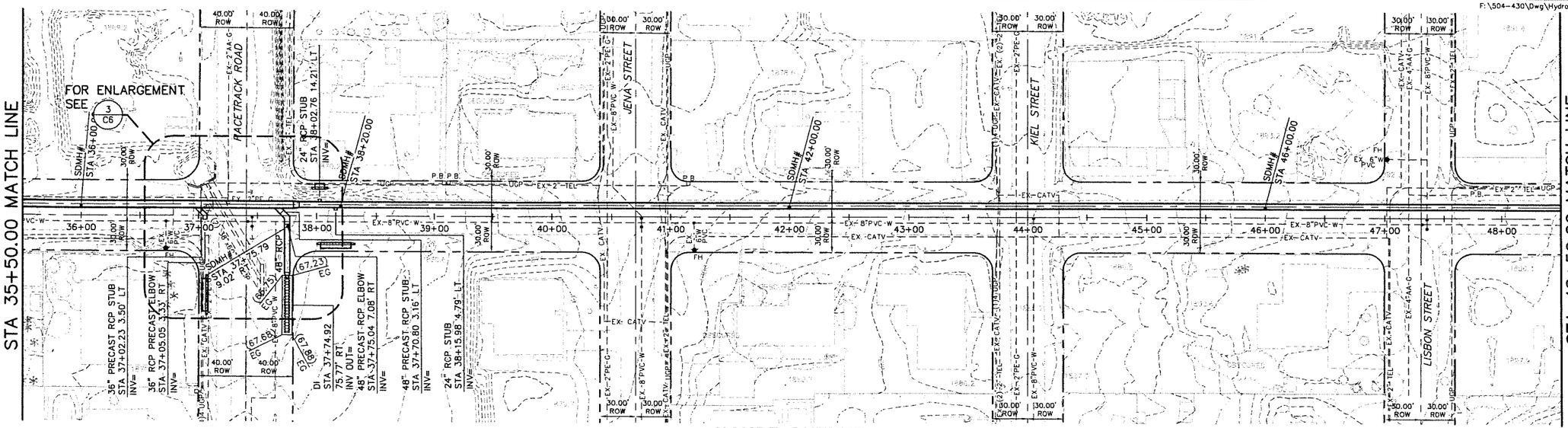
G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T. 702.804.2000 · F. 702.804.2299 · GCWALLACE.COM

SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

DRAWING NO. C2
SHT. OF

F:\504-430\Dwg\Hydro\Improv\430_C03.dwg 10-04-07 10:48:06 Djohnson

SEE SHEET C2
STA 35+50.00 MATCH LINE



STA 48+50.00 MATCH LINE
SEE SHEET C4

NORTH

SCALE 1" = 50'

50 0 50 100

SCALE FEET

REMOVAL NOTES

1. REMOVE EXISTING WATERLINE
2. REMOVE EXISTING 38"x60" HERCP
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CONSTRUCTION NOTES

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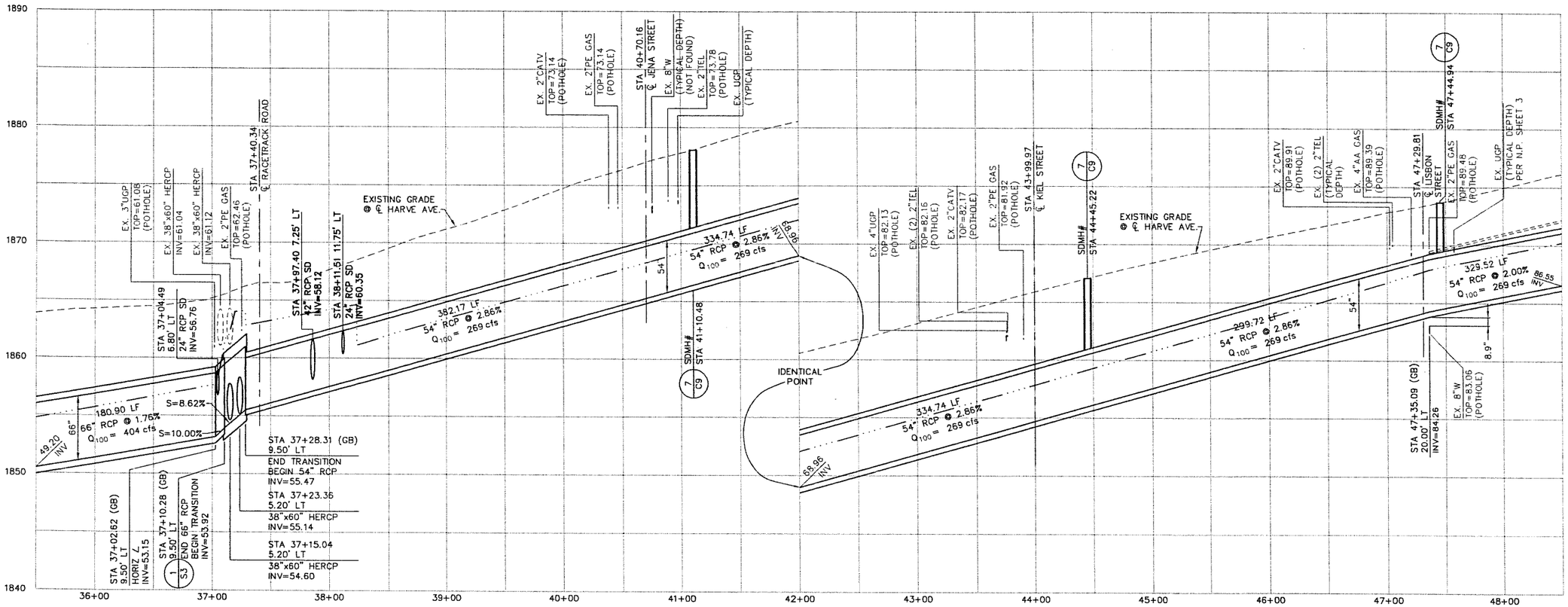
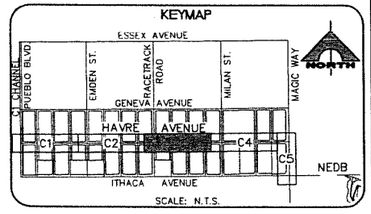
9. CONSTRUCT TRANSITION STRUCTURE (SEE DETAIL 1/S4)

HAVRE AVENUE





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REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN OUTFALL

PLAN & PROFILE

STA 35+50.00 TO STA 48+50.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

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SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

DRAWING NO. C3

SHT. OF

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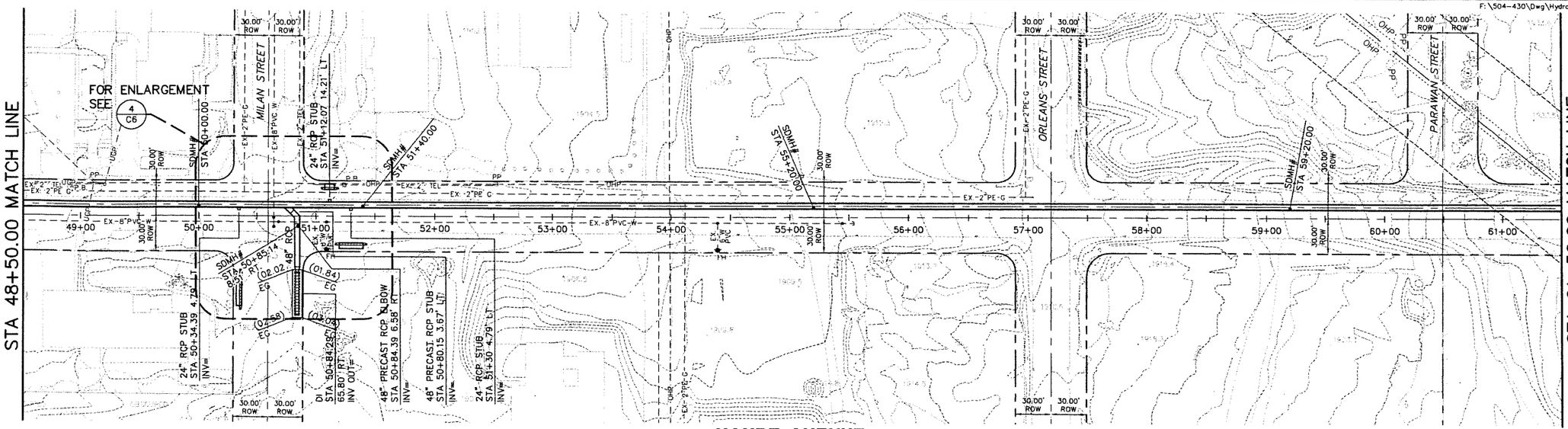
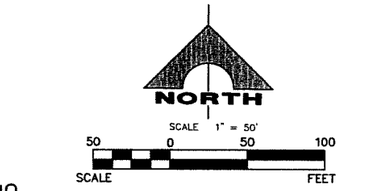
SEE SHEET C3
STA 48+50.00 MATCH LINE



SEE SHEET C5
STA 61+50.00 MATCH LINE



REMOVAL NOTES

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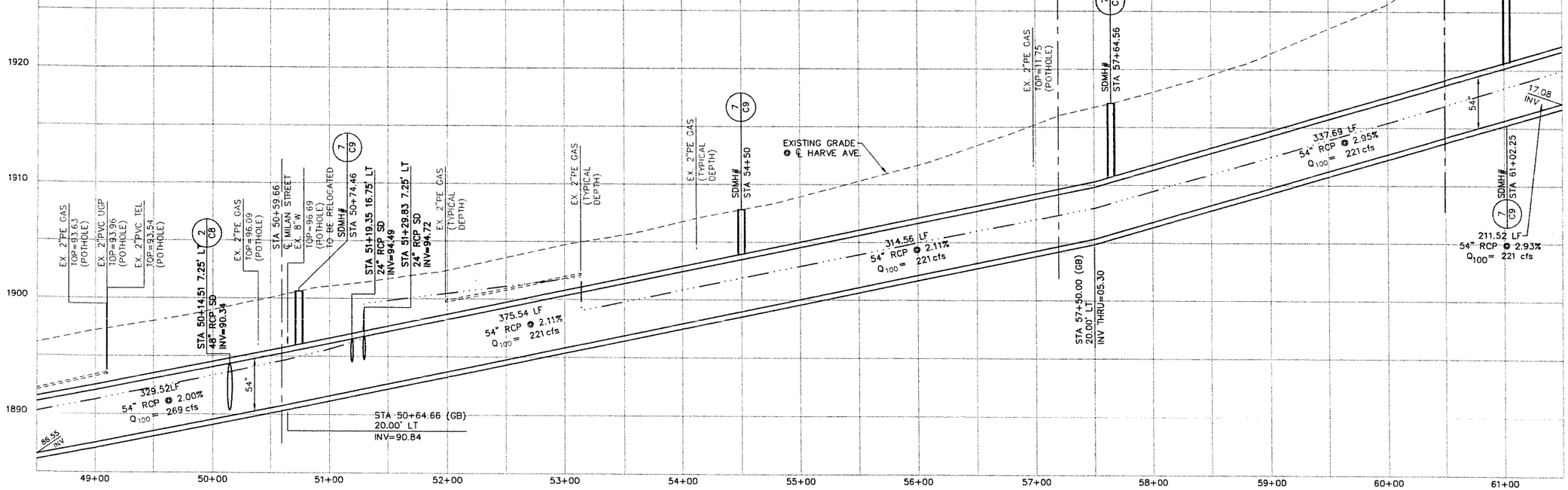
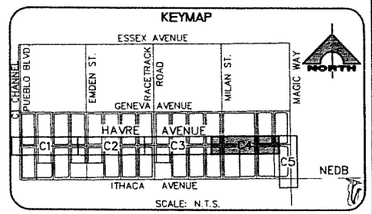
HAVRE AVENUE





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REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN OUTFALL

PLAN & PROFILE

STA 48+50.00 TO STA 61+50.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

90% SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.430 DRAWN BY:
DESIGNED BY: CHECKED BY:
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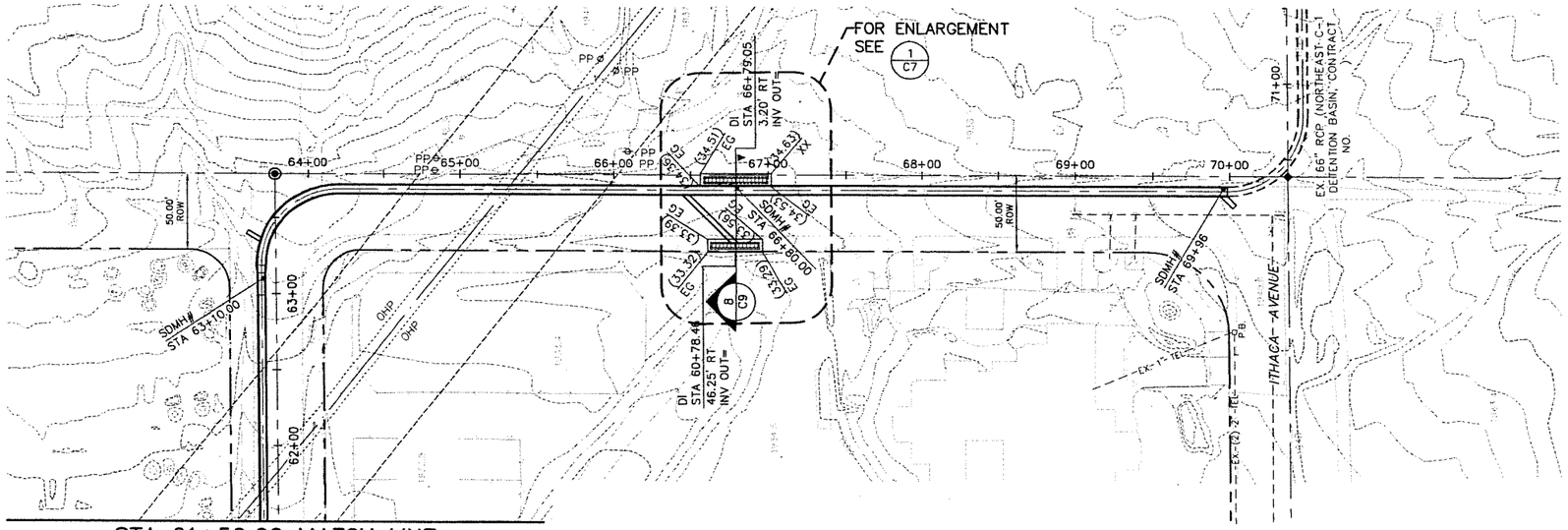
SCALE
HORIZ: 1" = 50'
VERT: 1" = 5'
FIELD BOOK

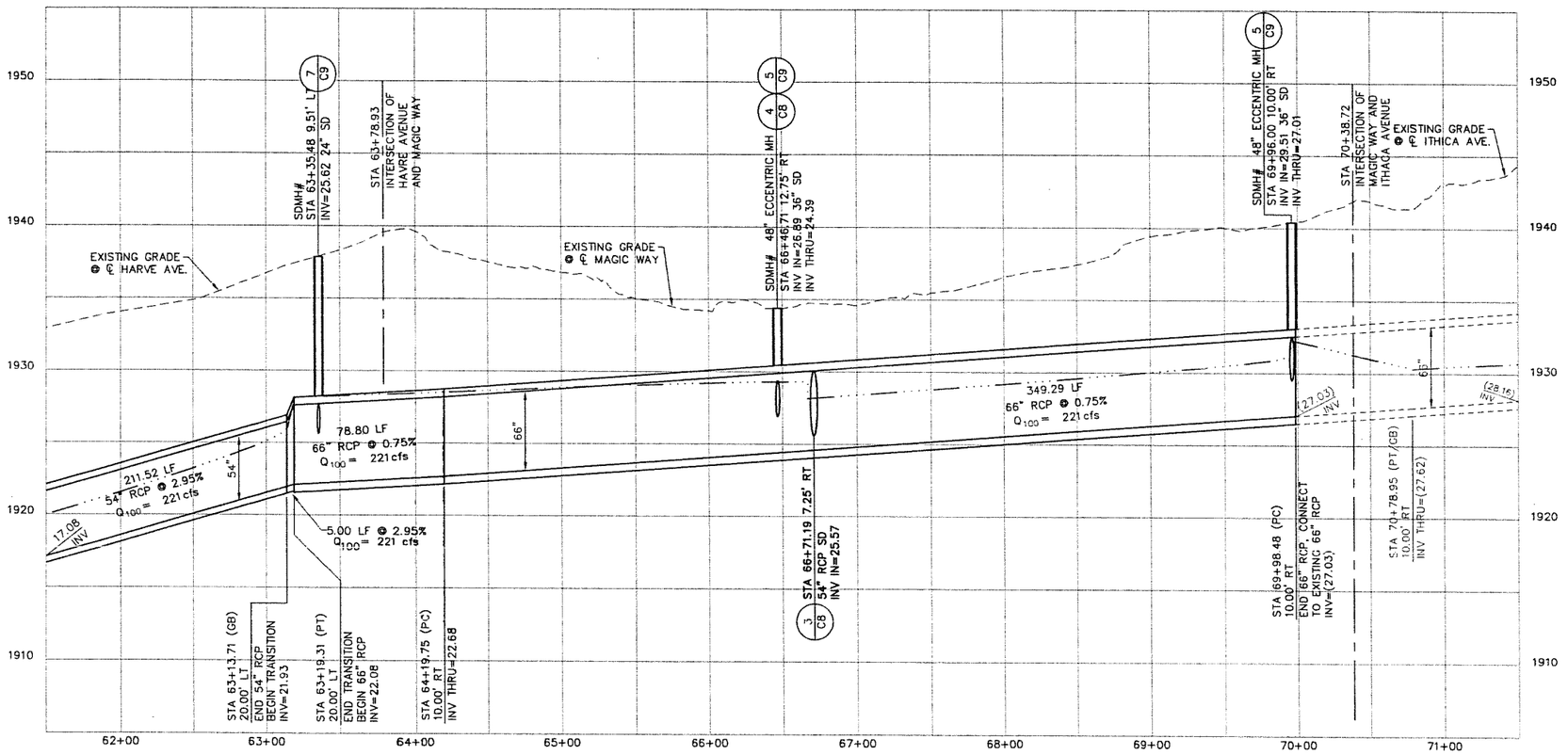
DRAWING NO. C4
SHT. OF

F:\504-430\Dwg\Hydro\Improv\430_C05.dwg 10-04-07 10:48:30 Djohnson



STA 61+50.00 MATCH LINE
SEE SHEET C4

MAGIC WAY



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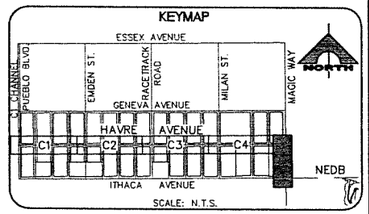

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REV. NO.	DATE	DESCRIPTION	APPROVED

NORTHEAST C-1 DETENTION BASIN OUTFALL

PLAN & PROFILE

STA 61+50.00 TO STA 71+50.00

CITY OF HENDERSON, CLARK COUNTY, NEVADA, DEPARTMENT OF PUBLIC WORKS

90% SUBMITTAL PRELIMINARY NOT FOR CONSTRUCTION

PROJECT No: 504.430 DRAWN BY:

DESIGNED BY: CHECKED BY:

APPROVED BY

G. C. WALLACE COMPANIES
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1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
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SCALE
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VERT: 1" = 5'
FIELD BOOK

DRAWING NO. C5

SHT. OF

RESPONSE TO COMMENTS
ON THE
CONDITIONAL LETTER OF MAP REVISION
(CLOMR)
FOR THE
NORTHEAST C-1
DETENTION BASIN

504-424

January 2008

Prepared For:

City of Henderson
Department of Public Works
240 Water Street
Henderson, Nevada 89009-5050
Phone: (702) 267-3050
Fax: (702) 267-3051

RESPONSE TO COMMENTS
ON THE
CONDITIONAL LETTER OF MAP REVISION
(CLOMR)
FOR THE
NORTHEAST C-1
DETENTION BASIN

504-424

January 2008

Prepared For:

City of Henderson Department of Public Works
240 Water Street
Henderson, Nevada 89009-5050
Phone: (702) 267-3050
Fax: (702) 267-3051

Prepared By:

G. C. Wallace, Inc.
1555 South Rainbow Boulevard
Las Vegas, Nevada 89146
Phone: (702) 804-2000
Fax: (702) 804-2297

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS

G. C. WALLACE, INC.

Writer's Contact Information:
(702) 804-2079

504-424

January 29, 2008

Sacha Tohme, PE, CFM
Federal Emergency Management Agency (FEMA) Depot
Michael Baker Jr., Inc.
3601 Eisenhower Avenue, Suite 600
Alexandria, Virginia 22304-6425

Re: CLOMR for the Northeast C-1 Detention Basin
(CLOMR Case# 08-09-0093R)

Dear Mr. Tohme:

This letter is in response to your letter, dated November 1, 2007, regarding the Conditional Letter of Map Revision (CLOMR) for the Northeast C-1 Detention Basin. The comments listed below are being addressed, so the review of our request can be continued.

Comment: "1. Our preliminary review revealed that the area of revision is currently shown on the effective Flood Insurance Rate Map as within the unincorporated areas of Clark County. Please provide community acknowledgement in the form of a letter stating that Clark County officials have reviewed the revision request and understand the effects of the revision on flooding conditions in the community, or Application/Certification Form 1, entitled: "Overview & Concurrence Form," signed by a Clark County official. Alternatively, if the revision area has been annexed by the City of Henderson, please provide official annexation documentation, including a map reflecting the new corporate limits for the City of Henderson, to show that this area has been annexed by the City of Henderson."

Response: The Conditional Letter of Map Revision (CLOMR) for the Northeast C-1 Detention Basin has been sent to Clark County for concurrence. Community acknowledgement from Clark County, as requested in the above comment, will be forwarded to you upon receipt.

Comment: "2. Our preliminary review revealed an increase in the width of the Special Flood Hazard Area (SFHA), the area that would be inundated by base (1-percent-annual-chance) flood, for the Upper Berm Tributary. Please submit documentation of individual legal notice distributed by Clark County officials and/or officials from the City of Henderson to all property owners affected by the increase in SFHA width, or a letter signed by Clark County officials and/or officials from the City of Henderson stating that all affected property owners have been notified."

Response: The U.S. Bureau of Reclamation (BOR) and U.S. Bureau of Land Management (BLM) went through the process of review of right-of-way grant applications including accompanying environmental evaluations showing the flood control facilities and corresponding right-of-way areas. The processes are complete and approval has been obtained for the right-of-way for the flood control facilities. Letters advising the BOR and BLM of the map revisions with this CLOMR have been included in the Appendix.

Comment: "3. Our preliminary review revealed that the submitted proposed conditions HEC-1 hydrologic computer analysis was modeled using a 100-year, 6-hour storm. Because the submitted HEC-1 analysis includes the proposed Northeast C-1 (NE C-1) detention basin, which is used to reduce the peak discharge of the base flood, please provide documentation that the NE C-1 detention basin was designed using the critical storm duration that would yield the maximum reservoir stage or maximum reservoir outflow during the design storm."

Response: Per our conversation on December 12, 2007, 24-hour and 3-hour storm durations were analyzed to satisfy this comment. HEC-1 models C1SDN3B-alt3 and C1SDN4B-alt3 (previously submitted in this CLOMR) were edited with 3-hour and 24-hour storm distributions and precipitation values in order to determine the maximum reservoir stage and maximum reservoir outflow. The 3-hour rainfall distribution used in this analysis was previously used in Clark County before current the 6-hour rainfall distribution was adopted. The SCS Type II rainfall distribution was used for the 24-hour analysis. Point precipitation values for the 3-hour and 24-hour storm durations were referenced from NOAA Atlas 14. The results of the analyses show the 6-hour storm duration in HEC-1 model C1SDN3B-alt3 yields the maximum reservoir stage (1983.89 feet at 6.83 hours) and outflow (208 cfs). Note that the 6-hour HEC-1 model C1SDN3B-alt3 was provided in the previous submittal. HEC-1 output, rainfall distributions, and precipitation values are included in the Appendix.

Comment: "4. The submitted topographic work map entitled: "City of Henderson, Northeast C-1 Detention Basin CLOMR, Upper Berm Normal Depth Cross Sections," prepared by your firm, dated October 16, 2007, does not provide essential information required to complete our review of this request. Please submit a work map for the unnamed tributary to C-1 channel (upper berm tributary) that includes topographic information and all applicable items listed on page 2 of Application/Certification Form 2, entitled: "Riverine Hydrology & Hydraulics Form," including:

a. The locations and alignments of cross sections used in the hydraulic model;
b. The flow line used in the hydraulic model;
c. Certification by a registered professional engineer; and
d. The topographic contour information used for the boundary delineation of the base flood.

Response: Figure 8R2, Upper Berm Work Map, has been revised to include the flow line and locations and alignments of cross sections used in the approximate methods analysis. The analysis was conducted with approximate methods using normal depth calculations to determine the approximate 100-year SFHA boundary for the upper berm tributary area. Certification of data and work maps included in the Northeast C-1 Detention Basin CLOMR is provided on page 2 of 2 of MT-2 Form 1, Overview and Concurrence Form. Topographic contours used in the normal depth analysis are 5-foot contours created by Clark County from data collected from the 1996 orthophotos. The contour elevations are based on 1983 North American Datum. Figure 8R2 is included in the Appendix.

Comment: "5. The proposed conditions hydraulic model for the upper berm tributary was run using a supercritical flow regime. FEMA accepts base floodplain boundary delineations based on critical flow depths only for concrete-lined, engineered channels. Because the reach is not concrete-lined, critical depth is the minimum depth permissible to map the base floodplain boundary delineations for this reach. Please revise the submitted hydraulic analysis to use the subcritical flow regime. In addition, please revise the topographic work map to reflect the proposed conditions base floodplain boundary delineations based on the results of the revised hydraulic model."

Response: Normal Depth Calculations were used to determine the 100-year SFHA boundary for the upper berm tributary area. For flow depths generated by normal depth analyses that resulted in supercritical flows, critical flow conditions were reported. Thus, the normal depths reported in the analysis for the upper berm tributary are for critical flow conditions or subcritical flow conditions.

Comment: "6. The submitted report entitled: "Northeast C-1 Detention Basin Conditional Letter of Map Revision (CLOMR)," prepared by your firm, dated October 16, 2007, did not contain topographic work maps for the submitted proposed conditions HEC-RAS and WSPGW hydraulic models. Please submit topographic work maps, certified by a registered professional engineer or licensed land surveyor, for the proposed conditions HEC-RAS and WSPGW hydraulic models."

Response: Topographic work maps WM-1 through WM-14 have been prepared for the proposed conditions WSPGW and HEC-RAS models. The WSPGW model for the NE C-1 CLOMR has been revised. WSPGW model PRE-FINAL2.out has been prepared for the latest NE C-1 Outfall submittal to the City of Henderson and Clark County Regional Flood Control District, dated November 8, 2007. WSPGW calculations are included in the Appendix. As stated in the response to Comment No. 4, certification of data and work maps included in the Northeast C-1 Detention Basin CLOMR is provided on page 2 of 2 of MT-2 Form 1, Overview and Concurrence Form.

Comment: "7. The submitted report referenced in Item 6 shows that the proposed channel will cut off flow to the Drake Channel. Please provide hydrologic and hydraulic

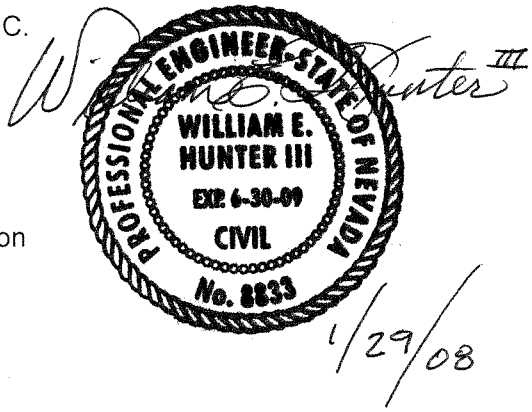
analyses showing the effects of the proposed channel on the Drake Channel. In addition, please provide a hydrologic drainage area map and topographic work map, certified by a registered professional engineer or licensed land surveyor."

Response: HEC-RAS model Drake.prj was provided to G. C. Wallace by the CCRFCD to represent the existing Drake Channel. HEC-RAS model drake12908.prj was created from the existing model and was modified using 100-year existing condition flows referenced from Figures E-5 and E-6 in the City of Henderson's 2005-2006 Local Drainage Master Plan Project. The existing conditions in HEC-1 model C1E3.dat from the referenced report are based on future curve number values with only existing local and CCRFCD facilities in place, and are consistent with post-project drainage patterns presented in this CLOMR. The HEC-RAS model drake12808.prj shows existing condition flows are contained within the Drake Channel. Work Maps showing HEC-RAS cross-section locations and water surface elevations created from existing Drake Channel improvement plans provided by the CCRFCD have been included in the Appendix. Sheets DR-1 to DR-2 show where additional cross-section points were created from project topography using 1988 datum. Figures E-5 and E-6 and excerpts from HEC-1 model output C1E3.out from the referenced report are included in the Appendix. HEC-RAS model drake12908.prj output and electronic files are included in the Appendix.

If you have any questions or require additional information, please contact us at 804-4381.

Very truly yours,

G. C. WALLACE, INC.



Bill Hunter, PE
Project Manager
Flood Control Division

BH/DMM/jj

Enclosures.

c: Kevin Eubanks, CCRFCD
Lance Olsen, COH
Calvin L. Black, GCW
Jerry E. Pruitt, GCW

APPENDIX

Comment 2

Letters Advising U.S. Bureau of Reclamation and U.S. Bureau of Land Management of SFHA Revisions

January 25, 2008

Mark Chatterton
BLM – Las Vegas Field Office
4701 North Torrey Pines
Las Vegas, NV 89130

NORTHEAST C-1 DETENTION BASIN PROJECT – NOTIFICATION OF CHANGES TO 100-YEAR FLOODPLAIN BOUNDARIES ON ASSESSORS PARCEL NO. 179-01-000-001.

Dear Mr. Chatterton:

I am writing to provide notification as to changes to the 100-year flood plain boundaries on your property, as identified in Assessors Parcel Number 179-01-000-001, due to construction of the Northeast C-1 (NE C-1) Detention Basin project. The Flood Insurance Rate Map (FIRM) for a community depicts land determined to be subject to a one percent (100-year) or greater chance of flooding in any given year. The FIRM is used to determine flood insurance rates and to help the community with floodplain management.

The City of Henderson (COH) is planning to construct an 11-foot high berm within the River Mountains as a part of the Northeast C-1 Detention Basin project in Henderson, Nevada. The purpose of the berm is to eliminate an existing flow split within the River Mountains and direct all flows north along a natural wash and ultimately to the NE C-1 Detention Basin. Construction of the berm will result in approximately 23.7 acres of the referenced parcel added to the one percent annual chance Special Flood Hazard Area (SFHA). The attached exhibit shows the proposed changes to the one percent annual chance SFHA.

COH is applying for a Conditional Letter of Map Revision (CLOMR) from the Federal Emergency Management Agency (FEMA) to revise FIRM Map Number 32003, Panels 2615 E and 2620 E for Clark County, Nevada, and Incorporated Areas resulting from constructing the NE C1 Detention Basin project.

If you have any questions or concerns about the proposed changes or its effects on your property, you may contact me at 702-267-3063.

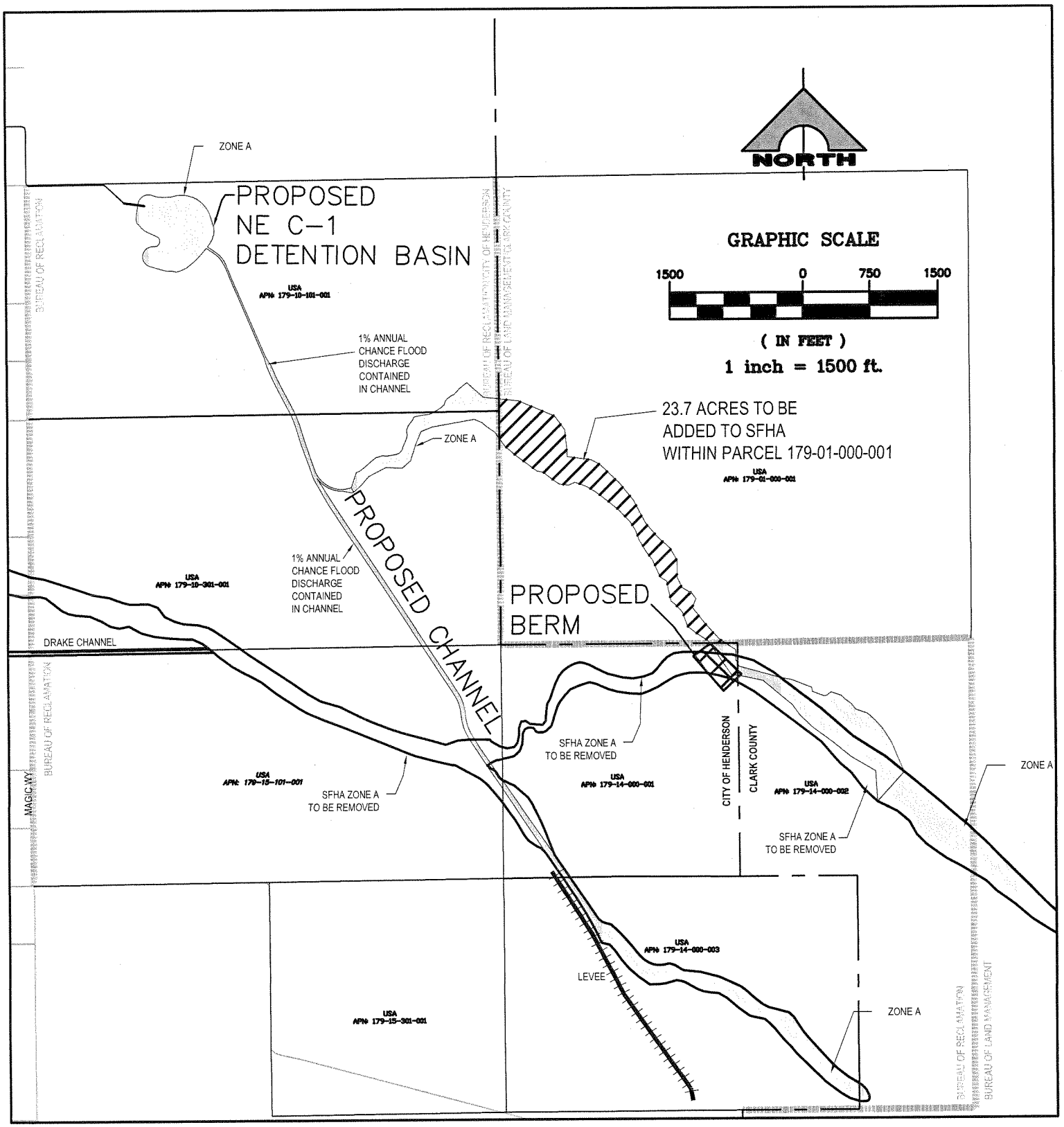
Sincerely,

_____
Lance Olson

LO/

Attachment

cc: Calvin L. Black, G.C. Wallace, Inc.
Layne Weber, Clark County Development Services Division



LEGEND

- REVISED SFHA ZONE A
- SFHA ZONE A ADDED WITHIN BLM LAND
- SFHA ZONE A TO BE REMOVED
- COH/CLARK COUNTY BOUNDARY
- BLM/BR BOUNDARY
- PARCEL BOUNDARY

PROPOSED SFHA CHANGES WITHIN BLM LAND

January 25, 2008

Bureau of Reclamation
Lower Colorado Regional Office
PO Box 61470
Boulder City, NV 89006

NORTHEAST C-1 DETENTION BASIN PROJECT – NOTIFICATION OF CHANGES TO 100-YEAR FLOODPLAIN BOUNDARIES ON ASSESSORS PARCEL NOS. 179-10-101-001, 179-10-301-001, 179-15-101-001, 179-14-000-001, AND 179-14-000-002

To Whom it May Concern:

I am writing to provide notification as to changes to the 100-year flood plain boundaries on your property, as identified in Assessors Parcel Numbers 179-10-101-001, 179-10-301-001, 179-15-101-001, 179-14-000-001, and 179-14-000-002 due to construction of the Northeast C-1 (NE C-1) Detention Basin project. The Flood Insurance Rate Map (FIRM) for a community depicts land determined to be subject to a one percent (100-year) or greater chance of flooding in any given year. The FIRM is used to determine flood insurance rates and to help the community with floodplain management.

The City of Henderson (COH) is planning to construct the NE C-1 Detention Basin project in Henderson, Nevada. The proposed improvements consist of an upper berm, a concrete-lined collection channel, the NE C-1 Detention Basin, and a storm drain outfall facility to convey flows to the existing C-1 Channel downstream. Construction of the NE C-1 Detention Basin will result in approximately 17.4 acres of parcel 179-10-101-001, 10.3 acres of parcel 179-10-301-101, 1.5 acres of parcel 179-15-101-001, 0.6 acres of parcel 179-14-000-001, and 6.9 acres of parcel 179-14-000-002 added to the one percent annual chance Special Flood Hazard Area (SFHA). The attached exhibit shows the proposed changes to the one percent annual chance SFHA.

COH is applying for a Conditional Letter of Map Revision (CLOMR) from the Federal Emergency Management Agency (FEMA) to revise FIRM Map Number 32003, Panels 2615 E and 2620 E for Clark County, Nevada, and Incorporated Areas resulting from constructing the NE C1 Detention Basin project.

If you have any questions or concerns about the proposed changes or its effects on your property, you may contact me at 702-267-3063.

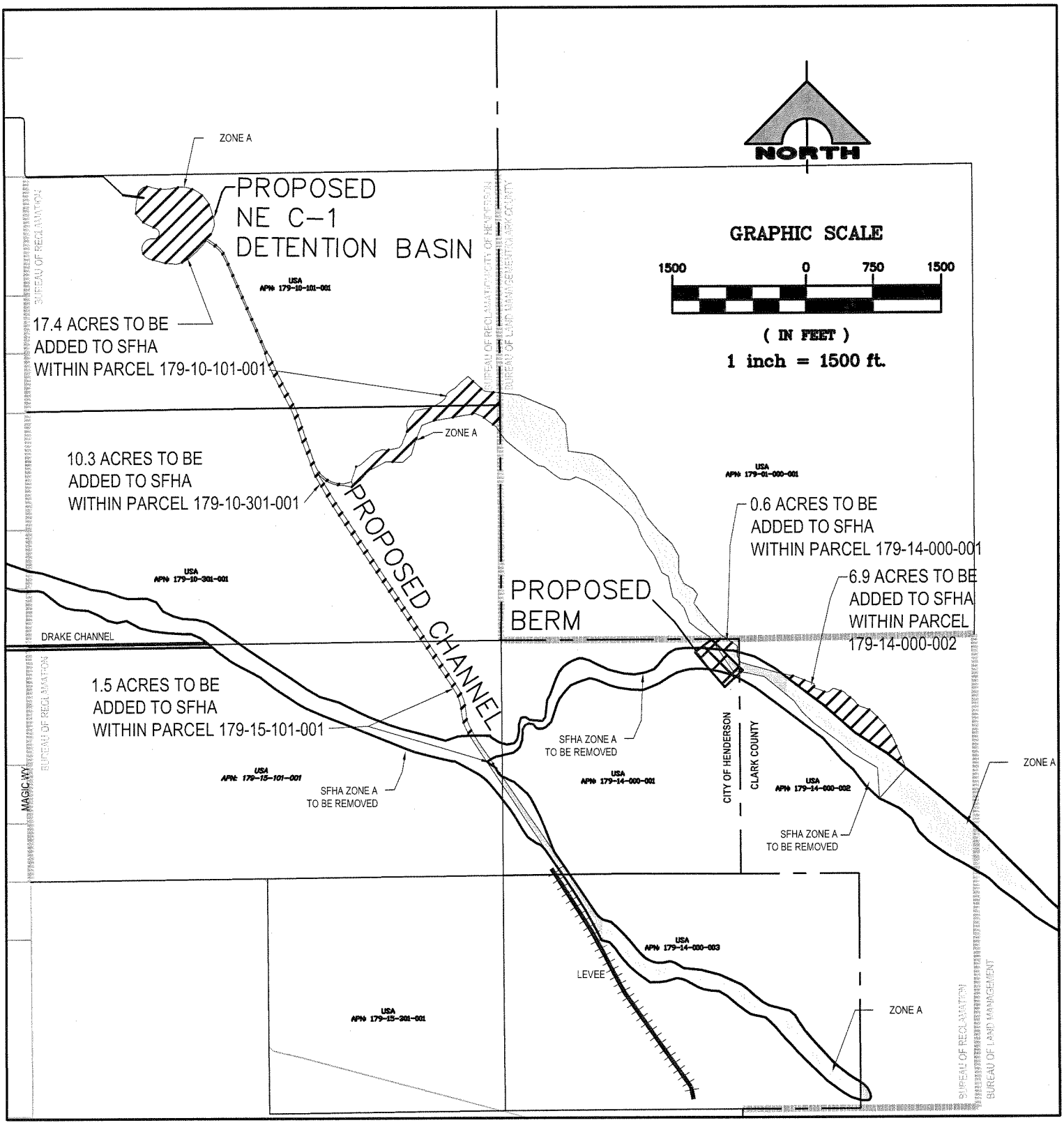
Sincerely,

_____
Lance Olson

LO/

Attachment

cc: Calvin L. Black, G.C. Wallace, Inc.
Layne Weber, Clark County Development Services Division



LEGEND

- REVISED SFHA ZONE A
- SFHA ZONE A ADDED WITHIN BUREAU OF RECLAMATION LAND
- SFHA ZONE A TO BE REMOVED
- COH/CLARK COUNTY BOUNDARY
- BLM/BR BOUNDARY
- PARCEL BOUNDARY

PROPOSED SFHA CHANGES WITHIN BUREAU OF RECLAMATION LAND

Comment #3

SCS Type II Storm Distribution

Three-Hour Storm Distribution

Point Precipitation Estimates, 3-hour, 100-year and 24-hour, 100-year

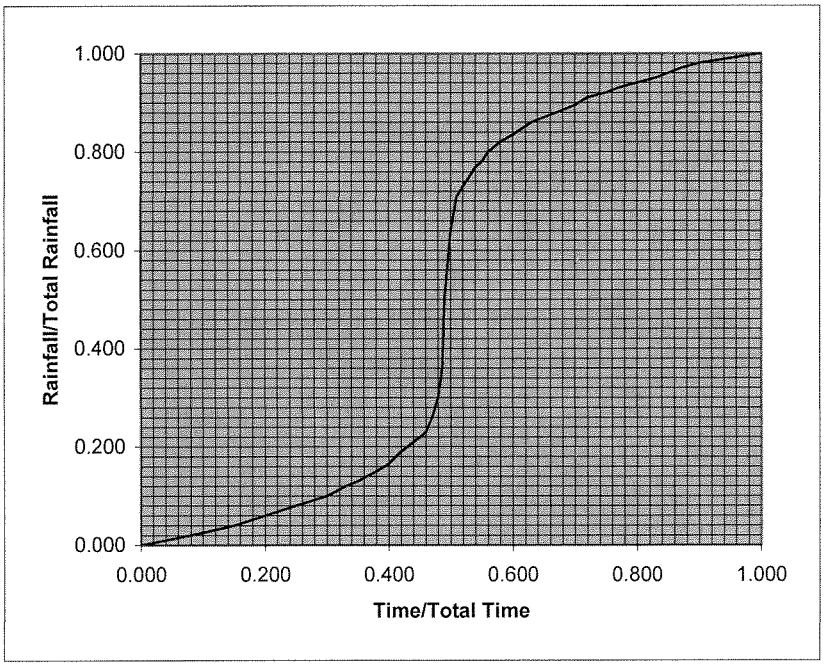
HEC-1 model C1SDN3B-ALT3 using 3-hour storm

HEC-1 model C1SDN4B-ALT3 using 3-hour storm

HEC-1 model C1SDN3B-ALT3 using 24-hour storm

HEC-1 model C1SDN4B-ALT3 using 24-hour storm

Soil Conservation Service Type II Storm Distribution



Time/Total Time	Rainfall/Total Rainfall	Time/Total Time	Rainfall/Total Rainfall
0.000	0.000	0.520	0.730
0.040	0.010	0.530	0.750
0.100	0.025	0.540	0.770
0.150	0.040	0.550	0.780
0.200	0.060	0.560	0.800
0.250	0.080	0.570	0.810
0.300	0.100	0.580	0.820
0.330	0.120	0.600	0.835
0.350	0.130	0.630	0.860
0.380	0.150	0.650	0.870
0.400	0.165	0.670	0.880
0.420	0.190	0.700	0.895
0.430	0.200	0.720	0.910
0.440	0.210	0.750	0.920
0.450	0.220	0.770	0.930
0.460	0.230	0.800	0.940
0.470	0.260	0.830	0.950
0.480	0.300	0.850	0.960
0.485	0.340	0.870	0.970
0.487	0.370	0.900	0.980
0.490	0.500	0.950	0.990
0.500	0.640	1.000	1.000

Nevada Hydrology

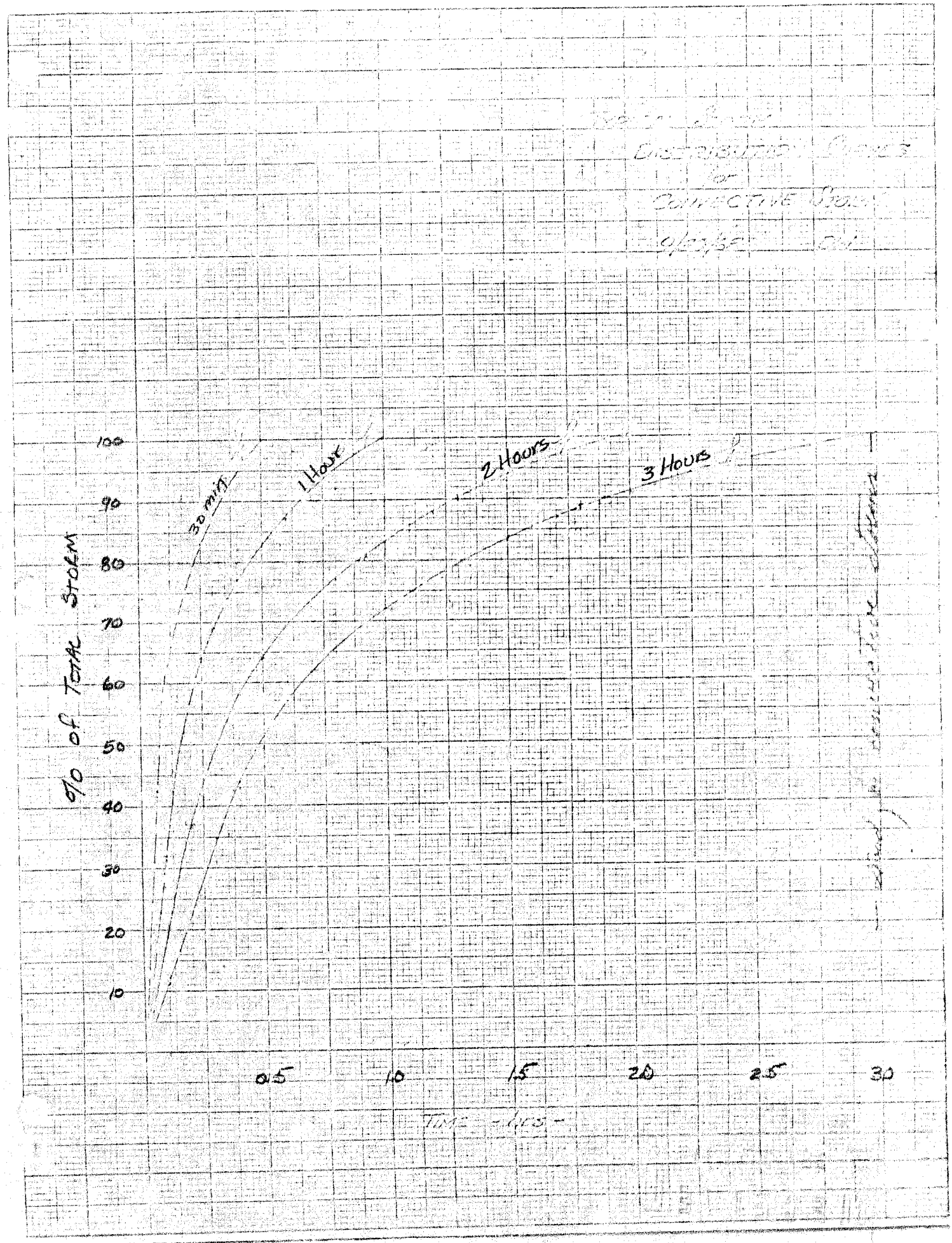
Purvis 3-76

Convective Storm Distribution Curves

Time hrs	% of Total Precip. 1 hour	% of Total Precip. 2 hours	% of Total Precip. 3 hours
0.05	18	10	6
.10	35	20	11
.15	49	30	17
20	57	38	23
25	64	44	28
30	69	50	35
35	73.5	54.5	40
40	77	58	44
45	80	61.5	48
50	83	64	52
55	85.5	67	54.5
60	88	69.5	57.5
65	90	71.5	59.5
70	92	73.5	62
75	93.5	75.5	64
80	95.5	77.5	66
85	96.5	79	67.5
90	98	80.5	69.5
95	99	81.5	70.5
1.00	100	83	72
05		84.5	73.5
10		86	74.5
15		87	76
20		88	77.5
25		89	78.5
30		90	79.5
35		91.5	80.5
40		92.5	81.5
45		93	82.5
50		94	83.5
55		95	84.5
60		95.5	85.5
65		96.5	86
70		97	87
75		98	88
80		98.5	88.5
85		99	89.5
90		99.5	90
95		99.5	90.5
2.00		100	91

Time hrs	% of Total Precip. 1 hour	% of Total Precip. 3 hours
2.05	92	
10	92.5	
15	93	
20	93.5	
25	94	
30	94.5	
35	95	
40	95.5	
45	96	
50	96.5	
55	97	
60	97.5	
65	98	
70	98	
75	98.5	
80	99	
85	99	
90	99.5	
95	99.5	
3.00	100	

G.C. WALLACE
CONSULTING ENGINEERS, INC.
SEP 13 1984
RECEIVED


Distribution Curves
for
Convective Storms
30 min
1 Hour
2 Hours
3 Hours
% of Total Storm
100
90
80
70
60
50
40
30
20
10
0.5
1.0
1.5
2.0
2.5
3.0
Time - hrs -

C1-65

POINT PRECIPITATION FREQUENCY ESTIMATES FROM NOAA ATLAS 14

Nevada 36.04 N 114.9 W 2611 feet

from "Precipitation-Frequency Atlas of the United States" NOAA Atlas 14, Volume 1, Version 4
G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley
NOAA, National Weather Service, Silver Spring, Maryland, 2006

Extracted: Mon Jan 21 2008

Confidence Limits | Seasonality | Location Maps | Other Info. | GIS data | Maps | Help | D

Precipitation Frequency Estimates (inches)

ARI* (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.13	0.20	0.25	0.33	0.41	0.50	0.56	0.68	0.79	0.88	0.93	1.03	1.15	1.24	1.44	1.68	1.89	2.08
2	0.17	0.26	0.33	0.44	0.54	0.66	0.72	0.88	1.03	1.15	1.22	1.35	1.52	1.64	1.92	2.26	2.55	2.83
5	0.25	0.37	0.46	0.62	0.77	0.93	1.00	1.20	1.41	1.59	1.68	1.87	2.09	2.25	2.66	3.19	3.63	4.10
10	0.31	0.47	0.58	0.78	0.96	1.15	1.23	1.47	1.70	1.92	2.04	2.25	2.50	2.69	3.18	3.85	4.40	5.01
25	0.39	0.60	0.74	1.00	1.24	1.48	1.56	1.84	2.10	2.39	2.53	2.77	3.04	3.24	3.86	4.69	5.41	6.23
50	0.47	0.71	0.88	1.18	1.46	1.76	1.84	2.14	2.42	2.77	2.92	3.18	3.44	3.66	4.35	5.32	6.17	7.16
100	0.55	0.83	1.03	1.39	1.72	2.07	2.15	2.48	2.76	3.17	3.35	3.60	3.86	4.07	4.85	5.94	6.94	8.12
200	0.63	0.97	1.20	1.61	2.00	2.42	2.49	2.85	3.11	3.59	3.79	4.05	4.30	4.48	5.34	6.56	7.71	9.09
500	0.77	1.17	1.45	1.95	2.42	2.96	3.04	3.39	3.60	4.20	4.42	4.71	4.97	5.15	5.98	7.37	8.74	10.39
1000	0.88	1.34	1.67	2.24	2.78	3.42	3.50	3.87	4.04	4.69	4.94	5.25	5.52	5.67	6.46	7.98	9.53	11.41

Text version of table

* These precipitation frequency estimates are based on a partial duration series. ARI is the Average Recurrence Interval.
Please refer to the documentation for more information. NOTE: Formatting forces estimates near zero to appear as zero.

* Upper bound of the 90% confidence interval Precipitation Frequency Estimates (inches)

ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.16	0.24	0.30	0.40	0.49	0.60	0.66	0.79	0.90	0.99	1.04	1.15	1.29	1.39	1.62	1.90	2.15	2.39
2	0.21	0.32	0.40	0.53	0.66	0.79	0.87	1.02	1.18	1.30	1.38	1.52	1.69	1.83	2.14	2.56	2.89	3.23
5	0.30	0.46	0.56	0.76	0.94	1.12	1.20	1.40	1.61	1.79	1.90	2.10	2.33	2.52	2.97	3.60	4.10	4.67
10	0.38	0.57	0.71	0.95	1.18	1.38	1.47	1.71	1.94	2.16	2.29	2.52	2.78	3.00	3.55	4.33	4.97	5.71
25	0.49	0.74	0.92	1.24	1.53	1.78	1.87	2.14	2.40	2.71	2.87	3.12	3.40	3.64	4.32	5.30	6.14	7.13
50	0.58	0.88	1.09	1.47	1.82	2.12	2.20	2.51	2.77	3.16	3.34	3.60	3.88	4.13	4.90	6.05	7.04	8.22
100	0.69	1.05	1.30	1.75	2.16	2.51	2.59	2.91	3.17	3.66	3.86	4.12	4.38	4.64	5.50	6.81	7.99	9.39
200	0.81	1.24	1.53	2.06	2.55	2.96	3.03	3.36	3.60	4.21	4.43	4.68	4.93	5.15	6.10	7.58	8.96	10.63
500	1.01	1.53	1.90	2.56	3.17	3.66	3.73	4.07	4.24	5.01	5.29	5.56	5.80	6.02	6.97	8.64	10.31	12.35
1000	1.18	1.80	2.23	3.00	3.72	4.29	4.34	4.69	4.80	5.70	6.02	6.30	6.53	6.72	7.63	9.48	11.38	13.70

* The **upper** bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are **greater** than.
** These precipitation frequency estimates are based on a partial duration series. ARI is the Average Recurrence Interval.
Please refer to the documentation for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

* Lower bound of the 90% confidence interval Precipitation Frequency Estimates (inches)

ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day

C1-66

POINT PRECIPITATION FREQUENCY ESTIMATES FROM NOAA ATLAS 14

Nevada 36.05 N 114.92 W 2316 feet

from "Precipitation-Frequency Atlas of the United States" NOAA Atlas 14, Volume 1, Version 4
G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley
NOAA, National Weather Service, Silver Spring, Maryland, 2006

Extracted: Mon Jan 21 2008

Confidence Limits | Seasonality | Location Maps | Other Info. | GIS data | Maps | Help | D

Precipitation Frequency Estimates (inches)

ARI* (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.12	0.19	0.23	0.32	0.39	0.48	0.54	0.65	0.76	0.83	0.88	0.98	1.09	1.17	1.34	1.55	1.74	1.91
2	0.17	0.25	0.31	0.42	0.52	0.63	0.70	0.84	0.99	1.09	1.16	1.28	1.43	1.54	1.79	2.08	2.34	2.59
5	0.23	0.36	0.44	0.60	0.74	0.89	0.97	1.16	1.35	1.50	1.59	1.76	1.96	2.11	2.47	2.92	3.31	3.73
10	0.29	0.45	0.55	0.74	0.92	1.10	1.19	1.42	1.63	1.82	1.92	2.12	2.33	2.50	2.94	3.51	4.01	4.55
25	0.38	0.57	0.71	0.96	1.19	1.42	1.50	1.78	2.02	2.26	2.37	2.59	2.82	3.00	3.55	4.27	4.90	5.64
50	0.45	0.68	0.84	1.14	1.41	1.69	1.77	2.07	2.33	2.60	2.73	2.96	3.19	3.38	3.99	4.82	5.57	6.47
100	0.53	0.80	0.99	1.34	1.66	2.00	2.07	2.40	2.65	2.97	3.11	3.35	3.56	3.74	4.43	5.37	6.24	7.30
200	0.61	0.93	1.16	1.56	1.93	2.34	2.41	2.75	2.98	3.36	3.50	3.74	3.94	4.10	4.86	5.91	6.91	8.15
500	0.74	1.13	1.41	1.89	2.34	2.86	2.93	3.28	3.46	3.91	4.06	4.33	4.52	4.68	5.42	6.61	7.78	9.28
1000	0.86	1.30	1.61	2.17	2.69	3.31	3.39	3.74	3.88	4.35	4.51	4.80	4.98	5.13	5.83	7.13	8.43	10.14

Text version of table

* These precipitation frequency estimates are based on a partial duration series. ARI is the Average Recurrence Interval.
Please refer to the documentation for more information. NOTE: Formatting forces estimates near zero to appear as zero.

* Upper bound of the 90% confidence interval Precipitation Frequency Estimates (inches)

ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.15	0.23	0.28	0.38	0.47	0.58	0.64	0.76	0.86	0.94	0.99	1.09	1.21	1.31	1.50	1.75	1.97	2.18
2	0.20	0.30	0.38	0.51	0.63	0.76	0.83	0.99	1.13	1.23	1.30	1.44	1.59	1.72	1.99	2.34	2.64	2.95
5	0.29	0.44	0.54	0.73	0.90	1.07	1.16	1.35	1.55	1.69	1.79	1.97	2.17	2.35	2.74	3.29	3.73	4.24
10	0.36	0.55	0.68	0.91	1.13	1.33	1.42	1.65	1.86	2.04	2.15	2.37	2.59	2.79	3.27	3.94	4.50	5.17
25	0.47	0.71	0.88	1.19	1.47	1.72	1.80	2.07	2.30	2.55	2.67	2.91	3.15	3.36	3.96	4.80	5.54	6.43
50	0.56	0.85	1.05	1.42	1.75	2.05	2.13	2.42	2.66	2.97	3.10	3.34	3.57	3.80	4.48	5.46	6.33	7.40
100	0.67	1.01	1.25	1.69	2.09	2.43	2.50	2.81	3.04	3.42	3.57	3.81	4.02	4.25	5.01	6.13	7.15	8.42
200	0.79	1.20	1.48	2.00	2.47	2.86	2.93	3.25	3.46	3.92	4.08	4.31	4.50	4.70	5.54	6.80	7.98	9.49
500	0.98	1.49	1.84	2.48	3.07	3.55	3.61	3.93	4.07	4.65	4.84	5.09	5.25	5.44	6.29	7.71	9.11	10.97
1000	1.15	1.74	2.16	2.91	3.60	4.15	4.20	4.54	4.62	5.26	5.47	5.73	5.88	6.04	6.85	8.42	10.00	12.12

* The **upper** bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are **greater** than.
** These precipitation frequency estimates are based on a partial duration series. ARI is the Average Recurrence Interval.
Please refer to the documentation for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

* Lower bound of the 90% confidence interval Precipitation Frequency Estimates (inches)

ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day

C1-55

POINT PRECIPITATION FREQUENCY ESTIMATES FROM NOAA ATLAS 14

Nevada 36.03 N 114.91 W 2513 feet

from "Precipitation-Frequency Atlas of the United States" NOAA Atlas 14, Volume 1, Version 4
G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley
NOAA, National Weather Service, Silver Spring, Maryland, 2006

Extracted: Mon Jan 21 2008

Confidence Limits | Seasonality | Location Maps | Other Info. | GIS data | Maps | Help | D

Precipitation Frequency Estimates (inches)

ARI* (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.13	0.20	0.24	0.33	0.41	0.50	0.56	0.68	0.79	0.88	0.93	1.03	1.15	1.24	1.45	1.69	1.90	2.09
2	0.17	0.26	0.33	0.44	0.54	0.66	0.73	0.88	1.03	1.15	1.22	1.36	1.52	1.65	1.93	2.27	2.56	2.84
5	0.24	0.37	0.46	0.62	0.77	0.93	1.01	1.21	1.41	1.59	1.69	1.88	2.10	2.26	2.68	3.20	3.64	4.12
10	0.31	0.47	0.58	0.78	0.96	1.15	1.24	1.47	1.70	1.93	2.05	2.27	2.51	2.70	3.20	3.86	4.42	5.04
25	0.39	0.60	0.74	1.00	1.24	1.48	1.57	1.84	2.11	2.41	2.54	2.79	3.05	3.26	3.88	4.71	5.43	6.26
50	0.47	0.71	0.88	1.18	1.46	1.76	1.84	2.15	2.42	2.78	2.94	3.20	3.46	3.68	4.38	5.34	6.20	7.20
100	0.55	0.83	1.03	1.39	1.72	2.08	2.15	2.49	2.76	3.19	3.37	3.63	3.89	4.10	4.88	5.97	6.97	8.16
200	0.64	0.97	1.20	1.61	2.00	2.43	2.50	2.85	3.11	3.62	3.81	4.08	4.33	4.51	5.38	6.60	7.75	9.14
500	0.77	1.17	1.45	1.96	2.42	2.97	3.04	3.40	3.61	4.23	4.45	4.75	5.01	5.19	6.03	7.42	8.79	10.45
1000	0.89	1.35	1.67	2.25	2.79	3.43	3.52	3.88	4.05	4.73	4.98	5.30	5.57	5.72	6.51	8.04	9.59	11.48

Text version of table

* These precipitation frequency estimates are based on a partial duration series. ARI is the Average Recurrence Interval. Please refer to the documentation for more information. NOTE: Formatting forces estimates near zero to appear as zero.

*** Upper bound of the 90% confidence interval Precipitation Frequency Estimates (inches)**

ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.16	0.24	0.29	0.40	0.49	0.60	0.66	0.79	0.90	0.99	1.05	1.16	1.29	1.40	1.62	1.91	2.16	2.40
2	0.21	0.32	0.39	0.53	0.66	0.79	0.87	1.03	1.18	1.30	1.38	1.52	1.70	1.84	2.15	2.56	2.90	3.25
5	0.30	0.46	0.56	0.76	0.94	1.12	1.20	1.41	1.61	1.79	1.90	2.11	2.34	2.53	2.98	3.61	4.12	4.69
10	0.37	0.57	0.70	0.95	1.18	1.39	1.48	1.71	1.94	2.17	2.30	2.54	2.79	3.02	3.57	4.35	4.99	5.73
25	0.48	0.74	0.92	1.23	1.53	1.78	1.87	2.15	2.40	2.72	2.88	3.14	3.42	3.66	4.34	5.33	6.17	7.16
50	0.58	0.88	1.09	1.47	1.82	2.13	2.21	2.51	2.77	3.18	3.36	3.63	3.90	4.16	4.93	6.08	7.08	8.27
100	0.69	1.05	1.30	1.75	2.16	2.52	2.60	2.92	3.17	3.68	3.88	4.16	4.42	4.67	5.54	6.85	8.03	9.44
200	0.81	1.24	1.53	2.06	2.55	2.97	3.04	3.37	3.61	4.24	4.46	4.72	4.96	5.19	6.15	7.63	9.01	10.69
500	1.01	1.53	1.90	2.56	3.16	3.68	3.75	4.07	4.24	5.05	5.34	5.61	5.85	6.06	7.03	8.69	10.37	12.42
1000	1.18	1.80	2.23	3.00	3.71	4.30	4.36	4.70	4.81	5.75	6.07	6.36	6.59	6.77	7.69	9.54	11.45	13.79

* The **upper** bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are **greater** than.
** These precipitation frequency estimates are based on a partial duration series. ARI is the Average Recurrence Interval.
Please refer to the documentation for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

*** Lower bound of the 90% confidence interval Precipitation Frequency Estimates (inches)**

ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day

C1-54

POINT PRECIPITATION FREQUENCY ESTIMATES FROM NOAA ATLAS 14

Nevada 36.02 N 114.88 W 3005 feet

from "Precipitation-Frequency Atlas of the United States" NOAA Atlas 14, Volume 1, Version 4
G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley
NOAA, National Weather Service, Silver Spring, Maryland, 2006

Extracted: Mon Jan 21 2008

Confidence Limits | Seasonality | Location Maps | Other Info. | GIS data | Maps | Help | D

Precipitation Frequency Estimates (inches)

ARI* (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.14	0.21	0.26	0.34	0.43	0.52	0.58	0.70	0.82	0.91	0.96	1.07	1.21	1.31	1.53	1.80	2.03	2.24
2	0.18	0.27	0.34	0.46	0.56	0.68	0.75	0.91	1.07	1.20	1.27	1.42	1.59	1.73	2.04	2.42	2.74	3.05
5	0.26	0.39	0.48	0.65	0.80	0.96	1.04	1.25	1.46	1.66	1.76	1.97	2.20	2.39	2.85	3.43	3.91	4.43
10	0.32	0.48	0.60	0.81	1.00	1.19	1.28	1.52	1.76	2.02	2.15	2.38	2.65	2.87	3.42	4.14	4.75	5.42
25	0.41	0.62	0.77	1.03	1.28	1.53	1.62	1.90	2.18	2.54	2.70	2.95	3.24	3.48	4.16	5.07	5.86	6.75
50	0.48	0.73	0.91	1.22	1.51	1.82	1.91	2.22	2.51	2.96	3.13	3.40	3.70	3.95	4.71	5.76	6.71	7.78
100	0.56	0.86	1.07	1.44	1.78	2.15	2.23	2.57	2.86	3.41	3.61	3.88	4.17	4.42	5.27	6.46	7.57	8.84
200	0.66	1.00	1.24	1.67	2.06	2.51	2.59	2.95	3.23	3.88	4.12	4.39	4.66	4.88	5.83	7.15	8.44	9.92
500	0.79	1.21	1.50	2.02	2.50	3.06	3.15	3.51	3.74	4.58	4.86	5.16	5.46	5.68	6.57	8.07	9.61	11.39
1000	0.91	1.39	1.72	2.32	2.87	3.54	3.63	4.00	4.20	5.15	5.46	5.79	6.11	6.31	7.12	8.77	10.52	12.54

Text version of table

* These precipitation frequency estimates are based on a partial duration series. ARI is the Average Recurrence Interval. Please refer to the documentation for more information. NOTE: Formatting forces estimates near zero to appear as zero.

*** Upper bound of the 90% confidence interval Precipitation Frequency Estimates (inches)**

ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.16	0.25	0.31	0.41	0.51	0.62	0.69	0.82	0.93	1.03	1.09	1.21	1.35	1.47	1.72	2.04	2.32	2.58
2	0.22	0.33	0.41	0.55	0.69	0.82	0.90	1.06	1.22	1.35	1.44	1.59	1.78	1.94	2.28	2.74	3.12	3.50
5	0.31	0.47	0.59	0.79	0.98	1.16	1.24	1.45	1.67	1.87	1.99	2.21	2.46	2.67	3.17	3.87	4.43	5.05
10	0.39	0.59	0.73	0.98	1.22	1.43	1.53	1.77	2.00	2.28	2.42	2.68	2.96	3.21	3.81	4.67	5.37	6.19
25	0.50	0.77	0.95	1.28	1.58	1.84	1.94	2.22	2.48	2.88	3.06	3.33	3.64	3.90	4.66	5.74	6.67	7.75
50	0.60	0.91	1.13	1.52	1.88	2.20	2.28	2.60	2.87	3.39	3.59	3.87	4.18	4.46	5.32	6.57	7.67	8.96
100	0.71	1.08	1.34	1.80	2.23	2.60	2.68	3.02	3.29	3.95	4.18	4.46	4.75	5.04	5.99	7.43	8.73	10.26
200	0.83	1.27	1.58	2.12	2.63	3.07	3.14	3.48	3.74	4.58	4.84	5.10	5.37	5.63	6.68	8.30	9.83	11.65
500	1.03	1.57	1.95	2.63	3.25	3.79	3.87	4.21	4.40	5.50	5.85	6.13	6.40	6.65	7.68	9.50	11.38	13.61
1000	1.21	1.85	2.29	3.09	3.82	4.43	4.50	4.85	4.99	6.30	6.71	7.00	7.28	7.49	8.46	10.46	12.62	15.15

* The **upper** bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are **greater** than.
** These precipitation frequency estimates are based on a partial duration series. ARI is the Average Recurrence Interval.
Please refer to the documentation for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

*** Lower bound of the 90% confidence interval Precipitation Frequency Estimates (inches)**

ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day

```
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *             JUN   1998                *
 *          VERSION 4.1                  *
 *                                       *
 *  RUN DATE   21JAN08  TIME  11:53:25   *
 *                                       *
 *****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX           XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

              *DIAGRAM
    1         ID    CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN UPDATE
    2         ID    C-1 WATERSHED
    3         ID    RECOMMENDED DRAINAGE SYSTEM WITH ULTIMATE DEVELOPMENT
    4         ID    INPUT FILE = C1SDN3B.DAT
    5         ID    INPUT FILE DATE = APRIL 18, 2002
    6         ID    DESIGN STORM = 100-YEAR 6-HR STORM
    7         ID    STORM DISTRIBUTION = SDN #3
    8         ID    MODELED BY = LOUIS BERGER GROUP (RYAN R. BELSICK, P.E. and SYNDI DUDLEY,
    9         ID    PHD, P.E.)
   10         ID    STORM CENTERING = NO STORM CENTERING
   11         ID
   12         ID    REFERENCED HYDROLOGIC MODELS:
   13         ID    PREDESIGN REPORT FOR THE BLACK MOUNTAIN AND MISSION HILLS DETENTION BASINS
   14         ID    AND OUTFALL STRUCTURES (VTN 1992)
   15         ID    SNWA RIVER MOUNTAINS WATER TREATMENT FACILITY DRAFT TECHNICAL DRAINAGE STUDY
   16         ID    (MONTGOMERY WATSON/CH2MHILL 1997)
   17         ID    EAST C-1 DETENTION BASIN FINAL DESIGN (VTN 1998)
   18         ID    DESIGN MEMORANDUM FOR THE EQUESTRIAN DETENTION BASIN (POGGEMEYER 1994)
   19         ID    DESIGN CALCULATION NOTEBOOK FOR THE BLACK MOUNTAIN DETENTION BASIN
   20         ID    (VTN 1998)
   21         ID
   22         ID    **REVISED C1 BASINS BY G.C. WALLACE, INC.
   23         ID    **REVISED NORTHEAST C-1 DETENTION BASIN STAGE/STORAGE BY G.C. WALLACE, INC.
   24         ID    **INPUT FILE = C1SDN3B-ALT3.DAT
   25         ID    **INPUT FILE DATE = DECEMBER 23, 2004
   26         ID
   27         ID    ***REVISED USING 3-HOUR STORM DISTRIBUTION FROM
   28         ID    ***G.C. WALLACE, 1984
   29         ID    ***12-13-07
   30         ID
   31         ID
   32         IT       3       0       0     300
   33         IN       3       0       0
   34         IO       5
   35         JR    PREC       1
              *
   36         KK    C1-55
   37         KM    REVISED BASIN AREA TO MATCH TOPOGRAPHY
   38         KM    REVISED LAG TIME TO MATCH NEW BASIN AREA
   39         BA    0.981
   40         PB     2.15
   41         PC    0.000   0.060   0.110   0.170   0.230   0.280   0.350   0.400   0.440   0.480
   42         PC    0.520   0.545   0.575   0.595   0.620   0.640   0.660   0.675   0.695   0.705
   43         PC    0.720   0.735   0.745   0.760   0.775   0.785   0.795   0.805   0.815   0.825
   44         PC    0.835   0.845   0.855   0.860   0.870   0.880   0.885   0.895   0.900   0.905
   45         PC    0.910   0.920   0.925   0.930   0.935   0.940   0.945   0.950   0.955   0.960
   46         PC    0.965   0.970   0.975   0.980   0.980   0.985   0.990   0.990   0.995   0.995
   47         PC       1
   48         LS       0    86.9
   49         UD    0.257
              *
```



```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
```

```
50            KK   RC155
51            KM   ROUTE C1-55 TO DB6
52            KM   FACILITY = LEVEE TO NEC1DB
53            KM   FACILITY # = C1IT 0155
54            KM   LINING = CONCRETE
55            RD    3830   0.025    .025       0    TRAP       5       2
              *

56            KK   C1-65
57            KM   REVISED BASIN AREA TO MATCH TOPOGRAPHY
58            KM   REVISED LAG TIME TO MATCH NEW BASIN AREA
59            KO       3       2
60            BA   2.564
61            PB    2.15
62            LS       0    86.1
63            UD   0.849
              *

64            KK   CP52A
65            KM   COMBINE RCP52 AND C1-65
66            HC       2
              *

67            KK   C1-66
68            KM   REVISED BASIN AREA TO MATCH TOPOGRAPHY
69            KM   REVISED LAG TIME TO MATCH NEW BASIN AREA
70            KM   REVISED AREA TO REMOVE AREAS TRIBUTARY TO BET BASIN
71            BA   0.592
72            PB    2.07
73            LS       0    87.6
74            UD   0.199
              *

75            KK    CP64
76            KM   COMBINE C1-66, AND RCP52
77            KM   NORTHEAST C-1 DETENTION BASIN
78            HC       2
              *

79            KK     DB6
80            KM   FACILITY = NORTHEAST C-1 DETENTION BASIN
81            KM   FACILITY # = C1IT 0118
82            KM   STORAGE VOLUME = 310 ACRE-FEET
83            KM   OUTLET = 36" RCP
84            KM   REVISED PER GCW DESIGN
85            KO       3       2
86            RS       1    STOR      -1
87            SV       0   11.92   20.04   54.96  103.23  156.48  214.92  278.69  333.63  348.25
88            SE    1952    1956    1957    1961    1966    1971    1976    1981    1985    1986
89            SQ       0   73.74   82.45  110.61  137.96  160.72  180.63  198.56  211.81  214.99
              *
90            ZZ
```

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    36       C1-55
                V
                V
    50       RC155
                .
                .
    56          .       C1-65
                .          .
                .          .
    64       CP52A..........
                .
                .
    67          .       C1-66
                .          .
                .          .
    75        CP64..........
                V
                V
    79         DB6
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *             JUN   1998                *
 *           VERSION 4.1                 *
 *                                       *
 *  RUN DATE   21JAN08  TIME  11:53:25   *
 *                                       *
 *****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

```
                    CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN UPDATE
                    C-1 WATERSHED
                    RECOMMENDED DRAINAGE SYSTEM WITH ULTIMATE DEVELOPMENT
                    INPUT FILE = C1SDN3B.DAT
                    INPUT FILE DATE = APRIL 18, 2002
                    DESIGN STORM = 100-YEAR 6-HR STORM
                    STORM DISTRIBUTION = SDN #3
                    MODELED BY = LOUIS BERGER GROUP (RYAN R. BELSICK, P.E. and SYNDI DUDLEY,
                    PHD, P.E.)
                    STORM CENTERING = NO STORM CENTERING

                    REFERENCED HYDROLOGIC MODELS:
                    PREDESIGN REPORT FOR THE BLACK MOUNTAIN AND MISSION HILLS DETENTION BASINS
                    AND OUTFALL STRUCTURES (VTN 1992)
                    SNWA RIVER MOUNTAINS WATER TREATMENT FACILITY DRAFT TECHNICAL DRAINAGE STUDY
                    (MONTGOMERY WATSON/CH2MHILL 1997)
                    EAST C-1 DETENTION BASIN FINAL DESIGN (VTN 1998)
                    DESIGN MEMORANDUM FOR THE EQUESTRIAN DETENTION BASIN (POGGEMEYER 1994)
                    DESIGN CALCULATION NOTEBOOK FOR THE BLACK MOUNTAIN DETENTION BASIN
                    (VTN 1998)

                    **REVISED C1 BASINS BY G.C. WALLACE, INC.
                    **REVISED NORTHEAST C-1 DETENTION BASIN STAGE/STORAGE BY G.C. WALLACE, INC.
                    **INPUT FILE = C1SDN3B-ALT3.DAT
                    **INPUT FILE DATE = DECEMBER 23, 2004

                    ***REVISED USING 3-HOUR STORM DISTRIBUTION FROM
                    ***G.C. WALLACE, 1984
                    ***12-13-07


 34 IO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                       NMIN           3  MINUTES IN COMPUTATION INTERVAL
                      IDATE      1    0  STARTING DATE
                      ITIME        0000  STARTING TIME
                         NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      1    0  ENDING DATE
                     NDTIME        1457  ENDING TIME
                     ICENT           19  CENTURY MARK

                   COMPUTATION INTERVAL      .05 HOURS
                        TOTAL TIME BASE   14.95 HOURS

         ENGLISH UNITS
              DRAINAGE AREA          SQUARE MILES
              PRECIPITATION DEPTH    INCHES
              LENGTH, ELEVATION      FEET
              FLOW                   CUBIC FEET PER SECOND
              STORAGE VOLUME         ACRE-FEET
              SURFACE AREA           ACRES
              TEMPERATURE            DEGREES FAHRENHEIT

    JP          MULTI-PLAN OPTION
                      NPLAN           1  NUMBER OF PLANS

    JR          MULTI-RATIO OPTION
                    RATIOS OF PRECIPITATION
                   1.00


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


           **************
           *            *
 56 KK     *     C1-65  *
           *            *
           **************

 59 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           2  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

              SUBBASIN RUNOFF DATA

 60 BA          SUBBASIN CHARACTERISTICS
                      TAREA        2.56  SUBBASIN AREA

                PRECIPITATION DATA

 61 PB                STORM        2.15  BASIN TOTAL PRECIPITATION

 41 PI            INCREMENTAL PRECIPITATION PATTERN
                    .06       .05       .06       .06       .05       .07       .05       .04       .04       .04
                    .03       .03       .02       .02       .02       .02       .01       .02       .01       .02
                    .01       .01       .01       .01       .01       .01       .01       .01       .01       .01
                    .01       .01       .00       .01       .01       .00       .01       .00       .00       .01
```

```
                .01       .00       .00       .00       .00       .00       .00       .00       .00       .00
                .01       .00       .00       .00       .00       .00       .00       .00       .00       .00

 62 LS          SCS LOSS RATE
                     STRTL        .32  INITIAL ABSTRACTION
                    CRVNBR      86.10  CURVE NUMBER
                     RTIMP        .00  PERCENT IMPERVIOUS AREA

 63 UD          SCS DIMENSIONLESS UNITGRAPH
                     TLAG        .85  LAG

                                                  ***

                                                        UNIT HYDROGRAPH
                                                    87 END-OF-PERIOD ORDINATES
              24.       57.      114.      179.      251.      343.      440.      570.      706.      860.
            1002.     1132.     1230.     1319.     1367.     1405.     1413.     1413.     1405.     1366.
            1317.     1260.     1201.     1136.     1063.      982.      888.      791.      710.      636.
             579.      527.      478.      436.      396.      366.      336.      307.      280.      256.
             231.      208.      191.      175.      159.      145.      133.      121.      109.      100.
              91.       82.       75.       68.       62.       56.       52.       47.       43.       39.
              36.       33.       30.       27.       25.       22.       20.       19.       17.       16.
              15.       14.       13.       12.       11.       10.        9.        8.        7.        6.
               5.        4.        4.        3.        2.        1.        0.

     ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION    C1-65
                            FOR PLAN 1, RATIO = 1.00

     TOTAL RAINFALL =    2.15, TOTAL LOSS =    1.18, TOTAL EXCESS =     .97

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                    6-HR       24-HR       72-HR     14.95-HR
+   (CFS)        (HR)
                        (CFS)
+     728.       1.60                267.        107.        107.        107.
                        (INCHES)     .970        .970        .970        .970
                        (AC-FT)      133.        133.        133.        133.

                          CUMULATIVE AREA =    2.56 SQ MI


     ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION    C1-65
                            FOR PLAN 1, RATIO = 1.00

     TOTAL RAINFALL =    2.15, TOTAL LOSS =    1.18, TOTAL EXCESS =     .97

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                    6-HR       24-HR       72-HR     14.95-HR
+   (CFS)        (HR)
                        (CFS)
+     728.       1.60                267.        107.        107.        107.
                        (INCHES)     .970        .970        .970        .970
                        (AC-FT)      133.        133.        133.        133.

                          CUMULATIVE AREA =    2.56 SQ MI

1                                                   STATION    C1-65

                        (O) OUTFLOW
          0.      100.      200.      300.      400.      500.      600.      700.      800.        0.        0.        0.        0.
                                                                                                  (L) PRECIP,   (X) EXCESS
         .00       .00       .00       .00       .00       .00       .00       .00       .16       .12       .08       .04       .00
 DAHRMN PER
  10000   1O---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.
  10003   2O         .         .         .         .         .         .         .         .       LLLLLLLLLLLLLLLLLLLLLLLLLLLLLL.
  10006   3O         .         .         .         .         .         .         .         .         . LLLLLLLLLLLLLLLLLLLLLLLLLL.
  10009   4O         .         .         .         .         .         .         .         .       LLLLLLLLLLLLLLLLLLLLLLLLLLLLL.
  10012   5O         .         .         .         .         .         .         .         .       LLLLLLLLLLLLLLLLLLLLLLLLLLLXXXX.
  10015   6O         .         .         .         .         .         .         .         .         . LLLLLLLLLLLLLLLLLLLXXXXXX.
  10018   7O         .         .         .         .         .         .         .         . LLLLLLLLLLLLLLLLLLLLLXXXXXXXXXX.
  10021   8.O        .         .         .         .         .         .         .         .         . LLLLLLLLLLLLLLLLXXXXXXXXXX.
  10024   9. O       .         .         .         .         .         .         .         .         .       LLLLLLLLLLXXXXXXXXXX.
  10027  10.  O      .         .         .         .         .         .         .         .         .       LLLLLLLLLLXXXXXXXXXX.
  10030  11. . O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .LLLLLLLLLLXXXXXXXXXX.
  10033  12.     O  .         .         .         .         .         .         .         .         .         .     LLLLLXXXXXXX.
  10036  13.       O.         .         .         .         .         .         .         .         .         .   LLLLLLLXXXXXXX.
  10039  14.        . O       .         .         .         .         .         .         .         .         .       LLLLLXXXXX.
  10042  15.         .  O     .         .         .         .         .         .         .         .         .     LLLLLXXXXXXX.
  10045  16.         .    O.   .         .         .         .         .         .         .         .         .       LLLLXXXXXX.
  10048  17.         .      .  O        .         .         .         .         .         .         .         .       LLLLXXXXXX.
  10051  18.         .      .     O.    .         .         .         .         .         .         .         .        . LLLXXXXX.
  10054  19.         .      .       .O  .         .         .         .         .         .         .         .       LLLLXXXXXX.
  10057  20.         .      .         .O.         .         .         .         .         .         .         .         .   LXXXX.
  10100  21. . . . . . . . . . . . . . . . . . . .O. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . LLLXXXXX.
  10103  22.         .      .         .   O       .         .         .         .         .         .         .         . LLLXXXXX.
  10106  23.         .      .         .     O     .         .         .         .         .         .         .         .   LXXXX.
  10109  24.         .      .         .       O   .         .         .         .         .         .         .         . LLXXXXXX.
  10112  25.         .      .         .         O .         .         .         .         .         .         .         . LLXXXXXX.
  10115  26.         .      .         .           O         .         .         .         .         .         .         .   LXXXX.
  10118  27.         .      .         .           .  O      .         .         .         .         .         .         .   LXXXX.
  10121  28.         .      .         .           .     O   .         .         .         .         .         .         .   LXXXX.
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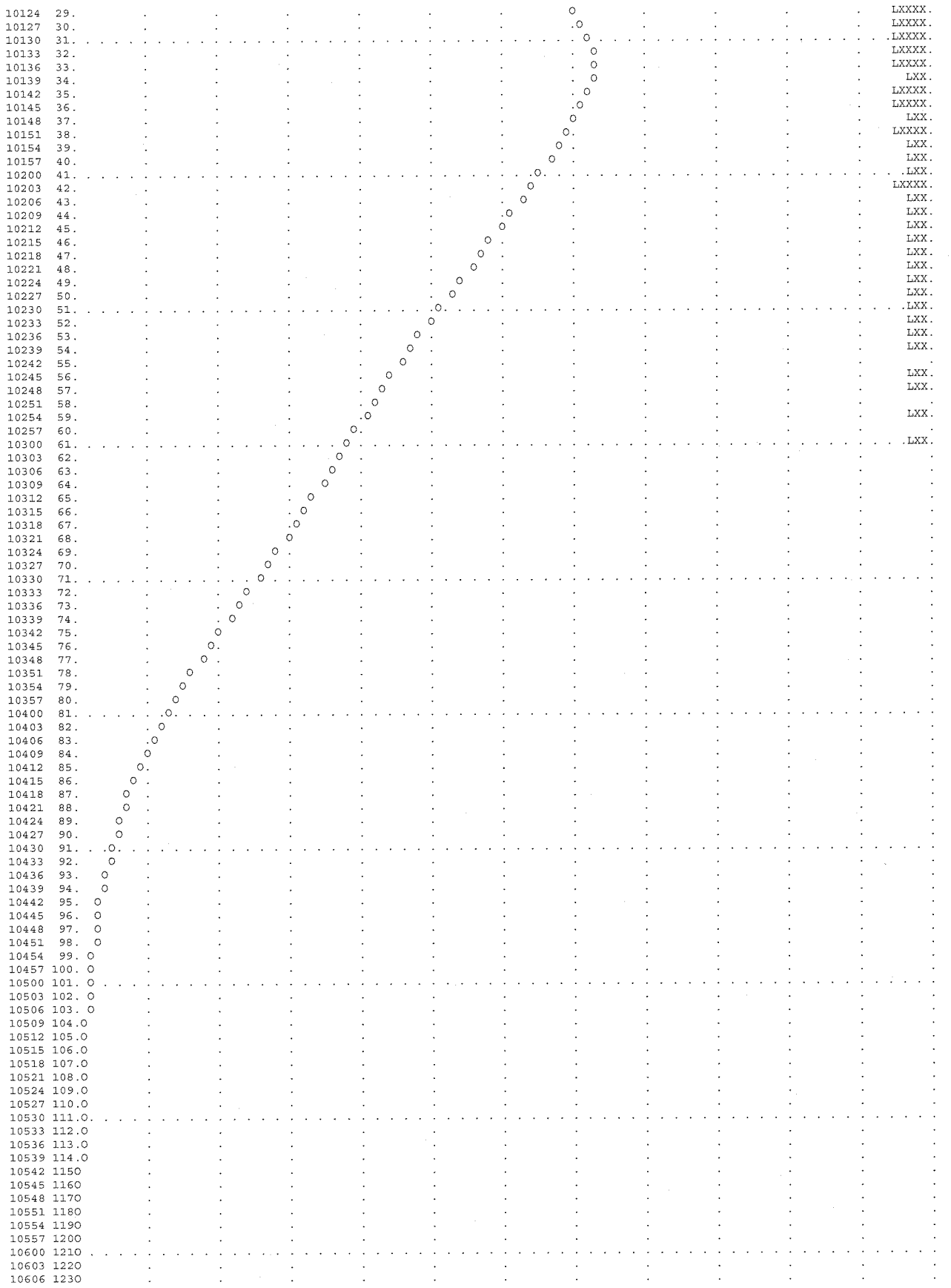
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10351 78.
10354 79.
10357 80.
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10403 82.
10406 83.
10409 84.
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10415 86.
10418 87.
10421 88.
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10430 91.
10433 92.
10436 93.
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10445 96.
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10457 100.
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10542 115
10545 116
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10557 120
10600 121
10603 122
10606 123

10609 1240
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10615 1260
10618 1270
10621 1280
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10630 1310
10633 1320
10636 1330
10639 1340
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10654 1390
10657 1400
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10809 1640
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11445 2960
11448 2970
11451 2980
11454 2990
11457 3000---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.
1

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***

          **************
          *            *
 79 KK    *       DB6  *
          *            *
          **************
```

```
 85 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
                     IPLOT          2  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

               HYDROGRAPH ROUTING DATA

 86 RS          STORAGE ROUTING
                     NSTPS          1  NUMBER OF SUBREACHES
                      ITYP       STOR  TYPE OF INITIAL CONDITION
                    RSVRIC      -1.00  INITIAL CONDITION
                         X        .00 WORKING R AND D COEFFICIENT

 87 SV            STORAGE         .0      11.9      20.0      55.0     103.2     156.5     214.9     278.7     333.6     348.3

 88 SE            ELEVATION   1952.00   1956.00   1957.00   1961.00   1966.00   1971.00   1976.00   1981.00   1985.00   1986.00

 89 SQ            DISCHARGE       0.       74.       82.      111.      138.      161.      181.      199.      212.      215.

                                                                ***

     ***             ***             ***             ***             ***

                        HYDROGRAPH AT STATION      DB6
                          FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                                MAXIMUM AVERAGE FLOW
                                      6-HR        24-HR        72-HR      14.95-HR
+   (CFS)       (HR)          (CFS)
+     166.      3.85                    158.         134.         134.         134.
                            (INCHES)    .356         .750         .750         .750
                            (AC-FT)      79.         165.         165.         165.

  PEAK STORAGE  TIME                              MAXIMUM AVERAGE STORAGE
                                      6-HR        24-HR        72-HR      14.95-HR
+  (AC-FT)      (HR)
      172.      3.85                    152.         107.         107.         107.

  PEAK STAGE    TIME                              MAXIMUM AVERAGE STAGE
                                      6-HR        24-HR        72-HR      14.95-HR
+   (FEET)      (HR)
    1972.36     3.85                1970.55      1966.06      1966.06      1966.06

                        CUMULATIVE AREA =     4.14 SQ MI

1                                                          STATION      DB6

                    (I) INFLOW,   (O) OUTFLOW
          0.      200.      400.      600.      800.     1000.     1200.        0.        0.        0.        0.        0.        0.
                                                                                (S) STORAGE
          0.        0.        0.        0.        0.        0.        0.       50.      100.      150.      200.        0.        0.
 DAHRMN PER
  10000   1I---------.---------.---------.---------.---------.---------S---------.---------.---------.---------.---------.---------.
  10003   2I         .         .         .         .         .         S         .         .         .         .         .         .
  10006   3I         .         .         .         .         .         S         .         .         .         .         .         .
  10009   4I         .         .         .         .         .         S         .         .         .         .         .         .
  10012   5I         .         .         .         .         .         S         .         .         .         .         .         .
  10015   6OI        .         .         .         .         .         S         .         .         .         .         .         .
  10018   7O  I      .         .         .         .         .         S         .         .         .         .         .         .
  10021   8O    I    .         .         .         .         .         S         .         .         .         .         .         .
  10024   9O      I  .         .         .         .         .         S         .         .         .         .         .         .
  10027  10.O      . I         .         .         .         .         S         .         .         .         .         .         .
  10030  11.O. . . . . . . . . . I . . . . . . . . . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  10033  12. O     .           . I         .         .         .         S         .         .         .         .         .         .
  10036  13.  O    .           .   I       .         .         .         . S       .         .         .         .         .         .
  10039  14.   O   .           .     I     .         .         .         . S       .         .         .         .         .         .
  10042  15.   O   .           .       I   .         .         .         .  S      .         .         .         .         .         .
  10045  16.   O   .           .         I .         .         .         .  S      .         .         .         .         .         .
  10048  17.   O   .           .           I.        .         .         .   S     .         .         .         .         .         .
  10051  18.   O   .           .            I        .         .         .   S     .         .         .         .         .         .
  10054  19.   O   .           .             I       .         .         .    S    .         .         .         .         .         .
  10057  20.    O  .           .              I      .         .         .    S    .         .         .         .         .         .
  10100  21. . .O. . . . . . . . . . . . . . . . . .I. . . . . . . . . . .S. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  10103  22.    O  .           .                I    .         .         .     S   .         .         .         .         .         .
  10106  23.    O  .           .                 I   .         .         .     S   .         .         .         .         .         .
  10109  24.    O  .           .                 I   .         .         .      S  .         .         .         .         .         .
  10112  25.    O  .           .                  I  .         .         .      .S .         .         .         .         .         .
  10115  26.     O .           .                  I  .         .         .      .S .         .         .         .         .         .
  10118  27.     O .           .                   I .         .         .       S .         .         .         .         .         .
  10121  28.     O .           .                   I .         .         .       S .         .         .         .         .         .
  10124  29.     O .           .                   I .         .         .        S.         .         .         .         .         .
  10127  30.     O .           .                   I .         .         .        S.         .         .         .         .         .
  10130  31. . . O . . . . . . . . . . . . . . . . . I . . . . . . . . . . . . S. . . . . . . . . . . . . . . . . . . . . . . . . . . .
  10133  32.     O .           .                    I.         .         .         S.         .         .         .         .         .
  10136  33.     O .           .                    I.         .         .         S.         .         .         .         .         .
  10139  34.      O.           .                     I         .         .          S         .         .         .         .         .
  10142  35.      O.           .                     I         .         .          S         .         .         .         .         .
  10145  36.      O.           .                     I         .         .          S         .         .         .         .         .
  10148  37.      O.           .                     I         .         .          S         .         .         .         .         .
  10151  38.      O.           .                     I         .         .          .S        .         .         .         .         .
  10154  39.      O.           .                     I         .         .          . S       .         .         .         .         .
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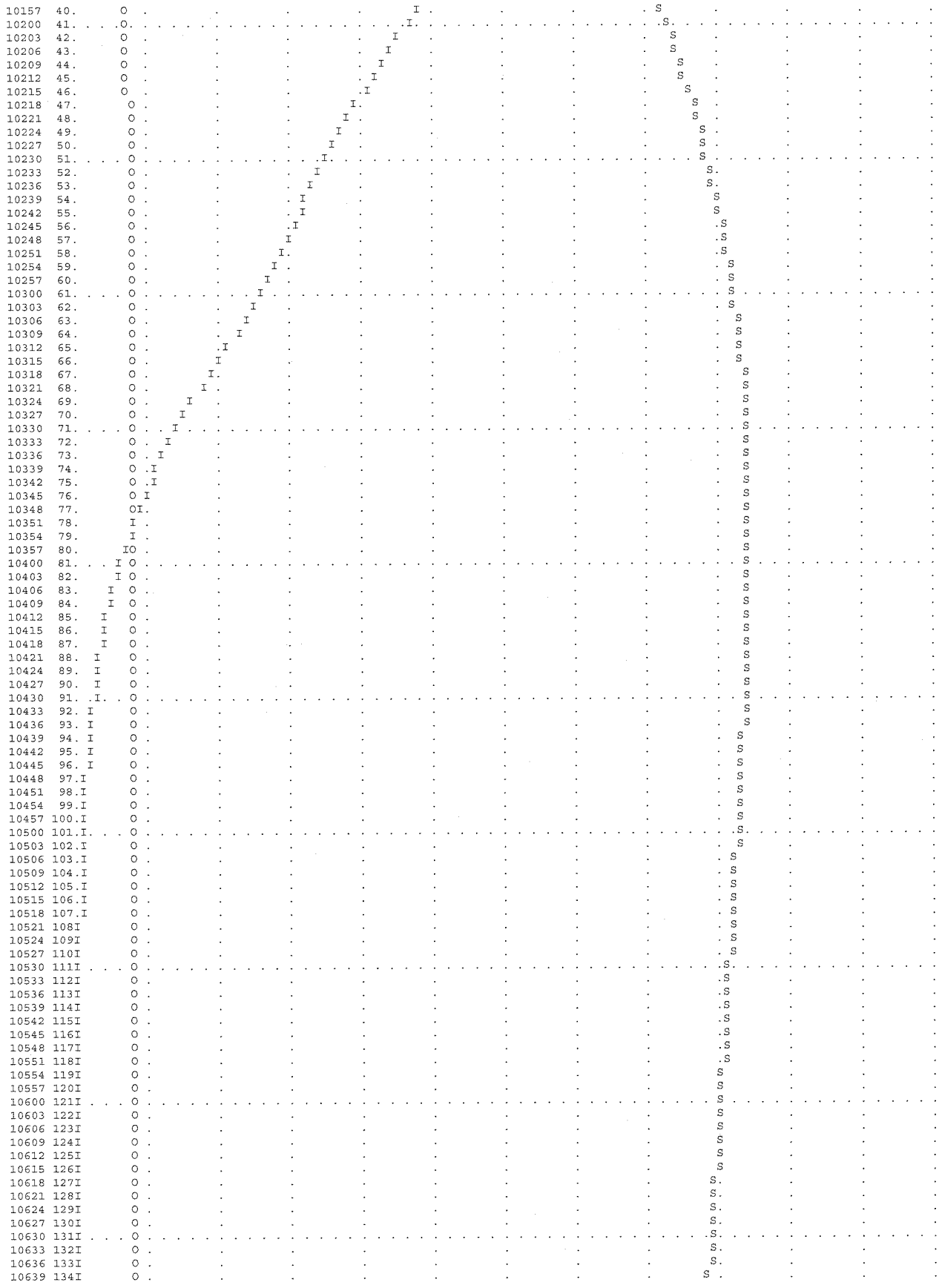

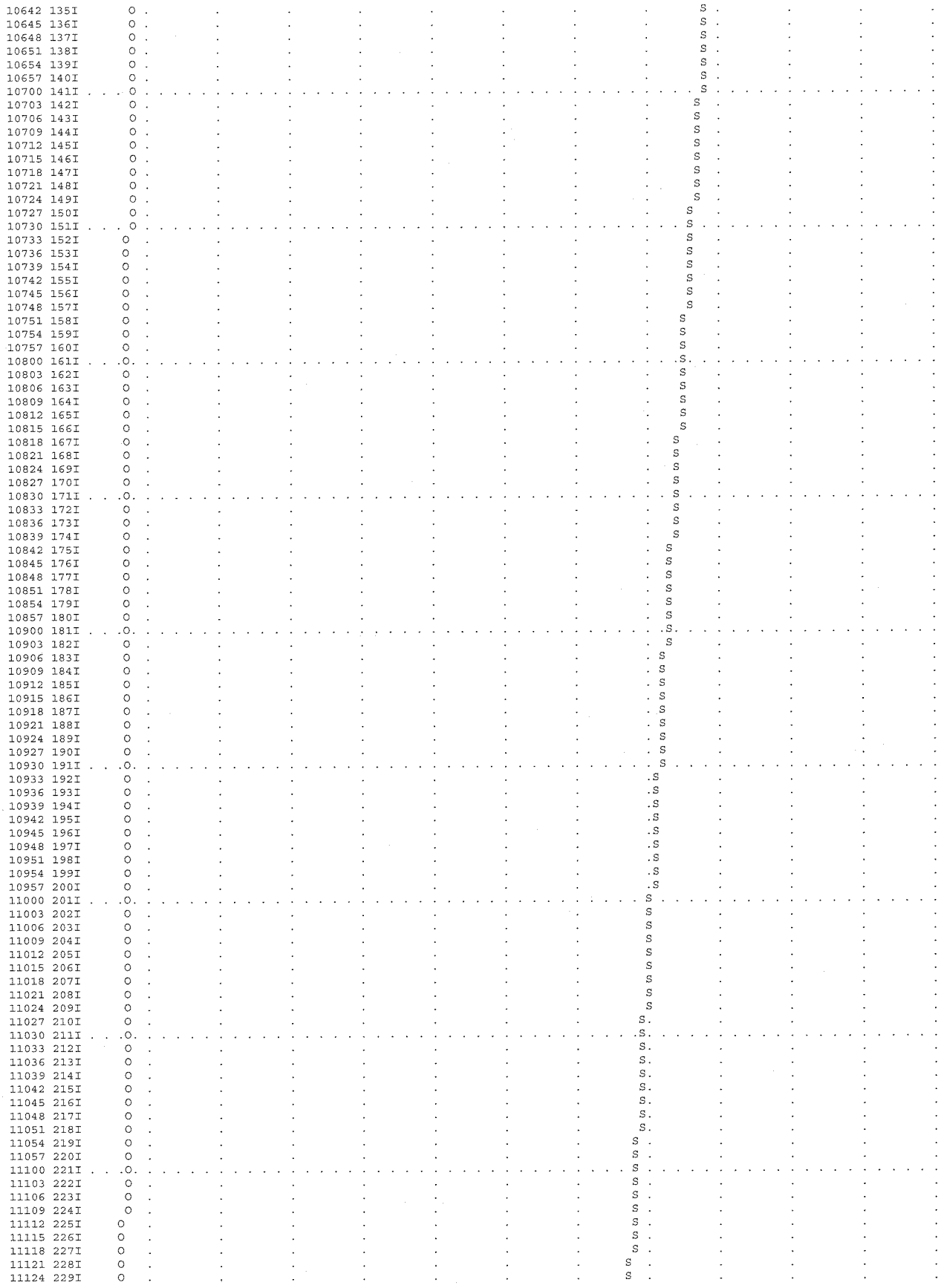
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11006 203I
11009 204I
11012 205I
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11112 225I
11115 226I
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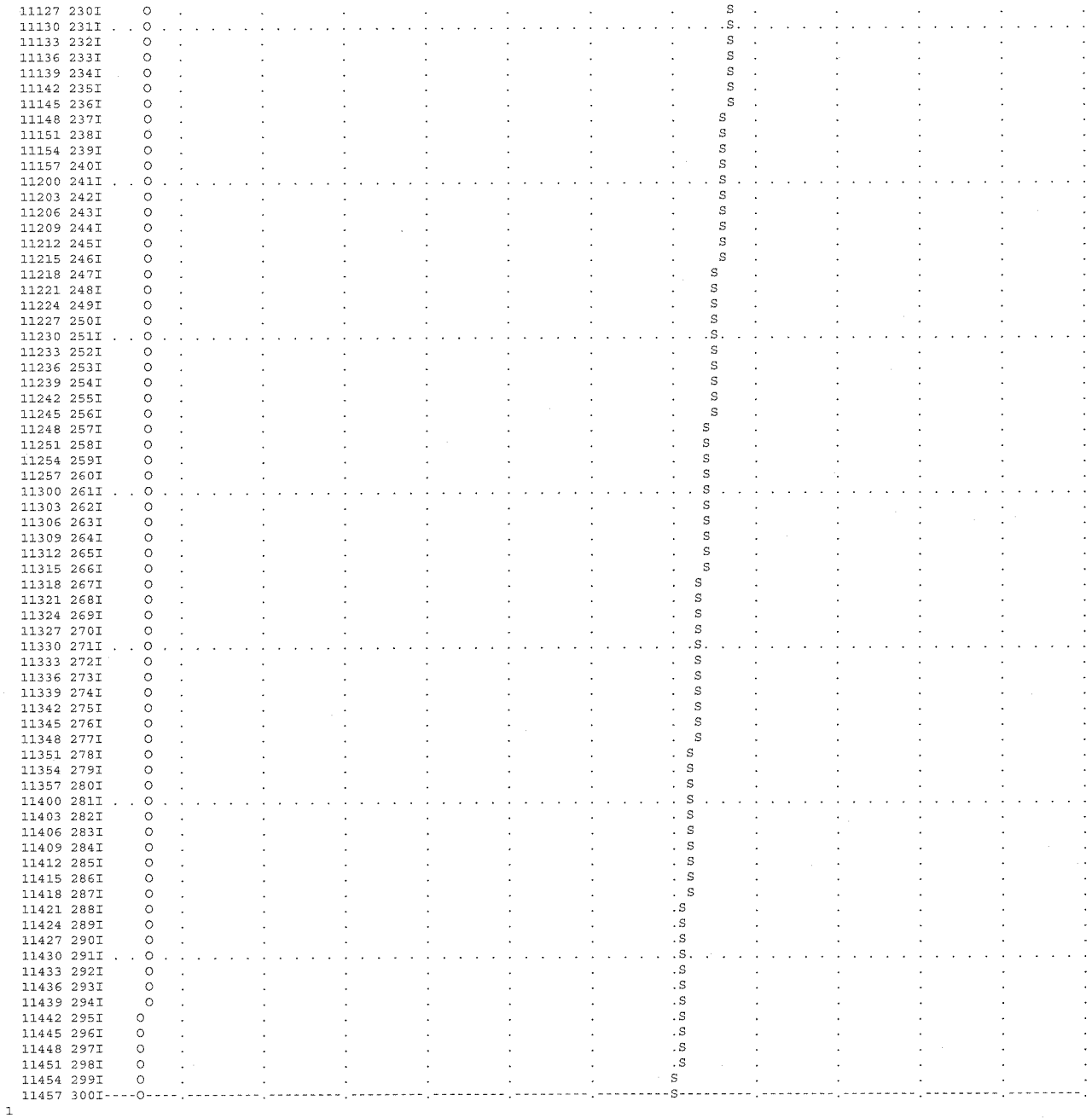

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1
					1.00
HYDROGRAPH AT					
+	C1-55	.98	1	FLOW	458.
				TIME	.75
ROUTED TO					
+	RC155	.98	1	FLOW	457.
				TIME	.80
HYDROGRAPH AT					
+	C1-65	2.56	1	FLOW	728.
				TIME	1.60

```
  2 COMBINED AT
+                 CP52A       3.54      1   FLOW          982.
                                              TIME         1.45

 HYDROGRAPH AT
+                 C1-66        .59      1   FLOW          291.
                                              TIME          .65

  2 COMBINED AT
+                  CP64       4.14      1   FLOW         1125.
                                              TIME         1.40

 ROUTED TO
+                   DB6       4.14      1   FLOW          166.
                                              TIME         3.85

                                      ** PEAK STAGES IN FEET **
                                      1   STAGE       1972.36
                                          TIME           3.85
1
                                      SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                          (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                                INTERPOLATED TO
                                                                                COMPUTATION INTERVAL
          ISTAQ     ELEMENT       DT        PEAK     TIME TO      VOLUME       DT        PEAK     TIME TO      VOLUME
                                                                     PEAK                              PEAK

                                  (MIN)      (CFS)      (MIN)      (IN)      (MIN)      (CFS)      (MIN)      (IN)

        FOR PLAN = 1  RATIO=  .00
           RC155  MANE          1.95     456.73     48.75      1.02      3.00     456.62     48.00      1.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5327E+02 EXCESS= .0000E+00 OUTFLOW= .5329E+02 BASIN STORAGE= .1795E-02 PERCENT ERROR=     .0


*** NORMAL END OF HEC-1 ***
```

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN   1998                *
*          VERSION 4.1                  *
*                                       *
*  RUN DATE   21JAN08  TIME  11:50:23   *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
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X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX           XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

HEC-1 INPUT

1

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

              *DIAGRAM
    1         ID    CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN UPDATE
    2         ID    C-1 WATERSHED
    3         ID    RECOMMENDED DRAINAGE SYSTEM WITH ULTIMATE DEVELOPMENT
    4         ID    INPUT FILE = C1SDN4B.DAT
    5         ID    INPUT FILE DATE = APRIL 18, 2002
    6         ID    DESIGN STORM = 100-YEAR 6-HR STORM
    7         ID    STORM DISTRIBUTION = SDN #4
    8         ID    MODELED BY = LOUIS BERGER GROUP (RYAN R. BELSICK, P.E. and SYNDI DUDLEY,
    9         ID    PHD, P.E.)
   10         ID    STORM CENTERING = NO STORM CENTERING
   11         ID
   12         ID    REFERENCED HYDROLOGIC MODELS:
   13         ID    PREDESIGN REPORT FOR THE BLACK MOUNTAIN AND MISSION HILLS DETENTION BASINS
   14         ID    AND OUTFALL STRUCTURES (VTN 1992)
   15         ID    SNWA RIVER MOUNTAINS WATER TREATMENT FACILITY DRAFT TECHNICAL DRAINAGE STUDY
   16         ID    (MONTGOMERY WATSON/CH2MHILL 1997)
   17         ID    EAST C-1 DETENTION BASIN FINAL DESIGN (VTN 1998)
   18         ID    DESIGN MEMORANDUM FOR THE EQUESTRIAN DETENTION BASIN (POGGEMEYER 1994)
   19         ID    DESIGN CALCULATION NOTEBOOK FOR THE BLACK MOUNTAIN DETENTION BASIN
   20         ID    (VTN 1998)
   21         ID
   22         ID    **REVISED C1 BASINS BY G.C. WALLACE, INC.
   23         ID    **REVISED NORTHEAST C-1 DETENTION BASIN STAGE/STORAGE BY G.C. WALLACE, INC.
   24         ID    **INPUT FILE = C1SDN4B-ALT3.DAT
   25         ID    **INPUT FILE DATE = DECEMBER 23, 2004
   26         ID
   27         ID    JR CARDS CONTAIN DARFS BASED ON THE FOLLOWING VALUES:
   28         ID
   29         ID    ***REVISED USING USING 3-HOUR STORM DISTRIBUTION
   30         ID    ***FROM G.C. WALLACE, 1984
   31         ID    ***12-13-07
   32         ID
   33         ID
   34         ID
   35         IT       3       0       0     300
   36         IN       3       0       0
   37         IO       5
   38         JR    PREC       1

   39         KK    C1-54
   40         KM    REVISED BASIN AREA TO MATCH TOPOGRAPHY
   41         KM    REVISED LAG TIME TO MATCH NEW BASIN AREA
   42         BA    5.379
   43         PB     2.23
   44         PC    0.000   0.060   0.110   0.170   0.230   0.280   0.350   0.400   0.440   0.480
   45         PC    0.520   0.545   0.575   0.595   0.620   0.640   0.660   0.675   0.695   0.705
   46         PC    0.720   0.735   0.745   0.760   0.775   0.785   0.795   0.805   0.815   0.825
   47         PC    0.835   0.845   0.855   0.860   0.870   0.880   0.885   0.895   0.900   0.905
   48         PC    0.910   0.920   0.925   0.930   0.935   0.940   0.945   0.950   0.955   0.960
   49         PC    0.965   0.970   0.975   0.980   0.980   0.985   0.990   0.990   0.995   0.995
   50         PC        1
   51         LS        0    84.3
   52         UD    0.720
              *
```


HEC-1 INPUT

1

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  53      KK     DB5
  54      KM   FACILITY = EAST C-1 DETENTION BASIN
  55      KM   FACILITY # = C1DC 0303
  56      KM   STORAGE VOLUME = 880 ACRE-FEET
  57      KM   OUTLET = 48" RCP
  58      KO       3
  59      RS       1    STOR      -1
  60      SV    0.02    1.85   10.35   24.60   45.03   70.78  104.85  148.32  204.08  271.64
  61      SV  362.21  482.58  551.62  625.31  704.75  789.13  879.88  975.68 1103.9  1414.3
  62      SE  2446.0  2450.0  2454.0  2458.0  2462.0  2466.0  2470.0  2474.0  2478.0  2482.0
  63      SE  2486.0  2490.0  2492.0  2494.0  2496.0  2498.0  2500.0  2502.2  2506.0  2510.0
  64      SQ       0   24.59   37.30   46.66   54.44   61.24   67.35   72.96   78.16   83.04
  65      SQ   87.65   92.02   94.14   96.20   98.22  100.21  102.15  104.06  107.77  111.36
  66      SE  2446.0  2450.0  2454.0  2458.0  2462.0  2466.0  2470.0  2474.0  2478.0  2482.0
  67      SE  2486.0  2490.0  2492.0  2494.0  2496.0  2498.0  2500.0  2502.2  2506.0  2510.0
          *

  68      KK    RDB5
  69      KM   ROUTE DB5 TO C1-55
  70      KM   FACILITY = C-1 CHANNEL - ITHACA
  71      KM   FACILITY # = C1DC 0226 TO C1DC 0170
  72      KM   TYPE OF FACILTIY = CONCRETE
  73      RD    6750   0.029    .025       0    TRAP      20       3
          *

  74      KK   C1-55
  75      KM   REVISED BASIN AREA TO MATCH TOPOGRAPHY
  76      KM   REVISED LAG TIME TO MATCH NEW BASIN AREA
  77      BA   0.981
  78      PB    2.15
  79      LS       0    86.9
  80      UD   0.257
          *

  81      KK    CP52
  82      KM   COMBINE RDB5 AND C1-55
  83      HC       2
          *

  84      KK   RCP52
  85      KM   ROUTE CP52 TO DB6
  86      KM   FACILITY = LEVEE TO NEC1DB
  87      KM   FACILITY # = C1IT 0155
  88      KM   LINING = CONCRETE
  89      RD    3830   0.025    .025       0    TRAP       5       2
          *

  90      KK   C1-65
  91      KM   REVISED BASIN AREA TO MATCH TOPOGRAPHY
  92      KM   REVISED LAG TIME TO MATCH NEW BASIN AREA
  93      BA   2.564
  94      PB    2.15
  95      LS       0    86.1
  96      UD   0.849
          *
```



```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  97      KK   CP52A
  98      KM   COMBINE RCP52 AND C1-65
  99      HC       2
          *

 100      KK   C1-66
 101      KM   REVISED BASIN AREA TO MATCH TOPOGRAPHY
 102      KM   REVISED LAG TIME TO MATCH NEW BASIN AREA
 103      BA   0.873
 104      PB    2.07
 105      LS       0    87.6
 106      UD   0.199
          *

 107      KK    CP64
 108      KM   COMBINE C1-66, AND RCP52
 109      KM   NORTHEAST C-1 DETENTION BASIN
 110      HC       2
          *

 111      KK     DB6
 112      KM   FACILITY = NORTHEAST C-1 DETENTION BASIN
 113      KM   FACILITY # = C1IT 0118
 114      KM   STORAGE VOLUME = 310 ACRE-FEET
 115      KM   OUTLET = 48" RCP
 116      KM   REVISED PER GCW DESIGN
 117      KO       3       2
 118      RS       1    STOR      -1
 119      SV       0   11.92   20.04   54.96  103.23  156.48  214.92  278.69  333.63  348.25
 120      SE    1952    1956    1957    1961    1966    1971    1976    1981    1985    1986
 121      SQ       0   73.74   82.45  110.61  137.96  160.72  180.63  198.56  211.81  214.99
          *
```

```
          122           ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK

 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    39       C1-54
               V
               V
    53         DB5
               V
               V
    68        RDB5
               .
               .
    74          .       C1-55
                .          .
                .          .
    81        CP52.............
               V
               V
    84       RCP52
               .
               .
    90          .       C1-65
                .          .
                .          .
    97       CP52A.............
                .
                .
   100          .       C1-66
                .          .
                .          .
   107        CP64.............
               V
               V
   111         DB6

  (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************
 *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
 *             JUN   1998               *
 *           VERSION 4.1                *
 *                                      *
 *  RUN DATE   21JAN08  TIME  11:50:23  *
 *                                      *
 ****************************************

 ****************************************
 *                                      *
 *    U.S. ARMY CORPS OF ENGINEERS      *
 *    HYDROLOGIC ENGINEERING CENTER     *
 *          609 SECOND STREET           *
 *       DAVIS, CALIFORNIA 95616        *
 *           (916) 756-1104             *
 *                                      *
 ****************************************

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN UPDATE
C-1 WATERSHED
RECOMMENDED DRAINAGE SYSTEM WITH ULTIMATE DEVELOPMENT
INPUT FILE = C1SDN4B.DAT
INPUT FILE DATE = APRIL 18, 2002
DESIGN STORM = 100-YEAR 6-HR STORM
STORM DISTRIBUTION = SDN #4
MODELED BY = LOUIS BERGER GROUP (RYAN R. BELSICK, P.E. and SYNDI DUDLEY,
PHD, P.E.)
STORM CENTERING = NO STORM CENTERING

REFERENCED HYDROLOGIC MODELS:
PREDESIGN REPORT FOR THE BLACK MOUNTAIN AND MISSION HILLS DETENTION BASINS
AND OUTFALL STRUCTURES (VTN 1992)
SNWA RIVER MOUNTAINS WATER TREATMENT FACILITY DRAFT TECHNICAL DRAINAGE STUDY
(MONTGOMERY WATSON/CH2MHILL 1997)
EAST C-1 DETENTION BASIN FINAL DESIGN (VTN 1998)
DESIGN MEMORANDUM FOR THE EQUESTRIAN DETENTION BASIN (POGGEMEYER 1994)
DESIGN CALCULATION NOTEBOOK FOR THE BLACK MOUNTAIN DETENTION BASIN
(VTN 1998)

**REVISED C1 BASINS BY G.C. WALLACE, INC.
**REVISED NORTHEAST C-1 DETENTION BASIN STAGE/STORAGE BY G.C. WALLACE, INC.
**INPUT FILE = C1SDN4B-ALT3.DAT
**INPUT FILE DATE = DECEMBER 23, 2004

JR CARDS CONTAIN DARFS BASED ON THE FOLLOWING VALUES:

***REVISED USING USING 3-HOUR STORM DISTRIBUTION
***FROM G.C. WALLACE, 1984
***12-13-07

   37 IO          OUTPUT CONTROL VARIABLES
                        IPRNT          5  PRINT CONTROL
                        IPLOT          0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
```

```
 IT          HYDROGRAPH TIME DATA
                   NMIN          3  MINUTES IN COMPUTATION INTERVAL
                  IDATE      1    0  STARTING DATE
                  ITIME         0000  STARTING TIME
                     NQ          300  NUMBER OF HYDROGRAPH ORDINATES
                 NDDATE      1    0  ENDING DATE
                 NDTIME         1457  ENDING TIME
                  ICENT           19  CENTURY MARK

               COMPUTATION INTERVAL      .05 HOURS
                   TOTAL TIME BASE   14.95 HOURS

      ENGLISH UNITS
           DRAINAGE AREA          SQUARE MILES
           PRECIPITATION DEPTH    INCHES
           LENGTH, ELEVATION      FEET
           FLOW                   CUBIC FEET PER SECOND
           STORAGE VOLUME         ACRE-FEET
           SURFACE AREA           ACRES
           TEMPERATURE            DEGREES FAHRENHEIT

 JP          MULTI-PLAN OPTION
                NPLAN           1  NUMBER OF PLANS

 JR          MULTI-RATIO OPTION
                RATIOS OF PRECIPITATION
               1.00

*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
          *            *
 53 KK    *       DB5  *
          *            *
          **************

 58 KO          OUTPUT CONTROL VARIABLES
                   IPRNT          3  PRINT CONTROL
                   IPLOT          0  PLOT CONTROL
                   QSCAL          0.  HYDROGRAPH PLOT SCALE

               HYDROGRAPH ROUTING DATA

 59 RS         STORAGE ROUTING
                   NSTPS          1  NUMBER OF SUBREACHES
                    ITYP       STOR  TYPE OF INITIAL CONDITION
                  RSVRIC      -1.00  INITIAL CONDITION
                       X        .00 WORKING R AND D COEFFICIENT

 60 SV            STORAGE         .0       1.9      10.4      24.6      45.0      70.8     104.8     148.3     204.1     271.6
                                362.2     482.6     551.6     625.3     704.8     789.1     879.9     975.7    1103.9    1414.3

 62 SE            ELEVATION  2446.00   2450.00   2454.00   2458.00   2462.00   2466.00   2470.00   2474.00   2478.00   2482.00
                             2486.00   2490.00   2492.00   2494.00   2496.00   2498.00   2500.00   2502.20   2506.00   2510.00

 64 SQ            DISCHARGE       0.       25.       37.       47.       54.       61.       67.       73.       78.       83.
                                88.       92.       94.       96.       98.      100.      102.      104.      108.      111.

 66 SE            ELEVATION  2446.00   2450.00   2454.00   2458.00   2462.00   2466.00   2470.00   2474.00   2478.00   2482.00
                             2486.00   2490.00   2492.00   2494.00   2496.00   2498.00   2500.00   2502.20   2506.00   2510.00

                                                          ***

                                        COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

                  STORAGE        .02      1.85     10.35     24.60     45.03     70.78    104.85    148.32    204.08    271.64
                  OUTFLOW        .00     24.59     37.30     46.66     54.44     61.24     67.35     72.96     78.16     83.04
                ELEVATION    2446.00   2450.00   2454.00   2458.00   2462.00   2466.00   2470.00   2474.00   2478.00   2482.00

                  STORAGE     362.21    482.58    551.62    625.31    704.75    789.13    879.88    975.68   1103.90   1414.30
                  OUTFLOW      87.65     92.02     94.14     96.20     98.22    100.21    102.15    104.06    107.77    111.36
                ELEVATION    2486.00   2490.00   2492.00   2494.00   2496.00   2498.00   2500.00   2502.20   2506.00   2510.00

      ***              ***              ***              ***              ***

                                HYDROGRAPH AT STATION      DB5
                                  FOR PLAN 1, RATIO = 1.00

                                                          MAXIMUM AVERAGE FLOW
  PEAK FLOW      TIME                                6-HR        24-HR        72-HR      14.95-HR
+    (CFS)        (HR)
                                          (CFS)
+       81.       4.35                     80.         73.          73.          73.
                                  (INCHES)  .138        .315         .315         .315
                                  (AC-FT)   40.         90.          90.          90.

  PEAK STORAGE   TIME                                MAXIMUM AVERAGE STORAGE
                                                      6-HR        24-HR        72-HR      14.95-HR
+  (AC-FT)        (HR)
       242.       4.35                    230.        187.         187.         187.
```

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	14.95-HR
+ (FEET)	(HR)				
2480.22	4.35	2479.51	2475.50	2475.50	2475.50

CUMULATIVE AREA = 5.38 SQ MI

*** ***

```
**************
*            *
*       DB6  *
*            *
**************
```

111 KK

117 KO OUTPUT CONTROL VARIABLES

IPRNT	3	PRINT CONTROL
IPLOT	2	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

HYDROGRAPH ROUTING DATA

118 RS STORAGE ROUTING

NSTPS	1	NUMBER OF SUBREACHES
ITYP	STOR	TYPE OF INITIAL CONDITION
RSVRIC	-1.00	INITIAL CONDITION
X	.00	WORKING R AND D COEFFICIENT

119 SV	STORAGE	.0	11.9	20.0	55.0	103.2	156.5	214.9	278.7	333.6	348.3
120 SE	ELEVATION	1952.00	1956.00	1957.00	1961.00	1966.00	1971.00	1976.00	1981.00	1985.00	1986.00
121 SQ	DISCHARGE	0.	74.	82.	111.	138.	161.	181.	199.	212.	215.

*** *** *** *** ***

HYDROGRAPH AT STATION DB6
FOR PLAN 1, RATIO = 1.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	14.95-HR
+ (CFS)	(HR)	(CFS)				
+ 176.	4.15		172.	154.	154.	154.
		(INCHES)	.163	.364	.364	.364
		(AC-FT)	85.	190.	190.	190.

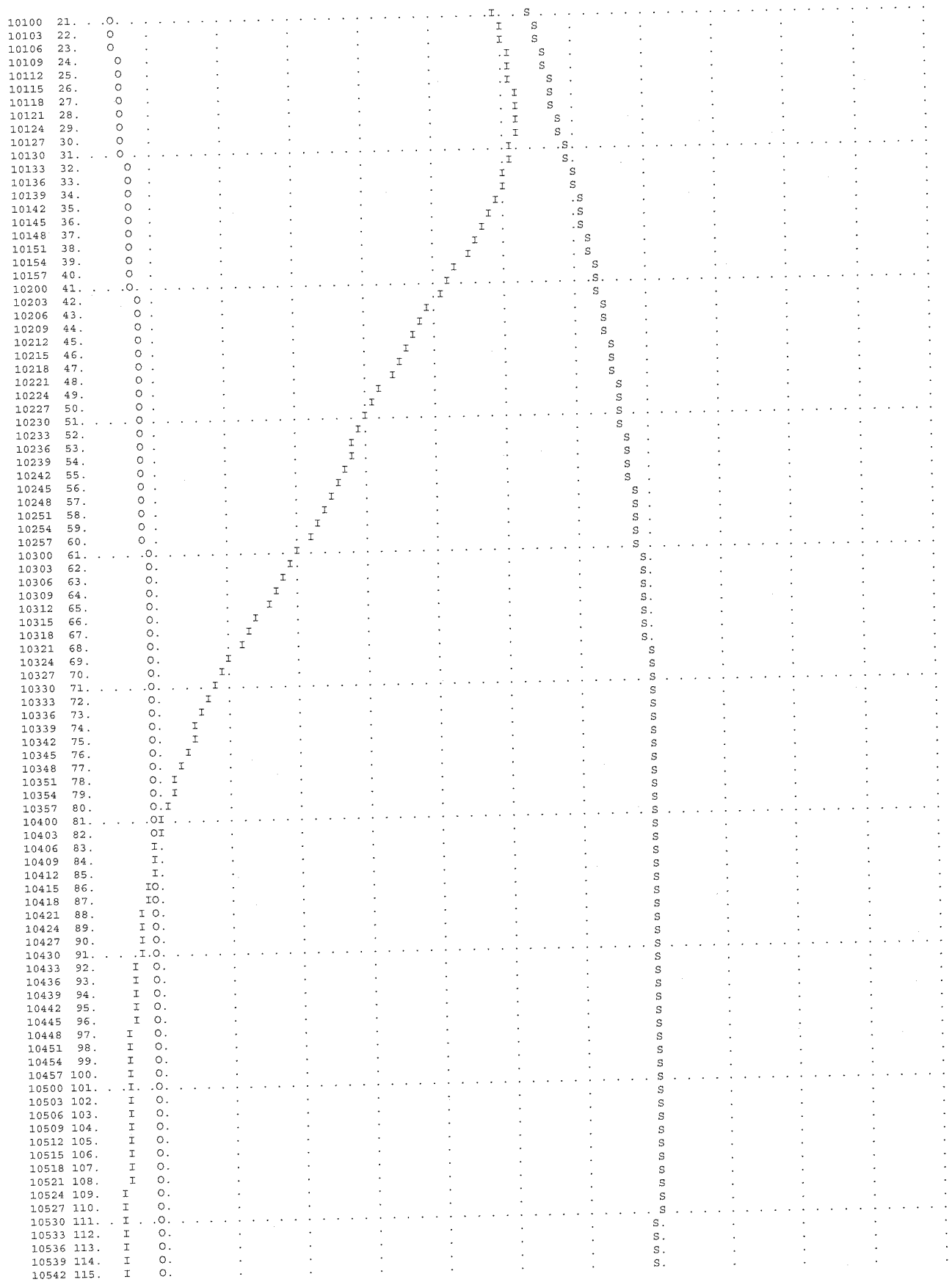
PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	14.95-HR
+ (AC-FT)	(HR)				
202.	4.15	189.	153.	153.	153.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	14.95-HR
+ (FEET)	(HR)				
1974.88	4.15	1973.81	1970.32	1970.32	1970.32

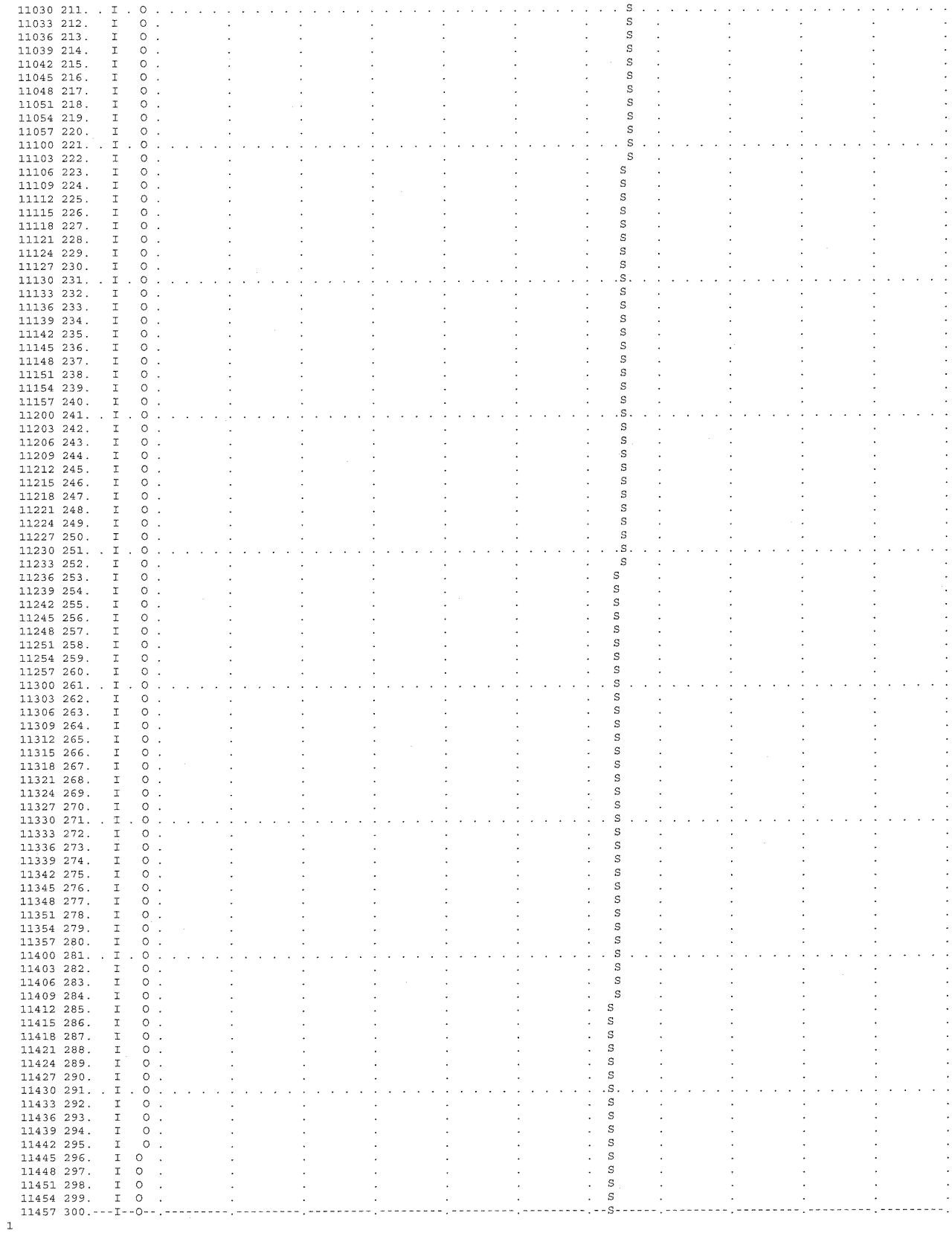
CUMULATIVE AREA = 9.80 SQ MI

1 STATION DB6

```
                (I) INFLOW,   (O) OUTFLOW
        0.      200.    400.    600.    800.    1000.   1200.   1400.       0.      0.      0.      0.      0.
                                                                (S) STORAGE
        0.      0.      0.      0.      0.      0.      0.      100.    200.    300.    0.      0.      0.
DAHRMN PER
 10000   1I---------.---------.---------.---------.---------.---------S---------.---------.---------.---------.---------.
 10003   2I         .         .         .         .         .         S         .         .         .         .         .
 10006   3I         .         .         .         .         .         S         .         .         .         .         .
 10009   4I         .         .         .         .         .         S         .         .         .         .         .
 10012   5I         .         .         .         .         .         S         .         .         .         .         .
 10015   6OI        .         .         .         .         .         S         .         .         .         .         .
 10018   7O   I     .         .         .         .         .         S         .         .         .         .         .
 10021   8O      I  .         .         .         .         .         S         .         .         .         .         .
 10024   9O         .  I      .         .         .         .         S         .         .         .         .         .
 10027  10.O        .         .I        .         .         .         S         .         .         .         .         .
 10030  11. O . . . . . . . . . . . . . I . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . .
 10033  12. O       .         .         .         .I        .         .S        .         .         .         .         .
 10036  13.  O      .         .         .         .  I      .         .S        .         .         .         .         .
 10039  14.   O     .         .         .         .    I    .         .S        .         .         .         .         .
 10042  15.   O     .         .         .         .      .I  .         . S       .         .         .         .         .
 10045  16.   O     .         .         .         .      .  I.         . S       .         .         .         .         .
 10048  17.   O     .         .         .         .      .    I        .  S      .         .         .         .         .
 10051  18.    O    .         .         .         .      .     I       .  S      .         .         .         .         .
 10054  19.    O    .         .         .         .      .      I .    .   S     .         .         .         .         .
 10057  20.    O    .         .         .         .      .        I .  .    S    .         .         .         .         .
```



```
10545 116.   I    O.                                                S.
10548 117.   I    O.                                                S.
10551 118.   I    O.                                                S.
10554 119.   I    O.                                                S.
10557 120.   I    O.                                                S.
10600 121. . I . .O. . . . . .                                      S. . . . . .
10603 122.   I    O.                                                S.
10606 123.   I    O.                                                S.
10609 124.   I    O.                                                S.
10612 125.   I    O.                                                S.
10615 126.   I    O.                                                S.
10618 127.   I    O.                                                S.
10621 128.   I    O.                                                S.
10624 129.   I    O.                                                S.
10627 130.   I    O.                                                S.
10630 131. . I . .O. . . . . .                                      S. . . . . .
10633 132.   I    O.                                                S.
10636 133.   I    O.                                                S.
10639 134.   I    O.                                                S.
10642 135.   I    O.                                                S.
10645 136.   I    O.                                                S.
10648 137.   I    O.                                                S.
10651 138.   I    O.                                                S.
10654 139.   I    O.                                              S .
10657 140.   I    O.                                              S .
10700 141. . I . .O. . . . . .                                    S . . . . . .
10703 142.   I    O.                                              S .
10706 143.   I   O .                                              S .
10709 144.   I   O .                                              S .
10712 145.   I   O .                                              S .
10715 146.   I   O .                                              S .
10718 147.   I   O .                                              S .
10721 148.   I   O .                                              S .
10724 149.   I   O .                                              S .
10727 150.   I   O .                                              S .
10730 151. . I . O . . . . . .                                    S . . . . . .
10733 152.   I   O .                                              S .
10736 153.   I   O .                                              S .
10739 154.   I   O .                                              S .
10742 155.   I   O .                                              S .
10745 156.   I   O .                                              S .
10748 157.   I   O .                                              S .
10751 158.   I   O .                                              S .
10754 159.   I   O .                                              S .
10757 160.   I   O .                                              S .
10800 161. . I . O . . . . . .                                    S . . . . . .
10803 162.   I   O .                                              S .
10806 163.   I   O .                                              S .
10809 164.   I   O .                                              S .
10812 165.   I   O .                                              S .
10815 166.   I   O .                                            S .
10818 167.   I   O .                                            S .
10821 168.   I   O .                                            S .
10824 169.   I   O .                                            S .
10827 170.   I   O .                                            S .
10830 171. . I . O . . . . . .                                  S. . . . . .
10833 172.   I   O .                                            S .
10836 173.   I   O .                                            S .
10839 174.   I   O .                                            S .
10842 175.   I   O .                                            S .
10845 176.   I   O .                                            S .
10848 177.   I   O .                                            S .
10851 178.   I   O .                                            S .
10854 179.   I   O .                                            S .
10857 180.   I   O .                                            S .
10900 181. . I . O . . . . . .                                  S. . . . . .
10903 182.   I   O .                                            S .
10906 183.   I   O .                                            S .
10909 184.   I   O .                                            S .
10912 185.   I   O .                                            S .
10915 186.   I   O .                                            S .
10918 187.   I   O .                                            S .
10921 188.   I   O .                                            S .
10924 189.   I   O .                                            S .
10927 190.   I   O .                                            S .
10930 191. . I . O . . . . . .                                  S. . . . . .
10933 192.   I   O .                                            S .
10936 193.   I   O .                                            S .
10939 194.   I   O .                                          S .
10942 195.   I   O .                                          S .
10945 196.   I   O .                                          S .
10948 197.   I   O .                                          S .
10951 198.   I   O .                                          S .
10954 199.   I   O .                                          S .
10957 200.   I   O .                                          S .
11000 201. . I . O . . . . . .                                  S. . . . . .
11003 202.   I   O .                                            S .
11006 203.   I   O .                                            S .
11009 204.   I   O .                                            S .
11012 205.   I   O .                                            S .
11015 206.   I   O .                                            S .
11018 207.   I   O .                                            S .
11021 208.   I   O .                                            S .
11024 209.   I   O .                                            S .
11027 210.   I   O .                                            S .
```



PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES

TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1 1.00
HYDROGRAPH AT					
+	C1-54	5.38	1	FLOW	1546.
				TIME	1.45
ROUTED TO					
+	DB5	5.38	1	FLOW	81.
				TIME	4.35
			** PEAK STAGES IN FEET **		
			1	STAGE	2480.22
				TIME	4.35
ROUTED TO					
+	RDB5	5.38	1	FLOW	81.
				TIME	4.55
HYDROGRAPH AT					
+	C1-55	.98	1	FLOW	458.
				TIME	.75
2 COMBINED AT					
+	CP52	6.36	1	FLOW	458.
				TIME	.75
ROUTED TO					
+	RCP52	6.36	1	FLOW	457.
				TIME	.80
HYDROGRAPH AT					
+	C1-65	2.56	1	FLOW	728.
				TIME	1.60
2 COMBINED AT					
+	CP52A	8.92	1	FLOW	1034.
				TIME	1.45
HYDROGRAPH AT					
+	C1-66	.87	1	FLOW	430.
				TIME	.65
2 COMBINED AT					
+	CP64	9.80	1	FLOW	1244.
				TIME	1.35
ROUTED TO					
+	DB6	9.80	1	FLOW	176.
				TIME	4.15
			** PEAK STAGES IN FEET **		
			1	STAGE	1974.88
				TIME	4.15

1

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

	ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
			(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= .00										
	RDB5	MANE	3.00	80.87	273.00	.31	3.00	80.87	273.00	.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9050E+02 EXCESS= .0000E+00 OUTFLOW= .8875E+02 BASIN STORAGE= .1838E+01 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .00										
	RCP52	MANE	1.95	456.76	48.75	.42	3.00	456.64	48.00	.42

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1420E+03 EXCESS= .0000E+00 OUTFLOW= .1412E+03 BASIN STORAGE= .8163E+00 PERCENT ERROR= -.1

*** NORMAL END OF HEC-1 ***

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN   1998                *
*          VERSION 4.1                  *
*                                       *
*  RUN DATE   21JAN08  TIME  16:07:09   *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X                X
XXXXXXX  XXXX     X        XXXXX   X
X     X  X        X                X
X     X  X        X     X          X
X     X  XXXXXXX   XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

              *DIAGRAM
    1         ID    CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN UPDATE
    2         ID    C-1 WATERSHED
    3         ID    RECOMMENDED DRAINAGE SYSTEM WITH ULTIMATE DEVELOPMENT
    4         ID    INPUT FILE = C1SDN3B.DAT
    5         ID    INPUT FILE DATE = APRIL 18, 2002
    6         ID    DESIGN STORM = 100-YEAR 6-HR STORM
    7         ID    STORM DISTRIBUTION = SDN #3
    8         ID    MODELED BY = LOUIS BERGER GROUP (RYAN R. BELSICK, P.E. and SYNDI DUDLEY,
    9         ID    PHD, P.E.)
   10         ID    STORM CENTERING = NO STORM CENTERING
   11         ID
   12         ID    REFERENCED HYDROLOGIC MODELS:
   13         ID    PREDESIGN REPORT FOR THE BLACK MOUNTAIN AND MISSION HILLS DETENTION BASINS
   14         ID    AND OUTFALL STRUCTURES (VTN 1992)
   15         ID    SNWA RIVER MOUNTAINS WATER TREATMENT FACILITY DRAFT TECHNICAL DRAINAGE STUDY
   16         ID    (MONTGOMERY WATSON/CH2MHILL 1997)
   17         ID    EAST C-1 DETENTION BASIN FINAL DESIGN (VTN 1998)
   18         ID    DESIGN MEMORANDUM FOR THE EQUESTRIAN DETENTION BASIN (POGGEMEYER 1994)
   19         ID    DESIGN CALCULATION NOTEBOOK FOR THE BLACK MOUNTAIN DETENTION BASIN
   20         ID    (VTN 1998)
   21         ID
   22         ID    **REVISED C1 BASINS BY G.C. WALLACE, INC.
   23         ID    **REVISED NORTHEAST C-1 DETENTION BASIN STAGE/STORAGE BY G.C. WALLACE, INC.
   24         ID    **INPUT FILE = C1SDN3B-ALT3.DAT
   25         ID    **INPUT FILE DATE = DECEMBER 23, 2004
   26         ID
   27         ID    ***REVISED USING USING SCS TYPE II, 24-HOUR STORM DISTRIBUTION
   28         ID    ***12-13-07
   29         ID
   30         ID
   31         IT      15       0       0     300
   32         IN      15       0       0
   33         IO       5
   34         JR    PREC       1
              *

   35         KK    C1-55
   36         KM    REVISED BASIN AREA TO MATCH TOPOGRAPHY
   37         KM    REVISED LAG TIME TO MATCH NEW BASIN AREA
   38         BA    0.981
   39         PB     3.19
   40         PC    0.000   0.003   0.007   0.010   0.013   0.017   0.020   0.023   0.027   0.030
   41         PC    0.033   0.037   0.040   0.043   0.047   0.050   0.053   0.057   0.060   0.063
   42         PC    0.067   0.070   0.073   0.077   0.080   0.083   0.087   0.090   0.093   0.097
   43         PC    0.100   0.107   0.113   0.120   0.127   0.133   0.140   0.150   0.160   0.170
   44         PC    0.180   0.190   0.200   0.220   0.240   0.270   0.320   0.380   0.500   0.620
   45         PC    0.680   0.730   0.760   0.780   0.800   0.810   0.820   0.830   0.840   0.850
   46         PC    0.860   0.867   0.873   0.880   0.887   0.893   0.900   0.903   0.907   0.910
   47         PC    0.913   0.917   0.920   0.923   0.927   0.930   0.933   0.937   0.940   0.943
   48         PC    0.947   0.950   0.953   0.957   0.960   0.963   0.967   0.970   0.973   0.977
   49         PC    0.980   0.983   0.987   0.990   0.993   0.997   1.000
   50         LS        0    86.9
   51         UD    0.257
              *
```

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  52          KK   RC155
  53          KM   ROUTE C1-55 TO DB6
  54          KM   FACILITY = LEVEE TO NEC1DB
  55          KM   FACILITY # = C1IT 0155
  56          KM   LINING = CONCRETE
  57          RD    3830   0.025    .025       0    TRAP       5       2
              *
  58          KK   C1-65
  59          KM   REVISED BASIN AREA TO MATCH TOPOGRAPHY
  60          KM   REVISED LAG TIME TO MATCH NEW BASIN AREA
  61          KO       3       2
  62          BA   2.564
  63          PB    3.17
  64          LS       0    86.1
  65          UD   0.849
              *
  66          KK   CP52A
  67          KM   COMBINE RCP52 AND C1-65
  68          HC       2
              *
  69          KK   C1-66
  70          KM   REVISED BASIN AREA TO MATCH TOPOGRAPHY
  71          KM   REVISED LAG TIME TO MATCH NEW BASIN AREA
  72          KM   REVISED AREA TO REMOVE AREAS TRIBUTARY TO BET BASIN
  73          BA   0.592
  74          PB    2.97
  75          LS       0    87.6
  76          UD   0.199
              *
  77          KK    CP64
  78          KM   COMBINE C1-66, AND RCP52
  79          KM   NORTHEAST C-1 DETENTION BASIN
  80          HC       2
              *
  81          KK     DB6
  82          KM   FACILITY = NORTHEAST C-1 DETENTION BASIN
  83          KM   FACILITY # = C1IT 0118
  84          KM   STORAGE VOLUME = 310 ACRE-FEET
  85          KM   OUTLET = 36" RCP
  86          KM   REVISED PER GCW DESIGN
  87          KO       3       2
  88          RS       1    STOR      -1
  89          SV       0   11.92   20.04   54.96  103.23  156.48  214.92  278.69  333.63  348.25
  90          SE    1952    1956    1957    1961    1966    1971    1976    1981    1985    1986
  91          SQ       0   73.74   82.45  110.61  137.96  160.72  180.63  198.56  211.81  214.99
              *
  92          ZZ
```

1

SCHEMATIC DIAGRAM OF STREAM NETWORK

```
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    35       C1-55
                V
                V
    52       RC155
                .
                .
    58          .       C1-65
                .          .
                .          .
    66       CP52A..........
                .
                .
    69          .       C1-66
                .          .
                .          .
    77        CP64..........
                V
                V
    81         DB6
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *              JUN   1998               *
 *            VERSION 4.1                *
 *                                       *
 *  RUN DATE   21JAN08  TIME  16:07:09   *
 *                                       *
 *****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

```
                    CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN UPDATE
                    C-1 WATERSHED
                    RECOMMENDED DRAINAGE SYSTEM WITH ULTIMATE DEVELOPMENT
                    INPUT FILE = C1SDN3B.DAT
                    INPUT FILE DATE = APRIL 18, 2002
                    DESIGN STORM = 100-YEAR 6-HR STORM
                    STORM DISTRIBUTION = SDN #3
                    MODELED BY = LOUIS BERGER GROUP (RYAN R. BELSICK, P.E. and SYNDI DUDLEY,
                    PHD, P.E.)
                    STORM CENTERING = NO STORM CENTERING

                    REFERENCED HYDROLOGIC MODELS:
                    PREDESIGN REPORT FOR THE BLACK MOUNTAIN AND MISSION HILLS DETENTION BASINS
                    AND OUTFALL STRUCTURES (VTN 1992)
                    SNWA RIVER MOUNTAINS WATER TREATMENT FACILITY DRAFT TECHNICAL DRAINAGE STUDY
                    (MONTGOMERY WATSON/CH2MHILL 1997)
                    EAST C-1 DETENTION BASIN FINAL DESIGN (VTN 1998)
                    DESIGN MEMORANDUM FOR THE EQUESTRIAN DETENTION BASIN (POGGEMEYER 1994)
                    DESIGN CALCULATION NOTEBOOK FOR THE BLACK MOUNTAIN DETENTION BASIN
                    (VTN 1998)

                    **REVISED C1 BASINS BY G.C. WALLACE, INC.
                    **REVISED NORTHEAST C-1 DETENTION BASIN STAGE/STORAGE BY G.C. WALLACE, INC.
                    **INPUT FILE = C1SDN3B-ALT3.DAT
                    **INPUT FILE DATE = DECEMBER 23, 2004

                    ***REVISED USING USING SCS TYPE II, 24-HOUR STORM DISTRIBUTION
                    ***12-13-07


 33 IO          OUTPUT CONTROL VARIABLES
                      IPRNT           5  PRINT CONTROL
                      IPLOT           0  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                       NMIN          15  MINUTES IN COMPUTATION INTERVAL
                      IDATE       1    0  STARTING DATE
                      ITIME         0000  STARTING TIME
                         NQ          300  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE       4    0  ENDING DATE
                     NDTIME         0245  ENDING TIME
                     ICENT           19  CENTURY MARK

                   COMPUTATION INTERVAL      .25 HOURS
                        TOTAL TIME BASE    74.75 HOURS

          ENGLISH UNITS
               DRAINAGE AREA          SQUARE MILES
               PRECIPITATION DEPTH    INCHES
               LENGTH, ELEVATION      FEET
               FLOW                   CUBIC FEET PER SECOND
               STORAGE VOLUME         ACRE-FEET
               SURFACE AREA           ACRES
               TEMPERATURE            DEGREES FAHRENHEIT

    JP          MULTI-PLAN OPTION
                      NPLAN           1  NUMBER OF PLANS

    JR          MULTI-RATIO OPTION
                    RATIOS OF PRECIPITATION
                   1.00


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


               **************
               *            *
 58 KK         *     C1-65  *
               *            *
               **************

 61 KO          OUTPUT CONTROL VARIABLES
                      IPRNT           3  PRINT CONTROL
                      IPLOT           2  PLOT CONTROL
                      QSCAL          0.  HYDROGRAPH PLOT SCALE

              SUBBASIN RUNOFF DATA

 62 BA          SUBBASIN CHARACTERISTICS
                      TAREA        2.56  SUBBASIN AREA

                PRECIPITATION DATA

 63 PB                STORM        3.17  BASIN TOTAL PRECIPITATION

 40 PI            INCREMENTAL PRECIPITATION PATTERN
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
                    .00       .00       .00       .00       .00       .00       .00       .00       .00       .00
```

.01	.01	.01	.01	.01	.01	.01	.01	.01	.01
.01	.01	.02	.02	.03	.05	.06	.12	.12	.06
.05	.03	.02	.02	.01	.01	.01	.01	.01	.01
.01	.01	.01	.01	.01	.01	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
.00	.00	.00	.00	.00	.00				

64 LS SCS LOSS RATE

STRTL	.32	INITIAL ABSTRACTION
CRVNBR	86.10	CURVE NUMBER
RTIMP	.00	PERCENT IMPERVIOUS AREA

65 UD SCS DIMENSIONLESS UNITGRAPH

TLAG	.85	LAG

***

UNIT HYDROGRAPH
19 END-OF-PERIOD ORDINATES

192.	631.	1142.	1270.	1110.	805.	500.	332.	222.	145.
95.	62.	41.	27.	18.	12.	8.	5.	2.	

*** *** *** *** ***

HYDROGRAPH AT STATION C1-65
FOR PLAN 1, RATIO = 1.00

TOTAL RAINFALL = 3.17, TOTAL LOSS = 1.35, TOTAL EXCESS = 1.82

	PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	74.75-HR
+	(CFS)	(HR)				
			(CFS)			
+	1022.	13.00	405.	125.	42.	40.
			(INCHES) 1.470	1.817	1.817	1.817
			(AC-FT) 201.	248.	248.	248.

CUMULATIVE AREA = 2.56 SQ MI

*** *** *** *** ***

HYDROGRAPH AT STATION C1-65
FOR PLAN 1, RATIO = 1.00

TOTAL RAINFALL = 3.17, TOTAL LOSS = 1.35, TOTAL EXCESS = 1.82

	PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	74.75-HR
+	(CFS)	(HR)				
			(CFS)			
+	1022.	13.00	405.	125.	42.	40.
			(INCHES) 1.470	1.817	1.817	1.817
			(AC-FT) 201.	248.	248.	248.

CUMULATIVE AREA = 2.56 SQ MI

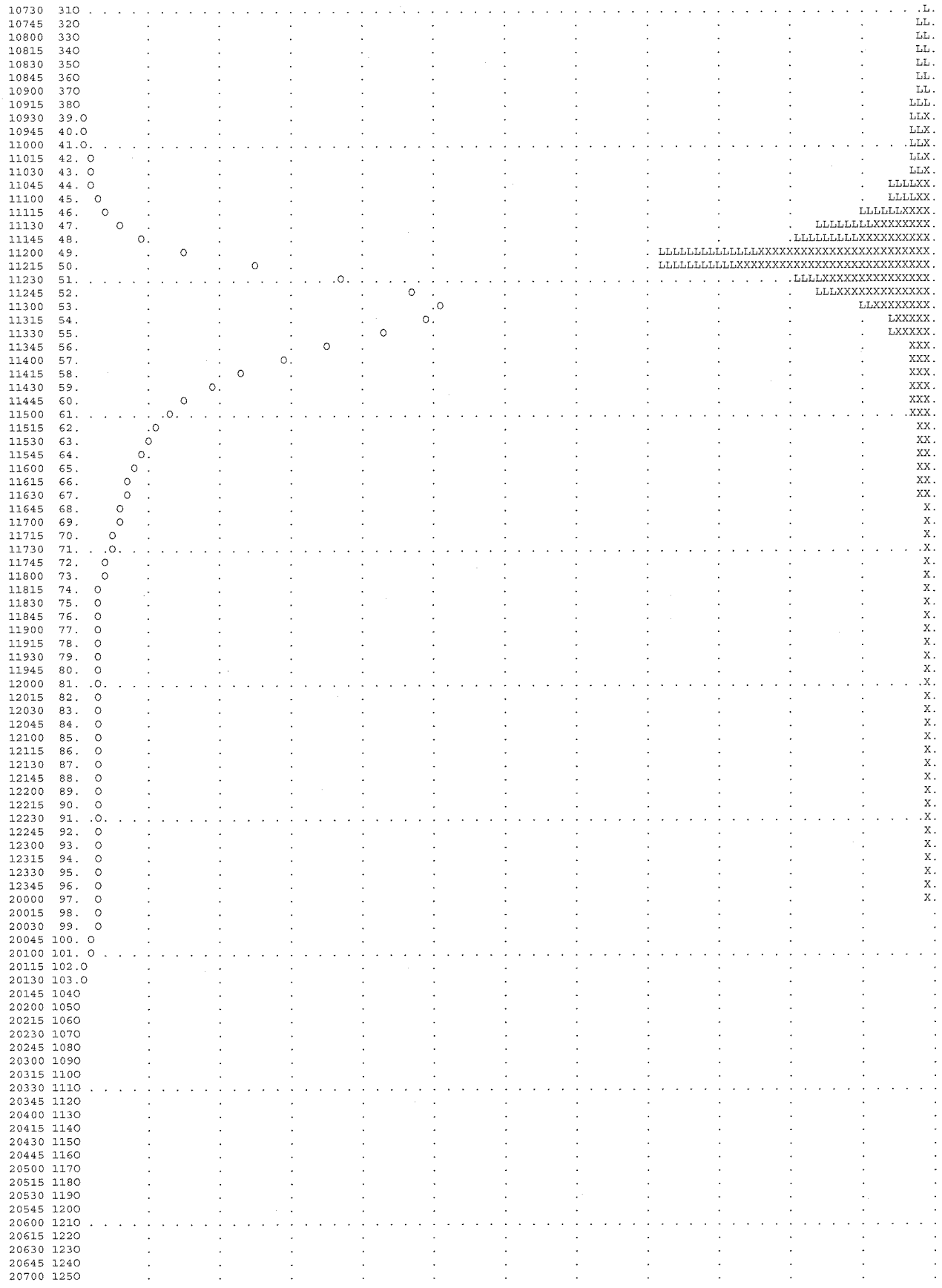
1 STATION C1-65

(O) OUTFLOW

0.	200.	400.	600.	800.	1000.	1200.	0.	0.	0.	0.	0.	0.
										(L) PRECIP,	(X) EXCESS	
.0	.0	.0	.0	.0	.0	.0	.0	.4	.3	.2	.1	.0

DAHRMN PER

```
 10000   1O----------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.
 10015   2O         .         .         .         .         .         .         .         .         .         .         .        L.
 10030   3O         .         .         .         .         .         .         .         .         .         .         .        L.
 10045   4O         .         .         .         .         .         .         .         .         .         .         .        L.
 10100   5O         .         .         .         .         .         .         .         .         .         .         .        L.
 10115   6O         .         .         .         .         .         .         .         .         .         .         .        L.
 10130   7O         .         .         .         .         .         .         .         .         .         .         .        L.
 10145   8O         .         .         .         .         .         .         .         .         .         .         .        L.
 10200   9O         .         .         .         .         .         .         .         .         .         .         .        L.
 10215  10O         .         .         .         .         .         .         .         .         .         .         .        L.
 10230  11O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .L.
 10245  12O         .         .         .         .         .         .         .         .         .         .         .        L.
 10300  13O         .         .         .         .         .         .         .         .         .         .         .        L.
 10315  14O         .         .         .         .         .         .         .         .         .         .         .        L.
 10330  15O         .         .         .         .         .         .         .         .         .         .         .        L.
 10345  16O         .         .         .         .         .         .         .         .         .         .         .        L.
 10400  17O         .         .         .         .         .         .         .         .         .         .         .        L.
 10415  18O         .         .         .         .         .         .         .         .         .         .         .        L.
 10430  19O         .         .         .         .         .         .         .         .         .         .         .        L.
 10445  20O         .         .         .         .         .         .         .         .         .         .         .        L.
 10500  21O . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .L.
 10515  22O         .         .         .         .         .         .         .         .         .         .         .        L.
 10530  23O         .         .         .         .         .         .         .         .         .         .         .        L.
 10545  24O         .         .         .         .         .         .         .         .         .         .         .        L.
 10600  25O         .         .         .         .         .         .         .         .         .         .         .        L.
 10615  26O         .         .         .         .         .         .         .         .         .         .         .        L.
 10630  27O         .         .         .         .         .         .         .         .         .         .         .        L.
 10645  28O         .         .         .         .         .         .         .         .         .         .         .        L.
 10700  29O         .         .         .         .         .         .         .         .         .         .         .        L.
 10715  30O         .         .         .         .         .         .         .         .         .         .         .        L.
```



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20730 1270
20745 1280
20800 1290
20815 1300
20830 1310
20845 1320
20900 1330
20915 1340
20930 1350
20945 1360
21000 1370
21015 1380
21030 1390
21045 1400
21100 1410
21115 1420
21130 1430
21145 1440
21200 1450
21215 1460
21230 1470
21245 1480
21300 1490
21315 1500
21330 1510
21345 1520
21400 1530
21415 1540
21430 1550
21445 1560
21500 1570
21515 1580
21530 1590
21545 1600
21600 1610
21615 1620
21630 1630
21645 1640
21700 1650
21715 1660
21730 1670
21745 1680
21800 1690
21815 1700
21830 1710
21845 1720
21900 1730
21915 1740
21930 1750
21945 1760
22000 1770
22015 1780
22030 1790
22045 1800
22100 1810
22115 1820
22130 1830
22145 1840
22200 1850
22215 1860
22230 1870
22245 1880
22300 1890
22315 1900
22330 1910
22345 1920
30000 1930
30015 1940
30030 1950
30045 1960
30100 1970
30115 1980
30130 1990
30145 2000
30200 2010
30215 2020
30230 2030
30245 2040
30300 2050
30315 2060
30330 2070
30345 2080
30400 2090
30415 2100
30430 2110
30445 2120
30500 2130
30515 2140
30530 2150
30545 2160
30600 2170
30615 2180
30630 2190
30645 2200

```
30700 2210 . . . . . .
30715 2220 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
30730 2230 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
30745 2240 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
30800 2250 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
30815 2260 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
30830 2270 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
30845 2280 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
30900 2290 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
30915 2300 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
30930 2310 . . . . . .
30945 2320 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31000 2330 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31015 2340 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31030 2350 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31045 2360 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31100 2370 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31115 2380 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31130 2390 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31145 2400 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31200 2410 . . . . . .
31215 2420 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31230 2430 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31245 2440 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31300 2450 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31315 2460 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31330 2470 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31345 2480 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31400 2490 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31415 2500 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31430 2510 . . . . . .
31445 2520 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31500 2530 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31515 2540 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31530 2550 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31545 2560 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31600 2570 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31615 2580 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31630 2590 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31645 2600 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31700 2610 . . . . . .
31715 2620 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31730 2630 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31745 2640 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31800 2650 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31815 2660 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31830 2670 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31845 2680 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31900 2690 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31915 2700 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
31930 2710 . . . . . .
31945 2720 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
32000 2730 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
32015 2740 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
32030 2750 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
32045 2760 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
32100 2770 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
32115 2780 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
32130 2790 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
32145 2800 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
32200 2810 . . . . . .
32215 2820 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
32230 2830 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
32245 2840 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
32300 2850 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
32315 2860 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
32330 2870 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
32345 2880 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
40000 2890 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
40015 2900 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
40030 2910 . . . . . .
40045 2920 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
40100 2930 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
40115 2940 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
40130 2950 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
40145 2960 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
40200 2970 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
40215 2980 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
40230 2990 .       .       .       .       .       .       .       .       .       .       .       .       .       .       .
40245 3000---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.---------.
1
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*** ***

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          **************
          *            *
 81 KK    *       DB6  *
          *            *
          **************
```

```
 87 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          3  PRINT CONTROL
```

```
                    IPLOT          2  PLOT CONTROL
                    QSCAL          0.  HYDROGRAPH PLOT SCALE

                HYDROGRAPH ROUTING DATA

   88 RS        STORAGE ROUTING
                     NSTPS          1  NUMBER OF SUBREACHES
                      ITYP       STOR  TYPE OF INITIAL CONDITION
                    RSVRIC      -1.00  INITIAL CONDITION
                         X        .00 WORKING R AND D COEFFICIENT

   89 SV          STORAGE          .0      11.9      20.0      55.0     103.2     156.5     214.9     278.7     333.6     348.3

   90 SE          ELEVATION    1952.00   1956.00   1957.00   1961.00   1966.00   1971.00   1976.00   1981.00   1985.00   1986.00

   91 SQ          DISCHARGE         0.       74.       82.      111.      138.      161.      181.      199.      212.      215.

                                                                 ***

       ***            ***            ***            ***            ***

                        HYDROGRAPH AT STATION      DB6
                          FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR       24-HR       72-HR     74.75-HR
+   (CFS)       (HR)
                          (CFS)
+    192.     16.75                   190.        165.         68.         65.
                         (INCHES)     .427       1.487       1.828       1.828
                         (AC-FT)       94.        328.        403.        403.

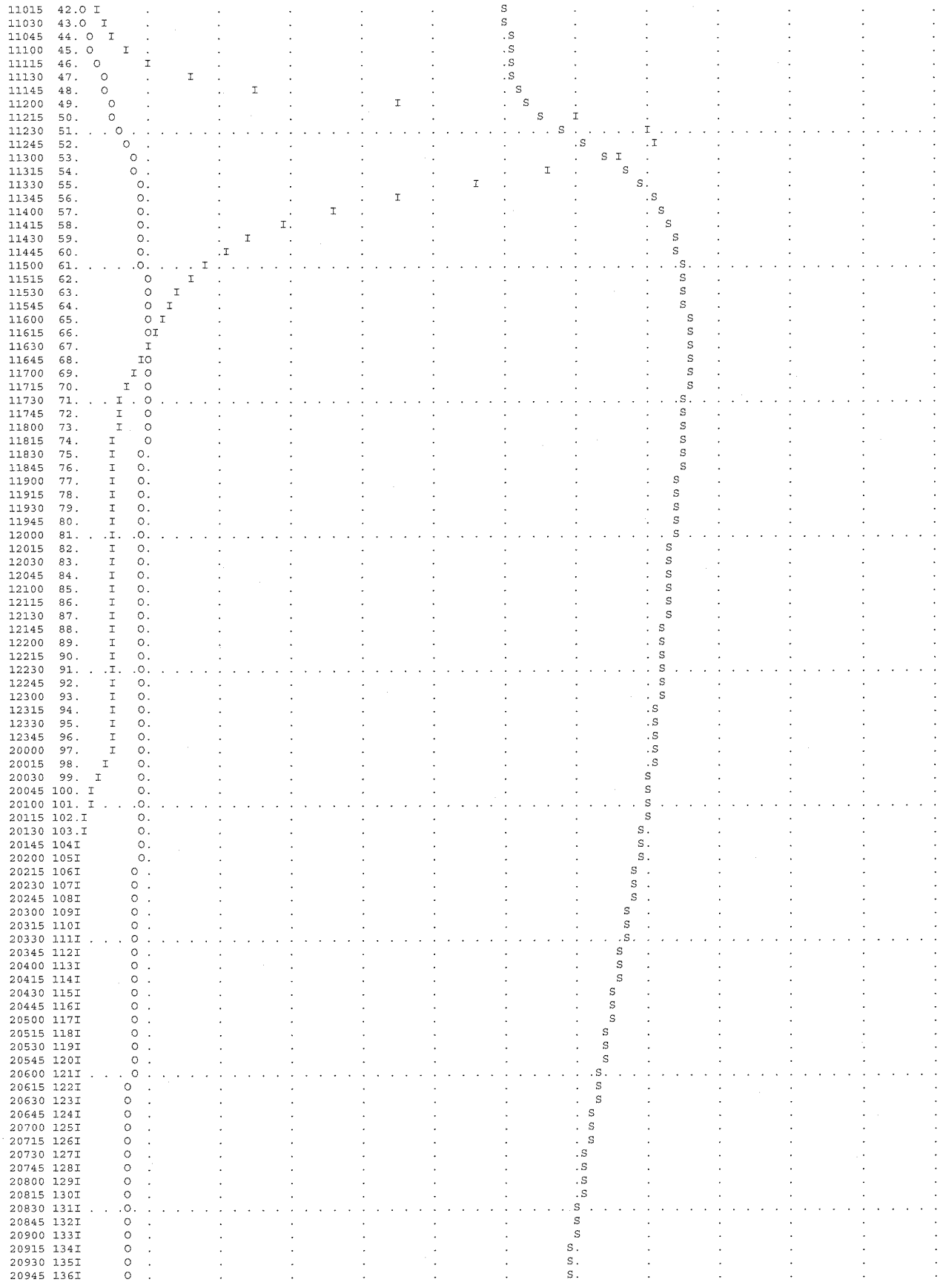
 PEAK STORAGE   TIME                       MAXIMUM AVERAGE STORAGE
                                      6-HR       24-HR       72-HR     74.75-HR
+  (AC-FT)      (HR)
     256.     16.75                   248.        178.         63.         61.

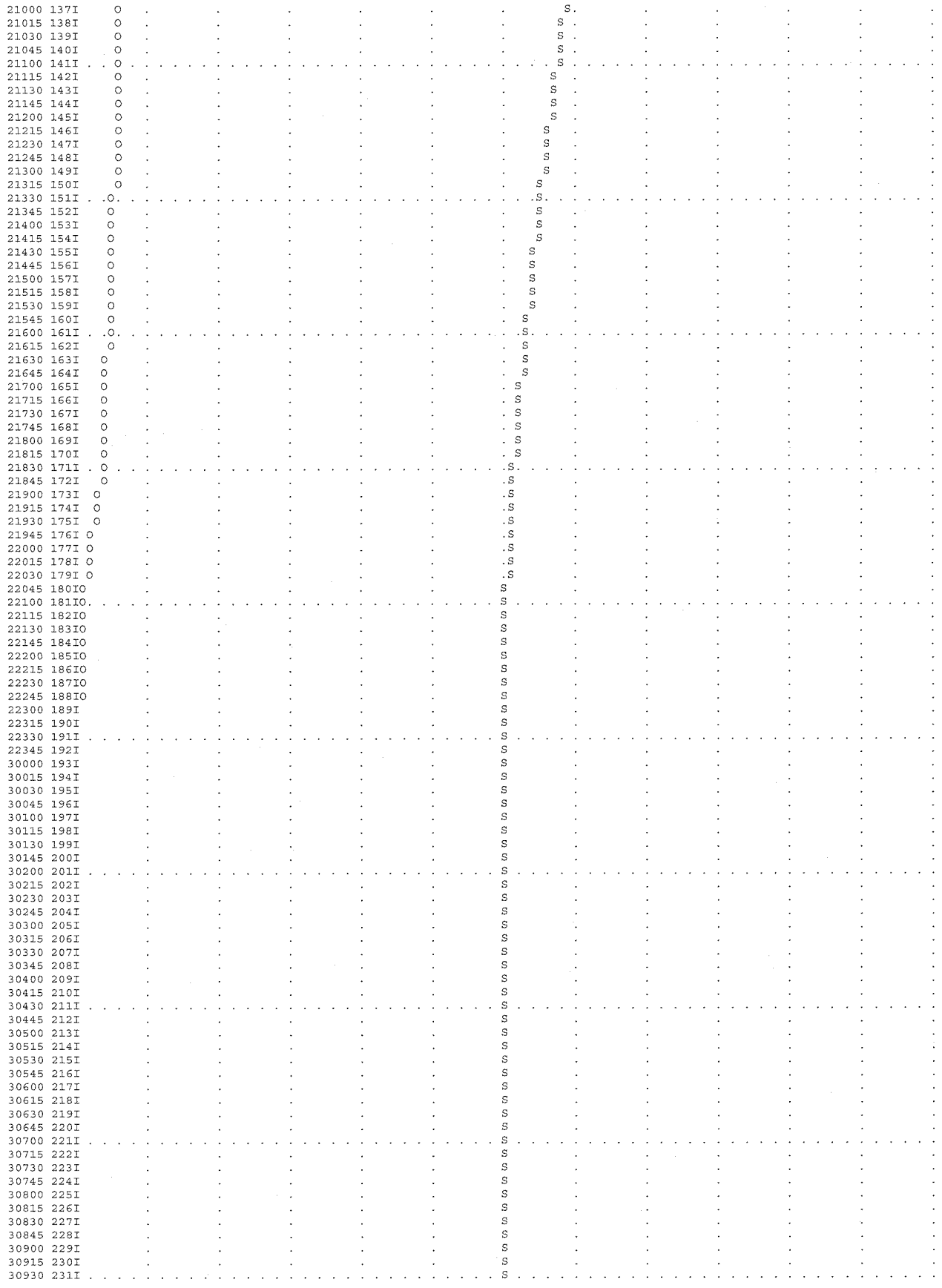
  PEAK STAGE    TIME                       MAXIMUM AVERAGE STAGE
                                      6-HR       24-HR       72-HR     74.75-HR
+   (FEET)      (HR)
   1979.25     16.75                1978.59     1972.59     1959.72     1959.43

                        CUMULATIVE AREA =    4.14 SQ MI

1                                                          STATION      DB6

                      (I) INFLOW,   (O) OUTFLOW
          0.      200.      400.      600.      800.     1000.     1200.     1400.     1600.     1800.        0.        0.        0.
                                                                                  (S) STORAGE
          0.        0.        0.        0.        0.        0.        0.      100.      200.      300.        0.        0.        0.
 DAHRMN PER
  10000   1I---------.---------.---------.---------.---------.---------S---------.---------.---------.---------.---------.---------.
  10015   2I         .         .         .         .         .         S         .         .         .         .         .         .
  10030   3I         .         .         .         .         .         S         .         .         .         .         .         .
  10045   4I         .         .         .         .         .         S         .         .         .         .         .         .
  10100   5I         .         .         .         .         .         S         .         .         .         .         .         .
  10115   6I         .         .         .         .         .         S         .         .         .         .         .         .
  10130   7I         .         .         .         .         .         S         .         .         .         .         .         .
  10145   8I         .         .         .         .         .         S         .         .         .         .         .         .
  10200   9I         .         .         .         .         .         S         .         .         .         .         .         .
  10215  10I         .         .         .         .         .         S         .         .         .         .         .         .
  10230  11I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  10245  12I         .         .         .         .         .         S         .         .         .         .         .         .
  10300  13I         .         .         .         .         .         S         .         .         .         .         .         .
  10315  14I         .         .         .         .         .         S         .         .         .         .         .         .
  10330  15I         .         .         .         .         .         S         .         .         .         .         .         .
  10345  16I         .         .         .         .         .         S         .         .         .         .         .         .
  10400  17I         .         .         .         .         .         S         .         .         .         .         .         .
  10415  18I         .         .         .         .         .         S         .         .         .         .         .         .
  10430  19I         .         .         .         .         .         S         .         .         .         .         .         .
  10445  20I         .         .         .         .         .         S         .         .         .         .         .         .
  10500  21I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  10515  22I         .         .         .         .         .         S         .         .         .         .         .         .
  10530  23I         .         .         .         .         .         S         .         .         .         .         .         .
  10545  24I         .         .         .         .         .         S         .         .         .         .         .         .
  10600  25I         .         .         .         .         .         S         .         .         .         .         .         .
  10615  26I         .         .         .         .         .         S         .         .         .         .         .         .
  10630  27I         .         .         .         .         .         S         .         .         .         .         .         .
  10645  28I         .         .         .         .         .         S         .         .         .         .         .         .
  10700  29I         .         .         .         .         .         S         .         .         .         .         .         .
  10715  30I         .         .         .         .         .         S         .         .         .         .         .         .
  10730  31I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
  10745  32I         .         .         .         .         .         S         .         .         .         .         .         .
  10800  33I         .         .         .         .         .         S         .         .         .         .         .         .
  10815  34I         .         .         .         .         .         S         .         .         .         .         .         .
  10830  35I         .         .         .         .         .         S         .         .         .         .         .         .
  10845  36OI        .         .         .         .         .         S         .         .         .         .         .         .
  10900  37OI        .         .         .         .         .         S         .         .         .         .         .         .
  10915  38OI        .         .         .         .         .         S         .         .         .         .         .         .
  10930  39O I       .         .         .         .         .         S         .         .         .         .         .         .
  10945  40.OI       .         .         .         .         .         S         .         .         .         .         .         .
  11000  41.O.I. . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
```




21000 137I
21015 138I
21030 139I
21045 140I
21100 141I
21115 142I
21130 143I
21145 144I
21200 145I
21215 146I
21230 147I
21245 148I
21300 149I
21315 150I
21330 151I
21345 152I
21400 153I
21415 154I
21430 155I
21445 156I
21500 157I
21515 158I
21530 159I
21545 160I
21600 161I
21615 162I
21630 163I
21645 164I
21700 165I
21715 166I
21730 167I
21745 168I
21800 169I
21815 170I
21830 171I
21845 172I
21900 173I
21915 174I
21930 175I
21945 176I
22000 177I
22015 178I
22030 179I
22045 180I
22100 181I
22115 182I
22130 183I
22145 184I
22200 185I
22215 186I
22230 187I
22245 188I
22300 189I
22315 190I
22330 191I
22345 192I
30000 193I
30015 194I
30030 195I
30045 196I
30100 197I
30115 198I
30130 199I
30145 200I
30200 201I
30215 202I
30230 203I
30245 204I
30300 205I
30315 206I
30330 207I
30345 208I
30400 209I
30415 210I
30430 211I
30445 212I
30500 213I
30515 214I
30530 215I
30545 216I
30600 217I
30615 218I
30630 219I
30645 220I
30700 221I
30715 222I
30730 223I
30745 224I
30800 225I
30815 226I
30830 227I
30845 228I
30900 229I
30915 230I
30930 231I

```
 30945 232I          .         .         .         .         .         S         .         .         .         .         .         .
 31000 233I          .         .         .         .         .         S         .         .         .         .         .         .
 31015 234I          .         .         .         .         .         S         .         .         .         .         .         .
 31030 235I          .         .         .         .         .         S         .         .         .         .         .         .
 31045 236I          .         .         .         .         .         S         .         .         .         .         .         .
 31100 237I          .         .         .         .         .         S         .         .         .         .         .         .
 31115 238I          .         .         .         .         .         S         .         .         .         .         .         .
 31130 239I          .         .         .         .         .         S         .         .         .         .         .         .
 31145 240I          .         .         .         .         .         S         .         .         .         .         .         .
 31200 241I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 31215 242I          .         .         .         .         .         S         .         .         .         .         .         .
 31230 243I          .         .         .         .         .         S         .         .         .         .         .         .
 31245 244I          .         .         .         .         .         S         .         .         .         .         .         .
 31300 245I          .         .         .         .         .         S         .         .         .         .         .         .
 31315 246I          .         .         .         .         .         S         .         .         .         .         .         .
 31330 247I          .         .         .         .         .         S         .         .         .         .         .         .
 31345 248I          .         .         .         .         .         S         .         .         .         .         .         .
 31400 249I          .         .         .         .         .         S         .         .         .         .         .         .
 31415 250I          .         .         .         .         .         S         .         .         .         .         .         .
 31430 251I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 31445 252I          .         .         .         .         .         S         .         .         .         .         .         .
 31500 253I          .         .         .         .         .         S         .         .         .         .         .         .
 31515 254I          .         .         .         .         .         S         .         .         .         .         .         .
 31530 255I          .         .         .         .         .         S         .         .         .         .         .         .
 31545 256I          .         .         .         .         .         S         .         .         .         .         .         .
 31600 257I          .         .         .         .         .         S         .         .         .         .         .         .
 31615 258I          .         .         .         .         .         S         .         .         .         .         .         .
 31630 259I          .         .         .         .         .         S         .         .         .         .         .         .
 31645 260I          .         .         .         .         .         S         .         .         .         .         .         .
 31700 261I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 31715 262I          .         .         .         .         .         S         .         .         .         .         .         .
 31730 263I          .         .         .         .         .         S         .         .         .         .         .         .
 31745 264I          .         .         .         .         .         S         .         .         .         .         .         .
 31800 265I          .         .         .         .         .         S         .         .         .         .         .         .
 31815 266I          .         .         .         .         .         S         .         .         .         .         .         .
 31830 267I          .         .         .         .         .         S         .         .         .         .         .         .
 31845 268I          .         .         .         .         .         S         .         .         .         .         .         .
 31900 269I          .         .         .         .         .         S         .         .         .         .         .         .
 31915 270I          .         .         .         .         .         S         .         .         .         .         .         .
 31930 271I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 31945 272I          .         .         .         .         .         S         .         .         .         .         .         .
 32000 273I          .         .         .         .         .         S         .         .         .         .         .         .
 32015 274I          .         .         .         .         .         S         .         .         .         .         .         .
 32030 275I          .         .         .         .         .         S         .         .         .         .         .         .
 32045 276I          .         .         .         .         .         S         .         .         .         .         .         .
 32100 277I          .         .         .         .         .         S         .         .         .         .         .         .
 32115 278I          .         .         .         .         .         S         .         .         .         .         .         .
 32130 279I          .         .         .         .         .         S         .         .         .         .         .         .
 32145 280I          .         .         .         .         .         S         .         .         .         .         .         .
 32200 281I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 32215 282I          .         .         .         .         .         S         .         .         .         .         .         .
 32230 283I          .         .         .         .         .         S         .         .         .         .         .         .
 32245 284I          .         .         .         .         .         S         .         .         .         .         .         .
 32300 285I          .         .         .         .         .         S         .         .         .         .         .         .
 32315 286I          .         .         .         .         .         S         .         .         .         .         .         .
 32330 287I          .         .         .         .         .         S         .         .         .         .         .         .
 32345 288I          .         .         .         .         .         S         .         .         .         .         .         .
 40000 289I          .         .         .         .         .         S         .         .         .         .         .         .
 40015 290I          .         .         .         .         .         S         .         .         .         .         .         .
 40030 291I. . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 40045 292I          .         .         .         .         .         S         .         .         .         .         .         .
 40100 293I          .         .         .         .         .         S         .         .         .         .         .         .
 40115 294I          .         .         .         .         .         S         .         .         .         .         .         .
 40130 295I          .         .         .         .         .         S         .         .         .         .         .         .
 40145 296I          .         .         .         .         .         S         .         .         .         .         .         .
 40200 297I          .         .         .         .         .         S         .         .         .         .         .         .
 40215 298I          .         .         .         .         .         S         .         .         .         .         .         .
 40230 299I          .         .         .         .         .         S         .         .         .         .         .         .
 40245 300I----------.---------.---------.---------.---------.---------S---------.---------.---------.---------.---------.---------.
1
1
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PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1 1.00
HYDROGRAPH AT					
+	C1-55	.98	1	FLOW	583.
				TIME	12.25
ROUTED TO					
+	RC155	.98	1	FLOW	557.
				TIME	12.50
HYDROGRAPH AT					
+	C1-65	2.56	1	FLOW	1022.
				TIME	13.00
2 COMBINED AT					
+	CP52A	3.54	1	FLOW	1399.

```
                                        TIME        12.75

 HYDROGRAPH AT
+                   C1-66       .59     1   FLOW         353.
                                            TIME        12.25

  2 COMBINED AT
+                    CP64      4.14     1   FLOW        1619.
                                            TIME        12.75

 ROUTED TO
+                     DB6      4.14     1   FLOW         192.
                                            TIME        16.75

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE     1979.25
                                        TIME        16.75
1
                                        SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                            (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                                INTERPOLATED TO
                                                                               COMPUTATION INTERVAL
           ISTAQ    ELEMENT      DT        PEAK     TIME TO      VOLUME       DT        PEAK     TIME TO      VOLUME
                                                      PEAK                                          PEAK

                                (MIN)      (CFS)      (MIN)      (IN)      (MIN)      (CFS)      (MIN)        (IN)

          FOR PLAN = 1  RATIO=  .00
             RC155  MANE         3.85     581.89     739.57      1.90      15.00     557.43     750.00        1.90

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .9929E+02 EXCESS= .0000E+00 OUTFLOW= .9930E+02 BASIN STORAGE= .1577E-02 PERCENT ERROR=     .0



 *** NORMAL END OF HEC-1 ***
```

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN  1998                 *
*          VERSION 4.1                  *
*                                       *
*  RUN DATE   21JAN08  TIME  16:05:16   *
*                                       *
*****************************************
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```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X               X
XXXXXXX  XXXX     X         XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

              *DIAGRAM
    1         ID    CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN UPDATE
    2         ID    C-1 WATERSHED
    3         ID    RECOMMENDED DRAINAGE SYSTEM WITH ULTIMATE DEVELOPMENT
    4         ID    INPUT FILE = C1SDN4B.DAT
    5         ID    INPUT FILE DATE = APRIL 18, 2002
    6         ID    DESIGN STORM = 100-YEAR 6-HR STORM
    7         ID    STORM DISTRIBUTION = SDN #4
    8         ID    MODELED BY = LOUIS BERGER GROUP (RYAN R. BELSICK, P.E. and SYNDI DUDLEY,
    9         ID    PHD, P.E.)
   10         ID    STORM CENTERING = NO STORM CENTERING
   11         ID
   12         ID    REFERENCED HYDROLOGIC MODELS:
   13         ID    PREDESIGN REPORT FOR THE BLACK MOUNTAIN AND MISSION HILLS DETENTION BASINS
   14         ID    AND OUTFALL STRUCTURES (VTN 1992)
   15         ID    SNWA RIVER MOUNTAINS WATER TREATMENT FACILITY DRAFT TECHNICAL DRAINAGE STUDY
   16         ID    (MONTGOMERY WATSON/CH2MHILL 1997)
   17         ID    EAST C-1 DETENTION BASIN FINAL DESIGN (VTN 1998)
   18         ID    DESIGN MEMORANDUM FOR THE EQUESTRIAN DETENTION BASIN (POGGEMEYER 1994)
   19         ID    DESIGN CALCULATION NOTEBOOK FOR THE BLACK MOUNTAIN DETENTION BASIN
   20         ID    (VTN 1998)
   21         ID
   22         ID    **REVISED C1 BASINS BY G.C. WALLACE, INC.
   23         ID    **REVISED NORTHEAST C-1 DETENTION BASIN STAGE/STORAGE BY G.C. WALLACE, INC.
   24         ID    **INPUT FILE = C1SDN4B-ALT3.DAT
   25         ID    **INPUT FILE DATE = DECEMBER 23, 2004
   26         ID
   27         ID    JR CARDS CONTAIN DARFS BASED ON THE FOLLOWING VALUES:
   28         ID
   29         ID    ***REVISED USING USING SCS TYPE II, 24-HOUR STORM DISTRIBUTION
   30         ID    ***12-13-07
   31         ID
   32         ID
   33         ID
   34         IT      15       0       0     300
   35         IN      15       0       0
   36         IO       5
   37         JR    PREC       1

   38         KK    C1-54
   39         KM    REVISED BASIN AREA TO MATCH TOPOGRAPHY
   40         KM    REVISED LAG TIME TO MATCH NEW BASIN AREA
   41         BA    5.379
   42         PB     3.41
   43         PC    0.000   0.003   0.007   0.010   0.013   0.017   0.020   0.023   0.027   0.030
   44         PC    0.033   0.037   0.040   0.043   0.047   0.050   0.053   0.057   0.060   0.063
   45         PC    0.067   0.070   0.073   0.077   0.080   0.083   0.087   0.090   0.093   0.097
   46         PC    0.100   0.107   0.113   0.120   0.127   0.133   0.140   0.150   0.160   0.170
   47         PC    0.180   0.190   0.200   0.220   0.240   0.270   0.320   0.380   0.500   0.620
   48         PC    0.680   0.730   0.760   0.780   0.800   0.810   0.820   0.830   0.840   0.850
   49         PC    0.860   0.867   0.873   0.880   0.887   0.893   0.900   0.903   0.907   0.910
   50         PC    0.913   0.917   0.920   0.923   0.927   0.930   0.933   0.937   0.940   0.943
   51         PC    0.947   0.950   0.953   0.957   0.960   0.963   0.967   0.970   0.973   0.977
   52         PC    0.980   0.983   0.987   0.990   0.993   0.997   1.000
   53         LS        0    84.3
```

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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  54          UD   0.720
              *

  55          KK     DB5
  56          KM   FACILITY = EAST C-1 DETENTION BASIN
  57          KM   FACILITY # = C1DC 0303
  58          KM   STORAGE VOLUME = 880 ACRE-FEET
  59          KM   OUTLET = 48" RCP
  60          KO        3
  61          RS        1    STOR      -1
  62          SV     0.02     1.85    10.35    24.60    45.03    70.78   104.85   148.32   204.08   271.64
  63          SV   362.21   482.58   551.62   625.31   704.75   789.13   879.88   975.68  1103.9   1414.3
  64          SE   2446.0   2450.0   2454.0   2458.0   2462.0   2466.0   2470.0   2474.0   2478.0   2482.0
  65          SE   2486.0   2490.0   2492.0   2494.0   2496.0   2498.0   2500.0   2502.2   2506.0   2510.0
  66          SQ        0    24.59    37.30    46.66    54.44    61.24    67.35    72.96    78.16    83.04
  67          SQ    87.65    92.02    94.14    96.20    98.22   100.21   102.15   104.06   107.77   111.36
  68          SE   2446.0   2450.0   2454.0   2458.0   2462.0   2466.0   2470.0   2474.0   2478.0   2482.0
  69          SE   2486.0   2490.0   2492.0   2494.0   2496.0   2498.0   2500.0   2502.2   2506.0   2510.0
              *

  70          KK    RDB5
  71          KM   ROUTE DB5 TO C1-55
  72          KM   FACILITY = C-1 CHANNEL - ITHACA
  73          KM   FACILITY # = C1DC 0226 TO C1DC 0170
  74          KM   TYPE OF FACILTIY = CONCRETE
  75          RD    6750   0.029    .025       0    TRAP      20       3
              *

  76          KK   C1-55
  77          KM   REVISED BASIN AREA TO MATCH TOPOGRAPHY
  78          KM   REVISED LAG TIME TO MATCH NEW BASIN AREA
  79          BA   0.981
  80          PB    3.19
  81          LS       0    86.9
  82          UD   0.257
              *

  83          KK    CP52
  84          KM   COMBINE RDB5 AND C1-55
  85          HC        2
              *

  86          KK   RCP52
  87          KM   ROUTE CP52 TO DB6
  88          KM   FACILITY = LEVEE TO NEC1DB
  89          KM   FACILITY # = C1IT 0155
  90          KM   LINING = CONCRETE
  91          RD    3830   0.025    .025       0    TRAP       5       2
              *
1                                        HEC-1 INPUT                                                PAGE  3

LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  92          KK   C1-65
  93          KM   REVISED BASIN AREA TO MATCH TOPOGRAPHY
  94          KM   REVISED LAG TIME TO MATCH NEW BASIN AREA
  95          BA   2.564
  96          PB    3.17
  97          LS       0    86.1
  98          UD   0.849
              *

  99          KK   CP52A
 100          KM   COMBINE RCP52 AND C1-65
 101          HC        2
              *

 102          KK   C1-66
 103          KM   REVISED BASIN AREA TO MATCH TOPOGRAPHY
 104          KM   REVISED LAG TIME TO MATCH NEW BASIN AREA
 105          BA   0.873
 106          PB    2.97
 107          LS       0    87.6
 108          UD   0.199
              *

 109          KK    CP64
 110          KM   COMBINE C1-66, AND RCP52
 111          KM   NORTHEAST C-1 DETENTION BASIN
 112          HC        2
              *

 113          KK     DB6
 114          KM   FACILITY = NORTHEAST C-1 DETENTION BASIN
 115          KM   FACILITY # = C1IT 0118
 116          KM   STORAGE VOLUME = 310 ACRE-FEET
 117          KM   OUTLET = 48" RCP
 118          KM   REVISED PER GCW DESIGN
 119          KO        3         2
 120          RS        1    STOR      -1
 121          SV        0   11.92    20.04    54.96   103.23   156.48   214.92   278.69   333.63   348.25
 122          SE     1952     1956     1957     1961     1966     1971     1976     1981     1985     1986
```

```
          123           SQ       0   73.74   82.45  110.61  137.96  160.72  180.63  198.56  211.81  214.99
                        *
          124           ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK

 INPUT
  LINE      (V) ROUTING           (--->) DIVERSION OR PUMP FLOW

   NO.      (.) CONNECTOR         (<---) RETURN OF DIVERTED OR PUMPED FLOW

    38       C1-54
               V
               V
    55         DB5
               V
               V
    70        RDB5
               .
               .
    76          .        C1-55
                .           .
                .           .
    83        CP52.............
               V
               V
    86        RCP52
               .
               .
    92          .        C1-65
                .           .
                .           .
    99        CP52A............
               .
               .
   102          .        C1-66
                .           .
                .           .
   109        CP64.............
               V
               V
   113         DB6

 (***) RUNOFF ALSO COMPUTED AT THIS LOCATION
1****************************************
 *                                      *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
 *               JUN  1998              *
 *            VERSION 4.1               *
 *                                      *
 *  RUN DATE   21JAN08  TIME  16:05:16  *
 *                                      *
 ****************************************

 ****************************************
 *                                      *
 *    U.S. ARMY CORPS OF ENGINEERS      *
 *    HYDROLOGIC ENGINEERING CENTER     *
 *          609 SECOND STREET           *
 *       DAVIS, CALIFORNIA 95616        *
 *           (916) 756-1104             *
 *                                      *
 ****************************************

CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN UPDATE
C-1 WATERSHED
RECOMMENDED DRAINAGE SYSTEM WITH ULTIMATE DEVELOPMENT
INPUT FILE = C1SDN4B.DAT
INPUT FILE DATE = APRIL 18, 2002
DESIGN STORM = 100-YEAR 6-HR STORM
STORM DISTRIBUTION = SDN #4
MODELED BY = LOUIS BERGER GROUP (RYAN R. BELSICK, P.E. and SYNDI DUDLEY,
PHD, P.E.)
STORM CENTERING = NO STORM CENTERING

REFERENCED HYDROLOGIC MODELS:
PREDESIGN REPORT FOR THE BLACK MOUNTAIN AND MISSION HILLS DETENTION BASINS
AND OUTFALL STRUCTURES (VTN 1992)
SNWA RIVER MOUNTAINS WATER TREATMENT FACILITY DRAFT TECHNICAL DRAINAGE STUDY
(MONTGOMERY WATSON/CH2MHILL 1997)
EAST C-1 DETENTION BASIN FINAL DESIGN (VTN 1998)
DESIGN MEMORANDUM FOR THE EQUESTRIAN DETENTION BASIN (POGGEMEYER 1994)
DESIGN CALCULATION NOTEBOOK FOR THE BLACK MOUNTAIN DETENTION BASIN
(VTN 1998)

**REVISED C1 BASINS BY G.C. WALLACE, INC.
**REVISED NORTHEAST C-1 DETENTION BASIN STAGE/STORAGE BY G.C. WALLACE, INC.
**INPUT FILE = C1SDN4B-ALT3.DAT
**INPUT FILE DATE = DECEMBER 23, 2004

JR CARDS CONTAIN DARFS BASED ON THE FOLLOWING VALUES:

***REVISED USING USING SCS TYPE II, 24-HOUR STORM DISTRIBUTION
***12-13-07


    36 IO          OUTPUT CONTROL VARIABLES
                        IPRNT          5  PRINT CONTROL
                        IPLOT          0  PLOT CONTROL
                        QSCAL          0.  HYDROGRAPH PLOT SCALE
```

```
 IT          HYDROGRAPH TIME DATA
                   NMIN          15  MINUTES IN COMPUTATION INTERVAL
                  IDATE      1    0  STARTING DATE
                  ITIME        0000  STARTING TIME
                     NQ         300  NUMBER OF HYDROGRAPH ORDINATES
                 NDDATE      4    0  ENDING DATE
                 NDTIME        0245  ENDING TIME
                  ICENT          19  CENTURY MARK

               COMPUTATION INTERVAL     .25 HOURS
                  TOTAL TIME BASE   74.75 HOURS

      ENGLISH UNITS
           DRAINAGE AREA          SQUARE MILES
           PRECIPITATION DEPTH    INCHES
           LENGTH, ELEVATION      FEET
           FLOW                   CUBIC FEET PER SECOND
           STORAGE VOLUME         ACRE-FEET
           SURFACE AREA           ACRES
           TEMPERATURE            DEGREES FAHRENHEIT

 JP          MULTI-PLAN OPTION
                NPLAN           1  NUMBER OF PLANS

 JR          MULTI-RATIO OPTION
              RATIOS OF PRECIPITATION
             1.00


*** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** *** ***


          **************
          *            *
 55 KK    *       DB5  *
          *            *
          **************

 60 KO          OUTPUT CONTROL VARIABLES
                   IPRNT          3  PRINT CONTROL
                   IPLOT          0  PLOT CONTROL
                   QSCAL          0.  HYDROGRAPH PLOT SCALE

             HYDROGRAPH ROUTING DATA

 61 RS          STORAGE ROUTING
                   NSTPS          1  NUMBER OF SUBREACHES
                    ITYP       STOR  TYPE OF INITIAL CONDITION
                  RSVRIC      -1.00  INITIAL CONDITION
                       X        .00 WORKING R AND D COEFFICIENT

 62 SV            STORAGE         .0      1.9     10.4     24.6     45.0     70.8    104.8    148.3    204.1    271.6
                               362.2    482.6    551.6    625.3    704.8    789.1    879.9    975.7   1103.9   1414.3

 64 SE            ELEVATION  2446.00  2450.00  2454.00  2458.00  2462.00  2466.00  2470.00  2474.00  2478.00  2482.00
                             2486.00  2490.00  2492.00  2494.00  2496.00  2498.00  2500.00  2502.20  2506.00  2510.00

 66 SQ            DISCHARGE       0.      25.      37.      47.      54.      61.      67.      73.      78.      83.
                              88.      92.      94.      96.      98.     100.     102.     104.     108.     111.

 68 SE            ELEVATION  2446.00  2450.00  2454.00  2458.00  2462.00  2466.00  2470.00  2474.00  2478.00  2482.00
                             2486.00  2490.00  2492.00  2494.00  2496.00  2498.00  2500.00  2502.20  2506.00  2510.00

                                                      ***

                                  COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

            STORAGE        .02     1.85    10.35    24.60    45.03    70.78   104.85   148.32   204.08   271.64
            OUTFLOW        .00    24.59    37.30    46.66    54.44    61.24    67.35    72.96    78.16    83.04
          ELEVATION    2446.00  2450.00  2454.00  2458.00  2462.00  2466.00  2470.00  2474.00  2478.00  2482.00

            STORAGE     362.21   482.58   551.62   625.31   704.75   789.13   879.88   975.68  1103.90  1414.30
            OUTFLOW      87.65    92.02    94.14    96.20    98.22   100.21   102.15   104.06   107.77   111.36
          ELEVATION    2486.00  2490.00  2492.00  2494.00  2496.00  2498.00  2500.00  2502.20  2506.00  2510.00

      ***             ***             ***             ***             ***

                          HYDROGRAPH AT STATION      DB5
                            FOR PLAN 1, RATIO = 1.00

  PEAK FLOW     TIME                          MAXIMUM AVERAGE FLOW
                                      6-HR        24-HR        72-HR     74.75-HR
+   (CFS)       (HR)
                          (CFS)
+      90.     24.75                  90.          89.          73.          70.
                          (INCHES)   .156         .616        1.511        1.511
                          (AC-FT)     45.         177.         434.         434.

  PEAK STORAGE  TIME                          MAXIMUM AVERAGE STORAGE
                                      6-HR        24-HR        72-HR     74.75-HR
+  (AC-FT)      (HR)
      439.     24.75                 433.         402.         252.         242.
```

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	74.75-HR
+ (FEET)	(HR)				
2488.55	24.75	2488.36	2487.29	2477.35	2476.19

CUMULATIVE AREA = 5.38 SQ MI

*** ***

```
          **************
          *            *
113 KK    *     DB6    *
          *            *
          **************
```

119 KO OUTPUT CONTROL VARIABLES

IPRNT	3	PRINT CONTROL
IPLOT	2	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

HYDROGRAPH ROUTING DATA

120 RS STORAGE ROUTING

NSTPS	1	NUMBER OF SUBREACHES
ITYP	STOR	TYPE OF INITIAL CONDITION
RSVRIC	-1.00	INITIAL CONDITION
X	.00	WORKING R AND D COEFFICIENT

121 SV	STORAGE	.0	11.9	20.0	55.0	103.2	156.5	214.9	278.7	333.6	348.3
122 SE	ELEVATION	1952.00	1956.00	1957.00	1961.00	1966.00	1971.00	1976.00	1981.00	1985.00	1986.00
123 SQ	DISCHARGE	0.	74.	82.	111.	138.	161.	181.	199.	212.	215.

*** *** *** *** *** ***

HYDROGRAPH AT STATION DB6
FOR PLAN 1, RATIO = 1.00

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	74.75-HR
+ (CFS)	(HR)	(CFS)				
+ 207.	18.00		206.	197.	139.	134.
		(INCHES)	.196	.747	1.583	1.583
		(AC-FT)	102.	390.	827.	827.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	74.75-HR
+ (AC-FT)	(HR)				
312.	18.00	310.	274.	146.	141.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	74.75-HR
+ (FEET)	(HR)				
1983.43	18.00	1983.29	1980.57	1968.92	1968.30

CUMULATIVE AREA = 9.80 SQ MI

1 STATION DB6

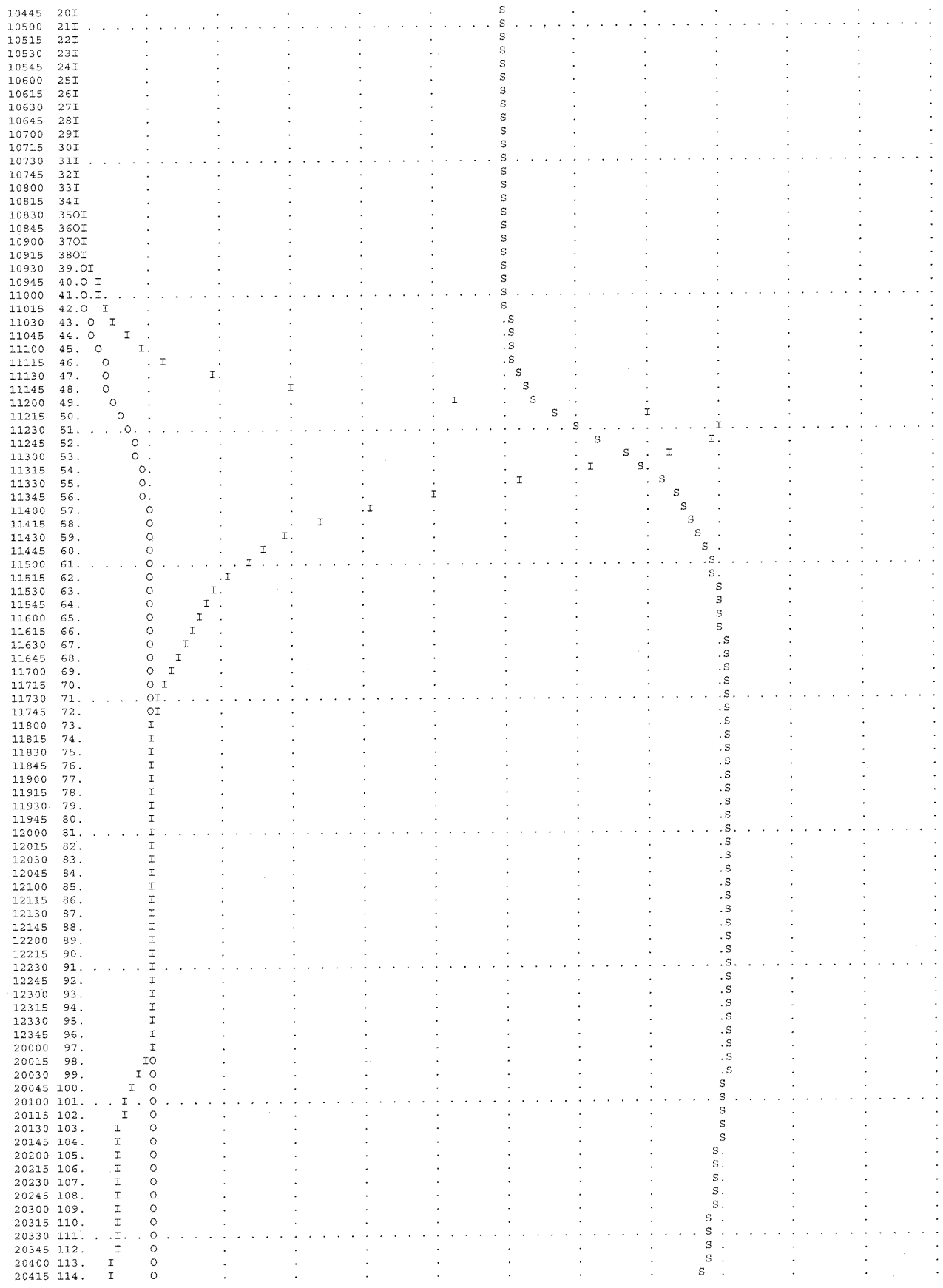
(I) INFLOW, (O) OUTFLOW

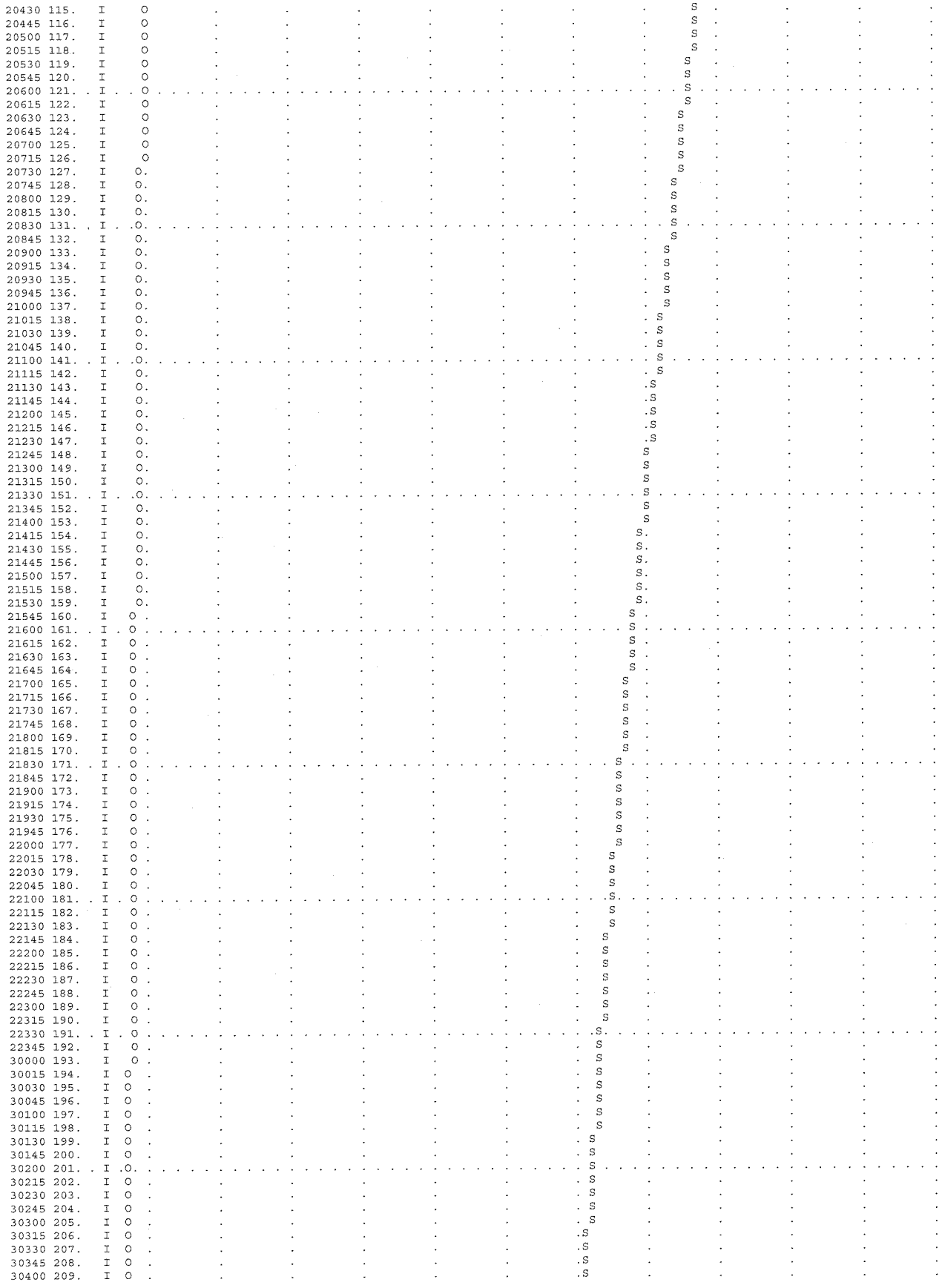
0. 200. 400. 600. 800. 1000. 1200. 1400. 1600. 1800. 0. 0. 0.

(S) STORAGE

0. 0. 0. 0. 0. 0. 0. 100. 200. 300. 400. 0. 0.

```
DAHRMN PER
 10000   1I----------.---------.---------.---------.---------.---------S---------.---------.---------.---------.---------.---------.
 10015   2I          .         .         .         .         .         S         .         .         .         .         .         .
 10030   3I          .         .         .         .         .         S         .         .         .         .         .         .
 10045   4I          .         .         .         .         .         S         .         .         .         .         .         .
 10100   5I          .         .         .         .         .         S         .         .         .         .         .         .
 10115   6I          .         .         .         .         .         S         .         .         .         .         .         .
 10130   7I          .         .         .         .         .         S         .         .         .         .         .         .
 10145   8I          .         .         .         .         .         S         .         .         .         .         .         .
 10200   9I          .         .         .         .         .         S         .         .         .         .         .         .
 10215  10I          .         .         .         .         .         S         .         .         .         .         .         .
 10230  11I . . . . . . . . . . . . . . . . . . . . . . . . . . . . . S . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
 10245  12I          .         .         .         .         .         S         .         .         .         .         .         .
 10300  13I          .         .         .         .         .         S         .         .         .         .         .         .
 10315  14I          .         .         .         .         .         S         .         .         .         .         .         .
 10330  15I          .         .         .         .         .         S         .         .         .         .         .         .
 10345  16I          .         .         .         .         .         S         .         .         .         .         .         .
 10400  17I          .         .         .         .         .         S         .         .         .         .         .         .
 10415  18I          .         .         .         .         .         S         .         .         .         .         .         .
 10430  19I          .         .         .         .         .         S         .         .         .         .         .         .
```

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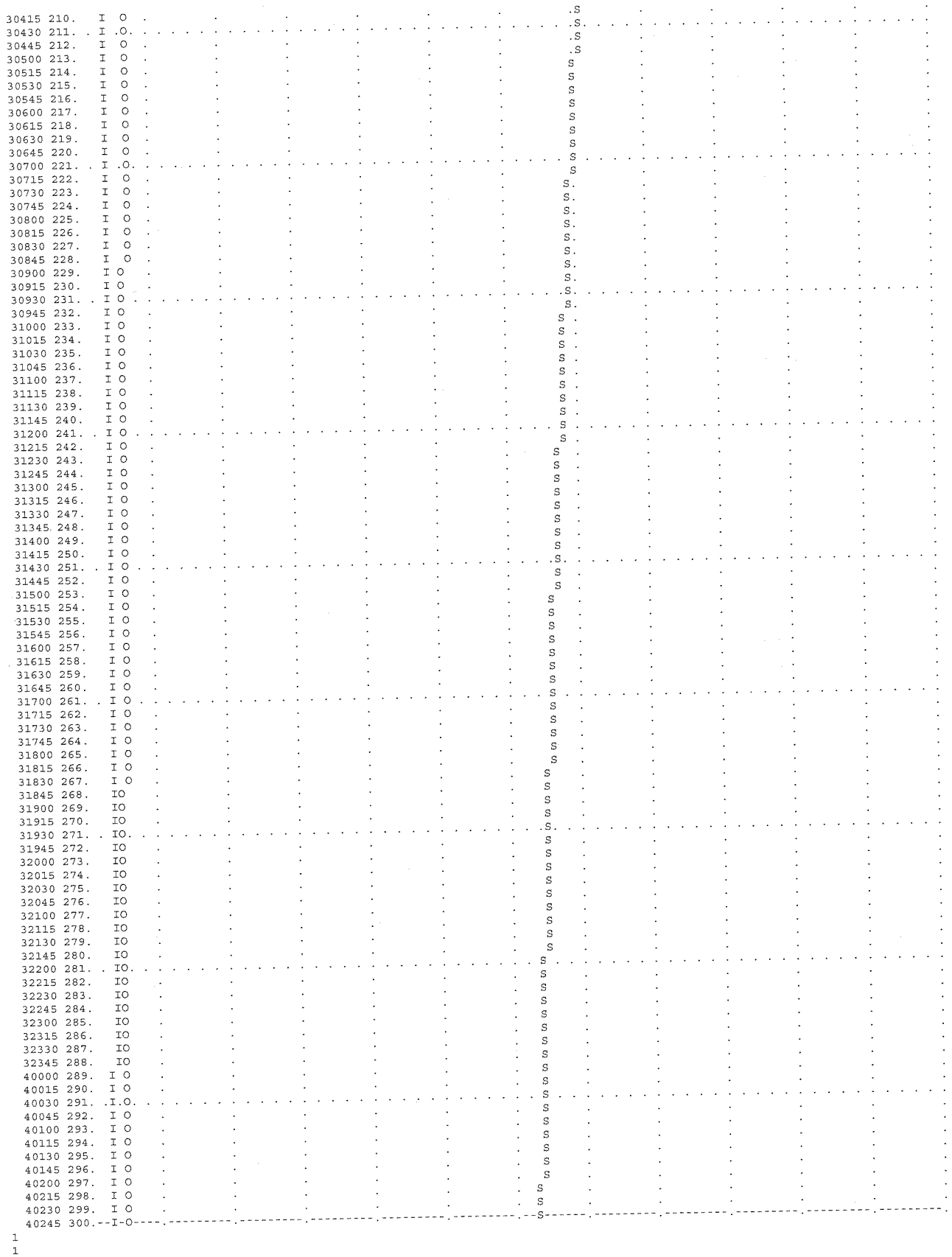
20445 116. I O S
20500 117. I O S
20515 118. I O S
20530 119. I O S
20545 120. I O S
20600 121. I O S
20615 122. I O S
20630 123. I O S
20645 124. I O S
20700 125. I O S
20715 126. I O S
20730 127. I O. S
20745 128. I O. S
20800 129. I O. S
20815 130. I O. S
20830 131. I O. S
20845 132. I O. S
20900 133. I O. S
20915 134. I O. S
20930 135. I O. S
20945 136. I O. S
21000 137. I O. S
21015 138. I O. S
21030 139. I O. S
21045 140. I O. S
21100 141. I O. S
21115 142. I O. S
21130 143. I O. .S
21145 144. I O. .S
21200 145. I O. .S
21215 146. I O. .S
21230 147. I O. .S
21245 148. I O. S
21300 149. I O. S
21315 150. I O. S
21330 151. I O. S
21345 152. I O. S
21400 153. I O. S
21415 154. I O. S.
21430 155. I O. S.
21445 156. I O. S.
21500 157. I O. S.
21515 158. I O. S.
21530 159. I O. S.
21545 160. I O S
21600 161. I O S
21615 162. I O S
21630 163. I O S
21645 164. I O S
21700 165. I O S
21715 166. I O S
21730 167. I O S
21745 168. I O S
21800 169. I O S
21815 170. I O S
21830 171. I O S
21845 172. I O S
21900 173. I O S
21915 174. I O S
21930 175. I O S
21945 176. I O S
22000 177. I O S
22015 178. I O S
22030 179. I O S
22045 180. I O S
22100 181. I O S
22115 182. I O S
22130 183. I O S
22145 184. I O S
22200 185. I O S
22215 186. I O S
22230 187. I O S
22245 188. I O S
22300 189. I O S
22315 190. I O S
22330 191. I O S
22345 192. I O S
30000 193. I O S
30015 194. I O S
30030 195. I O S
30045 196. I O S
30100 197. I O S
30115 198. I O S
30130 199. I O S
30145 200. I O S
30200 201. I O S
30215 202. I O S
30230 203. I O S
30245 204. I O S
30300 205. I O S
30315 206. I O .S
30330 207. I O .S
30345 208. I O .S
30400 209. I O .S



PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS

FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1 1.00
HYDROGRAPH AT	C1-54	5.38	1	FLOW	2353.
+				TIME	13.00
ROUTED TO	DB5	5.38	1	FLOW	90.
+				TIME	24.75
			** PEAK STAGES IN FEET **		
			1	STAGE	2488.55
				TIME	24.75
ROUTED TO	RDB5	5.38	1	FLOW	90.
+				TIME	24.75
HYDROGRAPH AT	C1-55	.98	1	FLOW	583.
+				TIME	12.25
2 COMBINED AT	CP52	6.36	1	FLOW	633.
+				TIME	12.25
ROUTED TO	RCP52	6.36	1	FLOW	613.
+				TIME	12.50
HYDROGRAPH AT	C1-65	2.56	1	FLOW	1022.
+				TIME	13.00
2 COMBINED AT	CP52A	8.92	1	FLOW	1461.
+				TIME	12.75
HYDROGRAPH AT	C1-66	.87	1	FLOW	521.
+				TIME	12.25
2 COMBINED AT	CP64	9.80	1	FLOW	1794.
+				TIME	12.50
ROUTED TO	DB6	9.80	1	FLOW	207.
+				TIME	18.00
			** PEAK STAGES IN FEET **		
			1	STAGE	1983.43
				TIME	18.00

1

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO=		.00							
RDB5	MANE	14.12	90.43	1496.44	1.50	15.00	90.43	1485.00	1.51

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4333E+03 EXCESS= .0000E+00 OUTFLOW= .4317E+03 BASIN STORAGE= .1708E+01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO=		.00							
RCP52	MANE	3.76	633.09	741.55	1.56	15.00	613.18	750.00	1.56

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5312E+03 EXCESS= .0000E+00 OUTFLOW= .5306E+03 BASIN STORAGE= .7548E+00 PERCENT ERROR= .0

*** NORMAL END OF HEC-1 ***

Comment 4

Figure 8R2, Upper Berm Work Map

NORMAL DEPTH SUMMARY TABLE - UPPER BERM									
Cross Section	Elevation ft	Normal Depth ft	Discharge cfs	Flow Regime	Flow Area sq ft	Average Velocity ft/s	Hydraulic Radius	Wetted Perimeter	Wetted Top Width
1	2136.5	1.5	1527	Critical	217.0	7.0	1.5	146.9	146.5
2	2151.4	1.4	1527	Critical	228.8	6.7	1.34	170.5	170.2
3	2166.1	1.1	1527	Critical	261.7	5.9	1.05	248.9	248.7
3.1	2175.7	0.7	1527	Critical	313.7	4.8	0.69	455.8	455.7
4	2180.8	0.8	1527	Critical	296.2	5.2	0.83	357.1	356.8
5	2200.6	0.6	1527	Critical	346.6	4.4	0.59	592.0	591.8
6	2216.3	1.3	1527	Critical	239.1	6.4	0.99	240.9	240.8
7	2236.0	1.0	1527	Critical	268.1	5.7	0.99	270.5	270.0
8	2251.5	1.5	1527	Critical	223.8	6.8	1.42	158.1	157.5
9	2266.3	1.3	1527	Critical	237.7	6.5	1.19	199.1	198.8
10	2282.5	2.5	1527	Critical	167.5	9.0	1.28	131.3	130.8
11	2300.7	1.7	1527	Critical	194.3	7.9	0.93	208.1	208.9
11.1	2312.7	1.7	1527	Subcritical	231.9	6.6	0.74	313.2	312.9
12	2315.5	1.5	1527	Subcritical	239.0	6.4	0.69	347.0	346.6
12.1	2317.3	1.3	1527	Critical	237.8	6.5	0.66	359.5	358.6
12.11	2320.9	0.9	1527	Critical	291.6	5.3	0.79	368.4	368.1
12.12	2324.5	1.5	1527	Critical	227.7	6.6	0.76	297.7	297.6
12.2	2330.2	1.2	1527	Critical	246.3	6.2	0.73	336.2	335.8
13	2337.7	1.7	1527	Critical	206.7	7.4	1.08	190.6	190.4
14	2356.4	1.4	1527	Critical	226.1	6.7	0.99	227.3	227.3
15	2375.8	0.8	1527	Critical	298.7	5.2	0.8	375.7	375.6
16	2391.0	1.0	1527	Subcritical	294.4	5.3	1	294.2	293.9

GRAPHIC SCALE

250 0 125 250

(IN FEET)

1 inch = 250 ft.

NORTH

LEGEND

STA 10+00.00 NORMAL DEPTH CROSS SECTION (16)

REVISED SFHA ZONE A

EXISTING SFHA ZONE A

NOTE: ELEVATIONS BASED ON 1983 NORTH AMERICAN DATUM

CITY OF HENDERSON

CLARK COUNTY

% COMPLETE

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	CCW APP	DATE

PROJECT NO. 504-424

DESIGN: FAM
DRAWN: FAM
CHECK: DM
PLOT DATE 01-29-08
PLOT TIME 15:52:43

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F:\504-424\Drainage\GLOMR\FIG\exhibit_ARdmm.dwg
David Mueller

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

UPPER BERM WORK MAP

DRAWING FIG-8R2

OF SHTS

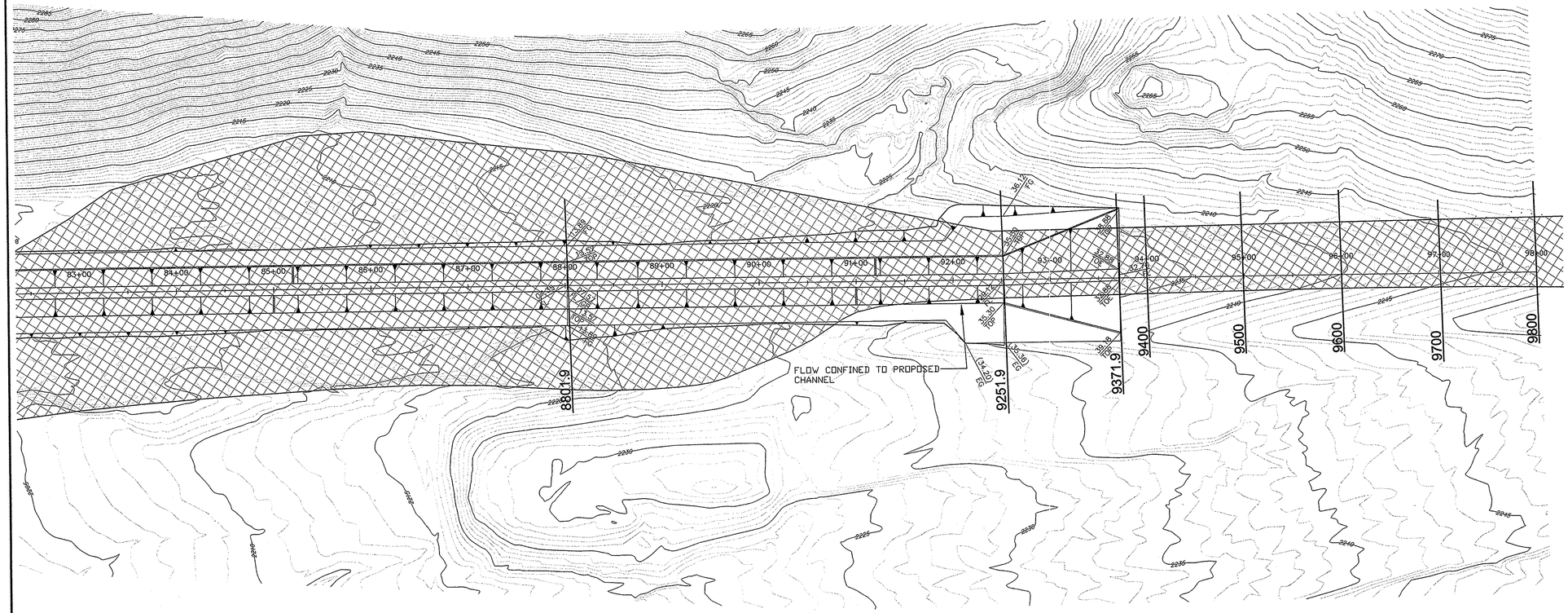
HTE: 00-00000

gis-2436.dwg 070203.jpr

Comment 6

Figures WM1 – WM14

WSPG model PRE-FINAL.out



NOTE: ELEVATIONS BASED ON NAVD 88 DATUM

LEGEND

9700 HEC-RAS CROSS SECTION

EXISTING SFHA ZONE A

NORTH

GRAPHIC SCALE

50 0 25 50

(IN FEET)

1 inch = 50 ft.

	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 504-424

DESIGN:

DRAWN:

CHECK:

PLOT DATE: 01-29-08

PLOT TIME: 14:08:23

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F:\504-424\Drainage\CLOMR\RTC\workmap2.dwg

David Mueller

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

HEC-RAS WORK MAP

DRAWING WM-1

SHT OF SHTS

gcw2426.dwg 070203.lay

NORTH

GRAPHIC SCALE

50 0 25 50

(IN FEET)

1 inch = 50 ft.

76+00 77+00 78+00 79+00 80+00 81+00 82+00 83+00 84+00 85+00 86+00 87+00 88+00

7612.88 7759.6 7935.67 8137.21 8801.9

FLOW CONFINED TO CHANNEL

NOTE: ELEVATIONS BASED ON NAVD 88 DATUM

LEGEND

9700 HEC-RAS CROSS SECTION

EXISTING SFHA ZONE A

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

DATE:

PROJECT NO. 504-424

DESIGN:

DRAWN:

CHECK:

PLOT DATE: 01-29-08

PLOT TIME: 11:23:21

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David Mueller

CITY OF HENDERSON

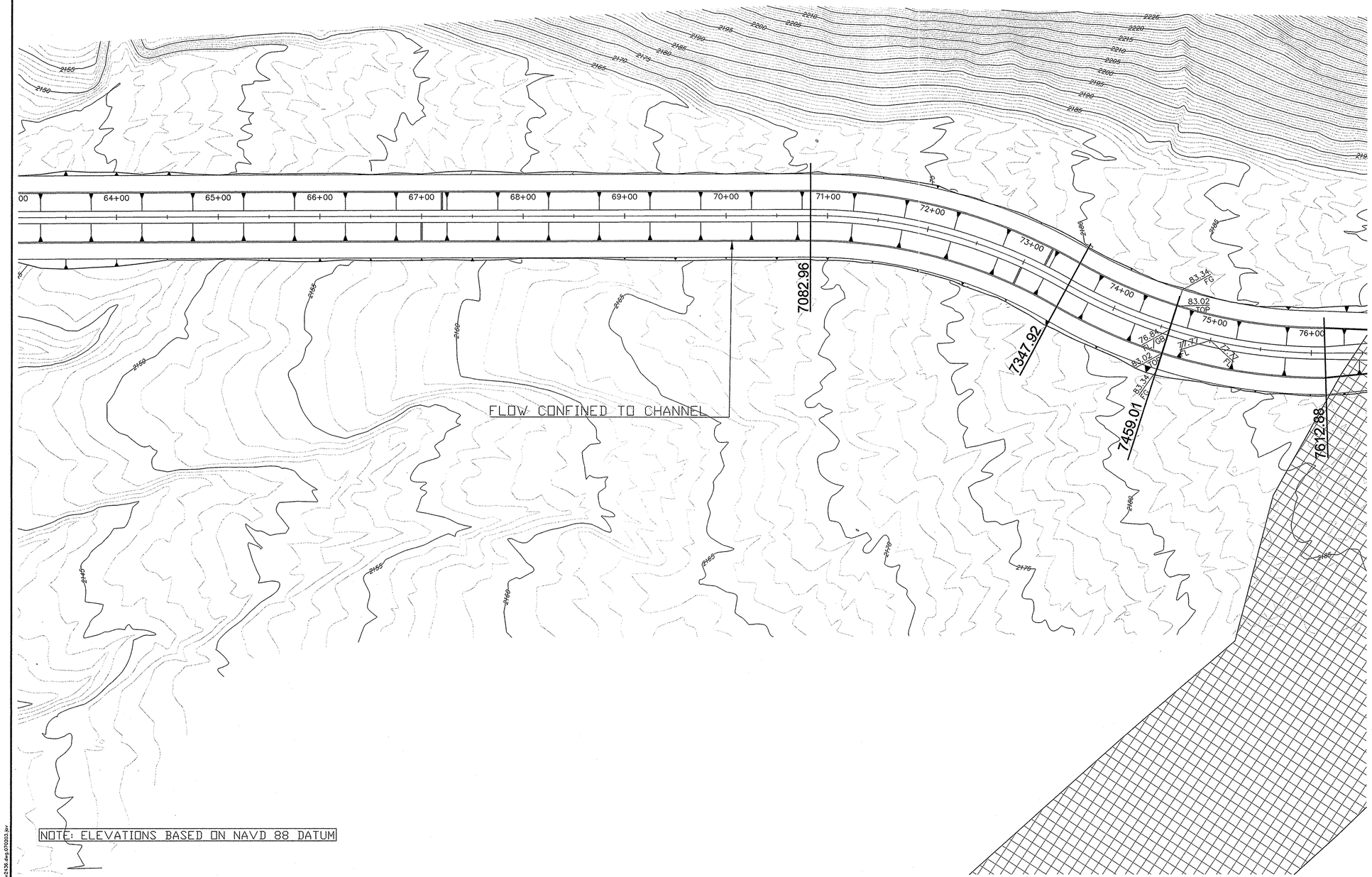
NORTHEAST C-1 DETENTION BASIN CLOMR

HEC-RAS WORK MAP

DRAWING WM-2

SHT OF SHTS

gcw2436.dwg 070203.jpv



NORTH

GRAPHIC SCALE

50 0 25 50

(IN FEET)

1 inch = 50 ft.

LEGEND

9700 HEC-RAS CROSS SECTION

EXISTING SFHA ZONE A

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	CCW APP	DATE

PROJECT NO. 504-424

DESIGN:
DRAWN:
CHECK:
PLOT DATE: 01-29-08
PLOT TIME: 11:25:38

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David Mueller

CITY OF HENDERSON

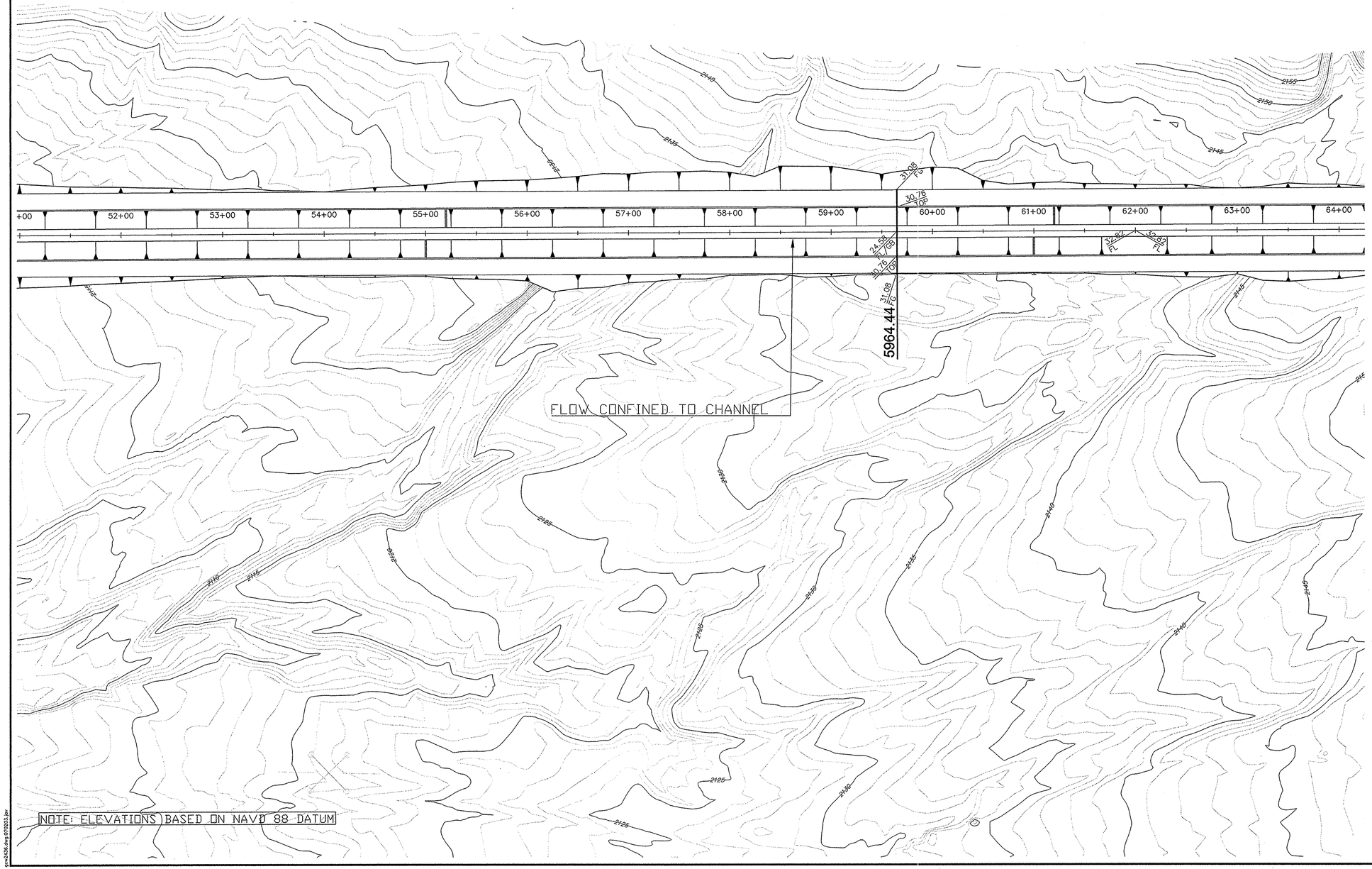
NORTHEAST C-1 DETENTION BASIN CLOMR

HEC-RAS WORK MAP

DRAWING WM-3

SHT OF SHTS

oce2436.dwg,07/30/03,jay



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PROJECT NO. 504-424

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David Mueller

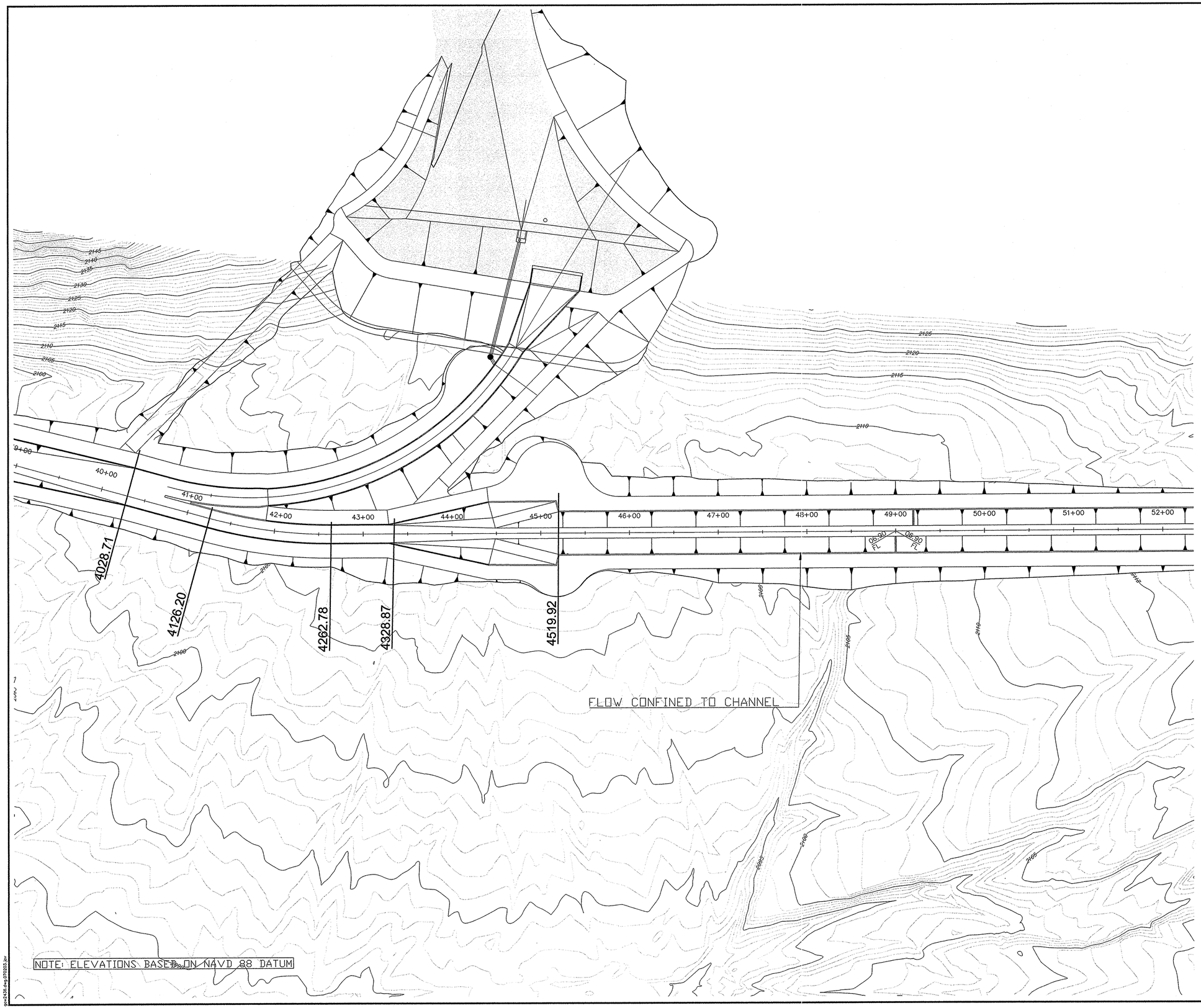
CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

HEC-RAS WORK MAP

DRAWING WM-4
SHT OF SHTS

dno2436.dwg 07/2013.pw



REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 504-424
DESIGN:
DRAWN:
CHECK:
PLOT DATE: 01-29-08
PLOT TIME: 11:31:12

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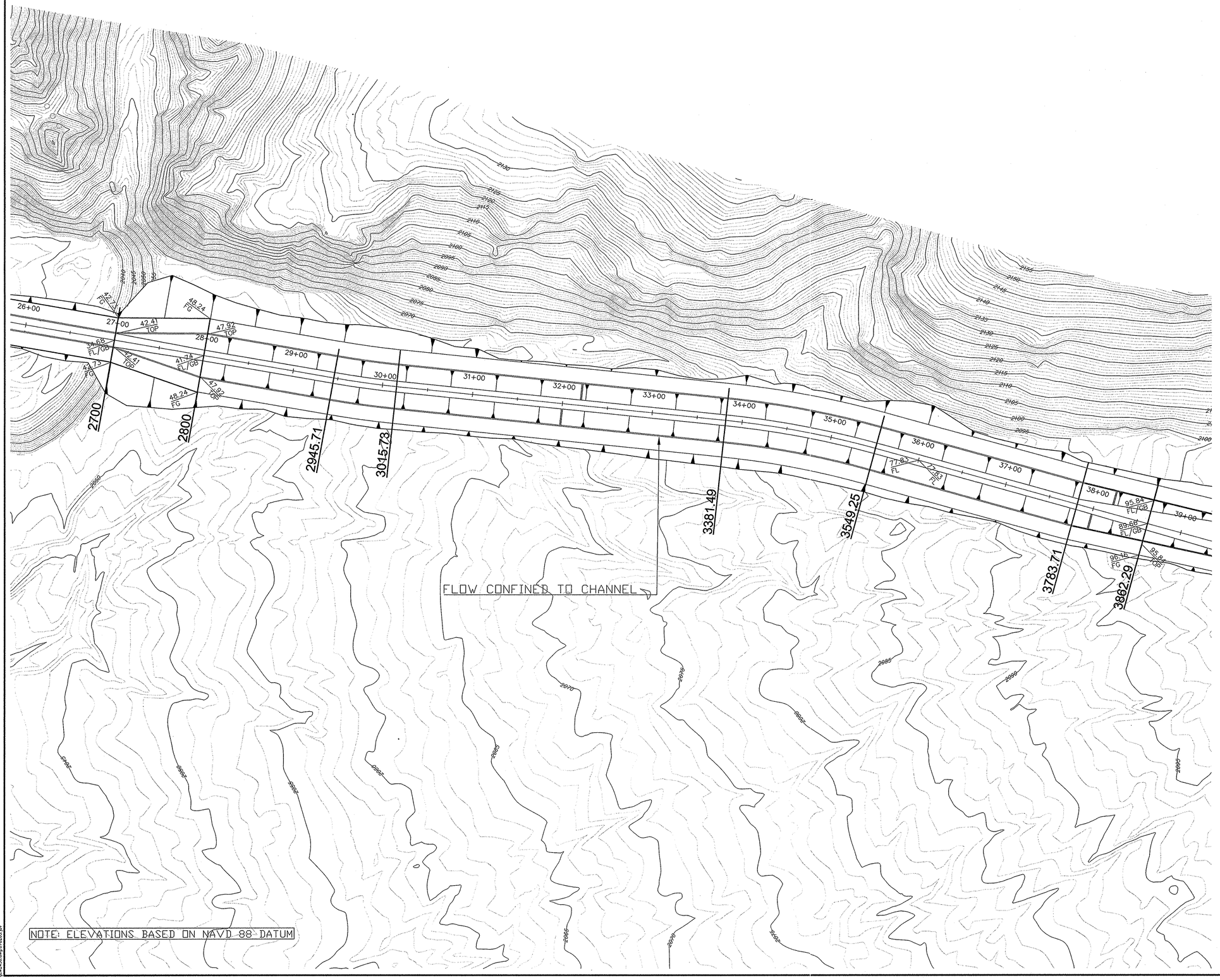
David Mueller

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

HEC-RAS WORK MAP

DRAWING WM-5
SHT OF SHTS



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PROJECT NO. 504-424

DESIGN:
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PLOT DATE: 01-29-08
PLOT TIME: 11:33:37

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CITY OF HENDERSON

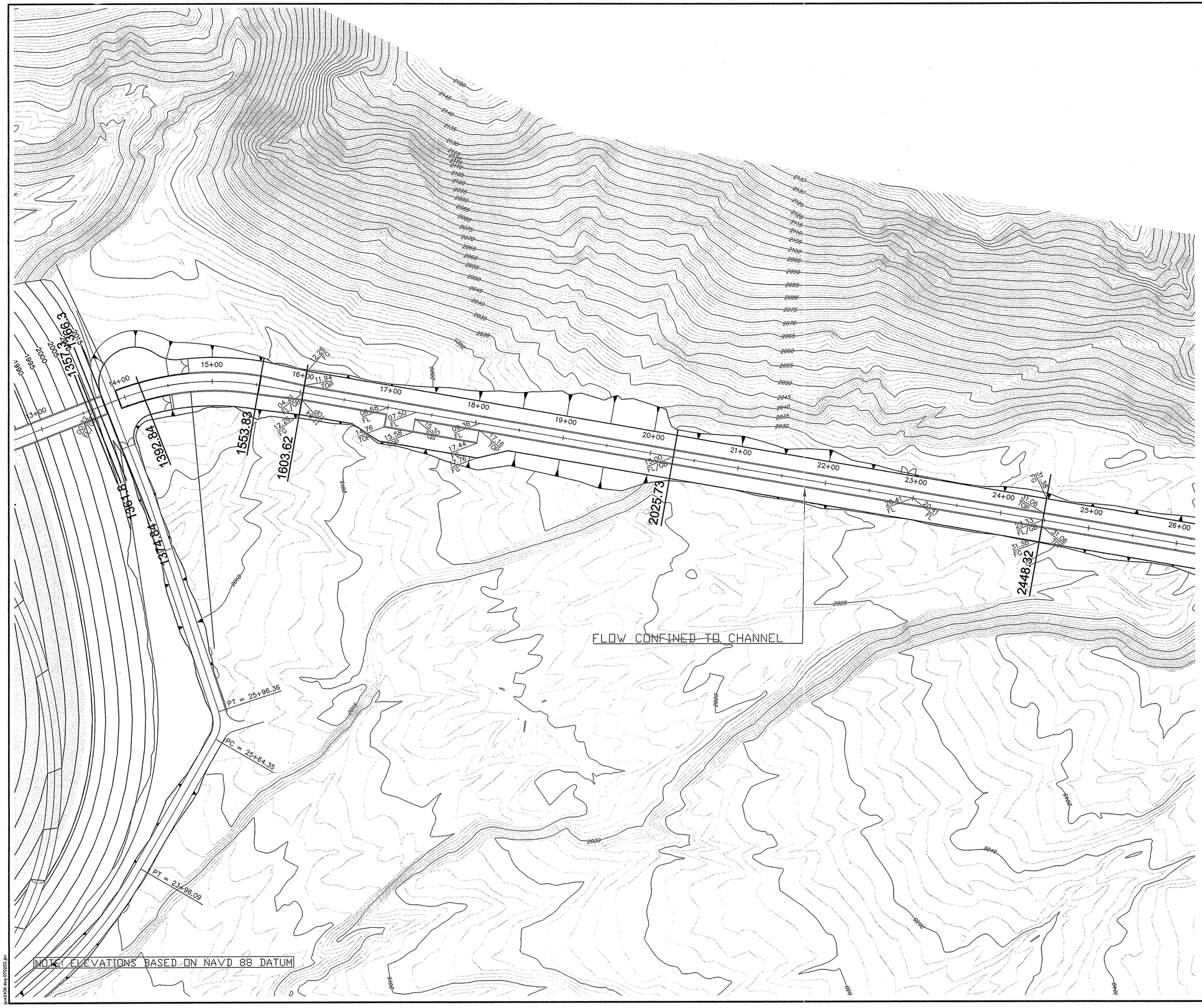
NORTHEAST C-1 DETENTION BASIN CLOMR

HEC-RAS WORK MAP

DRAWING WM-6

SHT OF SHTS

sm2436.dwg 070203.jpg



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PROJECT NO.
504-424

DESIGN:
DRAWN:
CHECK:

PLOT DATE: 01-29-08
PLOT TIME: 11:35:18

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David Mueller

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

HEC-RAS WORK MAP

DRAWING
WM-7
SHT OF SHTS

NORTH

GRAPHIC SCALE

50 0 25 50

(IN FEET)

1 inch = 50 ft.

FLOW CONFINED TO CHANNEL

PT = 25+96.36

PC = 25+64.35

PT = 23+96.09

NOTE: ELEVATIONS BASED ON NAVD 88 DATUM

LEGEND

9700 HEC-RAS CROSS SECTION

REVISED SFHA ZONE A

EXISTING SFHA ZONE A

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 504-424

DESIGN:

DRAWN:

CHECK:

PLOT DATE: 01-29-08

PLOT TIME: 11:36:58

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David Mueller

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

HEC-RAS WORK MAP

DRAWING WM-8

SHT OF SHTS

nce2426.dwg 070303.jpr

NOTE: ELEVATIONS BASED ON NAVD 88 DATUM

NORTH

GRAPHIC SCALE

50 0 25 50

(IN FEET)

1 inch = 50 ft.

LEGEND

1078.98 WSPG CROSS SECTION

REVISED SFHA ZONE A

EXISTING SFHA ZONE A

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 504-424

DESIGN:
DRAWN:
CHECK:
PLOT DATE: 01-29-08
PLOT TIME: 11:40:13

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David Mueller

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

WSPG WORK MAP

DRAWING WM-9

SHT OF SHTS

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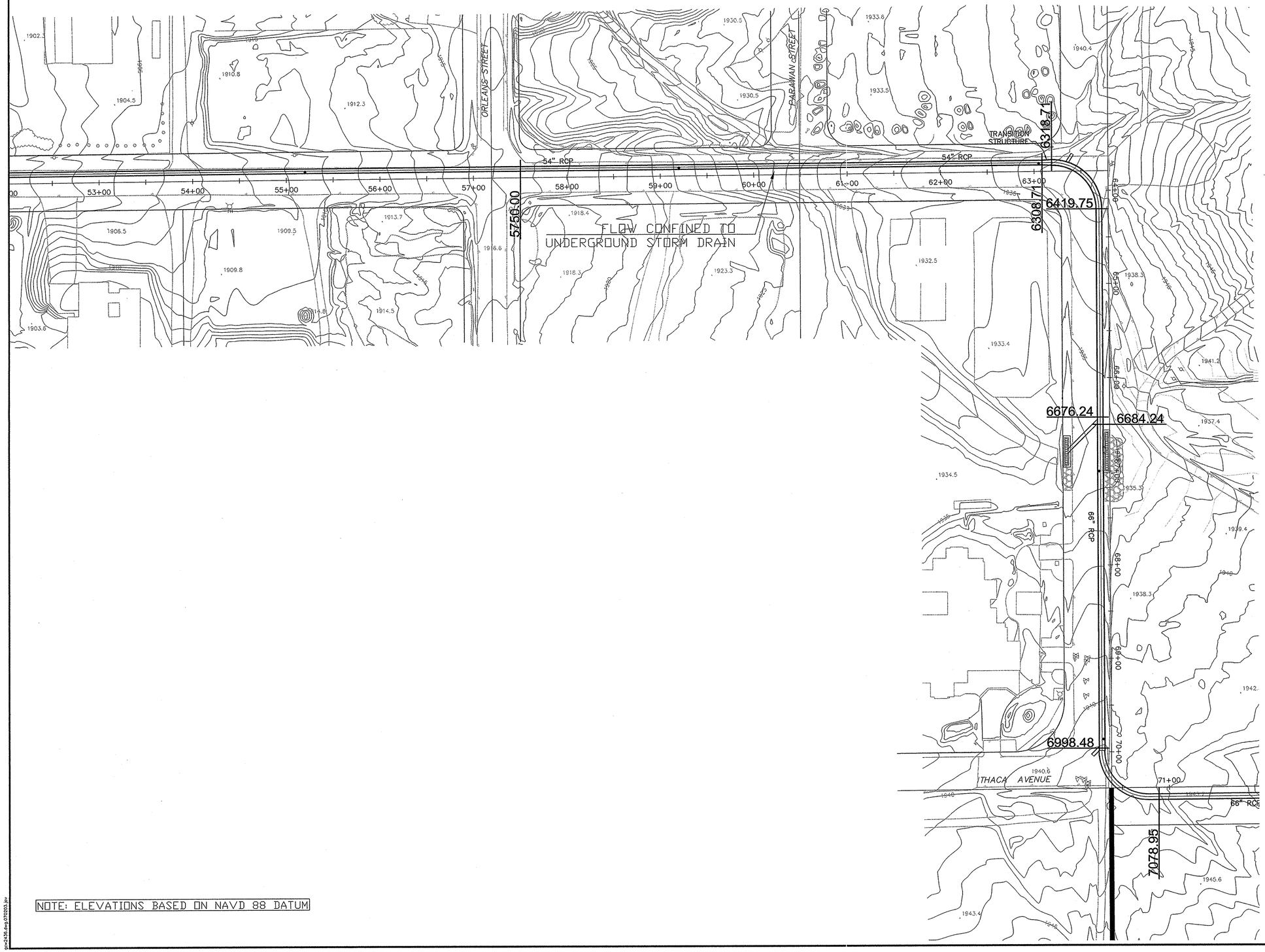

NOTE: ELEVATIONS BASED ON NAVD 88 DATUM

NORTH

GRAPHIC SCALE

50 0 25 50

(IN FEET)

1 inch = 50 ft.

LEGEND

1078.98 WSPG CROSS SECTION

EXISTING SFHA ZONE A

REV	DATE	DESCRIPTION	DATE	ASEN APP	DATE	GCW APP	DATE

PROJECT NO. 504-424

DESIGN:

DRAWN:

CHECK:

PLOT DATE: 01-29-08

PLOT TIME: 11:44:38

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David Mueller

CITY OF HENDERSON

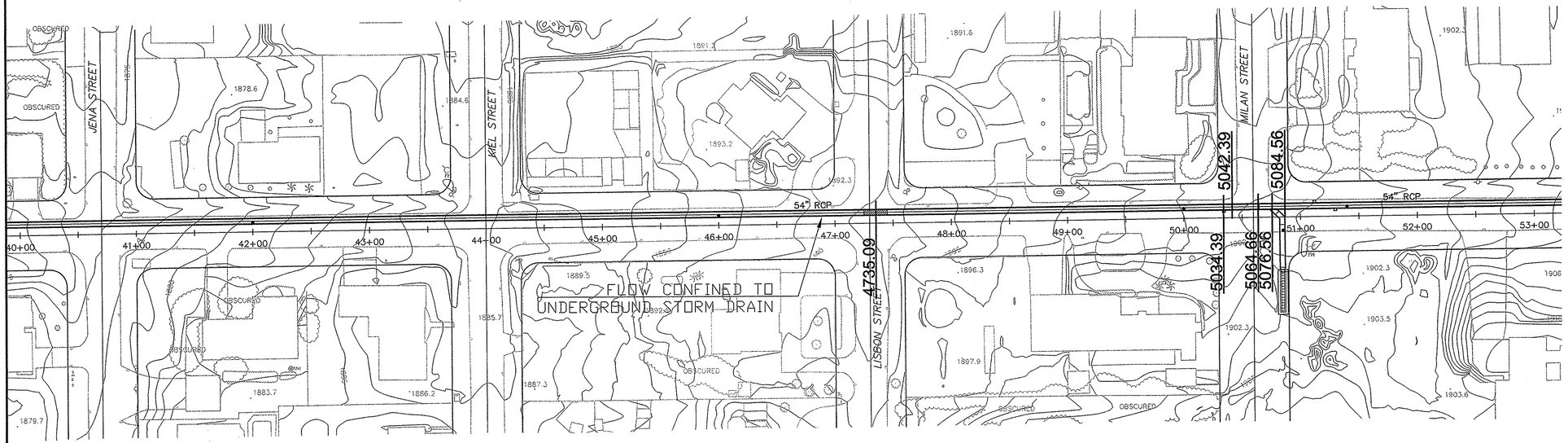
NORTHEAST C-1 DETENTION BASIN CLOMR

WSPG WORK MAP

DRAWING WM-10

SHT OF SHTS

pm24.fdr.dwg 070203.jpv



NOTE: ELEVATIONS BASED ON NAVD 88 DATUM

NORTH

GRAPHIC SCALE

50 0 25 50

(IN FEET)

1 inch = 50 ft.

LEGEND

1078.98 WSPG CROSS SECTION

EXISTING SFHA ZONE A

REV	DESCRIPTION	DATE	AGEN APP	DATE	CCW APP	DATE

PROJECT NO. 504-424

DESIGN:

DRAWN:

CHECK:

PLOT DATE: 01-28-08

PLOT TIME: 11:46:22

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David Mueller

CITY OF HENDERSON

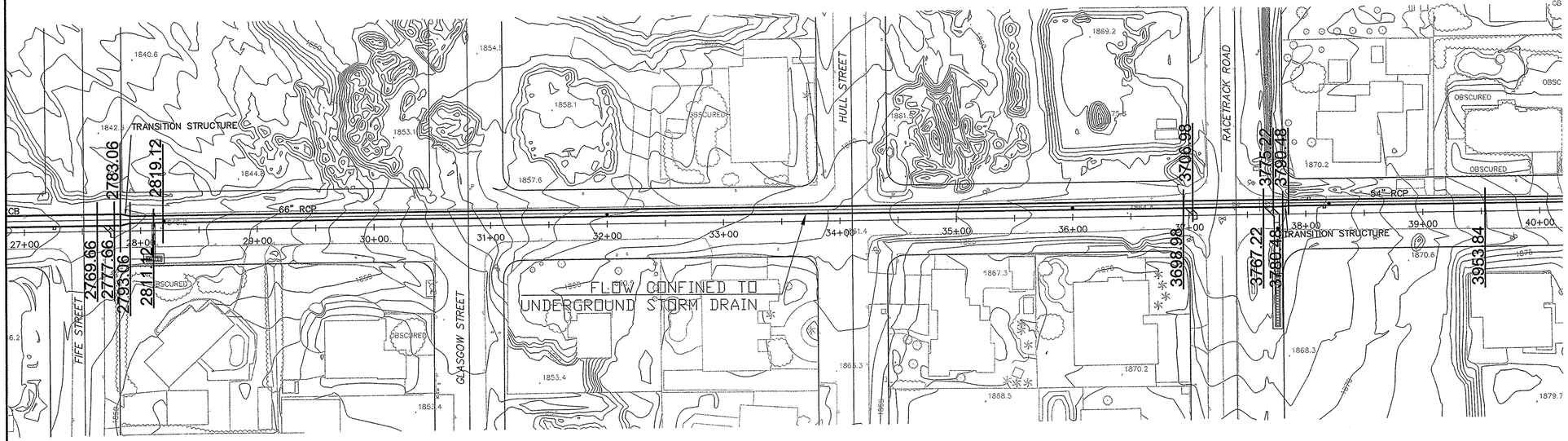
NORTHEAST C-1 DETENTION BASIN CLOMR

WSPG WORK MAP

DRAWING WM-11

SHT OF SHTS

gcw2438.dwg 070203.jpr



NORTH

GRAPHIC SCALE

50 0 25 50

(IN FEET)

1 inch = 50 ft.

LEGEND

1078.98 WSPG CROSS SECTION

EXISTING SFHA ZONE A

NOTE: ELEVATIONS BASED ON NAVD 88 DATUM

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 504-424

DESIGN:

DRAWN:

CHECK:

PLOT DATE: 01-29-08

PLOT TIME: 11:49:30

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David Mueller

CITY OF HENDERSON

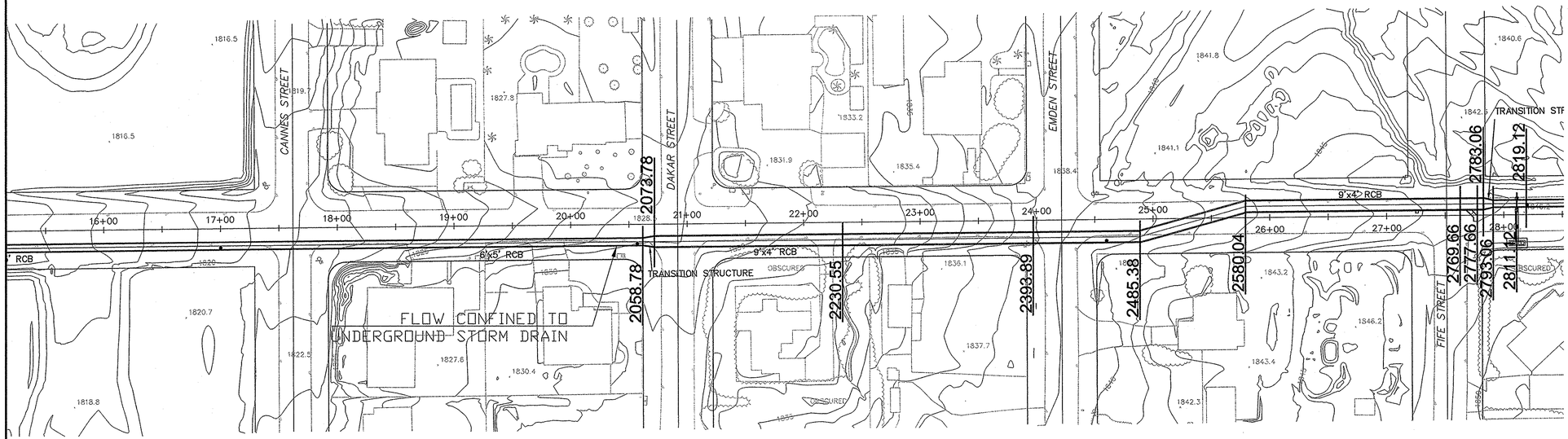
NORTHEAST C-1 DETENTION BASIN CLOMR

WSPG WORK MAP

DRAWING WM-12

SHT OF SHTS

dwg2438.dwg 070203.jpr



NORTH

GRAPHIC SCALE

50 0 25 50

(IN FEET)

1 inch = 50 ft.

LEGEND

1078.98 WSPG CROSS SECTION

EXISTING SFHA ZONE A

NOTE: ELEVATIONS BASED ON NAVD 88 DATUM

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE:

PROJECT NO. 504-424

DESIGN:

DRAWN:

CHECK:

PLOT DATE: 01-29-08

PLOT TIME: 11:50:52

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LAS VEGAS · SACRAMENTO · RENO

F:\504-424\Drainage\CLOMR\WTC\workmap2.dwg
David Mueller

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

WSPG WORK MAP

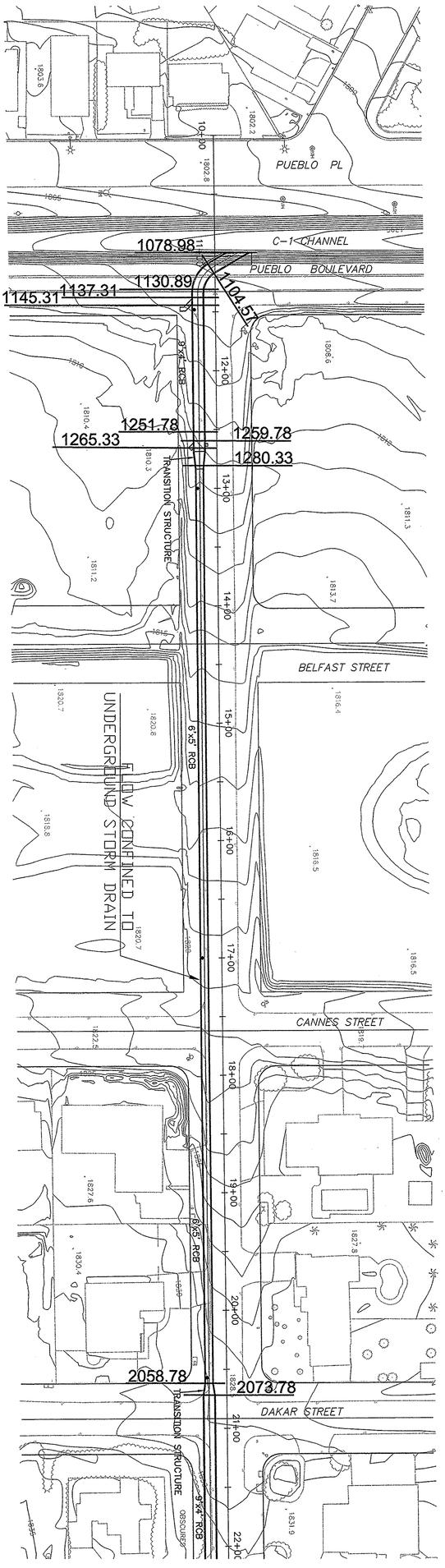
DRAWING WM-13

SHT OF SHTS

pw2436.dwg 070303.pr

gcw2436.dwg.070203.jpv

NOTE: ELEVATIONS BASED ON NAVD 88 DATUM



LEGEND

1078.98 WSPG CROSS SECTION

EXISTING SFHA ZONE A

GRAPHIC SCALE
1 INCH = 60 FT.

NORTH

CITY OF HENDERSON	G. C. WALLACE COMPANIES ENGINEERS | PLANNERS | SURVEYORS 1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146 T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM LAS VEGAS · SACRAMENTO · RENO	PROJECT NO. 504-424	REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP
NORTHEAST C-1 DETENTION BASIN CLOMR		DESIGN:							
WSPG WORK MAP	F:\504-424\Drainage\CLOMR\RTC\workmap2.dwg David Mueller	DRAWN:							
		CHECK:							
		PLOT DATE: 01-29-08							
		PLOT TIME: 11:52:24							

DRAWING WM-14 SHT OF SHTS

DATE:

FILE: PRE-FINAL2.WSW

W S P G W - CIVILDESIGN Version 14.06
Program Package Serial Number: 1622
WATER SURFACE PROFILE LISTING

Date: 1-21-2008 Time: 5:42:25

NEC-1 Detention Basin Outfall Stormdrain (C1IT 0000)
Modified COH HEC-1 Model (increased basin area from Ithaca to Harve)
SDN3 and SDN4,72" - 66" Outfall,48-inch RCP at Racetrack,Over Emden, F

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
1078.980	1797.100	6.318	1803.418	208.01	5.78	.52	1803.94	.00	2.55	9.00	4.000	9.000	.00	0 .0
25.590	.0146					.0017	.04	6.32	.51	1.53	.013	.00	.00	BOX
1104.570	1797.474	5.986	1803.460	208.01	5.78	.52	1803.98	.00	2.55	9.00	4.000	9.000	.00	0 .0
JUNCT STR	.0145					.0017	.04	.00	.51		.013	.00	.00	BOX
1130.890	1797.856	5.648	1803.504	208.01	5.78	.52	1804.02	.00	2.55	9.00	4.000	9.000	.00	0 .0
6.420	.0146					.0017	.01	5.65	.51	1.53	.013	.00	.00	BOX
1137.310	1797.950	5.565	1803.515	208.01	5.78	.52	1804.03	.00	2.55	9.00	4.000	9.000	.00	0 .0
JUNCT STR	.0145					.0017	.01	5.56	.51		.013	.00	.00	BOX
1145.310	1798.066	5.462	1803.528	208.01	5.78	.52	1804.05	.00	2.55	9.00	4.000	9.000	.00	0 .0
79.677	.0145					.0017	.13	5.46	.51	1.54	.013	.00	.00	BOX
1224.987	1799.218	4.461	1803.678	208.01	5.78	.52	1804.20	.00	2.55	9.00	4.000	9.000	.00	0 .0
HYDRAULIC JUMP														
1224.987	1799.218	1.253	1800.471	208.01	18.45	5.28	1805.75	.00	2.55	9.00	4.000	9.000	.00	0 .0
26.793	.0145					.0282	.76	1.25	2.90	1.54	.013	.00	.00	BOX
1251.780	1799.605	1.211	1800.816	208.01	19.09	5.66	1806.47	.00	2.55	9.00	4.000	9.000	.00	0 .0
JUNCT STR	.0145					.0302	.24	1.21	3.06		.013	.00	.00	BOX
1259.780	1799.721	1.196	1800.917	208.01	19.32	5.80	1806.71	.00	2.55	9.00	4.000	9.000	.00	0 .0
5.550	.0161					.0312	.17	1.20	3.11	1.48	.013	.00	.00	BOX

Program Package Serial Number: 1622

WATER SURFACE PROFILE LISTING Date: 1-21-2008 Time: 5:42:25

NEC-1 Detention Basin Outfall Stormdrain (C1IT 0000)

Modified COH HEC-1 Model (increased basin area from Ithaca to Harve)

SDN3 and SDN4,72" - 66" Outfall,48-inch RCP at Racetrack,Over Emden, F

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1265.330	1799.810	1.187	1800.997	208.01	19.48	5.89	1806.89	.00	2.55	9.00	4.000	9.000	.00	0 .0
TRANS STR	.0140					.0271	.41	1.19	3.15		.013	.00	.00	BOX
1280.330	1800.020	1.845	1801.865	208.01	18.79	5.48	1807.35	.00	3.34	6.00	5.000	6.000	.00	0 .0
394.379	.0226					.0226	8.92	1.85	2.44	1.85	.013	.00	.00	BOX
1674.709	1808.937	1.845	1810.782	208.01	18.79	5.48	1816.26	.00	3.34	6.00	5.000	6.000	.00	0 .0
287.570	.0226					.0214	6.14	1.85	2.44	1.85	.013	.00	.00	BOX
1962.279	1815.438	1.924	1817.363	208.01	18.01	5.04	1822.40	.00	3.34	6.00	5.000	6.000	.00	0 .0
96.501	.0226					.0188	1.82	1.92	2.29	1.85	.013	.00	.00	BOX
2058.780	1817.620	2.018	1819.638	208.01	17.18	4.58	1824.22	.00	3.34	6.00	5.000	6.000	.00	0 .0
TRANS STR	.0227					.0234	.35	2.02	2.13		.013	.00	.00	BOX
2073.780	1817.960	1.217	1819.177	208.01	18.99	5.60	1824.78	.00	2.55	9.00	4.000	9.000	.00	0 .0
4.377	.0226					.0294	.13	1.22	3.03	1.32	.013	.00	.00	BOX
2078.157	1818.059	1.213	1819.272	208.01	19.05	5.63	1824.91	.00	2.55	9.00	4.000	9.000	.00	0 .0
54.936	.0226					.0318	1.75	1.21	3.05	1.32	.013	.00	.00	BOX
2133.092	1819.299	1.157	1820.456	208.01	19.98	6.20	1826.65	.00	2.55	9.00	4.000	9.000	.00	0 .0
39.786	.0226					.0368	1.46	1.16	3.27	1.32	.013	.00	.00	BOX
2172.879	1820.198	1.103	1821.301	208.01	20.95	6.82	1828.12	.00	2.55	9.00	4.000	9.000	.00	0 .0
31.481	.0226					.0426	1.34	1.10	3.52	1.32	.013	.00	.00	BOX

NEC-1 Detention Basin Outfall Stormdrain (C1IT 0000)
Modified COH HEC-1 Model (increased basin area from Ithaca to Harve)
SDN3 and SDN4,72" - 66" Outfall,48-inch RCP at Racetrack,Over Emden, F

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2204.359	1820.909	1.052	1821.960	208.01	21.97	7.50	1829.46	.00	2.55	9.00	4.000	9.000	.00	0 .0
26.191	.0226					.0493	1.29	1.05	3.78	1.32	.013	.00	.00	BOX
2230.550	1821.500	1.003	1822.503	208.01	23.05	8.25	1830.75	.00	2.55	9.00	4.000	9.000	.00	0 .0
13.304	.0634					.0522	.69	1.00	4.06	.95	.013	.00	.00	BOX
2243.854	1822.344	1.012	1823.356	208.01	22.84	8.10	1831.45	.00	2.55	9.00	4.000	9.000	.00	0 .0
44.425	.0634					.0480	2.13	1.01	4.00	.95	.013	.00	.00	BOX
2288.279	1825.161	1.061	1826.223	208.01	21.77	7.36	1833.58	.00	2.55	9.00	4.000	9.000	.00	0 .0
28.059	.0634					.0414	1.16	1.06	3.72	.95	.013	.00	.00	BOX
2316.337	1826.941	1.113	1828.054	208.01	20.76	6.69	1834.75	.00	2.55	9.00	4.000	9.000	.00	0 .0
20.045	.0634					.0358	.72	1.11	3.47	.95	.013	.00	.00	BOX
2336.383	1828.212	1.168	1829.380	208.01	19.79	6.08	1835.46	.00	2.55	9.00	4.000	9.000	.00	0 .0
15.267	.0634					.0309	.47	1.17	3.23	.95	.013	.00	.00	BOX
2351.650	1829.181	1.225	1830.405	208.01	18.87	5.53	1835.94	.00	2.55	9.00	4.000	9.000	.00	0 .0
12.080	.0634					.0267	.32	1.22	3.01	.95	.013	.00	.00	BOX
2363.730	1829.947	1.284	1831.231	208.01	18.00	5.03	1836.26	.00	2.55	9.00	4.000	9.000	.00	0 .0
9.792	.0634					.0231	.23	1.28	2.80	.95	.013	.00	.00	BOX
2373.521	1830.568	1.347	1831.915	208.01	17.16	4.57	1836.49	.00	2.55	9.00	4.000	9.000	.00	0 .0
8.062	.0634					.0200	.16	1.35	2.61	.95	.013	.00	.00	BOX

NEC-1 Detention Basin Outfall Stormdrain (C1IT 0000)
Modified COH HEC-1 Model (increased basin area from Ithaca to Harve)
SDN3 and SDN4,72" - 66" Outfall,48-inch RCP at Racetrack,Over Emden, F

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2381.583	1831.079	1.413	1832.492	208.01	16.36	4.16	1836.65	.00	2.55	9.00	4.000	9.000	.00	0 .0
6.703	.0634					.0174	.12	1.41	2.43	.95	.013	.00	.00	BOX
2388.287	1831.505	1.482	1832.986	208.01	15.60	3.78	1836.76	.00	2.55	9.00	4.000	9.000	.00	0 .0
5.603	.0634					.0150	.08	1.48	2.26	.95	.013	.00	.00	BOX
2393.890	1831.860	1.554	1833.414	208.01	14.87	3.43	1836.85	.00	2.55	9.00	4.000	9.000	.00	0 .0
91.490	.0132					.0144	1.32	1.55	2.10	1.58	.013	.00	.00	BOX
2485.380	1833.070	1.523	1834.593	208.01	15.17	3.58	1838.17	.00	2.55	9.00	4.000	9.000	.00	0 .0
12.856	.0127					.0150	.19	1.52	2.17	1.61	.013	.00	.00	BOX
2498.236	1833.233	1.515	1834.748	208.01	15.26	3.61	1838.36	.00	2.55	9.00	4.000	9.000	.00	0 .0
81.804	.0127					.0162	1.33	1.51	2.18	1.61	.013	.00	.00	BOX
2580.040	1834.270	1.444	1835.714	208.01	16.00	3.98	1839.69	.00	2.55	9.00	4.000	9.000	.00	0 .0
47.490	.0132					.0184	.87	1.44	2.35	1.58	.013	.00	.00	BOX
2627.530	1834.896	1.393	1836.289	208.01	16.59	4.27	1840.56	.00	2.55	9.00	4.000	9.000	.00	0 .0
46.962	.0132					.0209	.98	1.39	2.48	1.58	.013	.00	.00	BOX
2674.491	1835.515	1.328	1836.843	208.01	17.40	4.70	1841.55	.00	2.55	9.00	4.000	9.000	.00	0 .0
37.231	.0132					.0242	.90	1.33	2.66	1.58	.013	.00	.00	BOX
2711.722	1836.006	1.266	1837.272	208.01	18.25	5.17	1842.44	.00	2.55	9.00	4.000	9.000	.00	0 .0
31.101	.0132					.0279	.87	1.27	2.86	1.58	.013	.00	.00	BOX

NEC-1 Detention Basin Outfall Stormdrain (C1IT 0000)
Modified COH HEC-1 Model (increased basin area from Ithaca to Harve)
SDN3 and SDN4,72" - 66" Outfall,48-inch RCP at Racetrack,Over Emden, F

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
2742.823	1836.416	1.207	1837.624	208.01	19.14	5.69	1843.31	.00	2.55	9.00	4.000	9.000	.00	0 .0
26.837	.0132					.0323	.87	1.21	3.07	1.58	.013	.00	.00	BOX
2769.660	1836.770	1.151	1837.921	208.01	20.08	6.26	1844.18	.00	2.55	9.00	4.000	9.000	.00	0 .0
JUNCT STR	.0130					.0355	.28	1.15	3.30		.013	.00	.00	BOX
2777.660	1836.874	1.134	1838.008	208.01	20.39	6.45	1844.46	.00	2.55	9.00	4.000	9.000	.00	0 .0
5.400	.0122					.0370	.20	1.13	3.37	1.63	.013	.00	.00	BOX
2783.060	1836.940	1.121	1838.061	208.01	20.63	6.61	1844.67	.00	2.55	9.00	4.000	9.000	.00	0 .0
TRANS STR	.0360					.0276	.28	1.12	3.43		.013	.00	.00	BOX
2793.060	1837.300	2.639	1839.939	208.01	18.46	5.29	1845.23	.00	4.04	5.50	5.500	.000	.00	1 .0
18.060	.0100					.0181	.33	2.64	2.27	3.14	.013	.00	.00	PIPE
2811.120	1837.480	2.604	1840.084	208.01	18.78	5.47	1845.56	.00	4.04	5.49	5.500	.000	.00	1 .0
JUNCT STR	.0185					.0185	.15	2.60	2.33		.013	.00	.00	PIPE
2819.120	1837.628	2.605	1840.233	208.01	18.77	5.47	1845.71	.00	4.04	5.49	5.500	.000	.00	1 .0
389.098	.0185					.0185	7.20	2.60	2.33	2.60	.013	.00	.00	PIPE
3208.218	1844.824	2.605	1847.428	208.01	18.77	5.47	1852.90	.00	4.04	5.49	5.500	.000	.00	1 .0
357.416	.0185					.0197	7.04	2.60	2.33	2.60	.013	.00	.00	PIPE
3565.634	1851.434	2.515	1853.949	208.01	19.64	5.99	1859.94	.00	4.04	5.48	5.500	.000	.00	1 .0
133.346	.0185					.0223	2.98	2.52	2.49	2.60	.013	.00	.00	PIPE

NEC-1 Detention Basin Outfall Stormdrain (C1IT 0000)
Modified COH HEC-1 Model (increased basin area from Ithaca to Harve)
SDN3 and SDN4,72" - 66" Outfall,48-inch RCP at Racetrack,Over Emden, F

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
3698.980	1853.900	2.426	1856.326	208.01	20.60	6.59	1862.91	.00	4.04	5.46	5.500	.000	.00	1 .0
JUNCT STR	.0185					.0239	.19	2.43	2.67		.013	.00	.00	PIPE
3706.980	1854.048	2.419	1856.467	208.00	20.67	6.64	1863.10	.00	4.04	5.46	5.500	.000	.00	1 .0
60.240	.0186					.0251	1.51	2.42	2.68	2.60	.013	.00	.00	PIPE
3767.220	1855.170	2.359	1857.529	208.00	21.37	7.09	1864.62	.00	4.04	5.44	5.500	.000	.00	1 .0
JUNCT STR	.0185					.0264	.21	2.36	2.82		.013	.00	.00	PIPE
3775.220	1855.318	2.350	1857.668	208.00	21.47	7.16	1864.83	.00	4.04	5.44	5.500	.000	.00	1 .0
5.260	.0175					.0267	.14	2.35	2.84	2.65	.013	.00	.00	PIPE
3780.480	1855.410	2.343	1857.753	208.00	21.56	7.22	1864.97	.00	4.04	5.44	5.500	.000	.00	1 .0
TRANS STR	.0190					.0264	.26	2.34	2.85		.013	.00	.00	PIPE
3790.480	1855.600	2.663	1858.263	208.00	21.22	6.99	1865.26	.00	4.09	4.42	4.500	.000	.00	1 .0
83.579	.0220					.0271	2.26	2.66	2.51	2.81	.013	.00	.00	PIPE
3874.059	1857.437	2.588	1860.025	208.00	21.97	7.49	1867.52	.00	4.09	4.45	4.500	.000	.00	1 .0
79.781	.0220					.0301	2.40	2.59	2.65	2.81	.013	.00	.00	PIPE
3953.840	1859.190	2.490	1861.679	208.00	23.04	8.24	1869.92	.00	4.09	4.47	4.500	.000	.00	1 .0
135.627	.0320					.0320	4.34	2.49	2.86	2.49	.013	.00	.00	PIPE
4089.467	1863.530	2.490	1866.019	208.00	23.04	8.24	1874.26	.00	4.09	4.47	4.500	.000	.00	1 .0
347.441	.0320					.0308	10.70	2.49	2.86	2.49	.013	.00	.00	PIPE

NEC-1 Detention Basin Outfall Stormdrain (C1IT 0000)
Modified COH HEC-1 Model (increased basin area from Ithaca to Harve)
SDN3 and SDN4,72" - 66" Outfall,48-inch RCP at Racetrack,Over Emden, F

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
4436.907	1874.648	2.550	1877.198	208.00	22.36	7.77	1884.96	.00	4.09	4.46	4.500	.000	.00	1 .0
146.881	.0320					.0279	4.10	2.55	2.73	2.49	.013	.00	.00	PIPE
4583.789	1879.348	2.652	1882.000	208.00	21.32	7.06	1889.06	.00	4.09	4.43	4.500	.000	.00	1 .0
72.790	.0320					.0247	1.80	2.65	2.53	2.49	.013	.00	.00	PIPE
4656.579	1881.677	2.760	1884.438	208.00	20.33	6.42	1890.86	.00	4.09	4.38	4.500	.000	.00	1 .0
46.160	.0320					.0219	1.01	2.76	2.35	2.49	.013	.00	.00	PIPE
4702.739	1883.155	2.875	1886.030	208.00	19.39	5.84	1891.86	.00	4.09	4.32	4.500	.000	.00	1 .0
32.351	.0320					.0194	.63	2.88	2.17	2.49	.013	.00	.00	PIPE
4735.090	1884.190	2.998	1887.188	208.00	18.48	5.30	1892.49	.00	4.09	4.24	4.500	.000	.00	1 .0
138.298	.0176					.0187	2.58	3.00	2.00	3.04	.013	.00	.00	PIPE
4873.388	1886.625	2.950	1889.575	208.00	18.82	5.50	1895.07	.00	4.09	4.28	4.500	.000	.00	1 .0
161.002	.0176					.0203	3.27	2.95	2.06	3.04	.013	.00	.00	PIPE
5034.390	1889.460	2.831	1892.291	208.00	19.74	6.05	1898.34	.00	4.09	4.35	4.500	.000	.00	1 .0
JUNCT STR	.0175					.0216	.17	2.83	2.23		.013	.00	.00	PIPE
5042.390	1889.600	2.823	1892.423	208.00	19.80	6.09	1898.51	.00	4.09	4.35	4.500	.000	.00	1 .0
22.270	.0175					.0220	.49	2.82	2.25	3.04	.013	.00	.00	PIPE
5064.660	1889.990	2.799	1892.789	208.00	20.00	6.21	1899.00	.00	4.09	4.36	4.500	.000	.00	1 .0
11.900	.0218					.0222	.26	2.80	2.28	2.82	.013	.00	.00	PIPE

NEC-1 Detention Basin Outfall Stormdrain (C1IT 0000)
Modified COH HEC-1 Model (increased basin area from Ithaca to Harve)
SDN3 and SDN4,72" - 66" Outfall,48-inch RCP at Racetrack,Over Emden, F

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
5076.560	1890.250	2.798	1893.048	208.00	20.01	6.22	1899.27	.00	4.09	4.36	4.500	.000	.00	1 .0
JUNCT STR	.0222					.0223	.18	2.80	2.29		.013	.00	.00	PIPE
5084.560	1890.428	2.798	1893.226	208.00	20.01	6.22	1899.45	.00	4.09	4.36	4.500	.000	.00	1 .0
274.704	.0222					.0224	6.17	2.80	2.29	2.80	.013	.00	.00	PIPE
5359.264	1896.526	2.781	1899.307	208.00	20.15	6.30	1905.61	.00	4.09	4.37	4.500	.000	.00	1 .0
273.728	.0222					.0241	6.60	2.78	2.31	2.80	.013	.00	.00	PIPE
5632.991	1902.603	2.672	1905.275	208.00	21.13	6.93	1912.21	.00	4.09	4.42	4.500	.000	.00	1 .0
117.009	.0222					.0272	3.19	2.67	2.50	2.80	.013	.00	.00	PIPE
5750.000	1905.200	2.569	1907.769	208.00	22.16	7.63	1915.40	.00	4.09	4.45	4.500	.000	.00	1 .0
65.496	.0295					.0288	1.89	2.57	2.69	2.55	.013	.00	.00	PIPE
5815.496	1907.133	2.577	1909.710	208.00	22.08	7.57	1917.28	.00	4.09	4.45	4.500	.000	.00	1 .0
231.685	.0295					.0270	6.25	2.58	2.68	2.55	.013	.00	.00	PIPE
6047.181	1913.972	2.680	1916.652	208.00	21.05	6.88	1923.54	.00	4.09	4.42	4.500	.000	.00	1 .0
91.504	.0295					.0239	2.19	2.68	2.48	2.55	.013	.00	.00	PIPE
6138.685	1916.672	2.790	1919.463	208.00	20.08	6.26	1925.72	.00	4.09	4.37	4.500	.000	.00	1 .0
54.109	.0295					.0212	1.15	2.79	2.30	2.55	.013	.00	.00	PIPE
6192.794	1918.270	2.907	1921.177	208.00	19.14	5.69	1926.87	.00	4.09	4.30	4.500	.000	.00	1 .0
36.663	.0295					.0188	.69	2.91	2.12	2.55	.013	.00	.00	PIPE

NEC-1 Detention Basin Outfall Stormdrain (C1IT 0000)
Modified COH HEC-1 Model (increased basin area from Ithaca to Harve)
SDN3 and SDN4,72" - 66" Outfall,48-inch RCP at Racetrack,Over Emden, F

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
6229.457	1919.352	3.031	1922.383	208.00	18.25	5.17	1927.55	.00	4.09	4.22	4.500	.000	.00	1 .0
26.279	.0295					.0167	.44	3.03	1.96	2.55	.013	.00	.00	PIPE
6255.736	1920.127	3.165	1923.292	208.00	17.40	4.70	1927.99	.00	4.09	4.11	4.500	.000	.00	1 .0
19.429	.0295					.0149	.29	3.17	1.80	2.55	.013	.00	.00	PIPE
6275.166	1920.701	3.309	1924.010	208.00	16.59	4.27	1928.28	.00	4.09	3.97	4.500	.000	.00	1 .0
14.287	.0295					.0134	.19	3.31	1.65	2.55	.013	.00	.00	PIPE
6289.452	1921.123	3.467	1924.590	208.00	15.82	3.89	1928.48	.00	4.09	3.78	4.500	.000	.00	1 .0
10.208	.0295					.0121	.12	3.47	1.50	2.55	.013	.00	.00	PIPE
6299.660	1921.424	3.642	1925.066	208.00	15.08	3.53	1928.60	.00	4.09	3.54	4.500	.000	.00	1 .0
6.527	.0295					.0110	.07	3.64	1.35	2.55	.013	.00	.00	PIPE
6306.187	1921.617	3.842	1925.459	208.00	14.38	3.21	1928.67	.00	4.09	3.18	4.500	.000	.00	1 .0
2.523	.0295					.0101	.03	3.84	1.19	2.55	.013	.00	.00	PIPE
6308.710	1921.691	4.086	1925.777	208.00	13.71	2.92	1928.70	.00	4.09	2.60	4.500	.000	.00	1 .0
TRANS STR	.0230					.0068	.07	4.09	1.00		.013	.00	.00	PIPE
6318.710	1921.921	5.825	1927.746	208.00	8.75	1.19	1928.94	.00	4.04	.00	5.500	.000	.00	1 .0
JUNCT STR	.0075							.00	.00		.013	.00	.00	PIPE
6419.750	1922.680	3.437	1926.117	208.00	13.32	2.75	1928.87	.00	4.04	5.33	5.500	.000	.00	1 .0
256.490	.0075					.0075	1.92	3.44	1.37	3.44	.013	.00	.00	PIPE

NEC-1 Detention Basin Outfall Stormdrain (C1IT 0000)
Modified COH HEC-1 Model (increased basin area from Ithaca to Harve)
SDN3 and SDN4,72" - 66" Outfall,48-inch RCP at Racetrack,Over Emden, F

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
6676.240	1924.610	3.450	1928.060	208.00	13.26	2.73	1930.79	.00	4.04	5.32	5.500	.000	.00	1 .0
JUNCT STR	.0075					.0074	.06	3.45	1.36		.013	.00	.00	PIPE
6684.240	1924.670	3.450	1928.120	208.00	13.26	2.73	1930.85	.00	4.04	5.32	5.500	.000	.00	1 .0
199.852	.0075					.0071	1.43	3.45	1.36	3.44	.013	.00	.00	PIPE
6884.092	1926.171	3.546	1929.717	208.00	12.84	2.56	1932.28	.00	4.04	5.26	5.500	.000	.00	1 .0
79.492	.0075					.0065	.52	3.55	1.29	3.44	.013	.00	.00	PIPE
6963.584	1926.768	3.697	1930.465	208.00	12.24	2.33	1932.79	.00	4.04	5.16	5.500	.000	.00	1 .0
27.910	.0075					.0058	.16	3.70	1.19	3.44	.013	.00	.00	PIPE
6991.494	1926.978	3.860	1930.838	208.00	11.68	2.12	1932.95	.00	4.04	5.03	5.500	.000	.00	1 .0
6.986	.0075					.0051	.04	3.86	1.09	3.44	.013	.00	.00	PIPE
6998.480	1927.030	4.037	1931.067	208.00	11.13	1.92	1932.99	.36	4.04	4.86	5.500	.000	.00	1 .0
JUNCT STR	.0072							4.40	1.00		.013	.00	.00	PIPE
7078.950	1927.610	2.666	1930.276	208.00	18.22	5.15	1935.43	.00	4.04	5.50	5.500	.000	.00	1 .0
27.813	.0076					.0178	.50	2.67	2.23	3.42	.013	.00	.00	PIPE
7106.763	1927.822	2.598	1930.420	208.00	18.83	5.51	1935.93	.00	4.04	5.49	5.500	.000	.00	1 .0
37.150	.0076					.0199	.74	2.60	2.34	3.42	.013	.00	.00	PIPE
7143.914	1928.105	2.504	1930.610	208.00	19.75	6.06	1936.67	.00	4.04	5.48	5.500	.000	.00	1 .0
34.377	.0076					.0227	.78	2.50	2.51	3.42	.013	.00	.00	PIPE

NEC-1 Detention Basin Outfall Stormdrain (C1IT 0000)

Modified COH HEC-1 Model (increased basin area from Ithaca to Harve)

SDN3 and SDN4,72" - 66" Outfall,48-inch RCP at Racetrack,Over Emden, F

Station / L/Elem	Invert Elev / Ch Slope	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head / SF Ave	Energy Grd.El. / HF	Super Elev / SE Dpth	Critical Depth / Froude N	Flow Top Width / Norm Dp	Height/ Dia.-FT / "N"	Base Wt or I.D. / X-Fall	ZL / ZR	No Wth Prs/Pip / Type Ch
7178.291	1928.368	2.415	1930.783	208.00	20.71	6.66	1937.44	.00	4.04	5.46	5.500	.000	.00	1 .0
31.955	.0076					.0258	.82	2.42	2.69	3.42	.013	.00	.00	PIPE
7210.246	1928.611	2.329	1930.941	208.00	21.72	7.33	1938.27	.00	4.04	5.44	5.500	.000	.00	1 .0
29.955	.0076					.0294	.88	2.33	2.88	3.42	.013	.00	.00	PIPE
7240.200	1928.840	2.247	1931.087	208.00	22.78	8.06	1939.15	.00	4.04	5.41	5.500	.000	.00	1 .0
255.045	.0318					.0296	7.56	2.25	3.09	2.24	.013	.00	.00	PIPE
7495.245	1936.961	2.316	1939.277	208.00	21.88	7.43	1946.71	.00	4.04	5.43	5.500	.000	.00	1 .0
106.159	.0318					.0263	2.79	2.32	2.91	2.24	.013	.00	.00	PIPE
7601.404	1940.341	2.402	1942.743	208.00	20.86	6.76	1949.50	.00	4.04	5.46	5.500	.000	.00	1 .0
60.089	.0318					.0231	1.39	2.40	2.72	2.24	.013	.00	.00	PIPE
7661.493	1942.254	2.491	1944.745	208.00	19.89	6.14	1950.89	.00	4.04	5.48	5.500	.000	.00	1 .0
40.352	.0318					.0203	.82	2.49	2.54	2.24	.013	.00	.00	PIPE
7701.845	1943.539	2.584	1946.123	208.00	18.96	5.58	1951.71	.00	4.04	5.49	5.500	.000	.00	1 .0
29.376	.0318					.0179	.52	2.58	2.36	2.24	.013	.00	.00	PIPE
7731.221	1944.474	2.681	1947.155	208.00	18.08	5.08	1952.23	.00	4.04	5.50	5.500	.000	.00	1 .0
22.302	.0318					.0157	.35	2.68	2.20	2.24	.013	.00	.00	PIPE
7753.522	1945.184	2.783	1947.967	208.00	17.24	4.62	1952.58	.00	4.04	5.50	5.500	.000	.00	1 .0
17.371	.0318					.0138	.24	2.78	2.05	2.24	.013	.00	.00	PIPE

NEC-1 Detention Basin Outfall Stormdrain (C1IT 0000)
Modified COH HEC-1 Model (increased basin area from Ithaca to Harve)
SDN3 and SDN4,72" - 66" Outfall,48-inch RCP at Racetrack,Over Emden, F

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
7770.893	1945.737	2.890	1948.627	208.00	16.44	4.20	1952.82	.00	4.04	5.49	5.500	.000	.00	1 .0
13.672	.0318					.0122	.17	2.89	1.91	2.24	.013	.00	.00	PIPE
7784.565	1946.172	3.003	1949.175	208.00	15.67	3.81	1952.99	.00	4.04	5.48	5.500	.000	.00	1 .0
10.811	.0318					.0108	.12	3.00	1.77	2.24	.013	.00	.00	PIPE
7795.376	1946.517	3.122	1949.639	208.00	14.94	3.47	1953.11	.00	4.04	5.45	5.500	.000	.00	1 .0
8.522	.0318					.0095	.08	3.12	1.65	2.24	.013	.00	.00	PIPE
7803.898	1946.788	3.247	1950.035	208.00	14.25	3.15	1953.19	.00	4.04	5.41	5.500	.000	.00	1 .0
6.600	.0318					.0084	.06	3.25	1.53	2.24	.013	.00	.00	PIPE
7810.498	1946.998	3.379	1950.377	208.00	13.58	2.87	1953.24	.00	4.04	5.35	5.500	.000	.00	1 .0
4.902	.0318					.0075	.04	3.38	1.42	2.24	.013	.00	.00	PIPE
7815.400	1947.154	3.520	1950.674	208.00	12.95	2.61	1953.28	.00	4.04	5.28	5.500	.000	.00	1 .0
TRANS STR	.0080					.0080	.04	3.52	1.31		.013	.00	.00	PIPE
7820.400	1947.194	3.072	1950.266	208.00	14.28	3.17	1953.43	.00	3.94	6.00	6.000	.000	.00	1 .0
82.070	.0078					.0093	.76	3.07	1.61	3.20	.013	.00	.00	PIPE
7902.470	1947.831	3.000	1950.831	208.00	14.72	3.36	1954.19	.00	3.94	6.00	6.000	.000	.00	1 .0
41.604	.0103					.0096	.40	3.00	1.69	2.94	.013	.00	.00	PIPE
7944.075	1948.261	3.016	1951.277	208.00	14.61	3.31	1954.59	.00	3.94	6.00	6.000	.000	.00	1 .0
130.226	.0103					.0089	1.16	3.02	1.67	2.94	.013	.00	.00	PIPE

NEC-1 Detention Basin Outfall Stormdrain (C1IT 0000)
Modified COH HEC-1 Model (increased basin area from Ithaca to Harve)
SDN3 and SDN4,72" - 66" Outfall,48-inch RCP at Racetrack,Over Emden, F

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
8074.301	1949.605	3.132	1952.737	208.00	13.93	3.01	1955.75	.00	3.94	5.99	6.000	.000	.00	1 .0
61.305	.0103					.0078	.48	3.13	1.56	2.94	.013	.00	.00	PIPE
8135.605	1950.238	3.254	1953.492	208.00	13.28	2.74	1956.23	.00	3.94	5.98	6.000	.000	.00	1 .0
35.571	.0103					.0069	.25	3.25	1.45	2.94	.013	.00	.00	PIPE
8171.176	1950.605	3.382	1953.988	208.00	12.66	2.49	1956.48	.00	3.94	5.95	6.000	.000	.00	1 .0
21.698	.0103					.0061	.13	3.38	1.34	2.94	.013	.00	.00	PIPE
8192.874	1950.829	3.517	1954.347	208.00	12.07	2.26	1956.61	.00	3.94	5.91	6.000	.000	.00	1 .0
12.637	.0103					.0054	.07	3.52	1.25	2.94	.013	.00	.00	PIPE
8205.511	1950.960	3.661	1954.621	208.00	11.51	2.06	1956.68	.00	3.94	5.85	6.000	.000	.00	1 .0
85.183	.0051					.0051	.43	3.66	1.15	3.66	.013	.00	.00	PIPE
8290.693	1951.393	3.661	1955.053	208.00	11.51	2.06	1957.11	.00	3.94	5.85	6.000	.000	.00	1 .0
131.174	.0051					.0048	.64	3.66	1.15	3.66	.013	.00	.00	PIPE
8421.867	1952.059	3.783	1955.842	208.00	11.07	1.90	1957.75	.00	3.94	5.79	6.000	.000	.00	1 .0
17.963	.0051					.0043	.08	3.78	1.08	3.66	.013	.00	.00	PIPE
8439.830	1952.150	3.944	1956.094	208.00	10.55	1.73	1957.82	.00	3.94	5.70	6.000	.000	.00	1 .0

Comment 7

Figures E-5, E-6 from the 2005-2006 Local Drainage Master Plan Project

Excerpts from HEC-1 model C1E3.dat

HEC-RAS model drake12908.prj

HEC-RAS Cross-Section locations

2005-2006
LOCAL DRAINAGE MASTER PLAN PROJECT

PREPARED FOR:

HENDERSON, NEVADA

August 2006

VOLUME 2 of 3 - Report

Prepared by:

VTN Nevada W.O. #6654

vtn nevada

THE CITY OF HENDERSON

A Place To Call Home

NEIGHBORHOOD FLOOD CONTROL MASTER PLAN

LEGEND

- Sub-basin Boundary
- PPA020 Basin ID
- (10yr/100yr) Contributing flow from the basin (cfs)
- Flow Arrow
- 250 / 500 / (300) / (800) — 10-Year Street Flow / 100-Year Street Flow / 10-Year Facility Flow / 100-Year Facility Flow

(Flows in CFS)

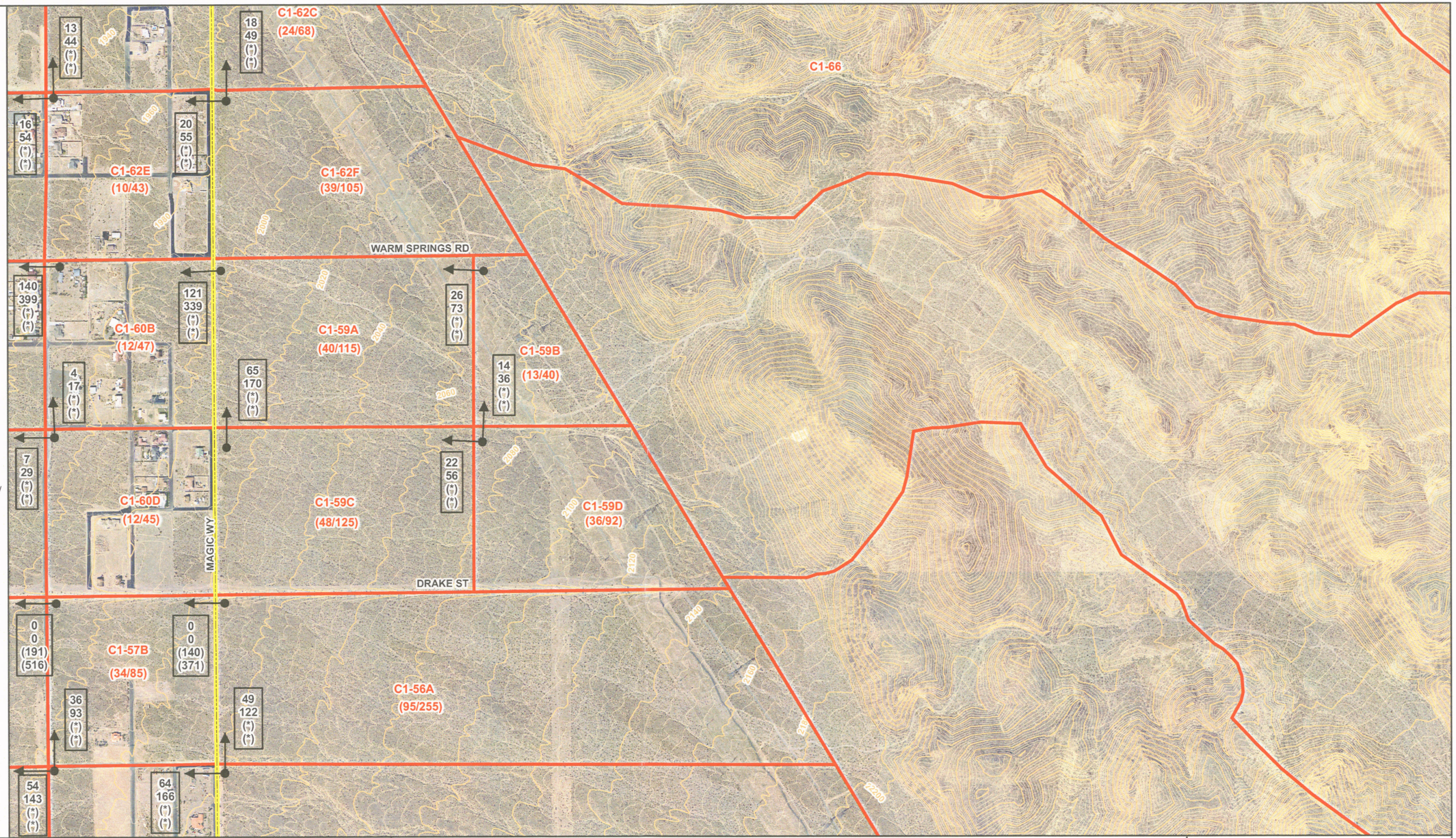
- Study Area Limit

1996 Contours

- 5-Foot Contours
- 2320 — 20-Foot Index Contours

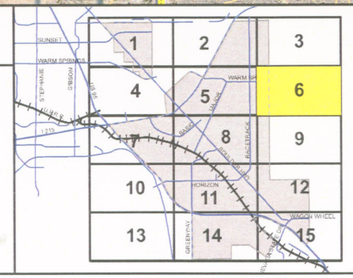
PHOTO DATE: SPRING 2006

FIGURE E-6



EXISTING DRAINAGE CONDITIONS

vtn nevada
2727 S. Rainbow Boulevard
Las Vegas, NV 89146-5148
Phone: (702) 873-7550
Fax: (702) 362-2597
Web Site: http://www.vtnnv.com



NOTE:
Existing drainage conditions are based on future Curve Number values with only existing local and CCRFCD facilities in place.

N W E S

0 200 400 600 800 1,600
Feet

SCALE: 1 inch = 800 feet

THE CITY OF HENDERSON

A Place To Call Home

NEIGHBORHOOD FLOOD CONTROL MASTER PLAN

LEGEND

- Sub-basin Boundary
- PPA020 Basin ID
- (10yr/100yr) Contributing flow from the basin (cfs)
- Flow Arrow
- 250 / 500 / (300) / (800) — 10-Year Street Flow; 100-Year Street Flow; 10-Year Facility Flow; 100-Year Facility Flow

(Flows in CFS)

- Study Area Limit

1996 Contours

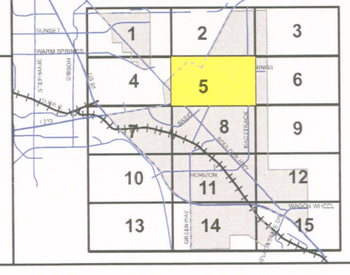
- 5-Foot Contours
- 2320 20-Foot Index Contours

PHOTO DATE: SPRING 2006

FIGURE E-5

EXISTING DRAINAGE CONDITIONS

vtn nevada
2727 S. Rainbow Boulevard
Las Vegas, NV 89146-5148
Phone: (702) 873-7550
Fax: (702) 362-2597
Web Site: http://www.vtnnv.com



NOTE:
Existing drainage conditions are based on future Curve Number values with only existing local and CCRFCD facilities in place.

N
W
E
S

0 200 400 600 800 1,600
Feet

SCALE: 1 inch = 800 feet

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1*****************************************
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 *               JUN  1998               *
 *            VERSION 4.1                *
 *                                       *
 *  RUN DATE   16AUG06  TIME  00:10:13   *
 *                                       *
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*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
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X     X  X        X     X         XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX          XXX
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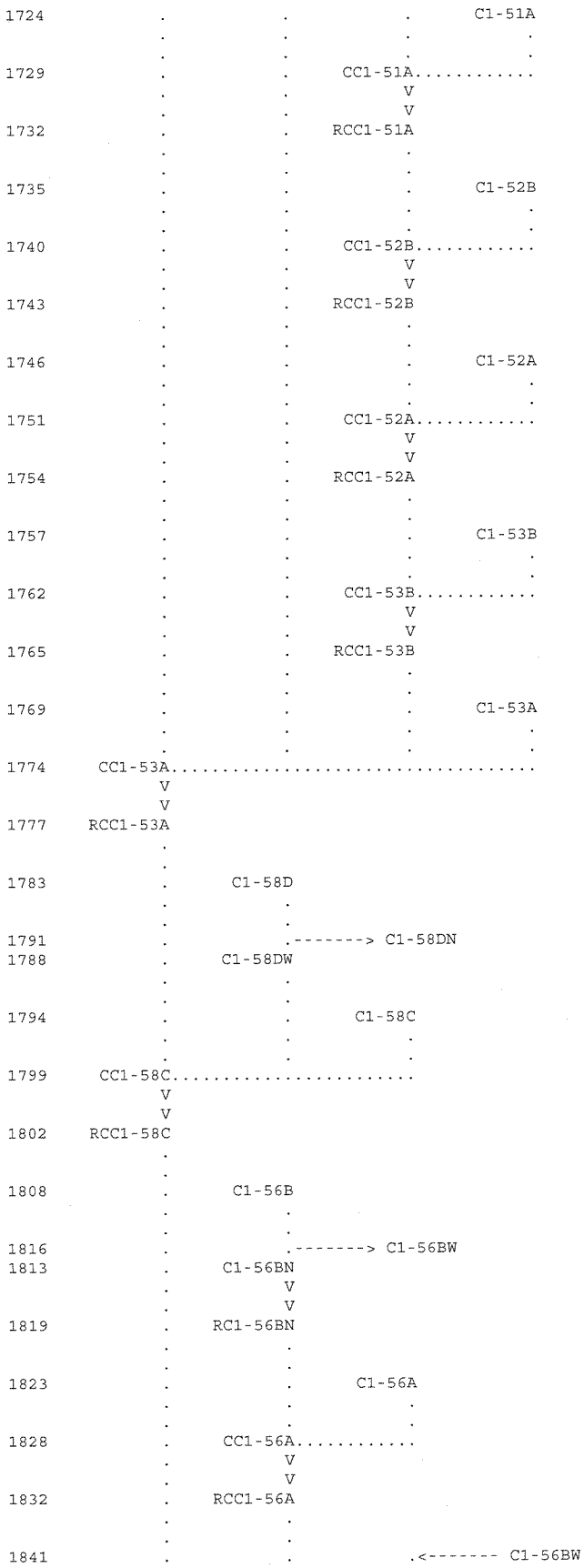
THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

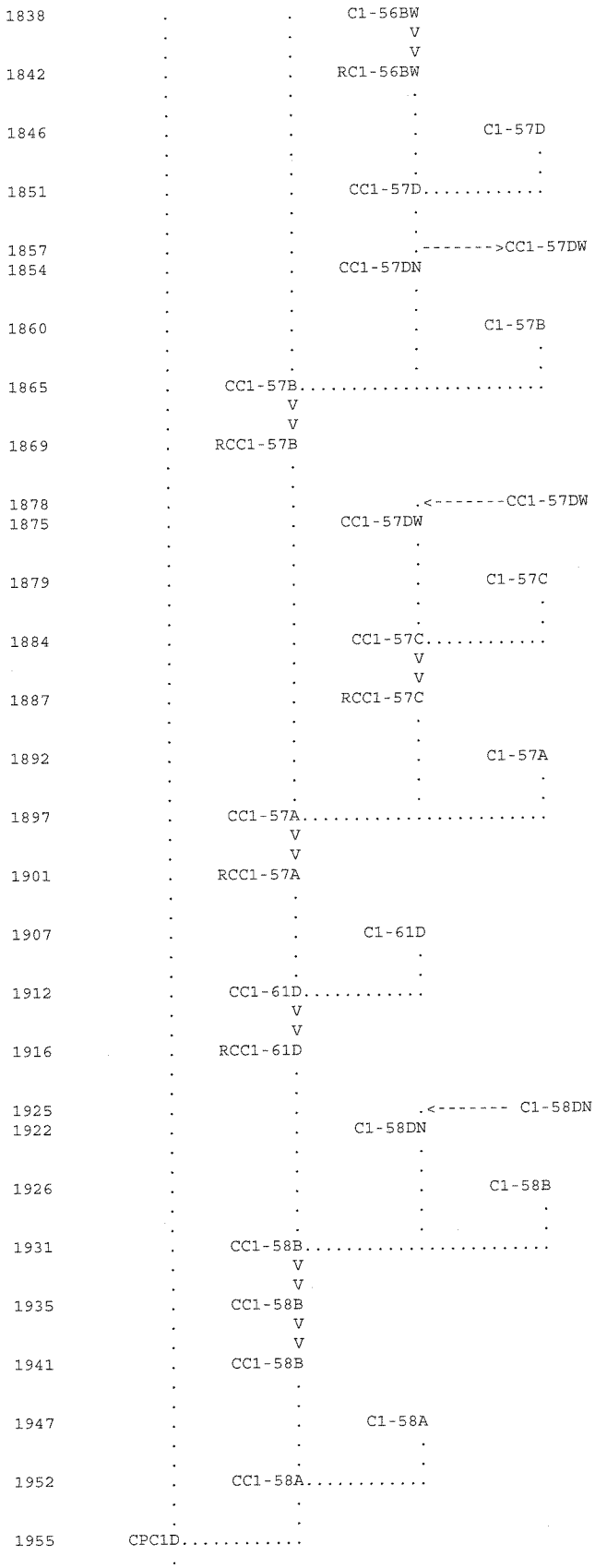
THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


```
          LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9.....10

                    *DIAGRAM
*** FREE ***
               1    ID        CITY OF HENDERSON 2005-2006 LOCAL DRAINAGE MASTER PLAN
               2    ID        HEC-1 ANALYSIS FOR EXISTING CONDITION
               3    ID        THE 100-YEAR 6-HOUR EVENT
               4    ID        FILE: C1E3.DAT
               5    ID
               6    ID    REFERENCED HYDROLOGIC MODELS:
               7    ID    CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN UPDATE
               8    ID    PREDESIGN REPORT FOR THE BLACK MOUNTAIN AND MISSION HILLS DETENTION BASINS
               9    ID    AND OUTFALL STRUCTURES (VTN 1992)
              10    ID    SNWA RIVER MOUNTAINS WATER TREATMENT FACILITY DRAFT TECHNICAL DRAINAGE STUDY
              11    ID    (MONTGOMERY WATSON/CH2MHILL 1997)
              12    ID    EAST C-1 DETENTION BASIN FINAL DESIGN (VTN 1998)
              13    ID    DESIGN MEMORANDUM FOR THE EQUESTRIAN DETENTION BASIN (POGGEMEYER 1994)
              14    ID    DESIGN CALCULATION NOTEBOOK FOR THE BLACK MOUNTAIN DETENTION BASIN
              15    ID    (VTN 1998)
              16    ID
              17    ID        PREPARED FOR THE CITY OF HENDERSON
              18    ID
              19    ID    JR CARDS CONTAIN DARFS BASED ON THE FOLLOWING VALUES:
              20    ID
              21    ID                        AREA     DARF
              22    ID                        SQ.MI.
              23    ID
              24    ID                         0 - 0.5  0.99
              25    ID                       0.5 - 1    0.975
              26    ID                         1 - 2    0.95
              27    ID                         2 - 3    0.925
              28    ID                         3 - 4    0.915
              29    ID                         4 - 5    0.908
              30    ID                         5 - 6    0.903
              31    ID                         6 - 7    0.895
              32    ID                         7 - 8    0.885
              33    ID
              34    ID
              35    ID
              36    IT      5       0       0     300
              37    IN      5       0       0
              38    IO      5
              39    JR    PREC    0.99   0.975    0.95   0.925   0.915   0.908   0.903   0.895   0.885

              40    KK    C1-1
```


1724
C1-51A
1729
CC1-51A
1732
RCC1-51A
1735
C1-52B
1740
CC1-52B
1743
RCC1-52B
1746
C1-52A
1751
CC1-52A
1754
RCC1-52A
1757
C1-53B
1762
CC1-53B
1765
RCC1-53B
1769
C1-53A
1774
CC1-53A
1777
RCC1-53A
1783
C1-58D
1791
C1-58DN
1788
C1-58DW
1794
C1-58C
1799
CC1-58C
1802
RCC1-58C
1808
C1-56B
1816
C1-56BW
1813
C1-56BN
1819
RC1-56BN
1823
C1-56A
1828
CC1-56A
1832
RCC1-56A
1841
C1-56BW


1838
C1-56BW
1842
RC1-56BW
1846
C1-57D
1851
CC1-57D
1857
CC1-57DW
1854
CC1-57DN
1860
C1-57B
1865
CC1-57B
1869
RCC1-57B
1878
CC1-57DW
1875
CC1-57DW
1879
C1-57C
1884
CC1-57C
1887
RCC1-57C
1892
C1-57A
1897
CC1-57A
1901
RCC1-57A
1907
C1-61D
1912
CC1-61D
1916
RCC1-61D
1925
C1-58DN
1922
C1-58DN
1926
C1-58B
1931
CC1-58B
1935
CC1-58B
1941
CC1-58B
1947
C1-58A
1952
CC1-58A
1955
CPC1D

```
1760          LS       0    86.6
1761          UD   0.252
              *

1762          KK CC1-53B
1763          KM   COMBINE CC1-52A AND C1-53B
1764          HC       2
              *

1765          KKRCC1-53B
1766          KM   ROUTE C1-53B TO C1-53A
1767          KM   BURKHOLDER BLVD
1768          RD    1330   0.026   0.016       0    TRAP       0      50
              *

1769          KK  C1-53A
1770          BA   0.077
1771          PB    2.98
1772          LS       0    86.3
1773          UD   0.274
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1774          KK CC1-53A
1775          KM   COMBINE CC1-29A, CC1-53D, CC1-53B AND C1-53A
1776          HC       4
              *

1777          KKRCC1-53A
1778          KM   ROUTE CC1-53A TO C1-58C
1779          KM   FACILITY = C-1 CHANNEL
1780          KM   FACILITY # = C1CH 0441 TO C1CH 0408
1781          KM   LINING = CONCRETE
1782          RD    1360   0.025   0.015       0    TRAP      25       2
              *

1783          KK  C1-58D
1784          BA   0.064
1785          PB    2.92
1786          LS       0    86.0
1787          UD   0.258
              *

1788          KK C1-58DW
1789          KM   SPLIT FLOW WEST SEVILLE AVE
1790          KM   SPLIT FLOW NORTH KIEL ST
1791          DT C1-58DN
1792          DI       0     100     200     400     600
1793          DQ       0      35      70     139     209
              *

1794          KK  C1-58C
1795          BA   0.049
1796          PB    2.92
1797          LS       0    81.6
1798          UD   0.294
              *

1799          KK CC1-58C
1800          KM   COMBINE CC1-53A, C1-58DW AND C1-58C
1801          HC       3
              *

1802          KKRCC1-58C
1803          KM   ROUTE CC1-58C TO CC1-58A
1804          KM   FACILITY = C-1 CHANNEL
1805          KM   FACILITY # = C1CH 0408 TO C1CH 0400
1806          KM   LINING = CONCRETE
1807          RD    1360   0.025   0.015       0    TRAP      25       2
              *

1808          KK  C1-56B
1809          BA   0.241
1810          PB    3.05
1811          LS       0    86.0
1812          UD   0.235
              *
```

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

1813          KK C1-56BN
1814          KM   SPLIT FLOW NORTH MAGIC WAY
1815          KM   SPLIT FLOW WEST SEVILLE AVE
1816          DT C1-56BW
1817          DI       0     100     200     400     600
1818          DQ       0      56     115     231     342
              *

1819          KKRC1-56BN
1820          KM   ROUTE C1-56BN TO C1-56A
1821          KM   MAGIC WAY
1822          RD    1300   0.012   0.016       0    TRAP       0      50
              *

1823          KK  C1-56A
1824          BA   0.215
1825          PB    3.05
1826          LS       0    85.1
1827          UD   0.212
              *

1828          KK CC1-56A
1829          KM   COMBINE C1-56B AND C1-56A
1830          KM   DRAKE CHANNEL @ MAGIC WAY
1831          HC       2
              *

1832          KKRCC1-56A
1833          KM   ROUTE CC1-56A TO C1-57
1834          KM   FACILITY = C-1 CHANNEL - DRAKE CHANNEL
1835          KM   FACILITY # = C1DC 0051
1836          KM   LINING = EARTH
1837          RD    1320   0.005   0.020       0    TRAP      20       2
              *

1838          KK C1-56BW
1839          KM   C1-56B SPLIT FLOW WEST
1840          KM   SEVILLE AVE
1841          DR C1-56BW
              *

1842          KKRC1-56BW
1843          KM   ROUTE C1-56BW TO C1-57D
1844          KM   SEVILLE AVE
1845          RD    1300   0.027   0.016       0    TRAP       0      50
              *

1846          KK  C1-57D
1847          BA   0.062
1848          PB    2.97
1849          LS       0    86.2
1850          UD   0.163
              *
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1

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LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

1851          KK CC1-57D
1852          KM   COMBINE C1-56BW AND C1-57D
1853          HC       2
              *

1854          KKCC1-57DN
1855          KM   SPLIT FLOW NORTH MILAN ST
1856          KM   SPLIT FLOW WEST SEVILLE AVE
1857          DTCC1-57DW
1858          DI       0     100     200     400     600
1859          DQ       0      60     121     242     363
              *

1860          KK  C1-57B
1861          BA   0.063
1862          PB    2.97
1863          LS       0    86.0
1864          UD   0.157
              *
```

```
1865          KK CC1-57B
1866          KM   COMBINE CC1-56A, C1-57DN AND C1-57B
1867          KM   DRAKE CHANNEL @ MILAN ST
1868          HC       3
              *

1869          KKRCC1-57B
1870          KM   ROUTE CC1-57B TO C1-57A
1871          KM   FACILITY = C-1 CHANNEL - DRAKE CHANNEL
1872          KM   FACILITY # = C1DC 0051
1873          KM   LINING = EARTH
1874          RD    1320   0.005   0.020       0    TRAP      20       2
              *

1875          KKCC1-57DW
1876          KM   C1-57D SPLIT FLOW WEST
1877          KM   SEVILLE AVE
1878          DRCC1-57DW
              *

1879          KK  C1-57C
1880          BA   0.063
1881          PB    2.97
1882          LS       0    86.2
1883          UD   0.170
              *

1884          KK CC1-57C
1885          KM   COMBINE C1-57DW AND C1-57C
1886          HC       2
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1887          KKRCC1-57C
1888          KM   ROUTE CC1-57C TO C1-57A
1889          KM   RACETRACK ROAD TRAP CHANNEL
1890          KM   LINING = CONCRETE
1891          RD    1300    0.01   0.015       0    TRAP      20       2
              *

1892          KK  C1-57A
1893          BA   0.062
1894          PB    2.97
1895          LS       0    86.1
1896          UD   0.159
              *

1897          KK CC1-57A
1898          KM   COMBINE CC1-57B, CC1-57C AND C1-57A
1899          KM   DRAKE CHANNEL @ RACETRACK ROAD
1900          HC       3
              *

1901          KKRCC1-57A
1902          KM   ROUTE CC1-57A TO C1-61D
1903          KM   FACILITY = C-1 CHANNEL - DRAKE CHANNEL
1904          KM   FACILITY # = C1DC 0031 TO C1DC 0026
1905          KM   LINING = CONCRETE
1906          RD    1000   0.027    .015       0    TRAP      26       0
              *

1907          KK  C1-61D
1908          BA   0.031
1909          PB    2.87
1910          LS       0    86.0
1911          UD   0.141
              *

1912          KK CC1-61D
1913          KM   COMBINE CC1-57A, AND C1-61D
1914          KM   DRAKE CHANNEL
1915          HC       2
              *

1916          KKRCC1-61D
1917          KM   ROUTE CC1-61D TO C1-58B
1918          KM   FACILITY = C-1 CHANNEL - DRAKE CHANNEL
```

```
1919          KM   FACILITY # = C1DC 0031 TO C1DC 0026
1920          KM   LINING = CONCRETE
1921          RD     300   0.027    .015       0    TRAP      26       0
              *
1                                    HEC-1 INPUT                                        PAGE 54

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1922          KK C1-58DN
1923          KM   C1-58D SPLIT FLOW NORTH
1924          KM   CLOUDCREST DR
1925          DR C1-58DN
              *

1926          KK  C1-58B
1927          BA   0.061
1928          PB    2.92
1929          LS       0    86.2
1930          UD   0.240
              *

1931          KK CC1-58B
1932          KM   COMBINE CC1-61D, C1-58DN AND C1-58B
1933          KM   DRAKE CHANNEL @ CLOUDCREST DR
1934          HC       3
              *

1935          KK CC1-58B
1936          KM   ROUTE CC1-58B TO C1-58A
1937          KM   FACILITY = C-1 CHANNEL - DRAKE CHANNEL
1938          KM   FACIILITY # = C1DC 0013
1939          KM   LINING = CONCRETE
1940          RD     650   0.027    .015       0    TRAP      16       2
              *

1941          KK CC1-58B
1942          KM   ROUTE CC1-58B TO C1-58A
1943          KM   FACILITY = C-1 CHANNEL - DRAKE CHANNEL
1944          KM   FACIILITY # = C1DC 0000
1945          KM   LINING = CONCRETE
1946          RD     700   0.027    .015       0    TRAP      25       0
              *

1947          KK  C1-58A
1948          BA   0.060
1949          PB    2.92
1950          LS       0    85.2
1951          UD   0.259
              *

1952          KK CC1-58A
1953          KM   COMBINE CC1-58B AND C1-58A
1954          HC       2
              *

1955          KK   CPC1D
1956          KM   COMBINE CC1-58C AND CC1-58A
1957          KM   CONFLUENCE OF C-1 CHANNEL AND DRAKE CHANNEL
1958          HC       2
              *
1                                    HEC-1 INPUT                                        PAGE 55

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1959          KK  C1-61C
1960          BA   0.095
1961          PB    2.87
1962          LS       0    86.5
1963          UD   0.173
              *

1964          KK     CPA
1965          KM   COMBINE FLOWS AT C-1 CHANNEL AND C-61C
1966          HC       2
              *

1967          KK    R61C
1968          KM   FLOW TO WARM SPRING AND C-1 CHANNEL
1969          RD    1410    .018    .013       0    TRAP      15       0
```

+	C1-58D	.06	1	FLOW	69.	67.	65.	62.	61.	60.	60.	59.	58.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
DIVERSION TO													
+	C1-58DN	.06	1	FLOW	24.	24.	23.	22.	21.	21.	21.	21.	20.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	C1-58DW	.06	1	FLOW	45.	44.	42.	40.	40.	39.	39.	38.	38.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	C1-58C	.05	1	FLOW	41.	40.	38.	36.	35.	35.	35.	34.	33.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
3 COMBINED AT													
+	CC1-58C	25.03	1	FLOW	10176.	9936.	9546.	9158.	9013.	8892.	8823.	8686.	8534.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO													
+	RCC1-58C	25.03	1	FLOW	10114.	9876.	9487.	9097.	8953.	8830.	8759.	8624.	8470.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT													
+	C1-56B	.24	1	FLOW	289.	282.	271.	261.	256.	253.	251.	248.	244.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
DIVERSION TO													
+	C1-56BW	.24	1	FLOW	166.	163.	156.	150.	148.	146.	145.	143.	140.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	C1-56BN	.24	1	FLOW	122.	120.	115.	110.	109.	107.	107.	105.	103.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RC1-56BN	.24	1	FLOW	118.	116.	112.	108.	107.	105.	103.	101.	101.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT													
+	C1-56A	.22	1	FLOW	255.	249.	240.	230.	226.	223.	222.	218.	215.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	CC1-56A	.46	1	FLOW	371.	363.	348.	335.	329.	324.	321.	317.	313.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RCC1-56A	.46	1	FLOW	359.	352.	336.	323.	319.	313.	310.	308.	301.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	C1-56BW	.00	1	FLOW	166.	163.	156.	150.	148.	146.	145.	143.	140.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RC1-56BW	.00	1	FLOW	162.	158.	153.	146.	143.	141.	140.	139.	136.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	C1-57D	.06	1	FLOW	83.	81.	78.	75.	74.	73.	72.	71.	70.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CC1-57D	.06	1	FLOW	236.	230.	222.	213.	209.	206.	205.	203.	199.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
DIVERSION TO													
+	CC1-57DW	.06	1	FLOW	143.	139.	135.	129.	127.	125.	124.	123.	120.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	CC1-57DN	.06	1	FLOW	93.	91.	88.	84.	83.	81.	81.	80.	78.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	C1-57B	.06	1	FLOW	85.	83.	80.	77.	75.	74.	74.	73.	72.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
3 COMBINED AT													
+	CC1-57B	.58	1	FLOW	526.	516.	494.	474.	468.	459.	456.	453.	442.

				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO														
+	RCC1-57B	.58	1	FLOW	511.	499.	481.	461.	455.	447.	443.	440.	430.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT														
+	CC1-57DW	.00	1	FLOW	143.	139.	135.	129.	127.	125.	124.	123.	120.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT														
+	C1-57C	.06	1	FLOW	83.	81.	78.	75.	74.	73.	72.	71.	70.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT														
+	CC1-57C	.06	1	FLOW	218.	214.	206.	198.	194.	191.	190.	188.	184.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO														
+	RCC1-57C	.06	1	FLOW	217.	212.	205.	197.	194.	190.	189.	187.	183.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT														
+	C1-57A	.06	1	FLOW	83.	82.	78.	75.	74.	73.	73.	72.	70.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
3 COMBINED AT														
+	CC1-57A	.71	1	FLOW	801.	781.	752.	719.	709.	696.	690.	685.	669.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO														
+	RCC1-57A	.71	1	FLOW	793.	772.	743.	710.	700.	688.	681.	676.	660.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT														
+	C1-61D	.03	1	FLOW	41.	40.	38.	37.	36.	36.	36.	35.	34.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT														
+	CC1-61D	.74	1	FLOW	827.	805.	775.	741.	730.	717.	710.	705.	688.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO														
+	RCC1-61D	.74	1	FLOW	824.	803.	772.	738.	727.	715.	708.	702.	686.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT														
+	C1-58DN	.00	1	FLOW	24.	24.	23.	22.	21.	21.	21.	21.	20.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT														
+	C1-58B	.06	1	FLOW	68.	67.	64.	62.	61.	60.	59.	59.	58.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
3 COMBINED AT														
+	CC1-58B	.80	1	FLOW	917.	893.	859.	822.	809.	796.	788.	781.	764.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO														
+	CC1-58B	.80	1	FLOW	909.	886.	852.	814.	802.	788.	781.	774.	756.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO														
+	CC1-58B	.80	1	FLOW	902.	879.	844.	807.	794.	781.	774.	767.	749.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT														
+	C1-58A	.06	1	FLOW	62.	61.	58.	56.	55.	54.	54.	53.	52.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT														
+	CC1-58A	.86	1	FLOW	964.	939.	903.	863.	849.	836.	828.	820.	801.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT														
+	CPC1D	25.89	1	FLOW	11064.	10804.	10381.	9954.	9797.	9662.	9583.	9441.	9270.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT														
+	C1-61C	.09	1	FLOW	120.	117.	112.	108.	106.	105.	104.	102.	101.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58

FEDERAL EMERGENCY MANAGEMENT AGENCY

RIVERINE HYDROLOGY & HYDRAULICS FORM

O.M.B No. 3067-0148
Expires September 30, 2005

PAPERWORK REDUCTION ACT

Public reporting burden for this form is estimated to average 3 hours per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing, reviewing, and submitting the form. You are not required to respond to this collection of information unless a valid OMB control number appears in the upper right corner of this form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, SW, Washington DC 20472, Paperwork Reduction Project (3067-0148). Submission of the form is required to obtain or retain benefits under the National Flood Insurance Program. **Please do not send your completed survey to the above address.**

Flooding Source: Unnamed Wash
Note: Fill out one form for each flooding source studied

A. HYDROLOGY

1. Reason for New Hydrologic Analysis (check all that apply)

☐ Not revised (skip to section 2) ☐ No existing analysis ☐ Improved data
☐ Alternative methodology ☐ Proposed Conditions (CLOMR) ☐ Changed physical condition of watershed

2. Comparison of Representative 1%-Annual-Chance Discharges

Location	Drainage Area (Sq. Mi.)	FIS (cfs)	Revised (cfs)

3. Methodology for New Hydrologic Analysis (check all that apply)

☐ Statistical Analysis of Gage Records ☐ Precipitation/Runoff Model [TR-20, HEC-1, HEC-HMS etc.]
☐ Regional Regression Equations ☐ Other (please attach description)

Please enclose all relevant models in digital format, maps, computations (including computation of parameters) and documentation to support the new analysis. The document, "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by FEMA. This document can be found at: http://www.fema.gov/plan/prevent/fhm/en_modl.shtm.

4. Review/Approval of Analysis

If your community requires a regional, state, or federal agency to review the hydrologic analysis, please attach evidence of approval/review.

5. Impacts of Sediment Transport on Hydrology

Was sediment transport considered? ☐ Yes ☐ No If yes, then fill out Section F (Sediment Transport) of Form 3. If No, then attach your explanation for why sediment transport was not considered.

B. HYDRAULICS

1. Reach to be Revised

	Description	Cross Section	Water-Surface Elevations (ft.) Effective	Proposed/Revised
Downstream Limit	Confluence with C1 Channel	1001	NA	NA
Upstream Limit	System Headworks	1328	NA	NA

2. Hydraulic Method Used

Hydraulic Analysis HEC-RAS [HEC-2 , HEC-RAS, Other (Attach description)]

B. HYDRAULICS (CONTINUED)

3. Pre-Submittal Review of Hydraulic Models

FEMA has developed two review programs, CHECK-2 and CHECK-RAS, to aid in the review of HEC-2 and HEC-RAS hydraulic models, respectively. These review programs verify that the hydraulic estimates and assumptions in the model data are in accordance with NFIP requirements, and that the data are comparable with the assumptions and limitations of HEC-2/HEC-RAS. CHECK-2 and CHECK-RAS identify areas of potential error or concern. These tools do not replace engineering judgment. CHECK-2 and CHECK-RAS can be downloaded from http://www.fema.gov/plan/prevent/fhm/frm_soft.shtm. We recommend that you review your HEC-2 and HEC-RAS models with CHECK-2 and CHECK-RAS. If you disagree with a message, please attach an explanation of why the message is not valid in this case. Review of your submittal and resolution of valid modeling discrepancies will result in reduced review time.

HEC-2/HEC-RAS models reviewed with CHECK-2/CHECK-RAS? ☐ Yes ☒ No

4. Models Submitted

Duplicate Effective Model*	Natural File Name:		Floodway File Name:
Corrected Effective Model*	Natural File Name:		Floodway File Name:
Existing or Pre-Project Conditions Model	Natural File Name:		Floodway File Name:
Revised or Post-Project Conditions Model	Natural File Name:	drake012908	Floodway File Name: NA
Other - (attach description)	Natural File Name:		Floodway File Name:

*Not required for revisions to approximate 1%-annual-chance floodplains (Zone A) – for details, refer to the corresponding section of the instructions.

The document "Numerical Models Accepted by FEMA for NFIP Usage" lists the models accepted by FEMA. This document can be found at: http://www.fema.gov/plan/prevent/fhm/en_modl.shtm.

C. MAPPING REQUIREMENTS

A **certified topographic map** must be submitted showing the following information (where applicable): the boundaries of the effective, existing, and proposed conditions 1%-annual-chance floodplain (for approximate Zone A revisions) or the boundaries of the 1%- and 0.2%-annual-chance floodplains and regulatory floodway (for detailed Zone AE, AO, and AH revisions); location and alignment of all cross sections with stationing control indicated; stream, road, and other alignments (e.g., dams, levees, etc.); current community easements and boundaries; boundaries of the requester's property; certification of a registered professional engineer registered in the subject State; location and description of reference marks; and the referenced vertical datum (NGVD, NAVD, etc.).

Note that the boundaries of the existing or proposed conditions floodplains and regulatory floodway to be shown on the revised FIRM and/or FBFM must tie-in with the effective floodplain and regulatory floodway boundaries. Please attach **a copy of the effective FIRM and/or FBFM,** annotated to show the boundaries of the revised 1%- and 0.2%-annual-chance floodplains and regulatory floodway that tie-in with the boundaries of the effective 1%- and 0.2%-annual-chance floodplain and regulatory floodway at the upstream and downstream limits of the area of revision.

D. COMMON REGULATORY REQUIREMENTS

1. For CLOMR requests, do Base Flood Elevations (BFEs) increase? ☐ Yes ☒ No

For CLOMR requests, if either of the following is true, please submit evidence of compliance with Section 65.12 of the NFIP regulations:
- The proposed project encroaches upon a regulatory floodway and would result in increases above 0.00 foot.
- The proposed project encroaches upon a SFHA with BFEs established and would result in increases above 1.00 foot.

2. Does the request involve the placement or proposed placement of fill? ☐ Yes ☒ No

If Yes, the community must be able to certify that the area to be removed from the special flood hazard area, to include any structures or proposed structures, meets all of the standards of the local floodplain ordinances, and is reasonably safe from flooding in accordance with the NFIP regulations set forth at 44 CFR 60.3(a)(3), 65.5(a)(4), and 65.6(a)(14). Please see the MT-2 instructions for more information.

3. For LOMR requests, is the regulatory floodway being revised? ☐ Yes ☒ No

If Yes, attach evidence of regulatory floodway revision notification. As per Paragraph 65.7(b)(1) of the NFIP Regulations, notification is required for requests involving revisions to the regulatory floodway. (Not required for revisions to approximate 1%-annual-chance floodplains [studied Zone A designation] unless a regulatory floodway is being added. Elements and examples of regulatory floodway revision notification can be found in the MT-2 Form 2 Instructions.)

4. For LOMR requests, does this request require property owner notification and acceptance of BFE increases? ☐ Yes ☒ No

If Yes, please attach proof of property owner notification and acceptance (if available). Elements of and examples of property owner notification can be found in the MT-2 Form 2 Instructions.

SUBCRITICAL FLOW REGIME - CROSS SECTIONS 1046.5 - 1328

HEC-RAS Plan: Plan 06 River: Drake Channel Reach: C-1 to 9000 ft E Profile: PF 1

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
C-1 to 9000 ft E	1328	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		18.16
C-1 to 9000 ft E	1327	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		26.09
C-1 to 9000 ft E	1326	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		31.49
C-1 to 9000 ft E	1325	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		38.89
C-1 to 9000 ft E	1324	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		45.29
C-1 to 9000 ft E	1323	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		51.69
C-1 to 9000 ft E	1322	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		56.09
C-1 to 9000 ft E	1321	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		62.32
C-1 to 9000 ft E	1320	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		62.34
C-1 to 9000 ft E	1319	PF 1	2117.23	2117.23	0.00	0.03	0.00		1.10		50.42
C-1 to 9000 ft E	1318	PF 1	2117.20	2117.18	0.01	0.00	0.00		1.10		50.17
C-1 to 9000 ft E	1317	PF 1	2114.23	2114.23	0.00	0.05	0.00		1.10		50.27
C-1 to 9000 ft E	1316	PF 1	2114.18	2114.18	0.00	0.03	0.00		1.10		50.23
C-1 to 9000 ft E	1315	PF 1	2114.15	2114.14	0.01	0.00	0.00		1.10		50.10
C-1 to 9000 ft E	1314	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		19.69
C-1 to 9000 ft E	1313	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		24.92
C-1 to 9000 ft E	1312	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		24.99
C-1 to 9000 ft E	1311	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		25.09
C-1 to 9000 ft E	1310	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		38.57
C-1 to 9000 ft E	1309	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		38.89
C-1 to 9000 ft E	1308	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		54.29
C-1 to 9000 ft E	1307	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		50.69
C-1 to 9000 ft E	1306	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		57.09
C-1 to 9000 ft E	1305	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		62.32
C-1 to 9000 ft E	1304	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		62.34
C-1 to 9000 ft E	1303	PF 1	2106.53	2106.53	0.00	0.03	0.00		1.10		50.45
C-1 to 9000 ft E	1302	PF 1	2106.50	2106.49	0.01	0.00	0.00		1.10		50.19
C-1 to 9000 ft E	1301	PF 1	2103.53	2103.53	0.00	0.05	0.00		1.10		50.27
C-1 to 9000 ft E	1300	PF 1	2103.48	2103.48	0.00	0.03	0.00		1.10		50.23
C-1 to 9000 ft E	1299	PF 1	2103.45	2103.44	0.01	0.00	0.00		1.10		50.10
C-1 to 9000 ft E	1298	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		19.68
C-1 to 9000 ft E	1297	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		19.85
C-1 to 9000 ft E	1296	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		19.92
C-1 to 9000 ft E	1295	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		20.02
C-1 to 9000 ft E	1294	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		32.48
C-1 to 9000 ft E	1293	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		38.88
C-1 to 9000 ft E	1292	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		45.28
C-1 to 9000 ft E	1291	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		50.68
C-1 to 9000 ft E	1290	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		57.08
C-1 to 9000 ft E	1289	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		62.35
C-1 to 9000 ft E	1288	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		62.35
C-1 to 9000 ft E	1287	PF 1	2095.83	2095.83	0.00	0.03	0.00		1.10		50.41
C-1 to 9000 ft E	1286	PF 1	2095.80	2095.80	0.01	0.00	0.00		1.10		50.25
C-1 to 9000 ft E	1285	PF 1	2092.83	2092.83	0.00	0.05	0.00		1.10		50.27
C-1 to 9000 ft E	1284	PF 1	2092.78	2092.78	0.00	0.03	0.00		1.10		50.23
C-1 to 9000 ft E	1283	PF 1	2092.75	2092.74	0.01	0.00	0.00		1.10		50.13
C-1 to 9000 ft E	1282	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		19.69
C-1 to 9000 ft E	1281	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		19.86
C-1 to 9000 ft E	1280	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		19.93
C-1 to 9000 ft E	1279	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		25.39
C-1 to 9000 ft E	1278	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		33.71

HEC-RAS Plan: Plan 06 River: Drake Channel Reach: C-1 to 9000 ft E Profile: PF 1 (Continued)

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
C-1 to 9000 ft E	1277	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		39.07
C-1 to 9000 ft E	1276	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		45.41
C-1 to 9000 ft E	1275	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		50.77
C-1 to 9000 ft E	1274	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		57.14
C-1 to 9000 ft E	1273	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		62.38
C-1 to 9000 ft E	1272	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		62.40
C-1 to 9000 ft E	1271	PF 1	2085.13	2085.13	0.00	0.03	0.00		1.10		50.43
C-1 to 9000 ft E	1270	PF 1	2085.10	2085.09	0.01	0.00	0.00		1.10		50.18
C-1 to 9000 ft E	1269	PF 1	2082.12	2082.12	0.00	0.05	0.00		1.10		50.24
C-1 to 9000 ft E	1268	PF 1	2082.08	2082.07	0.00	0.03	0.00		1.10		50.25
C-1 to 9000 ft E	1267	PF 1	2082.05	2082.04	0.01	0.00	0.00		1.10		50.11
C-1 to 9000 ft E	1266	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		19.69
C-1 to 9000 ft E	1265	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		25.92
C-1 to 9000 ft E	1264	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		25.98
C-1 to 9000 ft E	1263	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		26.09
C-1 to 9000 ft E	1262	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		32.49
C-1 to 9000 ft E	1261	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		39.89
C-1 to 9000 ft E	1260	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		45.29
C-1 to 9000 ft E	1259	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		50.69
C-1 to 9000 ft E	1258	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		57.09
C-1 to 9000 ft E	1257	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		60.41
C-1 to 9000 ft E	1256	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		62.34
C-1 to 9000 ft E	1255	PF 1	2074.43	2074.43	0.00	0.03	0.00		1.10		50.43
C-1 to 9000 ft E	1254	PF 1	2074.40	2074.39	0.01	0.00	0.00		1.10		50.19
C-1 to 9000 ft E	1253	PF 1	2072.73	2072.73	0.00	0.00	0.00		1.10		55.47
C-1 to 9000 ft E	1252	PF 1	2072.73	2072.73	0.00	0.01	0.04		1.10		55.34
C-1 to 9000 ft E	1251	PF 1	2072.67	2072.23	0.45	0.00	0.06		255.00		53.66
C-1 to 9000 ft E	1250	PF 1	2065.21	2064.95	0.25	0.03	0.03		255.00		24.56
C-1 to 9000 ft E	1249	PF 1	2065.14	2065.00	0.14	0.01	0.00		255.00		30.00
C-1 to 9000 ft E	1248	PF 1	2065.13	2064.99	0.14	0.01	0.00		255.00		30.01
C-1 to 9000 ft E	1247	PF 1	2065.11	2064.97	0.14	0.03	0.02		255.00		30.05
C-1 to 9000 ft E	1246	PF 1	2065.06	2064.99	0.08	0.02	0.01		255.00		37.50
C-1 to 9000 ft E	1245	PF 1	2065.04	2064.98	0.06	0.01	0.01		255.00		40.86
C-1 to 9000 ft E	1244	PF 1	2065.02	2064.97	0.04	0.01	0.00		255.00		46.26
C-1 to 9000 ft E	1243	PF 1	2065.00	2064.97	0.03	0.01	0.00		255.00		51.65
C-1 to 9000 ft E	1242	PF 1	2064.99	2064.97	0.02	0.00	0.00		255.00		58.04
C-1 to 9000 ft E	1241	PF 1	2064.99	2064.97	0.02	0.00	0.00		255.00		62.44
C-1 to 9000 ft E	1240	PF 1	2064.99	2064.97	0.02	0.00	0.00		255.00		62.49
C-1 to 9000 ft E	1239	PF 1	2064.99	2064.97	0.01	0.00	0.02		255.00		67.81
C-1 to 9000 ft E	1238	PF 1	2064.96	2064.70	0.26	0.05	0.02		255.00		58.87
C-1 to 9000 ft E	1237	PF 1	2064.90	2064.47	0.43	0.00	0.06		255.00		57.08
C-1 to 9000 ft E	1236	PF 1	2062.08	2061.86	0.22	0.13	0.01		255.00		55.25
C-1 to 9000 ft E	1235	PF 1	2061.94	2061.65	0.29	0.05	0.02		255.00		54.53
C-1 to 9000 ft E	1234	PF 1	2061.87	2061.43	0.45	0.00	0.06		255.00		53.67
C-1 to 9000 ft E	1233	PF 1	2054.47	2054.23	0.24	0.03	0.03		255.00		24.88
C-1 to 9000 ft E	1232	PF 1	2054.41	2054.27	0.14	0.01	0.00		255.00		30.31
C-1 to 9000 ft E	1231	PF 1	2054.40	2054.26	0.13	0.01	0.00		255.00		30.32
C-1 to 9000 ft E	1230	PF 1	2054.38	2054.25	0.13	0.03	0.02		255.00		30.36
C-1 to 9000 ft E	1229	PF 1	2054.33	2054.26	0.07	0.02	0.01		255.00		37.81
C-1 to 9000 ft E	1228	PF 1	2054.31	2054.26	0.05	0.01	0.00		255.00		44.21
C-1 to 9000 ft E	1227	PF 1	2054.30	2054.26	0.03	0.01	0.00		255.00		50.61

HEC-RAS Plan: Plan 06 River: Drake Channel Reach: C-1 to 9000 ft E Profile: PF 1 (Continued)

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
C-1 to 9000 ft E	1226	PF 1	2054.29	2054.26	0.02	0.01	0.00		255.00		56.00
C-1 to 9000 ft E	1225	PF 1	2054.28	2054.26	0.02	0.00	0.00		255.00		62.40
C-1 to 9000 ft E	1224	PF 1	2054.28	2054.26	0.02	0.00	0.00		255.00		62.47
C-1 to 9000 ft E	1223	PF 1	2054.28	2054.26	0.02	0.00	0.02		255.00		67.86
C-1 to 9000 ft E	1222	PF 1	2054.25	2053.99	0.26	0.05	0.02		255.00		60.24
C-1 to 9000 ft E	1221	PF 1	2054.19	2053.76	0.43	0.00	0.07		255.00		58.16
C-1 to 9000 ft E	1220	PF 1	2051.45	2051.27	0.18	0.15	0.03		255.00		55.74
C-1 to 9000 ft E	1219	PF 1	2051.27	2050.83	0.45	0.07	0.00		255.00		53.75
C-1 to 9000 ft E	1218	PF 1	2051.17	2050.73	0.45	0.00	0.07		255.00		53.69
C-1 to 9000 ft E	1217	PF 1	2043.84	2043.62	0.22	0.03	0.03		255.00		25.22
C-1 to 9000 ft E	1216	PF 1	2043.78	2043.66	0.13	0.01	0.00		255.00		30.64
C-1 to 9000 ft E	1215	PF 1	2043.77	2043.65	0.13	0.01	0.00		255.00		30.66
C-1 to 9000 ft E	1214	PF 1	2043.76	2043.64	0.13	0.04	0.00		255.00		30.70
C-1 to 9000 ft E	1212	PF 1	2043.72	2043.60	0.12	0.05	0.01		255.00		30.84
C-1 to 9000 ft E	1211	PF 1	2043.66	2043.45	0.21	0.02	0.05		255.00		25.46
C-1 to 9000 ft E	1210	PF 1	2043.58	2043.55	0.03	0.01	0.00		255.00		50.72
C-1 to 9000 ft E	1209	PF 1	2043.57	2043.55	0.02	0.01	0.00		255.00		56.77
C-1 to 9000 ft E	1208	PF 1	2043.57	2043.55	0.02	0.00	0.00		255.00		62.35
C-1 to 9000 ft E	1207	PF 1	2043.57	2043.55	0.02	0.00	0.00		255.00		62.40
C-1 to 9000 ft E	1206	PF 1	2043.56	2043.55	0.01	0.00	0.02		255.00		71.32
C-1 to 9000 ft E	1205	PF 1	2043.54	2043.28	0.26	0.05	0.02		255.00		62.04
C-1 to 9000 ft E	1204	PF 1	2043.47	2043.06	0.42	0.00	0.06		255.00		59.74
C-1 to 9000 ft E	1203	PF 1	2040.67	2040.46	0.21	0.13	0.01		255.00		56.30
C-1 to 9000 ft E	1202	PF 1	2040.53	2040.25	0.29	0.05	0.02		255.00		55.43
C-1 to 9000 ft E	1201	PF 1	2040.47	2040.03	0.44	0.00	0.09		255.00		54.41
C-1 to 9000 ft E	1200	PF 1	2032.87	2032.73	0.15	0.03	0.00		255.00		30.01
C-1 to 9000 ft E	1199	PF 1	2032.84	2032.69	0.15	0.01	0.00		255.00		29.57
C-1 to 9000 ft E	1198	PF 1	2032.83	2032.68	0.15	0.02	0.00		255.00		29.57
C-1 to 9000 ft E	1197	PF 1	2032.81	2032.66	0.15	0.04	0.02		255.00		29.60
C-1 to 9000 ft E	1196	PF 1	2032.75	2032.67	0.09	0.02	0.01		255.00		36.03
C-1 to 9000 ft E	1195	PF 1	2032.72	2032.66	0.06	0.02	0.00		255.00		41.41
C-1 to 9000 ft E	1194	PF 1	2032.70	2032.66	0.05	0.01	0.00		255.00		45.79
C-1 to 9000 ft E	1193	PF 1	2032.69	2032.66	0.03	0.01	0.00		255.00		51.19
C-1 to 9000 ft E	1192	PF 1	2032.68	2032.65	0.03	0.01	0.00		255.00		56.58
C-1 to 9000 ft E	1191	PF 1	2032.67	2032.65	0.02	0.00	0.00		255.00		62.18
C-1 to 9000 ft E	1190	PF 1	2032.67	2032.65	0.02	0.00	0.00		255.00		62.23
C-1 to 9000 ft E	1189	PF 1	2032.67	2032.66	0.01	0.00	0.02		255.00		74.46
C-1 to 9000 ft E	1188	PF 1	2032.65	2032.41	0.24	0.05	0.01		255.00		70.70
C-1 to 9000 ft E	1187	PF 1	2032.58	2032.20	0.38	0.00	0.05		255.00		68.34
C-1 to 9000 ft E	1186	PF 1	2029.86	2029.65	0.21	0.13	0.01		255.00		57.57
C-1 to 9000 ft E	1185	PF 1	2029.72	2029.45	0.27	0.05	0.02		255.00		56.64
C-1 to 9000 ft E	1184	PF 1	2029.66	2029.22	0.44	0.00	0.09		255.00		55.31
C-1 to 9000 ft E	1183	PF 1	2022.10	2021.97	0.13	0.01	0.01		255.00		31.74
C-1 to 9000 ft E	1182	PF 1	2022.07	2021.99	0.08	0.01	0.00		255.00		38.12
C-1 to 9000 ft E	1181	PF 1	2022.06	2021.98	0.08	0.01	0.00		255.00		38.16
C-1 to 9000 ft E	1180	PF 1	2022.05	2021.98	0.08	0.02	0.00		255.00		38.19
C-1 to 9000 ft E	1179	PF 1	2022.03	2021.96	0.07	0.02	0.01		255.00		38.38
C-1 to 9000 ft E	1178	PF 1	2022.00	2021.96	0.05	0.01	0.00		255.00		44.78
C-1 to 9000 ft E	1177	PF 1	2021.99	2021.96	0.03	0.01	0.00		255.00		52.18
C-1 to 9000 ft E	1176	PF 1	2021.98	2021.96	0.02	0.00	0.00		255.00		59.58
C-1 to 9000 ft E	1175	PF 1	2021.97	2021.95	0.02	0.00	0.00		255.00		64.98

HEC-RAS Plan: Plan 06 River: Drake Channel Reach: C-1 to 9000 ft E Profile: PF 1 (Continued)

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
C-1 to 9000 ft E	1174	PF 1	2021.97	2021.95	0.01	0.00	0.00		255.00		69.25
C-1 to 9000 ft E	1173	PF 1	2021.97	2021.95	0.01	0.00	0.00		255.00		69.25
C-1 to 9000 ft E	1172	PF 1	2021.97	2021.95	0.01	0.00	0.02		255.00		68.45
C-1 to 9000 ft E	1171	PF 1	2021.94	2021.68	0.26	0.05	0.02		255.00		61.91
C-1 to 9000 ft E	1170	PF 1	2021.88	2021.46	0.42	0.00	0.09		255.00		59.59
C-1 to 9000 ft E	1169	PF 1	2019.37	2019.24	0.13	0.04	0.00		255.00		57.08
C-1 to 9000 ft E	1168	PF 1	2019.33	2019.20	0.13	0.02	0.04		255.00		55.75
C-1 to 9000 ft E	1167	PF 1	2019.26	2018.69	0.57	0.00	0.06		371.00		54.02
C-1 to 9000 ft E	1166	PF 1	2012.83	2012.45	0.37	0.04	0.06		371.00		26.57
C-1 to 9000 ft E	1165	PF 1	2012.73	2012.55	0.18	0.01	0.00		371.00		34.25
C-1 to 9000 ft E	1164	PF 1	2012.72	2012.54	0.18	0.01	0.00		371.00		34.25
C-1 to 9000 ft E	1163	PF 1	2012.70	2012.53	0.17	0.04	0.02		371.00		34.27
C-1 to 9000 ft E	1162	PF 1	2012.64	2012.54	0.10	0.02	0.01		371.00		41.73
C-1 to 9000 ft E	1161	PF 1	2012.61	2012.55	0.07	0.01	0.01		371.00		48.14
C-1 to 9000 ft E	1160	PF 1	2012.59	2012.55	0.05	0.01	0.00		371.00		55.55
C-1 to 9000 ft E	1159	PF 1	2012.58	2012.55	0.03	0.00	0.00		371.00		62.95
C-1 to 9000 ft E	1158	PF 1	2012.58	2012.53	0.05	0.00	0.01		371.00		61.69
C-1 to 9000 ft E	1157	PF 1	2012.57	2012.54	0.03	0.00	0.03		371.00		64.46
C-1 to 9000 ft E	1156	PF 1	2012.54	2012.17	0.37	0.05	0.02		371.00		59.25
C-1 to 9000 ft E	1155	PF 1	2012.47	2011.92	0.55	0.00	0.07		371.00		57.64
C-1 to 9000 ft E	1154	PF 1	2009.66	2009.36	0.31	0.13	0.01		371.00		54.83
C-1 to 9000 ft E	1153	PF 1	2009.52	2009.15	0.38	0.05	0.02		371.00		54.84
C-1 to 9000 ft E	1152	PF 1	2009.46	2008.89	0.57	0.00	0.06		371.00		53.95
C-1 to 9000 ft E	1151	PF 1	2003.03	2002.65	0.37	0.04	0.05		371.00		26.58
C-1 to 9000 ft E	1150	PF 1	2002.94	2002.73	0.21	0.02	0.00		371.00		32.13
C-1 to 9000 ft E	1149	PF 1	2002.92	2002.71	0.21	0.02	0.00		371.00		32.12
C-1 to 9000 ft E	1148	PF 1	2002.90	2002.69	0.21	0.04	0.03		371.00		32.13
C-1 to 9000 ft E	1147	PF 1	2002.83	2002.74	0.10	0.02	0.01		371.00		42.70
C-1 to 9000 ft E	1146	PF 1	2002.80	2002.73	0.07	0.01	0.01		371.00		48.09
C-1 to 9000 ft E	1145	PF 1	2002.78	2002.73	0.05	0.01	0.01		371.00		53.48
C-1 to 9000 ft E	1144	PF 1	2002.77	2002.74	0.03	0.00	0.00		371.00		63.90
C-1 to 9000 ft E	1143	PF 1	2002.77	2002.73	0.03	0.00	0.00		371.00		63.92
C-1 to 9000 ft E	1142	PF 1	2002.76	2002.74	0.03	0.00	0.03		371.00		64.63
C-1 to 9000 ft E	1141	PF 1	2002.73	2002.37	0.36	0.05	0.02		371.00		59.78
C-1 to 9000 ft E	1140	PF 1	2002.66	2002.12	0.54	0.00	0.07		371.00		58.10
C-1 to 9000 ft E	1139	PF 1	1999.87	1999.56	0.31	0.13	0.01		371.00		54.88
C-1 to 9000 ft E	1138	PF 1	1999.72	1999.34	0.39	0.05	0.02		371.00		54.75
C-1 to 9000 ft E	1137	PF 1	1999.66	1999.09	0.57	0.00	0.05		371.00		53.95
C-1 to 9000 ft E	1136	PF 1	1993.17	1992.77	0.39	0.04	0.06		371.00		26.25
C-1 to 9000 ft E	1135	PF 1	1993.07	1992.87	0.20	0.02	0.00		371.00		32.97
C-1 to 9000 ft E	1134	PF 1	1993.05	1992.85	0.20	0.02	0.00		371.00		32.96
C-1 to 9000 ft E	1133	PF 1	1993.03	1992.83	0.20	0.03	0.04		371.00		32.97
C-1 to 9000 ft E	1132	PF 1	1992.96	1992.89	0.07	0.02	0.00		371.00		48.51
C-1 to 9000 ft E	1131	PF 1	1992.95	1992.88	0.07	0.01	0.01		371.00		48.68
C-1 to 9000 ft E	1130	PF 1	1992.93	1992.87	0.05	0.01	0.01		371.00		53.66
C-1 to 9000 ft E	1129	PF 1	1992.91	1992.88	0.03	0.00	0.00		371.00		64.21
C-1 to 9000 ft E	1128	PF 1	1992.91	1992.88	0.02	0.00	0.00		371.00		74.71
C-1 to 9000 ft E	1127	PF 1	1992.91	1992.88	0.02	0.00	0.03		371.00		74.71
C-1 to 9000 ft E	1126	PF 1	1992.88	1992.55	0.32	0.05	0.02		371.00		67.32
C-1 to 9000 ft E	1125	PF 1	1992.81	1992.30	0.51	0.00	0.07		371.00		64.09
C-1 to 9000 ft E	1124	PF 1	1990.06	1989.78	0.28	0.15	0.02		371.00		58.15

HEC-RAS Plan: Plan 06 River: Drake Channel Reach: C-1 to 9000 ft E Profile: PF 1 (Continued)

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
C-1 to 9000 ft E	1123	PF 1	1989.90	1989.46	0.44	0.06	0.01		371.00		58.08
C-1 to 9000 ft E	1122	PF 1	1989.83	1989.28	0.55	0.00	0.12		371.00		57.15
C-1 to 9000 ft E	1121	PF 1	1982.31	1982.17	0.14	0.02	0.00		371.00		38.44
C-1 to 9000 ft E	1120	PF 1	1982.29	1982.16	0.13	0.01	0.00		371.00		39.57
C-1 to 9000 ft E	1119	PF 1	1982.28	1982.15	0.13	0.01	0.00		371.00		39.59
C-1 to 9000 ft E	1118	PF 1	1982.27	1982.14	0.13	0.04	0.00		371.00		39.64
C-1 to 9000 ft E	1117	PF 1	1982.23	1982.11	0.12	0.03	0.01		371.00		39.78
C-1 to 9000 ft E	1116	PF 1	1982.19	1982.10	0.09	0.02	0.01		371.00		45.17
C-1 to 9000 ft E	1115	PF 1	1982.16	1982.11	0.06	0.01	0.00		371.00		52.58
C-1 to 9000 ft E	1114	PF 1	1982.15	1982.11	0.04	0.01	0.00		371.00		58.98
C-1 to 9000 ft E	1113	PF 1	1982.14	1982.11	0.03	0.01	0.00		371.00		66.38
C-1 to 9000 ft E	1112	PF 1	1982.13	1982.10	0.03	0.00	0.00		371.00		67.22
C-1 to 9000 ft E	1111	PF 1	1982.13	1982.10	0.03	0.00	0.00		371.00		70.86
C-1 to 9000 ft E	1110	PF 1	1982.13	1982.10	0.03	0.00	0.03		371.00		70.85
C-1 to 9000 ft E	1109	PF 1	1982.10	1981.77	0.33	0.05	0.02		371.00		65.25
C-1 to 9000 ft E	1108	PF 1	1982.03	1981.51	0.52	0.00	0.06		371.00		62.51
C-1 to 9000 ft E	1107	PF 1	1979.27	1978.96	0.31	0.13	0.01		371.00		55.11
C-1 to 9000 ft E	1106	PF 1	1979.13	1978.75	0.38	0.05	0.02		371.00		54.56
C-1 to 9000 ft E	1105	PF 1	1979.06	1978.49	0.57	0.00	0.00		371.00		53.74
C-1 to 9000 ft E	1104	PF 1	1973.11	1972.51	0.60	0.03	0.13		516.00		27.60
C-1 to 9000 ft E	1103	PF 1	1972.95	1972.79	0.16	0.01	0.00		516.00		43.41
C-1 to 9000 ft E	1102	PF 1	1972.94	1972.78	0.16	0.01	0.00		516.00		43.42
C-1 to 9000 ft E	1101	PF 1	1972.93	1972.77	0.15	0.04	0.00		516.00		43.45
C-1 to 9000 ft E	1100	PF 1	1972.89	1972.73	0.16	0.03	0.01		516.00		43.28
C-1 to 9000 ft E	1099	PF 1	1972.84	1972.74	0.11	0.02	0.01		516.00		49.70
C-1 to 9000 ft E	1098	PF 1	1972.82	1972.74	0.08	0.01	0.01		516.00		56.11
C-1 to 9000 ft E	1097	PF 1	1972.80	1972.74	0.05	0.00	0.00		516.00		64.53
C-1 to 9000 ft E	1096	PF 1	1972.79	1972.74	0.05	0.00	0.00		516.00		64.59
C-1 to 9000 ft E	1095	PF 1	1972.79	1972.74	0.05	0.00	0.04		516.00		64.59
C-1 to 9000 ft E	1094	PF 1	1972.75	1972.26	0.48	0.05	0.02		516.00		59.96
C-1 to 9000 ft E	1093	PF 1	1972.68	1972.00	0.68	0.00	0.16		516.00		58.48
C-1 to 9000 ft E	1092	PF 1	1970.89	1970.75	0.14	0.02	0.00		516.00		58.99
C-1 to 9000 ft E	1091	PF 1	1970.87	1970.73	0.13	0.01	0.08		516.00		59.27
C-1 to 9000 ft E	1090	PF 1	1970.78	1969.86	0.91	0.00	0.10		516.00		37.15
C-1 to 9000 ft E	1089	PF 1	1963.35	1962.77	0.58	0.05	0.10		516.00		27.82
C-1 to 9000 ft E	1088	PF 1	1963.20	1962.95	0.25	0.02	0.00		516.00		36.83
C-1 to 9000 ft E	1087	PF 1	1963.18	1962.93	0.25	0.02	0.00		516.00		36.82
C-1 to 9000 ft E	1086	PF 1	1963.16	1962.92	0.25	0.05	0.02		516.00		36.82
C-1 to 9000 ft E	1085	PF 1	1963.09	1962.92	0.17	0.03	0.02		516.00		42.24
C-1 to 9000 ft E	1084	PF 1	1963.04	1962.93	0.11	0.02	0.01		516.00		49.50
C-1 to 9000 ft E	1083	PF 1	1963.01	1962.94	0.07	0.01	0.00		516.00		57.61
C-1 to 9000 ft E	1082	PF 1	1962.99	1962.93	0.06	0.00	0.01		516.00		60.48
C-1 to 9000 ft E	1081	PF 1	1962.98	1962.94	0.04	0.00	0.00		516.00		68.61
C-1 to 9000 ft E	1080	PF 1	1962.98	1962.94	0.04	0.00	0.04		516.00		68.62
C-1 to 9000 ft E	1079	PF 1	1962.94	1962.49	0.45	0.05	0.02		516.00		60.50
C-1 to 9000 ft E	1078	PF 1	1962.87	1962.20	0.67	0.00	0.09		516.00		58.76
C-1 to 9000 ft E	1077	PF 1	1960.08	1959.69	0.39	0.13	0.01		516.00		56.94
C-1 to 9000 ft E	1076	PF 1	1959.94	1959.46	0.48	0.05	0.02		516.00		56.25
C-1 to 9000 ft E	1075	PF 1	1959.87	1959.17	0.70	0.00	0.04		516.00		55.22
C-1 to 9000 ft E	1074	PF 1	1953.56	1952.99	0.57	0.05	0.08		516.00		27.92
C-1 to 9000 ft E	1073	PF 1	1953.43	1953.13	0.29	0.02	0.00		516.00		34.74

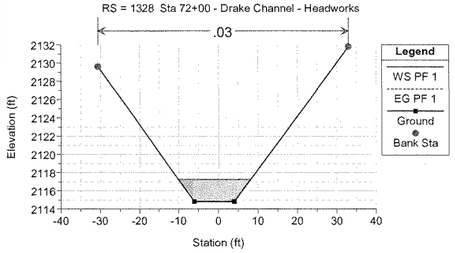
HEC-RAS Plan: Plan 06 River: Drake Channel Reach: C-1 to 9000 ft E Profile: PF 1 (Continued)

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
C-1 to 9000 ft E	1072	PF 1	1953.41	1953.11	0.29	0.02	0.00		516.00		34.72
C-1 to 9000 ft E	1071	PF 1	1953.38	1953.09	0.29	0.05	0.04		516.00		34.71
C-1 to 9000 ft E	1070	PF 1	1953.29	1953.14	0.15	0.03	0.01		516.00		44.32
C-1 to 9000 ft E	1069	PF 1	1953.25	1953.14	0.11	0.02	0.01		516.00		49.72
C-1 to 9000 ft E	1068	PF 1	1953.22	1953.14	0.08	0.01	0.01		516.00		57.59
C-1 to 9000 ft E	1067	PF 1	1953.20	1953.15	0.05	0.00	0.00		516.00		65.54
C-1 to 9000 ft E	1066	PF 1	1953.19	1953.15	0.04	0.00	0.00		516.00		72.28
C-1 to 9000 ft E	1065	PF 1	1953.19	1953.15	0.04	0.00	0.04		516.00		72.27
C-1 to 9000 ft E	1064	PF 1	1953.15	1952.70	0.45	0.05	0.02		516.00		60.71
C-1 to 9000 ft E	1063	PF 1	1953.08	1952.41	0.67	0.00	0.09		516.00		58.94
C-1 to 9000 ft E	1062	PF 1	1950.27	1949.89	0.38	0.13	0.01		516.00		58.27
C-1 to 9000 ft E	1061	PF 1	1950.13	1949.66	0.47	0.05	0.02		516.00		57.34
C-1 to 9000 ft E	1060	PF 1	1950.06	1949.37	0.69	0.00	0.13		516.00		56.05
C-1 to 9000 ft E	1059	PF 1	1944.74	1944.49	0.25	0.02	0.02		516.00		34.60
C-1 to 9000 ft E	1058	PF 1	1944.71	1944.51	0.20	0.01	0.00		516.00		36.46
C-1 to 9000 ft E	1057	PF 1	1944.70	1944.50	0.20	0.01	0.00		516.00		36.47
C-1 to 9000 ft E	1056	PF 1	1944.68	1944.50	0.18	0.03	0.01		516.00		38.26
C-1 to 9000 ft E	1055	PF 1	1944.63	1944.49	0.14	0.02	0.01		516.00		40.93
C-1 to 9000 ft E	1054	PF 1	1944.60	1944.50	0.09	0.02	0.00		516.00		46.54
C-1 to 9000 ft E	1053	PF 1	1944.58	1944.48	0.10	0.02	0.00		516.00		42.58
C-1 to 9000 ft E	1052	PF 1	1944.55	1944.46	0.09	0.00	0.06		516.00		44.29
C-1 to 9000 ft E	1051	PF 1	1944.49	1943.80	0.69	0.04	0.03		516.00		35.23
C-1 to 9000 ft E	1050	PF 1	1944.42	1943.45	0.97	0.00	0.23		516.00		33.73
C-1 to 9000 ft E	1049	PF 1	1943.04	1942.85	0.19	0.02	0.03		516.00		39.06
C-1 to 9000 ft E	1048	PF 1	1942.99	1942.89	0.11	0.02	0.02		516.00		52.32
C-1 to 9000 ft E	1047	PF 1	1942.96	1942.67	0.29				516.00		57.28
C-1 to 9000 ft E	1046.5		Culvert								
C-1 to 9000 ft E	1046	PF 1	1940.96	1940.34	0.62	0.49	0.09		516.00		26.00
C-1 to 9000 ft E	1045	PF 1	1940.39	1938.92	1.47	0.82	0.13		781.00		27.50
C-1 to 9000 ft E	1044	PF 1	1938.16	1937.11	1.05	0.80	0.01		781.00		45.00
C-1 to 9000 ft E	1043	PF 1	1937.07	1935.93	1.14	0.50	0.03		781.00		40.00
C-1 to 9000 ft E	1042	PF 1	1933.10	1931.70	1.40	0.22	0.00		781.00		29.48
C-1 to 9000 ft E	1041	PF 1	1931.00	1929.60	1.40	0.28	0.00		781.00		29.48
C-1 to 9000 ft E	1040	PF 1	1928.00	1926.59	1.41	0.28	0.01		781.00		29.47
C-1 to 9000 ft E	1039	PF 1	1925.96	1924.58	1.38	0.28	0.00		781.00		30.29
C-1 to 9000 ft E	1038	PF 1	1922.96	1921.59	1.37	0.28	0.00		781.00		30.30
C-1 to 9000 ft E	1037	PF 1	1919.89	1918.51	1.38	0.28	0.00		781.00		30.19
C-1 to 9000 ft E	1036	PF 1	1916.96	1915.58	1.38	0.28	0.00		781.00		30.27
C-1 to 9000 ft E	1035	PF 1	1912.61	1911.19	1.41	0.12	0.01		781.00		29.23
C-1 to 9000 ft E	1034	PF 1	1911.60	1910.10	1.50	0.16	0.00		781.00		26.47
C-1 to 9000 ft E	1033	PF 1	1910.02	1908.52	1.51	0.28	0.00		781.00		26.46
C-1 to 9000 ft E	1032	PF 1	1908.17	1906.63	1.54	0.27	0.08		781.00		25.40
C-1 to 9000 ft E	1031	PF 1	1906.21	1904.93	1.28	0.13	0.21		781.00		34.05
C-1 to 9000 ft E	1030	PF 1	1905.73	1905.14	0.59	0.05	0.10		893.00		41.69
C-1 to 9000 ft E	1029	PF 1	1905.58	1904.00	1.58	0.15	0.05		893.00		28.19
C-1 to 9000 ft E	1028	PF 1	1903.45	1902.02	1.43	0.17	0.03		893.00		32.73
C-1 to 9000 ft E	1027	PF 1	1903.15	1901.43	1.73	0.08	0.00		893.00		24.66
C-1 to 9000 ft E	1026	PF 1	1902.21	1900.49	1.73	0.13	0.00		893.00		24.66
C-1 to 9000 ft E	1025	PF 1	1900.01	1898.29	1.73	0.13	0.00		893.00		24.66
C-1 to 9000 ft E	1024	PF 1	1898.81	1897.09	1.73	0.13	0.00		893.00		24.66
C-1 to 9000 ft E	1023	PF 1	1897.21	1895.49	1.73	0.13	0.00		893.00		24.66

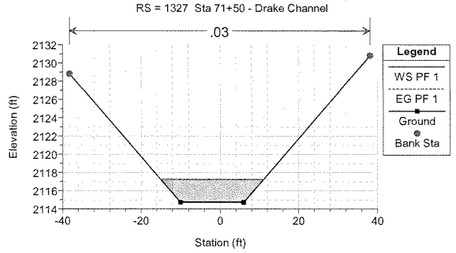
HEC-RAS Plan: Plan 06 River: Drake Channel Reach: C-1 to 9000 ft E Profile: PF 1 (Continued)

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
C-1 to 9000 ft E	1022	PF 1	1896.31	1894.59	1.73	0.13	0.00		893.00		24.66
C-1 to 9000 ft E	1021	PF 1	1895.41	1893.69	1.73	0.13	0.00		893.00		24.66
C-1 to 9000 ft E	1020	PF 1	1894.51	1892.79	1.73	0.15	0.00		893.00		24.66
C-1 to 9000 ft E	1019	PF 1	1893.12	1891.40	1.73	0.00	0.00		893.00		24.68
C-1 to 9000 ft E	1018	PF 1	1893.12	1891.39	1.73	0.14	0.03		893.00		24.68
C-1 to 9000 ft E	1017	PF 1	1891.71	1889.72	2.00	0.15	0.09		893.00		19.76
C-1 to 9000 ft E	1016	PF 1	1889.56	1887.85	1.71	0.15	0.00		893.00		25.00
C-1 to 9000 ft E	1015	PF 1	1888.52	1886.81	1.71	0.15	0.00		893.00		25.00
C-1 to 9000 ft E	1014	PF 1	1884.47	1882.76	1.71	0.15	0.00		893.00		25.00
C-1 to 9000 ft E	1013	PF 1	1880.42	1878.71	1.71	0.15	0.00		893.00		25.00
C-1 to 9000 ft E	1012	PF 1	1877.15	1875.44	1.71	0.04	0.40		893.00		25.00
C-1 to 9000 ft E	1011	PF 1	1874.90	1874.53	0.37	0.01	0.07		893.00		25.00
C-1 to 9000 ft E	1010	PF 1	1874.83	1874.69	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1009	PF 1	1874.82	1874.68	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1008	PF 1	1874.82	1874.68	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1007	PF 1	1874.82	1874.68	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1006	PF 1	1874.81	1874.67	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1005	PF 1	1874.81	1874.67	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1004	PF 1	1874.81	1874.67	0.14	0.01	0.00		893.00		25.00
C-1 to 9000 ft E	1003	PF 1	1874.80	1874.67	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1002	PF 1	1874.80	1874.66	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1001	PF 1	1874.80	1874.66	0.14				893.00		25.00

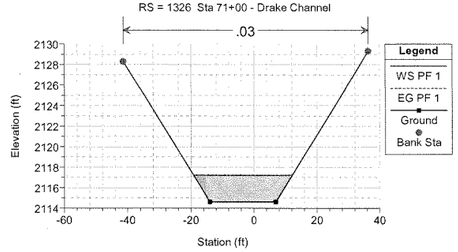
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1328 Sta 72+00 - Drake Channel - Headworks



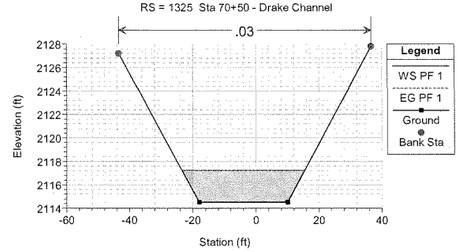
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1327 Sta 71+50 - Drake Channel



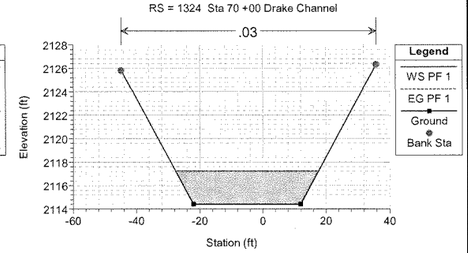
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1326 Sta 71+00 - Drake Channel



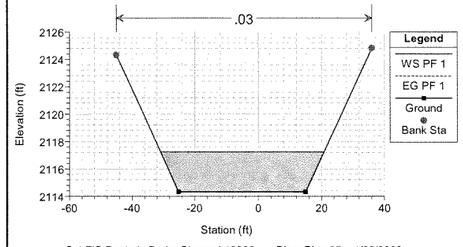
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1325 Sta 70+50 - Drake Channel



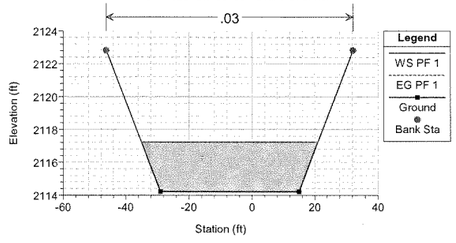
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1324 Sta 70 +00 Drake Channel



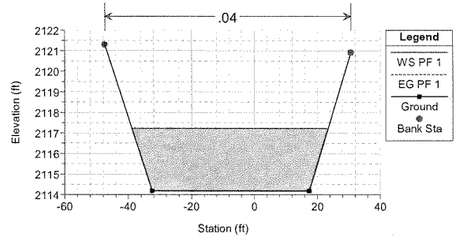
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1323 Sta 69+50 - Drake Channel



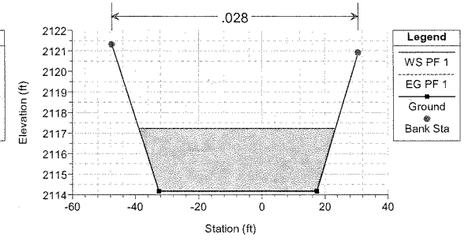
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1322 Sta 69+00 - Drake Channel



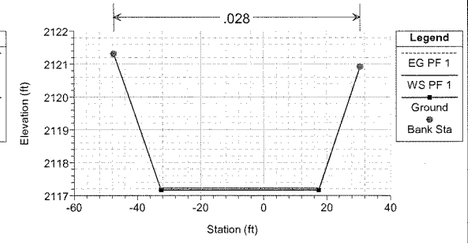
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1321 Sta 68+87 - Drake Channel



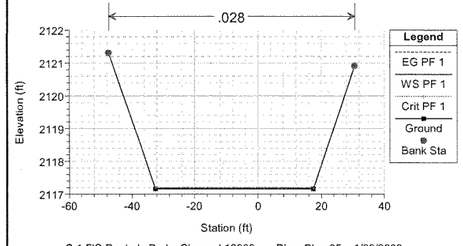
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1320 Sta 68+81 - Gabion Counterweir



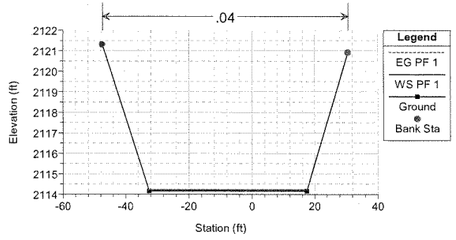
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1319 Sta 68+81 - Gabion Counterweir



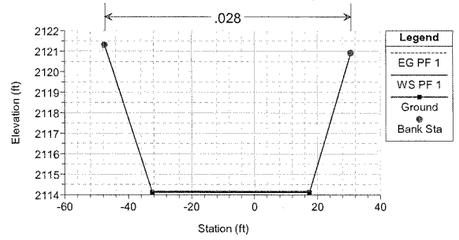
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1318 Sta 68+75 -Gabion Counterweir



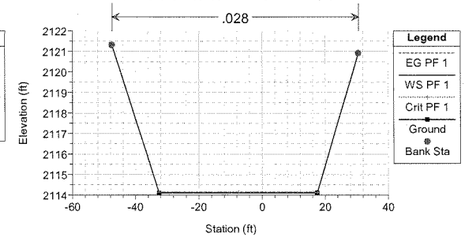
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1317 Sta 68 + 75 Drake Channel



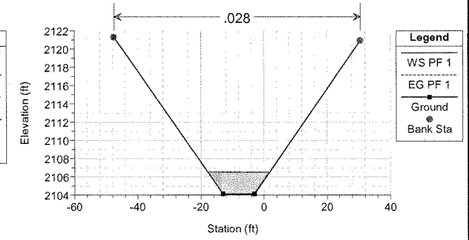
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1316 Sta 68+56 - Inline Gabion Drop Sructure



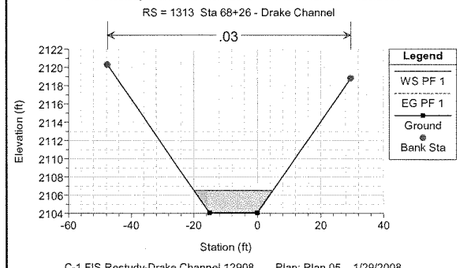
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1315 Sta 68+50 - Inline Gabion Drop Structure



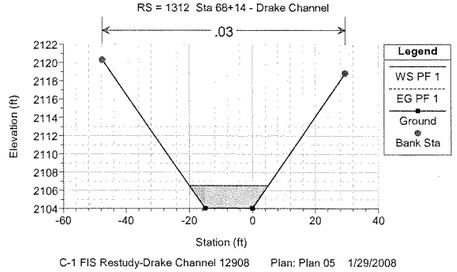
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1314 Sta 68+50 - Drake Channel



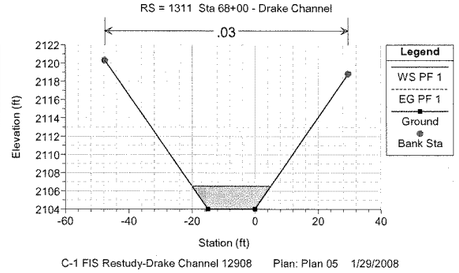
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1313 Sta 68+26 - Drake Channel



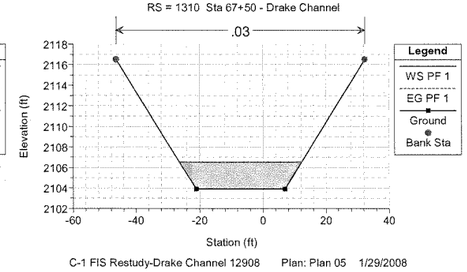
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1312 Sta 68+14 - Drake Channel



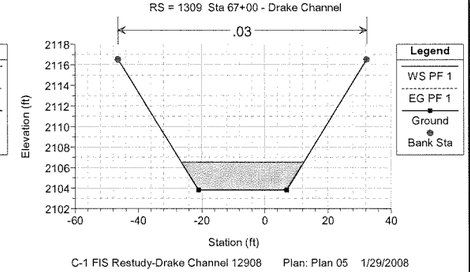
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1311 Sta 68+00 - Drake Channel



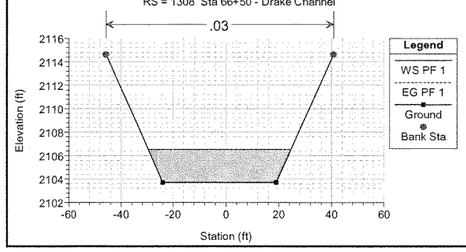
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1310 Sta 67+50 - Drake Channel



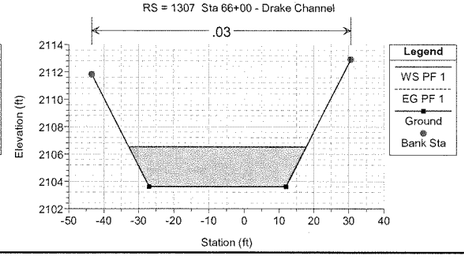
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1309 Sta 67+00 - Drake Channel



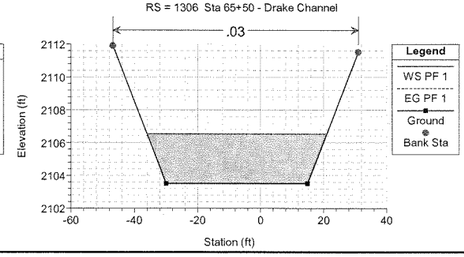
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1308 Sta 66+50 - Drake Channel



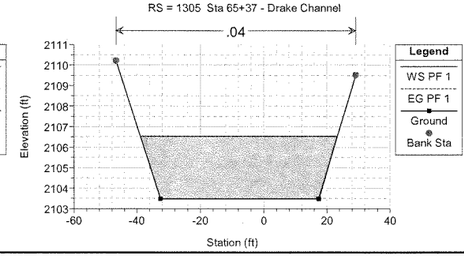
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1307 Sta 66+00 - Drake Channel



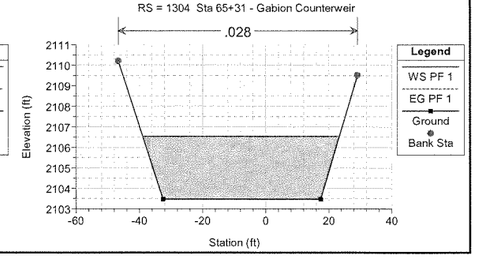
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1306 Sta 65+50 - Drake Channel



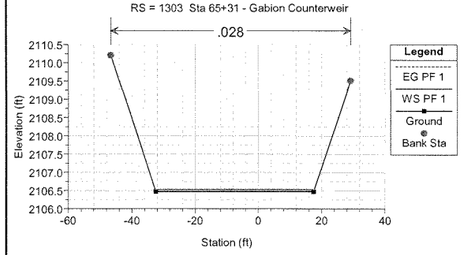
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1305 Sta 65+37 - Drake Channel



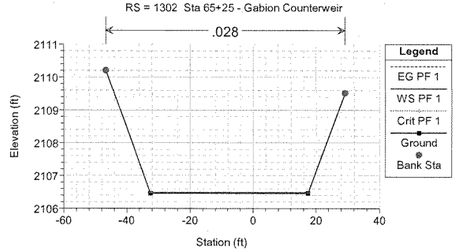
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1304 Sta 65+31 - Gabion Counterweir



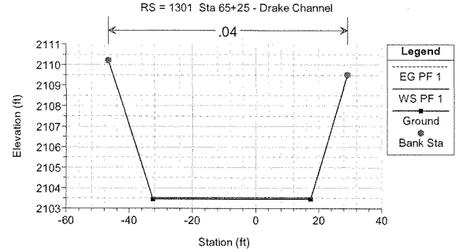
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1303 Sta 65+31 - Gabion Counterweir



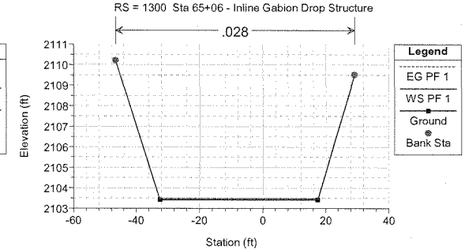
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1302 Sta 65+25 - Gabion Counterweir



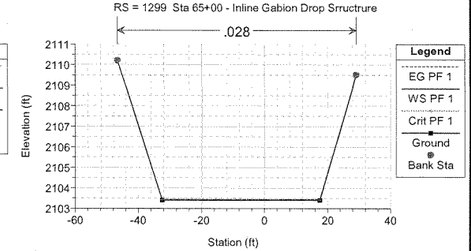
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1301 Sta 65+25 - Drake Channel



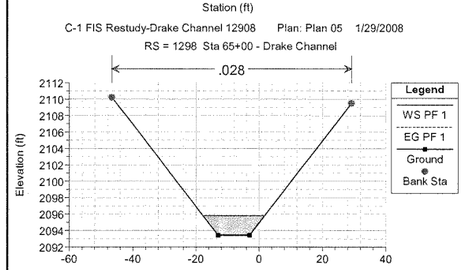
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1300 Sta 65+06 - Inline Gabion Drop Structure



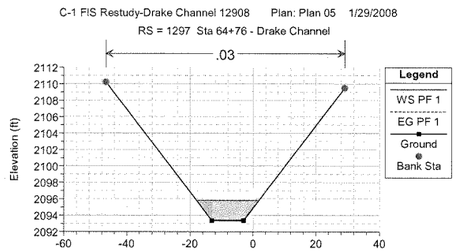
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1299 Sta 65+00 - Inline Gabion Drop Srructrure



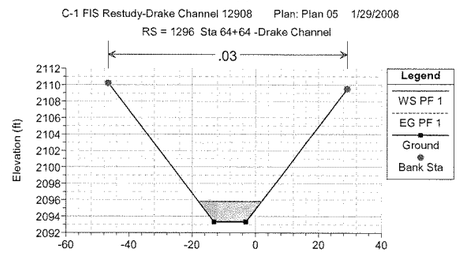
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1298 Sta 65+00 - Drake Channel



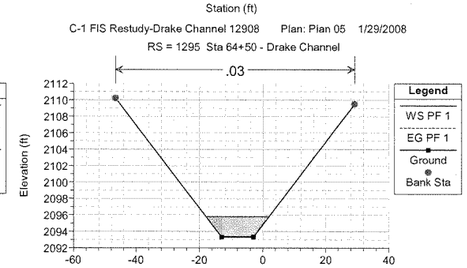
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1297 Sta 64+76 - Drake Channel



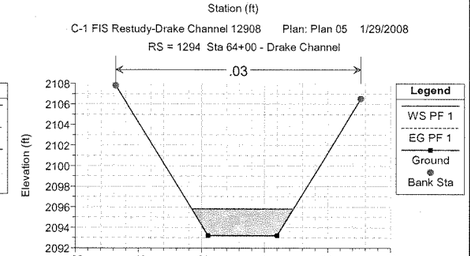
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1296 Sta 64+64 -Drake Channel



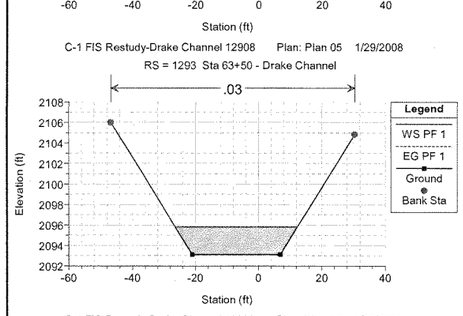
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1295 Sta 64+50 - Drake Channel



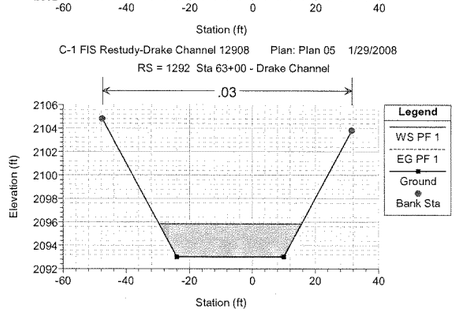
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1294 Sta 64+00 - Drake Channel



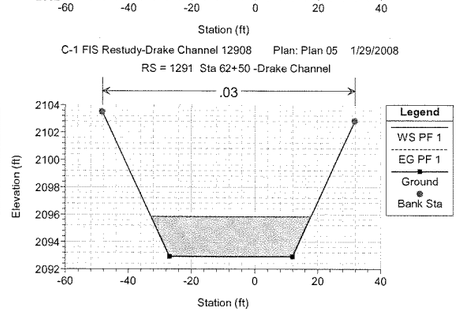
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1293 Sta 63+50 - Drake Channel



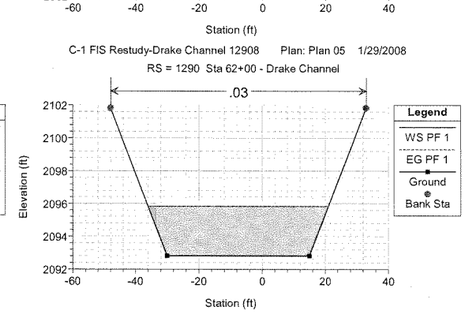
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1292 Sta 63+00 - Drake Channel



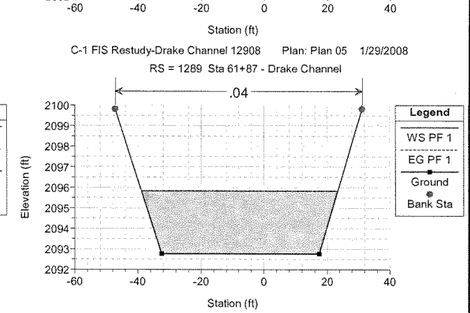
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1291 Sta 62+50 -Drake Channel



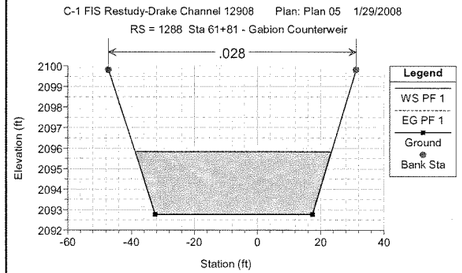
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1290 Sta 62+00 - Drake Channel



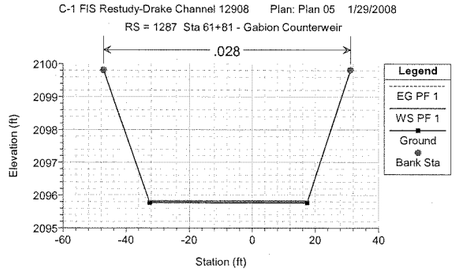
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1289 Sta 61+87 - Drake Channel



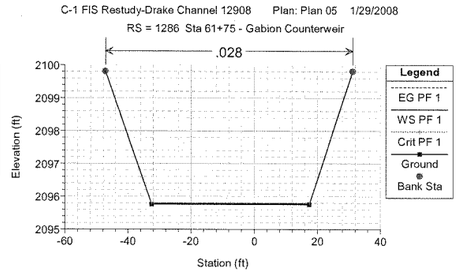
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1288 Sta 61+81 - Gabion Counterweir



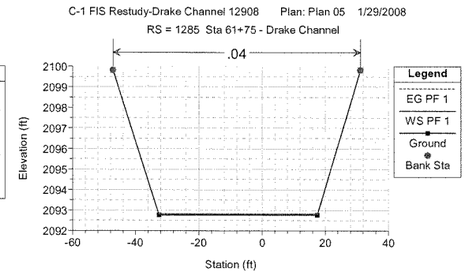
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1287 Sta 61+81 - Gabion Counterweir



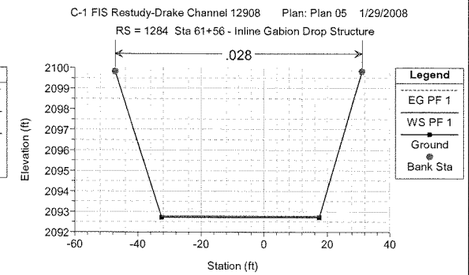
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1286 Sta 61+75 - Gabion Counterweir



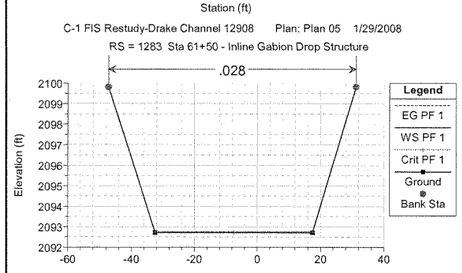
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1285 Sta 61+75 - Drake Channel



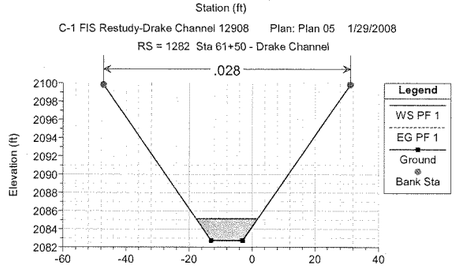
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1284 Sta 61+56 - Inline Gabion Drop Structure



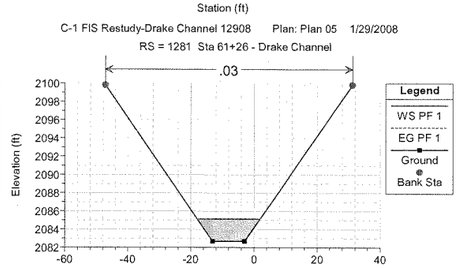
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1283 Sta 61+50 - Inline Gabion Drop Structure



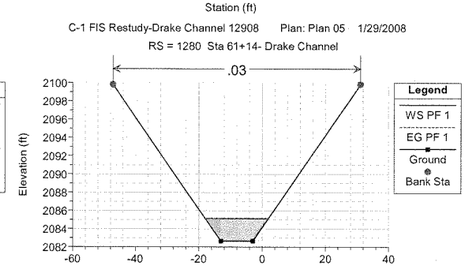
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1282 Sta 61+50 - Drake Channel



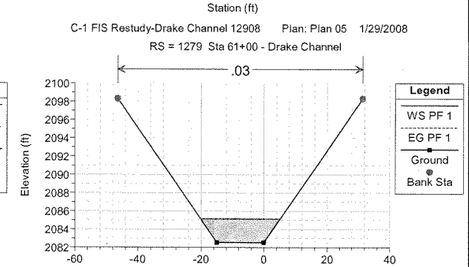
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1281 Sta 61+26 - Drake Channel



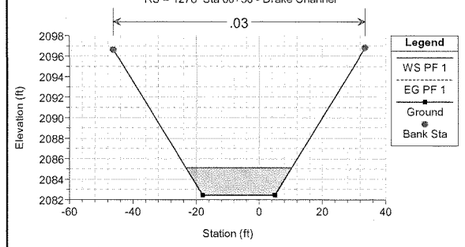
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1280 Sta 61+14- Drake Channel



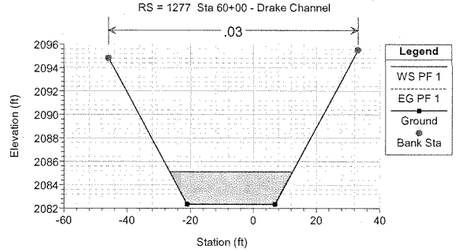
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1279 Sta 61+00 - Drake Channel



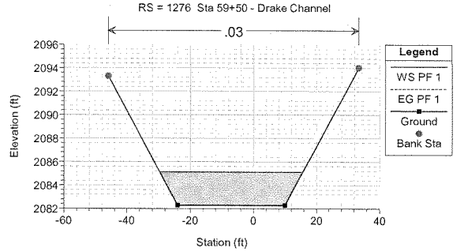
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1278 Sta 60+50 - Drake Channel



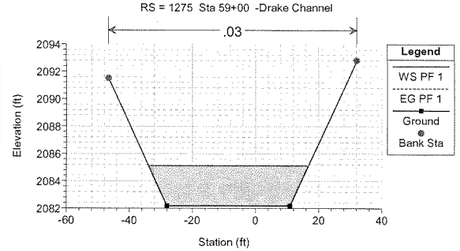
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1277 Sta 60+00 - Drake Channel



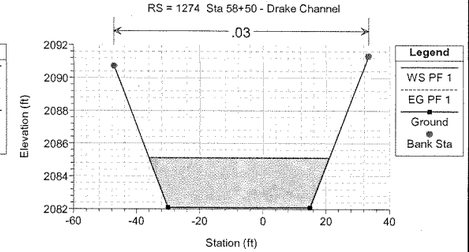
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1276 Sta 59+50 - Drake Channel



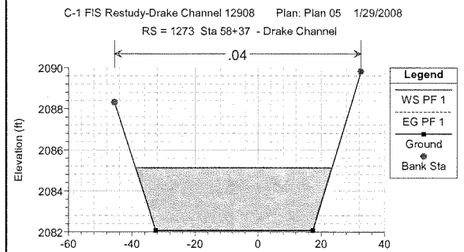
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1275 Sta 59+00 -Drake Channel



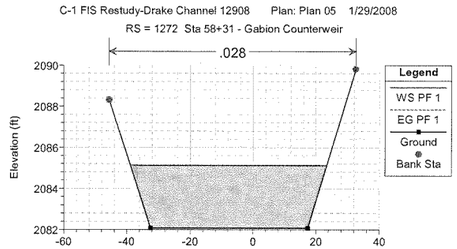
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1274 Sta 58+50 - Drake Channel



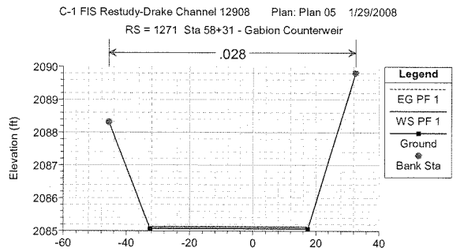
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1273 Sta 58+37 - Drake Channel



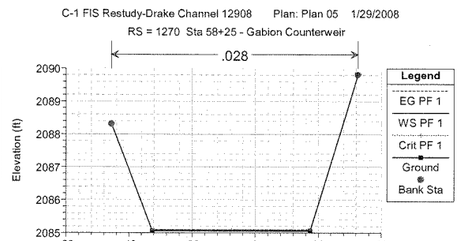
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1272 Sta 58+31 - Gabion Counterweir



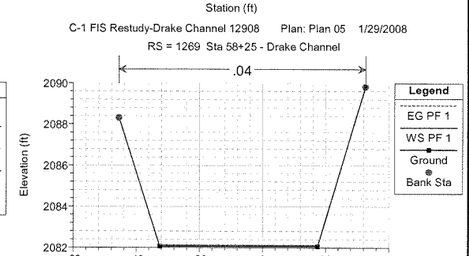
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1271 Sta 58+31 - Gabion Counterweir



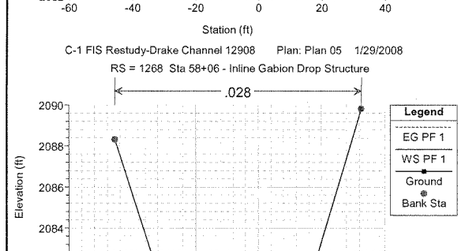
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1270 Sta 58+25 - Gabion Counterweir



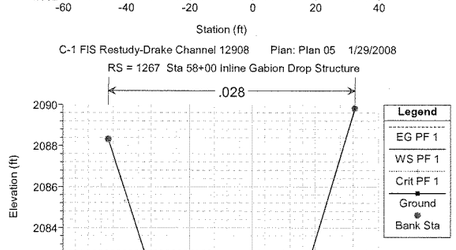
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1269 Sta 58+25 - Drake Channel



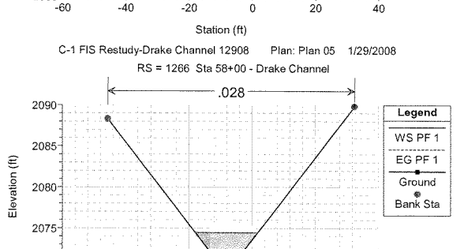
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1268 Sta 58+06 - Inline Gabion Drop Structure



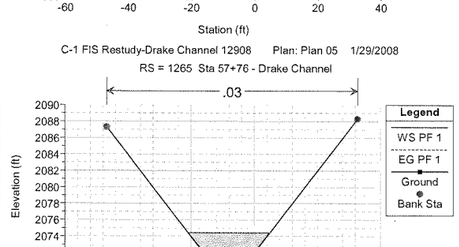
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1267 Sta 58+00 Inline Gabion Drop Structure



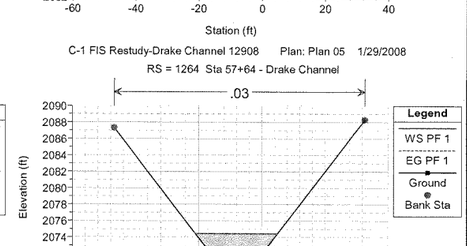
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1266 Sta 58+00 - Drake Channel



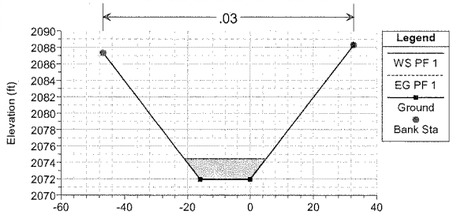
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1265 Sta 57+76 - Drake Channel



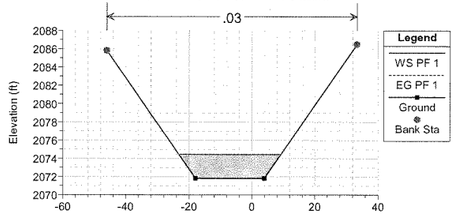
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1264 Sta 57+64 - Drake Channel



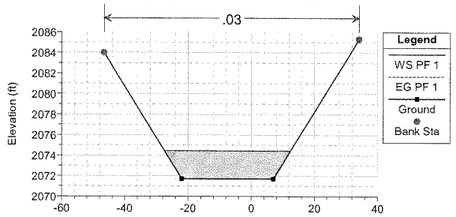
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1263 Sta 57+50 - Drake Channel



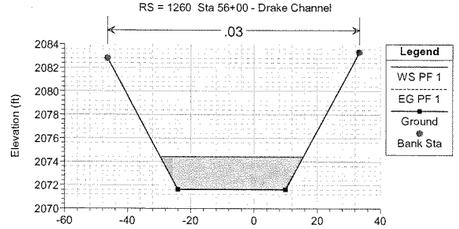
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1262 Sta 57+00 - Drake Channel



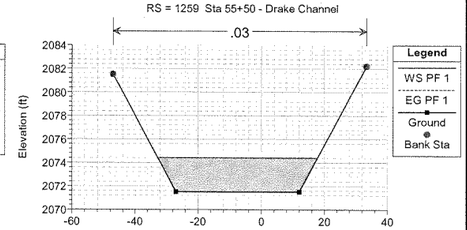
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1261 Sta 56+50 - Drake Channel



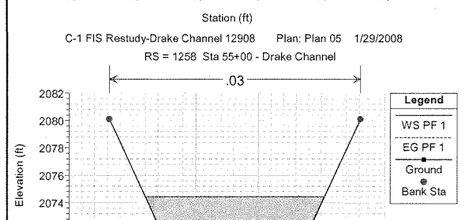
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1260 Sta 56+00 - Drake Channel



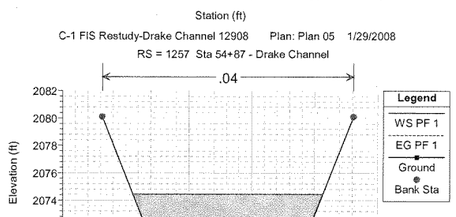
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1259 Sta 55+50 - Drake Channel



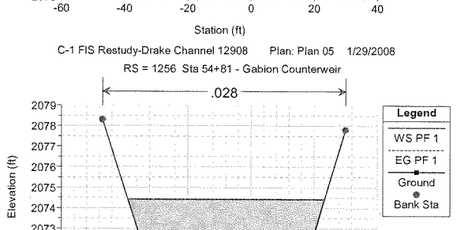
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1258 Sta 55+00 - Drake Channel



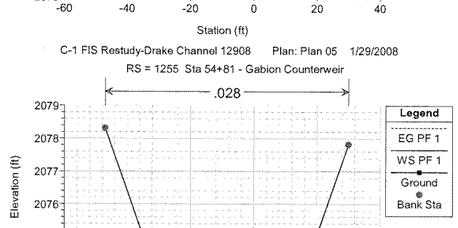
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1257 Sta 54+87 - Drake Channel



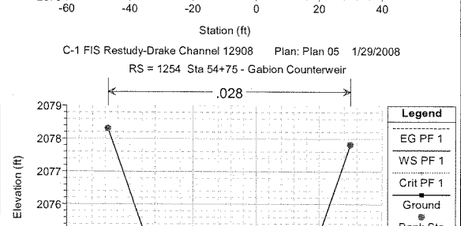
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1256 Sta 54+81 - Gabion Counterweir



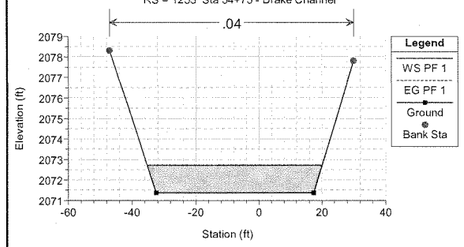
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1255 Sta 54+81 - Gabion Counterweir



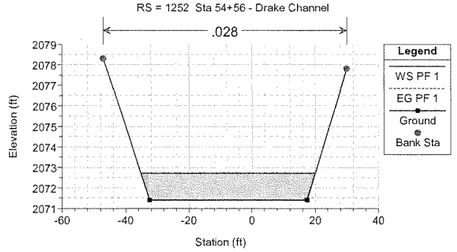
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1254 Sta 54+75 - Gabion Counterweir



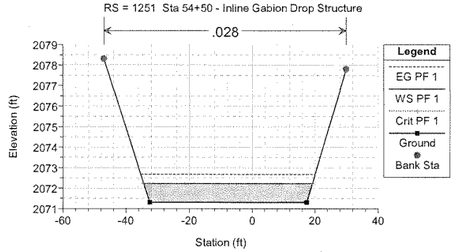
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1253 Sta 54+75 - Drake Channel



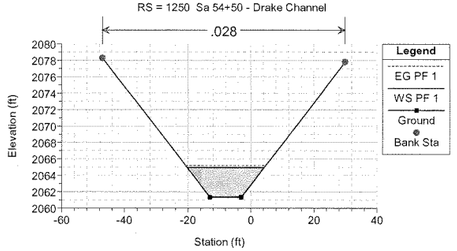
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1252 Sta 54+56 - Drake Channel



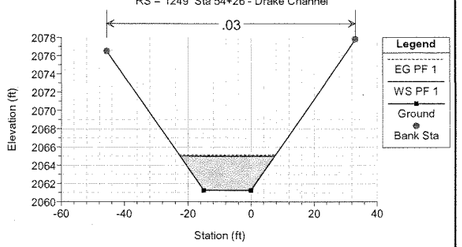
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1251 Sta 54+50 - Inline Gabion Drop Structure



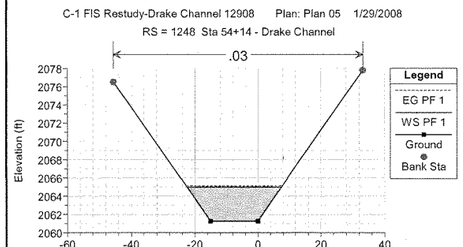
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1250 Sa 54+50 - Drake Channel



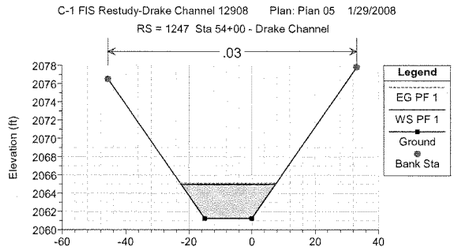
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1249 Sta 54+26 - Drake Channel



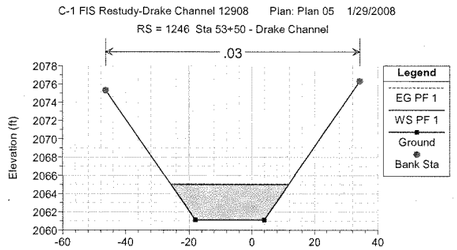
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1248 Sta 54+14 - Drake Channel



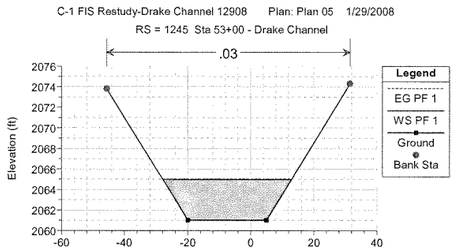
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1247 Sta 54+00 - Drake Channel



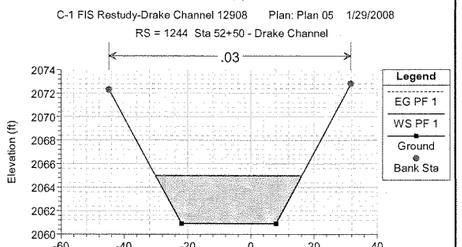
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1246 Sta 53+50 - Drake Channel



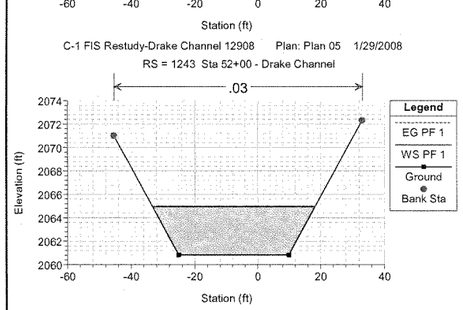
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1245 Sta 53+00 - Drake Channel



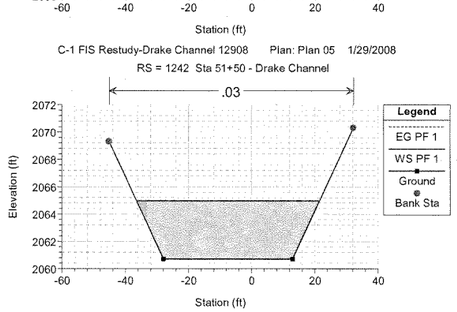
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1244 Sta 52+50 - Drake Channel



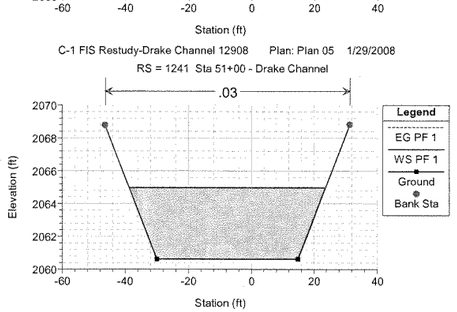
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1243 Sta 52+00 - Drake Channel



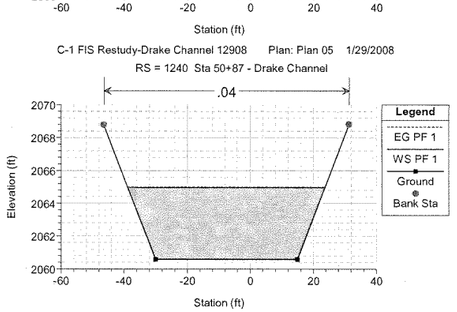
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1242 Sta 51+50 - Drake Channel



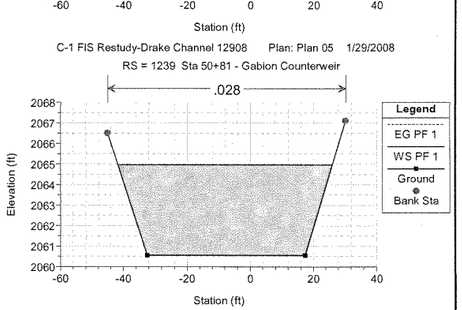
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1241 Sta 51+00 - Drake Channel



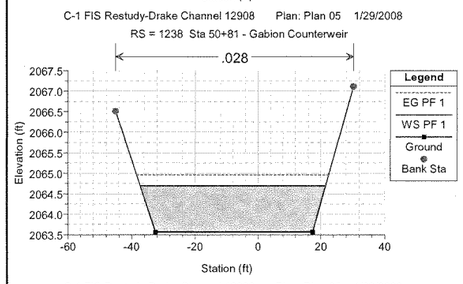
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1240 Sta 50+87 - Drake Channel



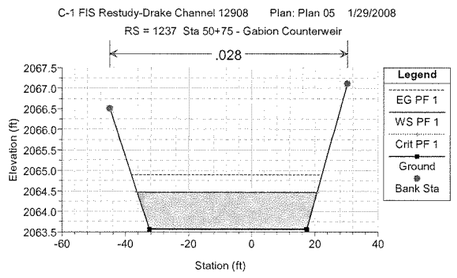
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1239 Sta 50+81 - Gabion Counterweir



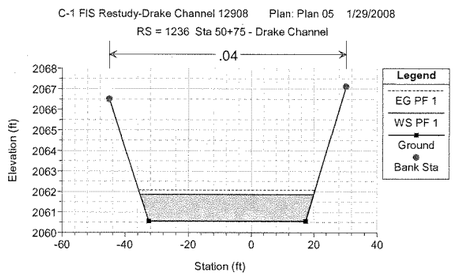
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1238 Sta 50+81 - Gabion Counterweir



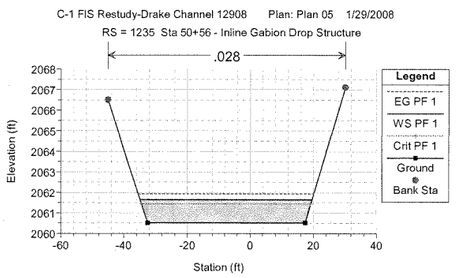
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1237 Sta 50+75 - Gabion Counterweir



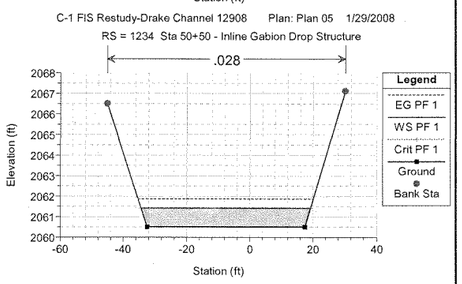
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1236 Sta 50+75 - Drake Channel



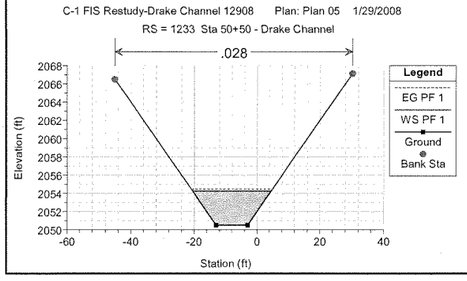
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1235 Sta 50+56 - Inline Gabion Drop Structure



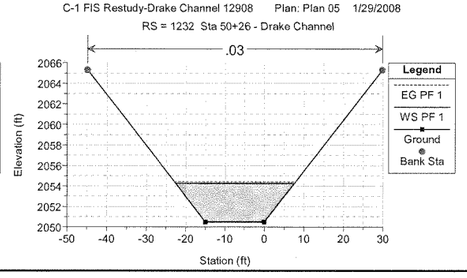
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1234 Sta 50+50 - Inline Gabion Drop Structure



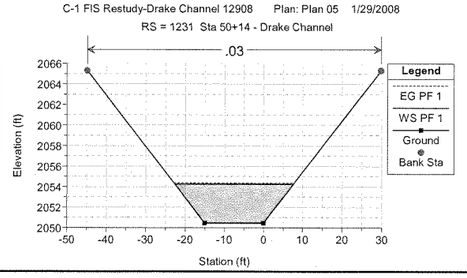
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1233 Sta 50+50 - Drake Channel



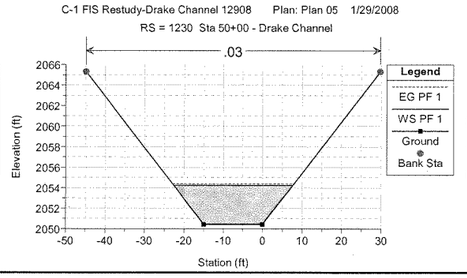
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1232 Sta 50+26 - Drake Channel



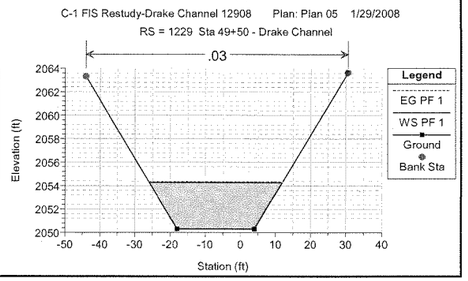
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1231 Sta 50+14 - Drake Channel



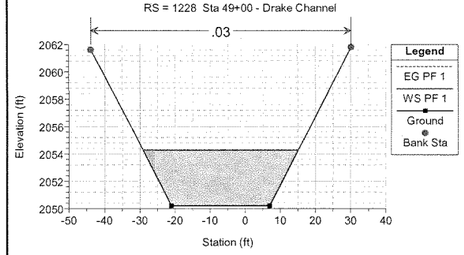
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1230 Sta 50+00 - Drake Channel



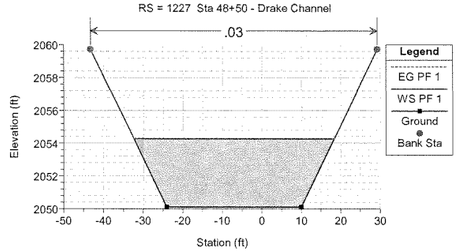
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1229 Sta 49+50 - Drake Channel



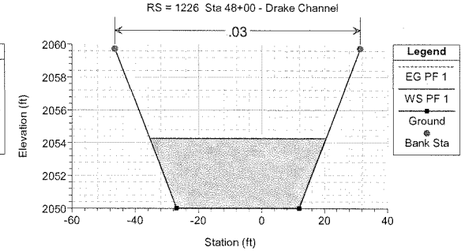
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1228 Sta 49+00 - Drake Channel



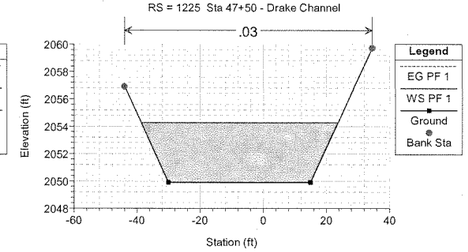
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1227 Sta 48+50 - Drake Channel



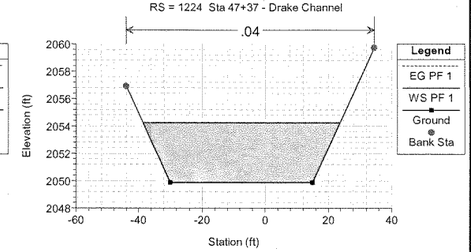
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1226 Sta 48+00 - Drake Channel



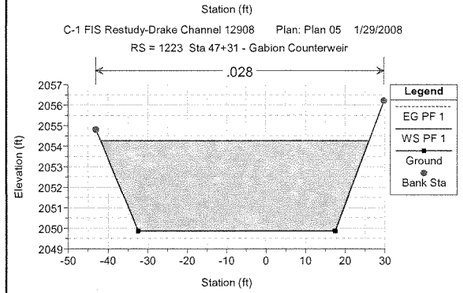
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1225 Sta 47+50 - Drake Channel



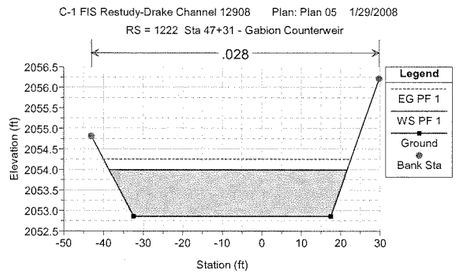
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1224 Sta 47+37 - Drake Channel



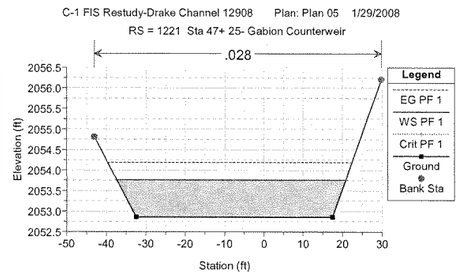
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1223 Sta 47+31 - Gabion Counterweir



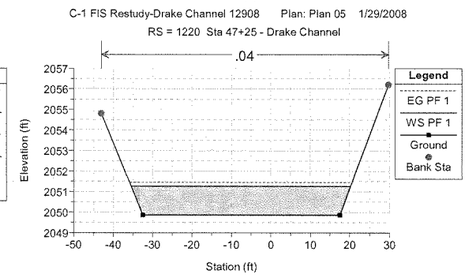
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1222 Sta 47+31 - Gabion Counterweir



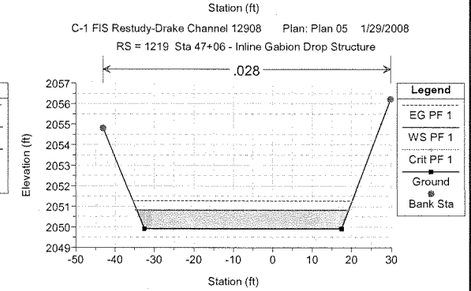
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1221 Sta 47+ 25- Gabion Counterweir



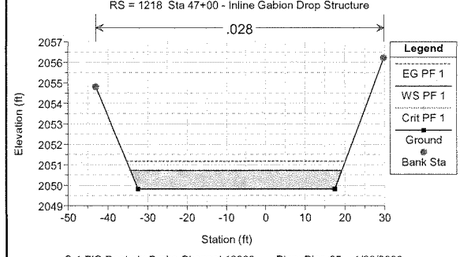
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1220 Sta 47+25 - Drake Channel



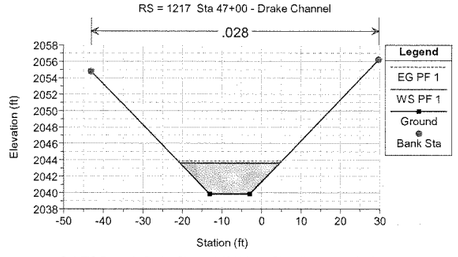
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1219 Sta 47+06 - Inline Gabion Drop Structure



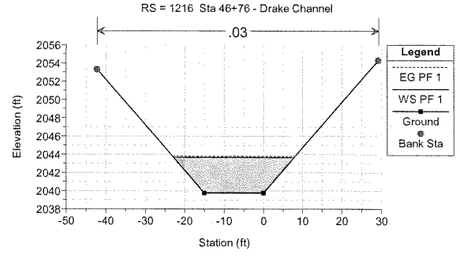
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1218 Sta 47+00 - Inline Gabion Drop Structure



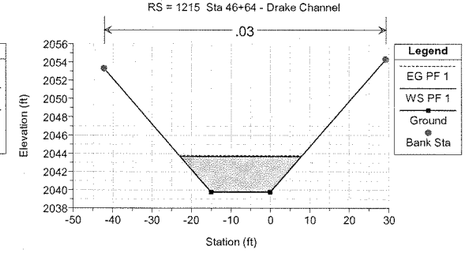
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1217 Sta 47+00 - Drake Channel



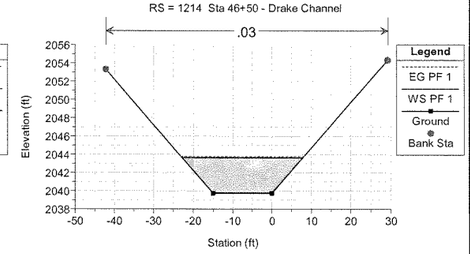
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1216 Sta 46+76 - Drake Channel



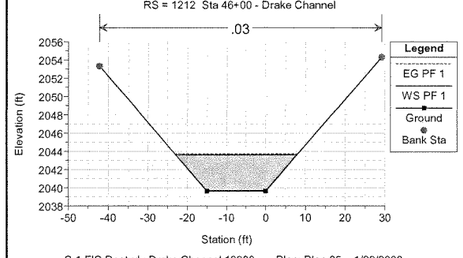
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1215 Sta 46+64 - Drake Channel



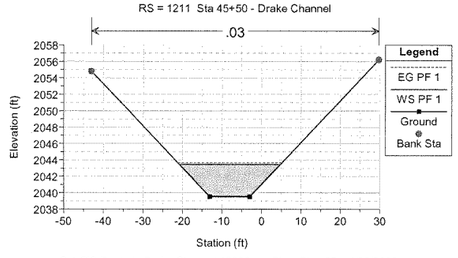
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1214 Sta 46+50 - Drake Channel



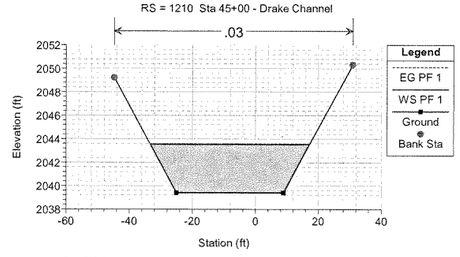
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1212 Sta 46+00 - Drake Channel



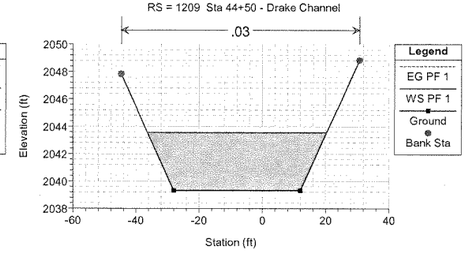
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1211 Sta 45+50 - Drake Channel



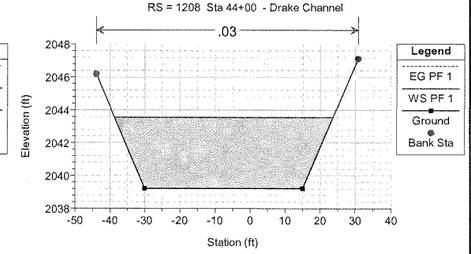
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1210 Sta 45+00 - Drake Channel



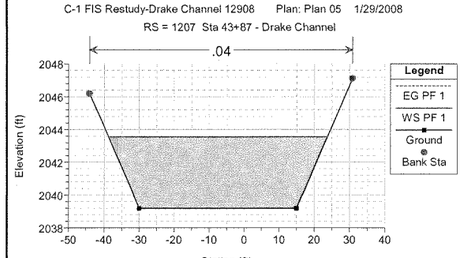
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1209 Sta 44+50 - Drake Channel



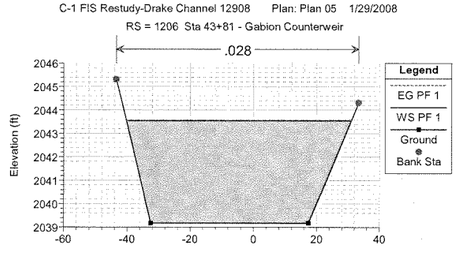
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1208 Sta 44+00 - Drake Channel



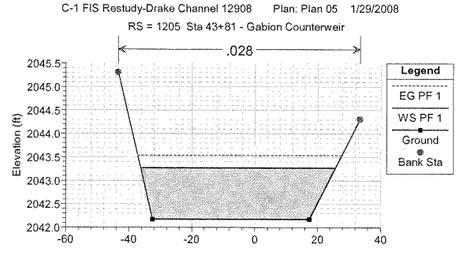
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1207 Sta 43+87 - Drake Channel



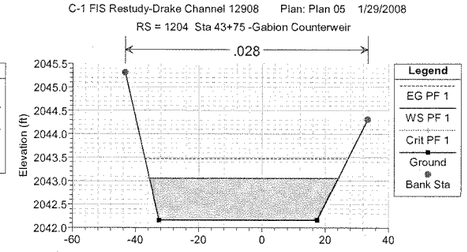
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1206 Sta 43+81 - Gabion Counterweir



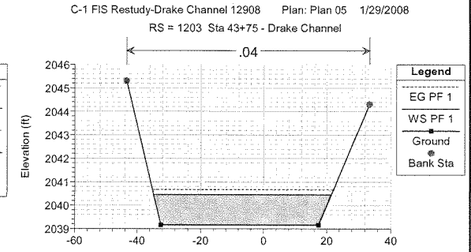
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1205 Sta 43+81 - Gabion Counterweir



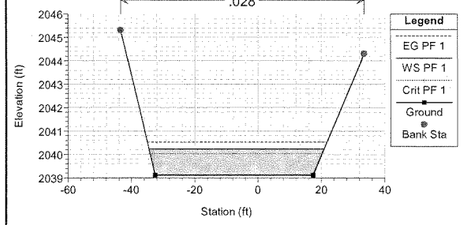
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1204 Sta 43+75 -Gabion Counterweir



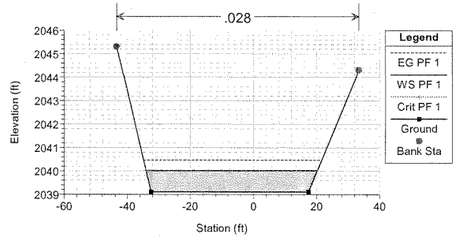
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1203 Sta 43+75 - Drake Channel



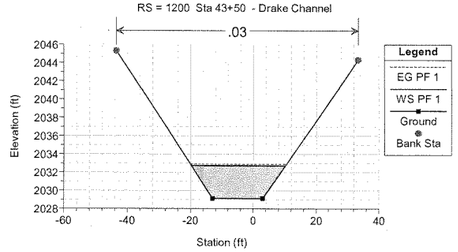
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1202 Sta 43+56 - Inline Gabion Drop Structure



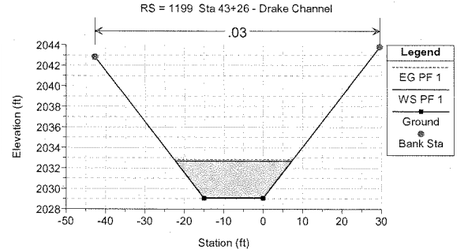
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1201 Sta 43+50 Inline Gabion Drop Structure



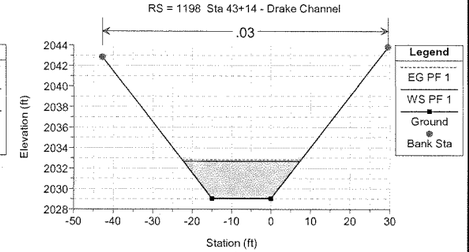
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1200 Sta 43+50 - Drake Channel



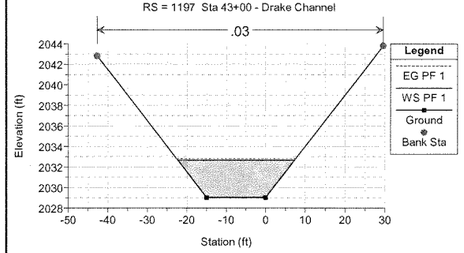
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1199 Sta 43+26 - Drake Channel



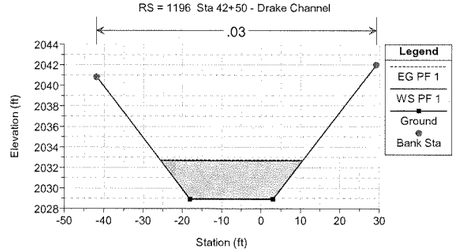
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1198 Sta 43+14 - Drake Channel



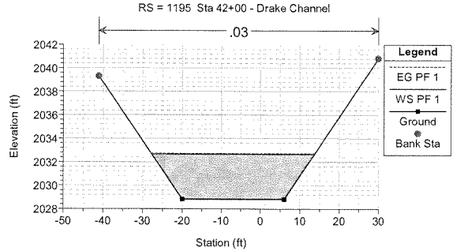
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1197 Sta 43+00 - Drake Channel



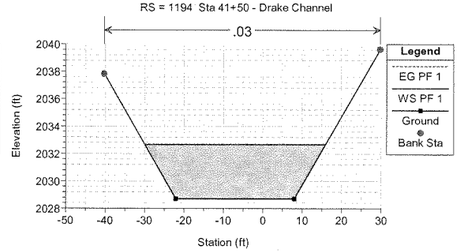
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1196 Sta 42+50 - Drake Channel



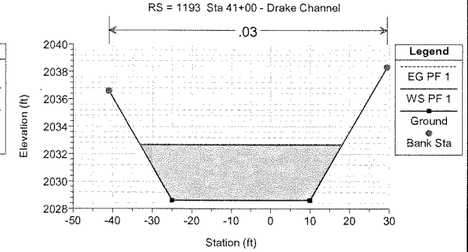
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1195 Sta 42+00 - Drake Channel



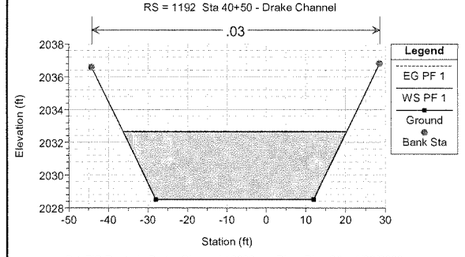
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1194 Sta 41+50 - Drake Channel



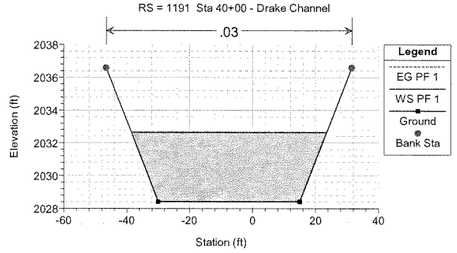
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1193 Sta 41+00 - Drake Channel



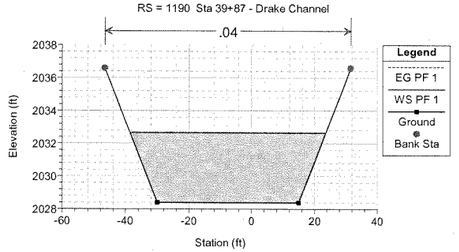
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1192 Sta 40+50 - Drake Channel



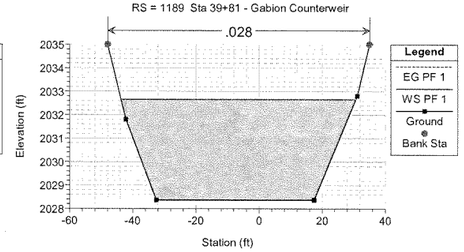
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1191 Sta 40+00 - Drake Channel



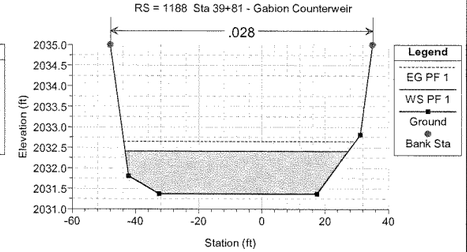
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1190 Sta 39+87 - Drake Channel



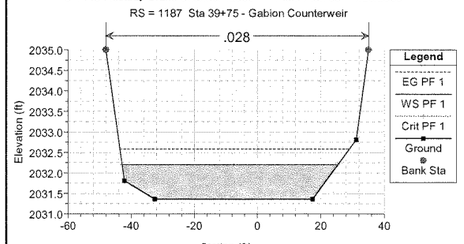
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1189 Sta 39+81 - Gabion Counterweir



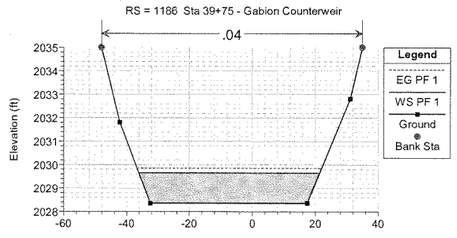
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1188 Sta 39+81 - Gabion Counterweir



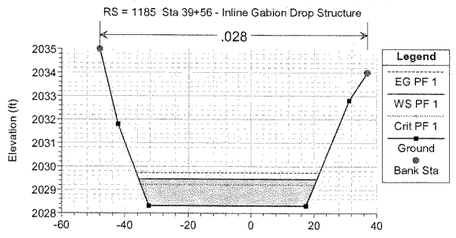
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1187 Sta 39+75 - Gabion Counterweir



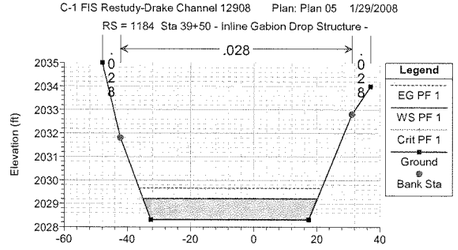
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1186 Sta 39+75 - Gabion Counterweir



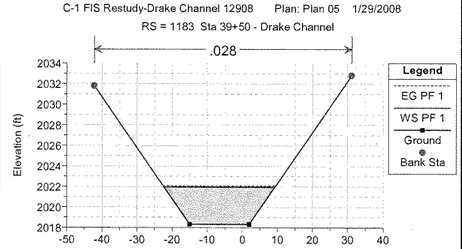
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1185 Sta 39+56 - Inline Gabion Drop Structure



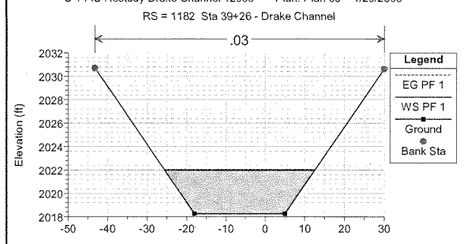
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1184 Sta 39+50 - Inline Gabion Drop Structure -



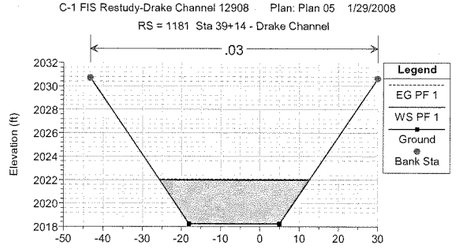
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1183 Sta 39+50 - Drake Channel



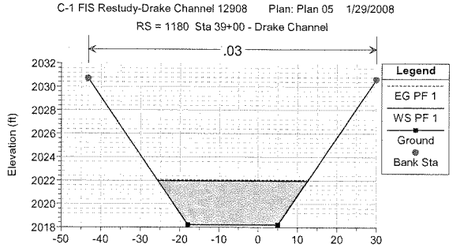
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1182 Sta 39+26 - Drake Channel



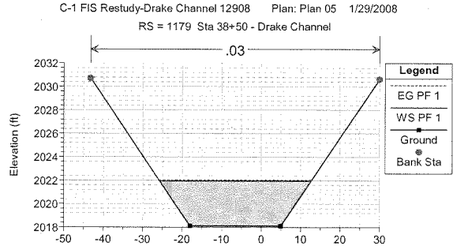
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1181 Sta 39+14 - Drake Channel



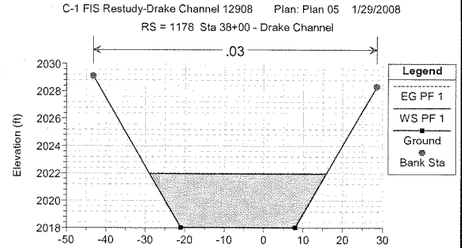
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1180 Sta 39+00 - Drake Channel



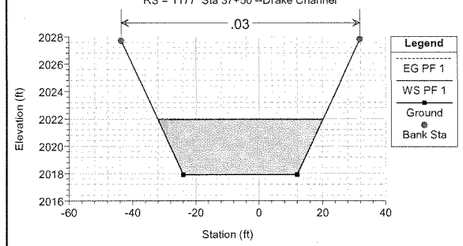
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1179 Sta 38+50 - Drake Channel



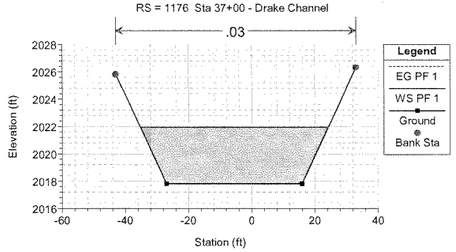
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1178 Sta 38+00 - Drake Channel



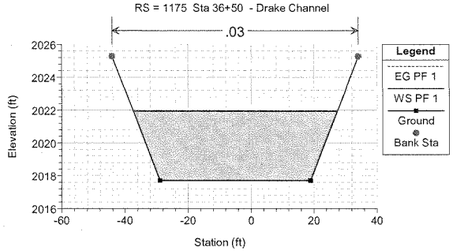
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1177 Sta 37+50 --Drake Channel



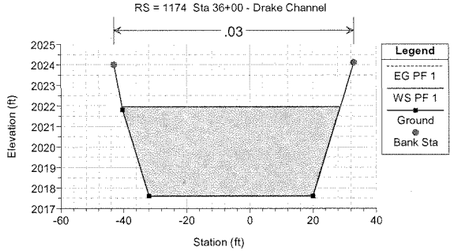
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1176 Sta 37+00 - Drake Channel



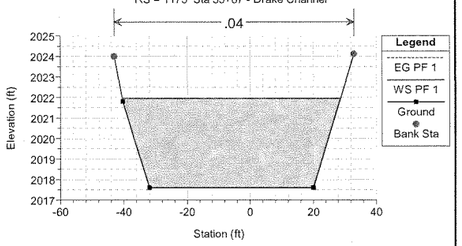
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1175 Sta 36+50 - Drake Channel



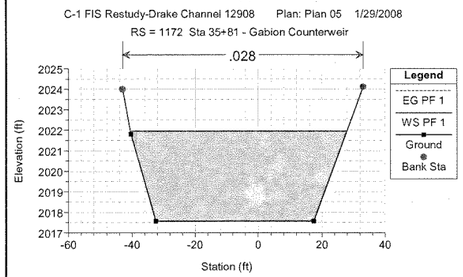
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1174 Sta 36+00 - Drake Channel



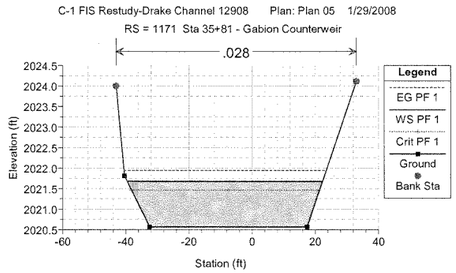
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1173 Sta 35+87 - Drake Channel



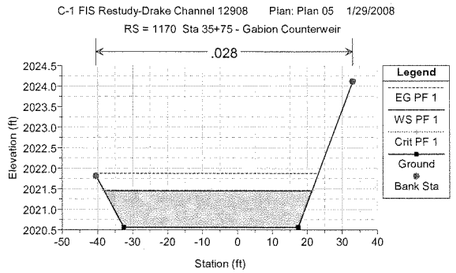
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1172 Sta 35+81 - Gabion Counterweir



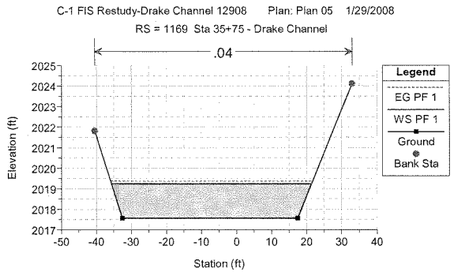
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1171 Sta 35+81 - Gabion Counterweir



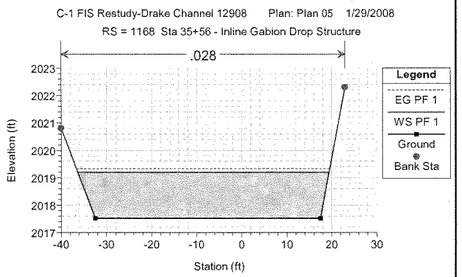
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1170 Sta 35+75 - Gabion Counterweir



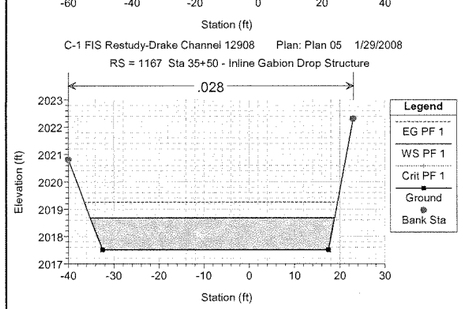
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1169 Sta 35+75 - Drake Channel



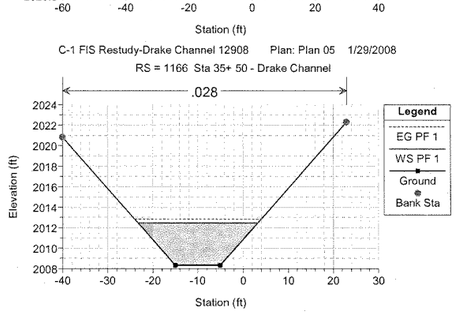
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1168 Sta 35+56 - Inline Gabion Drop Structure



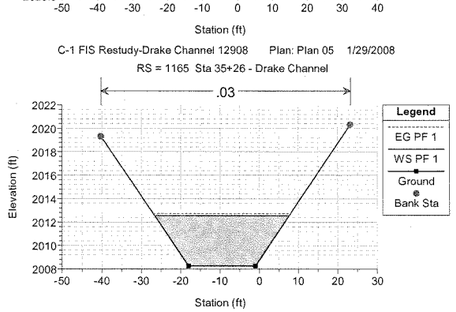
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1167 Sta 35+50 - Inline Gabion Drop Structure



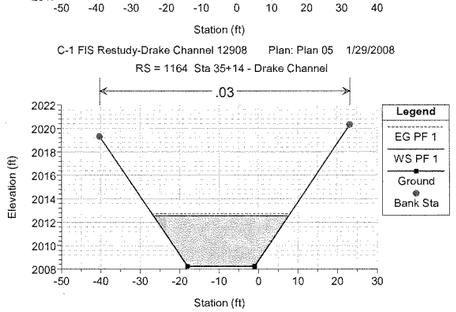
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1166 Sta 35+ 50 - Drake Channel



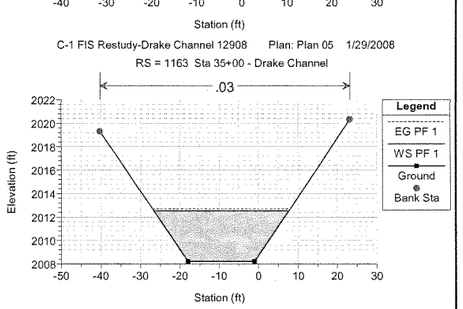
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1165 Sta 35+26 - Drake Channel



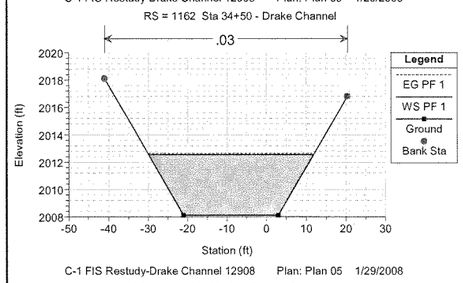
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1164 Sta 35+14 - Drake Channel



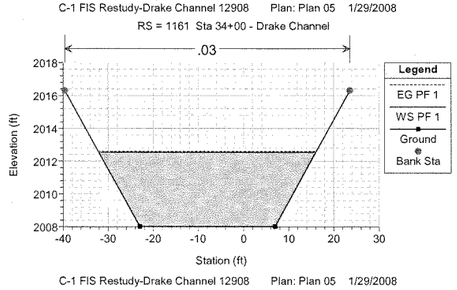
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1163 Sta 35+00 - Drake Channel



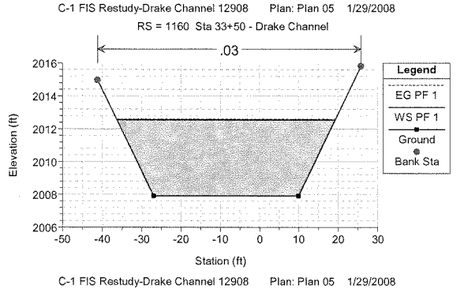
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1162 Sta 34+50 - Drake Channel



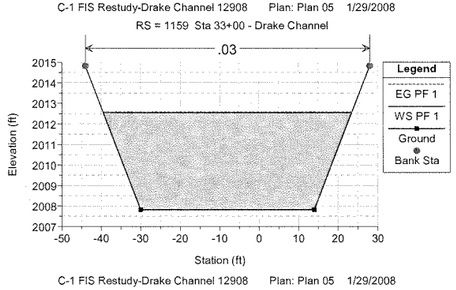
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1161 Sta 34+00 - Drake Channel



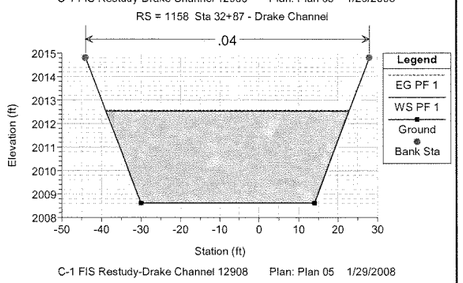
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1160 Sta 33+50 - Drake Channel



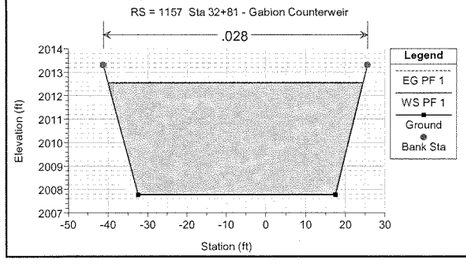
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1159 Sta 33+00 - Drake Channel



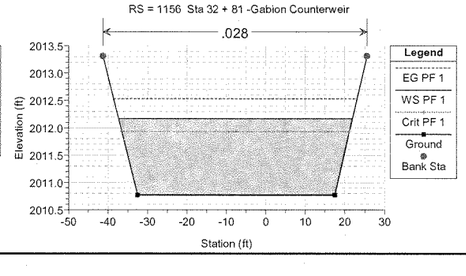
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1158 Sta 32+87 - Drake Channel



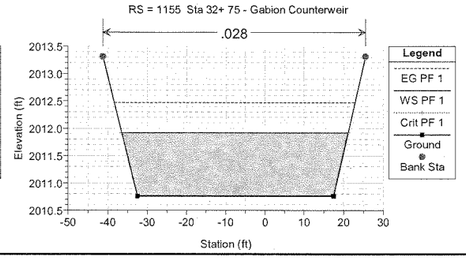
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1157 Sta 32+81 - Gabion Counterweir



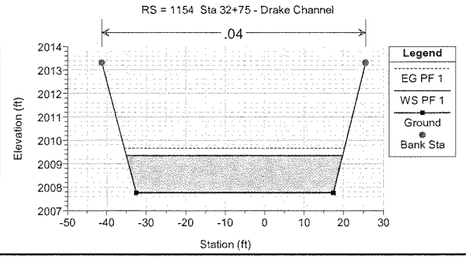
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1156 Sta 32 + 81 -Gabion Counterweir



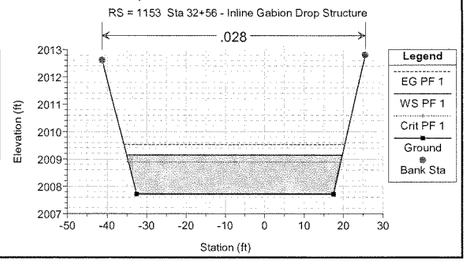
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1155 Sta 32+ 75 - Gabion Counterweir

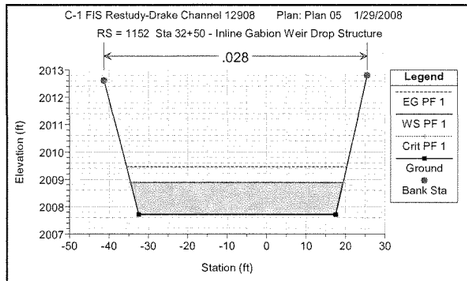


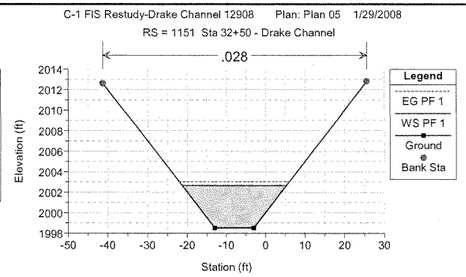
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1154 Sta 32+75 - Drake Channel

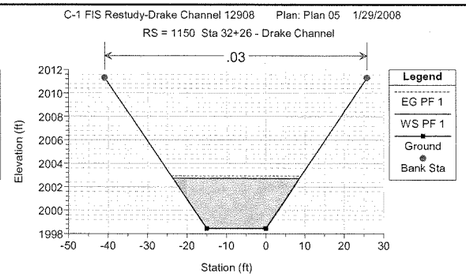


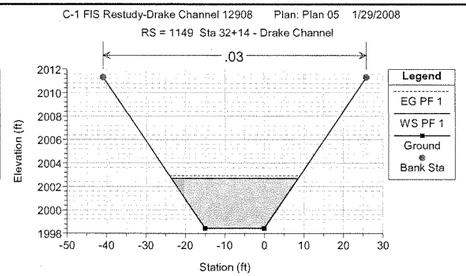
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1153 Sta 32+56 - Inline Gabion Drop Structure

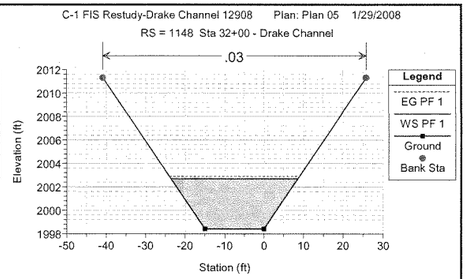


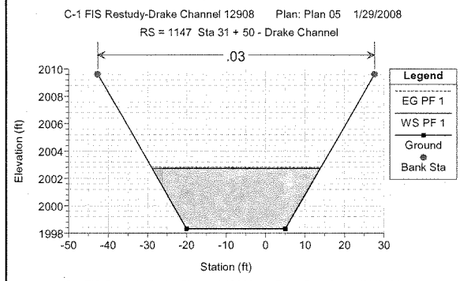

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1152 Sta 32+50 - Inline Gabion Weir Drop Structure
.028
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

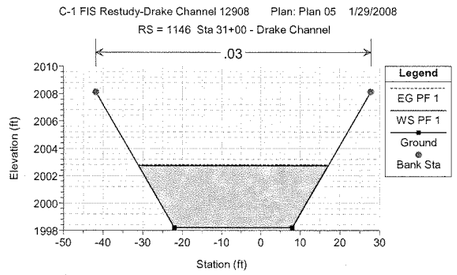

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1151 Sta 32+50 - Drake Channel
.028
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

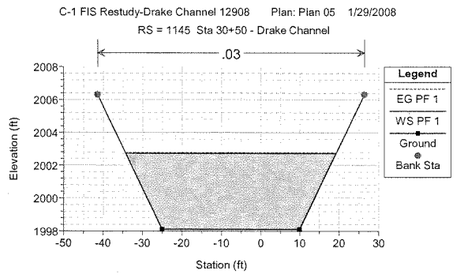

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1150 Sta 32+26 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

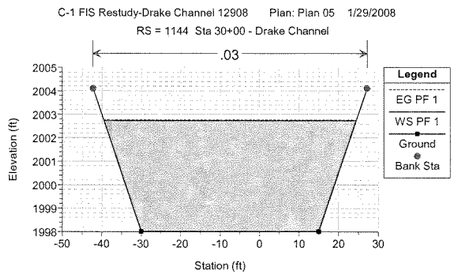

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1149 Sta 32+14 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

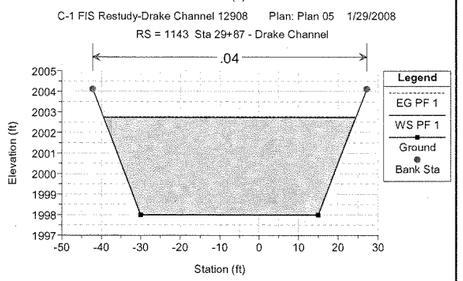

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1148 Sta 32+00 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

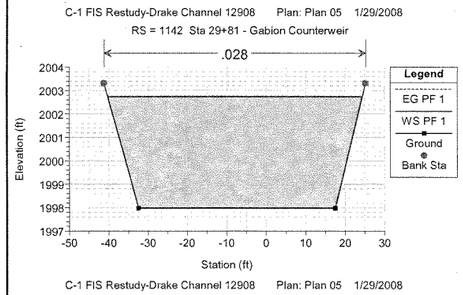

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1147 Sta 31 + 50 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

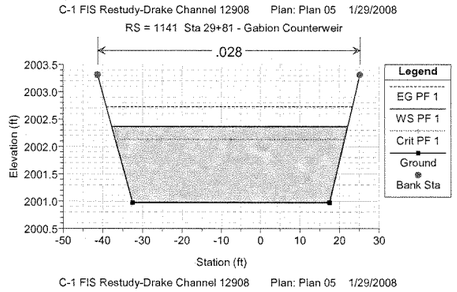

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1146 Sta 31+00 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

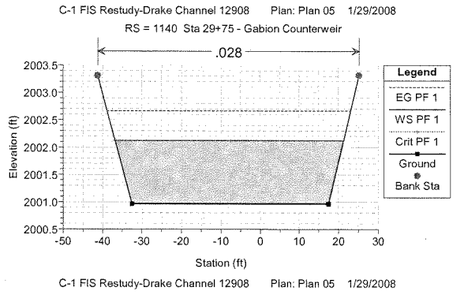

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1145 Sta 30+50 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

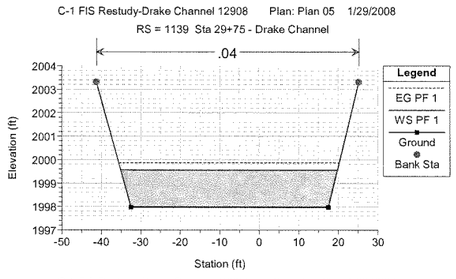

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1144 Sta 30+00 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

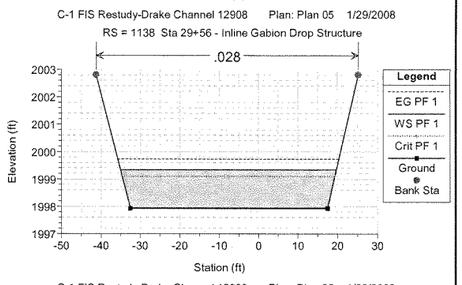

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1143 Sta 29+87 - Drake Channel
.04
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

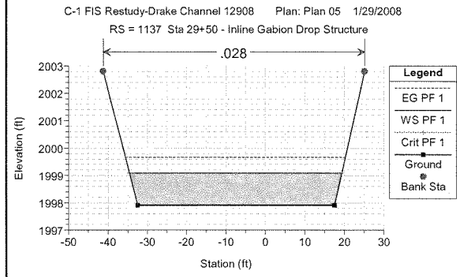

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1142 Sta 29+81 - Gabion Counterweir
.028
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

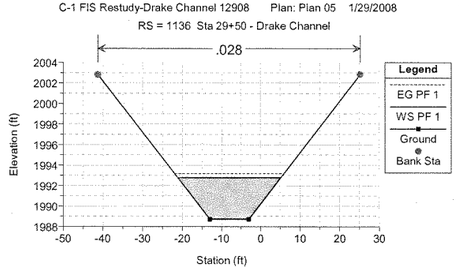

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1141 Sta 29+81 - Gabion Counterweir
.028
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

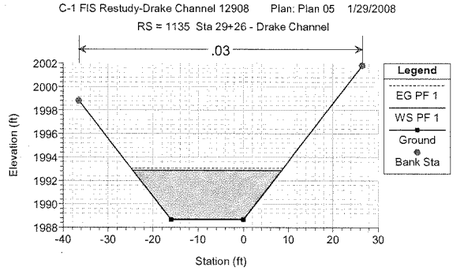

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1140 Sta 29+75 - Gabion Counterweir
.028
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

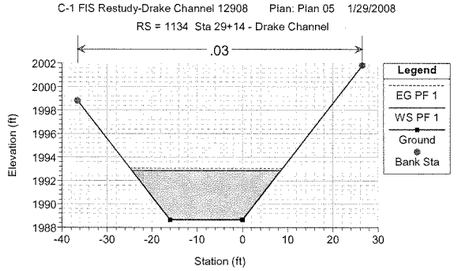

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1139 Sta 29+75 - Drake Channel
.04
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

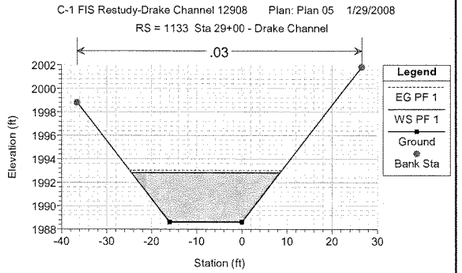

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1138 Sta 29+56 - Inline Gabion Drop Structure
.028
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

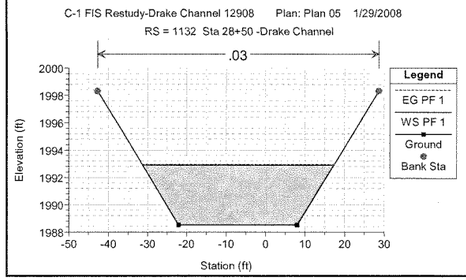

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1137 Sta 29+50 - Inline Gabion Drop Structure
.028
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

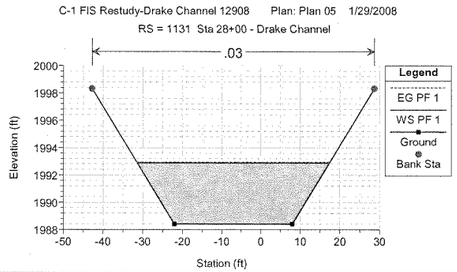

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1136 Sta 29+50 - Drake Channel
.028
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

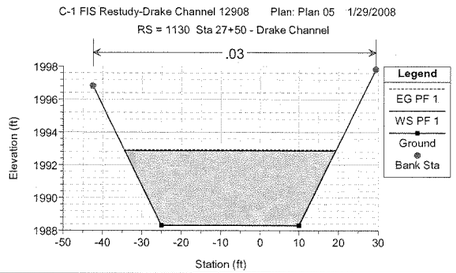

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1135 Sta 29+26 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

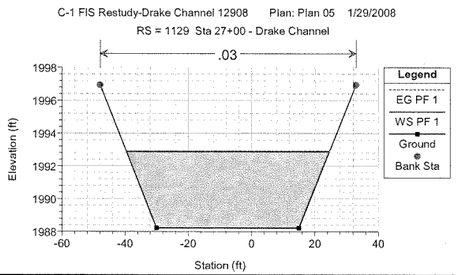

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1134 Sta 29+14 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

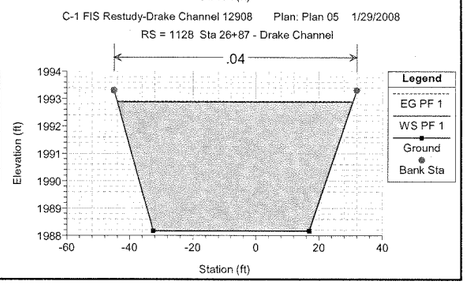

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1133 Sta 29+00 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1132 Sta 28+50 -Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

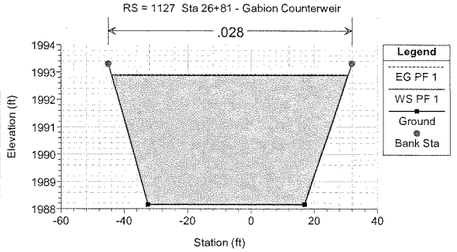

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1131 Sta 28+00 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1130 Sta 27+50 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

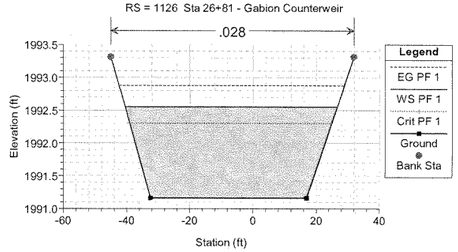

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1129 Sta 27+00 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1128 Sta 26+87 - Drake Channel
.04
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

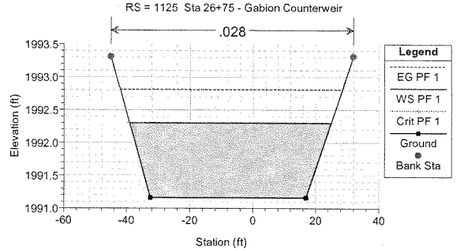
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1127 Sta 26+81 - Gabion Counterweir



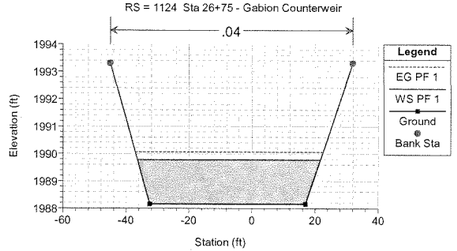
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1126 Sta 26+81 - Gabion Counterweir



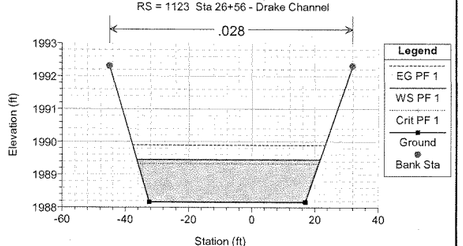
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1125 Sta 26+75 - Gabion Counterweir



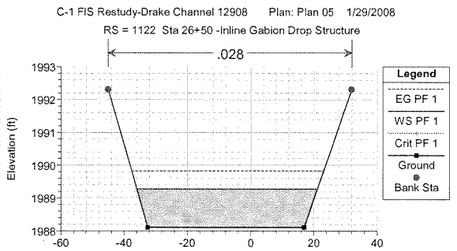
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1124 Sta 26+75 - Gabion Counterweir



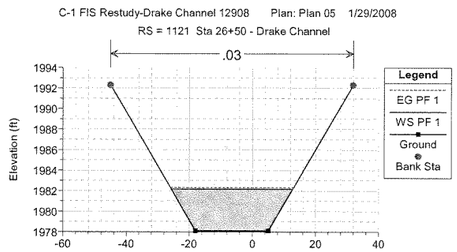
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1123 Sta 26+56 - Drake Channel



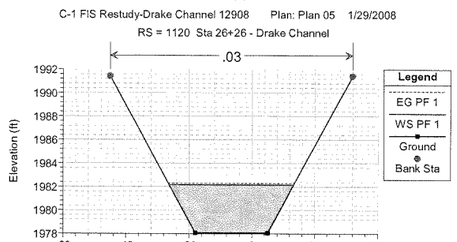
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1122 Sta 26+50 -Inline Gabion Drop Structure



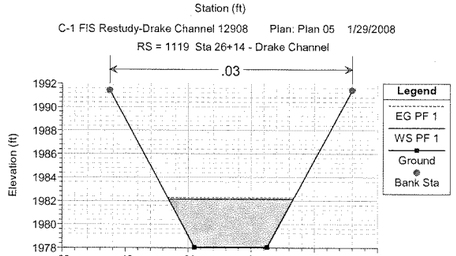
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1121 Sta 26+50 - Drake Channel



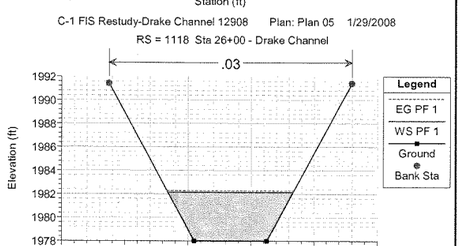
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1120 Sta 26+26 - Drake Channel



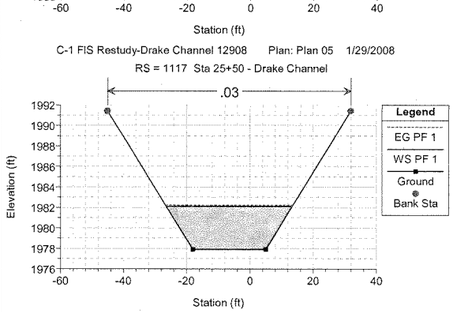
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1119 Sta 26+14 - Drake Channel



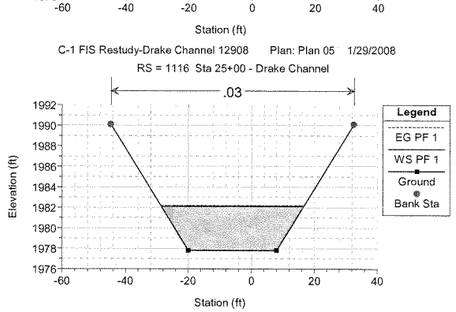
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1118 Sta 26+00 - Drake Channel



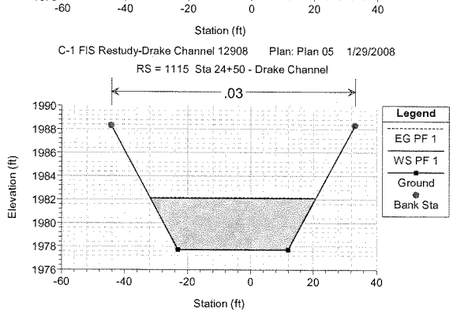
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1117 Sta 25+50 - Drake Channel



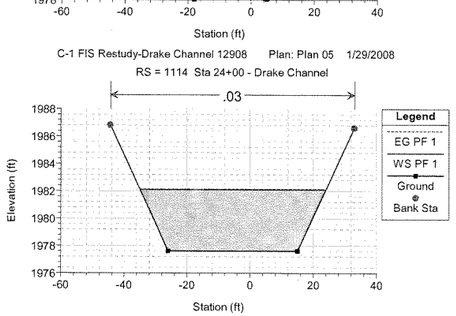
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1116 Sta 25+00 - Drake Channel



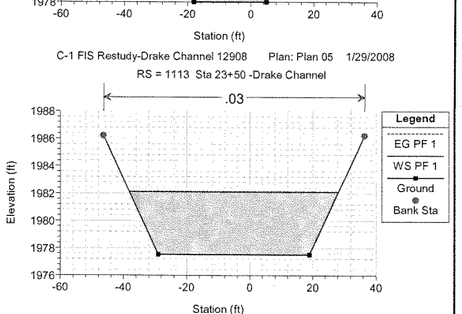
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1115 Sta 24+50 - Drake Channel



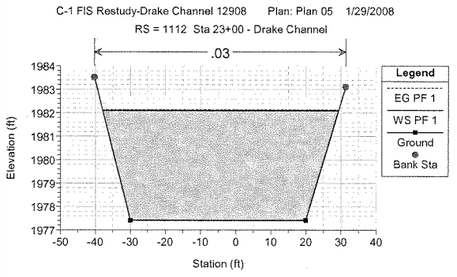
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1114 Sta 24+00 - Drake Channel



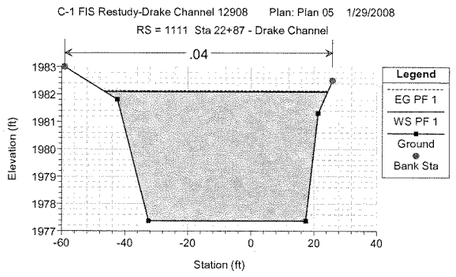
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1113 Sta 23+50 -Drake Channel



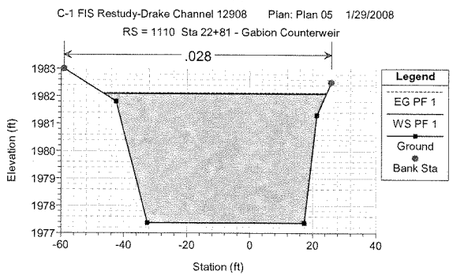
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1112 Sta 23+00 - Drake Channel



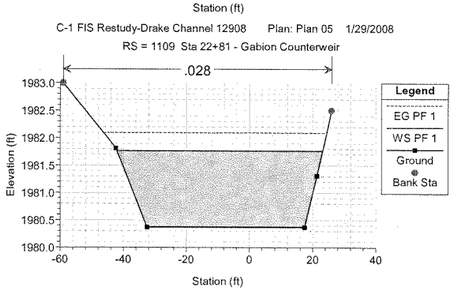
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1111 Sta 22+87 - Drake Channel



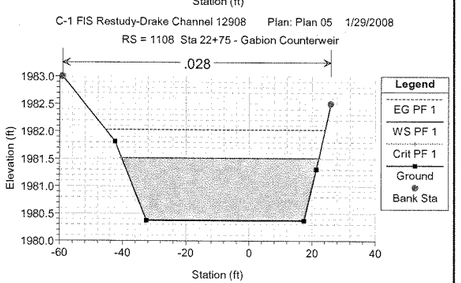
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1110 Sta 22+81 - Gabion Counterweir



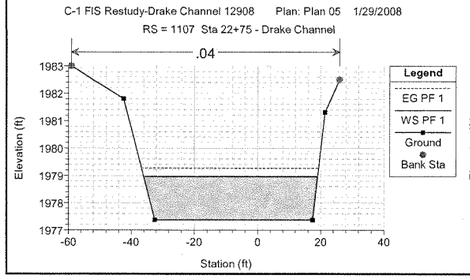
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1109 Sta 22+81 - Gabion Counterweir



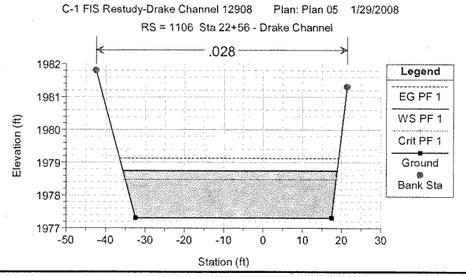
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1108 Sta 22+75 - Gabion Counterweir



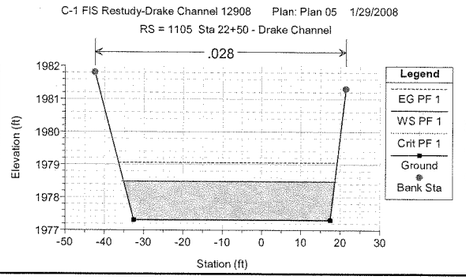
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1107 Sta 22+75 - Drake Channel



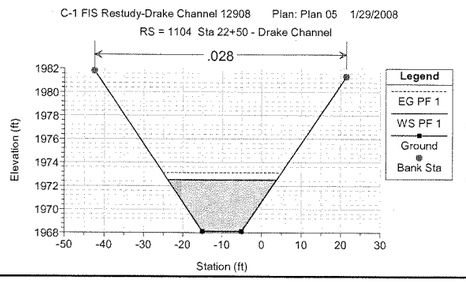
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1106 Sta 22+56 - Drake Channel



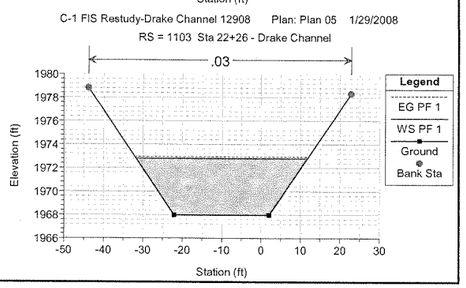
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1105 Sta 22+50 - Drake Channel



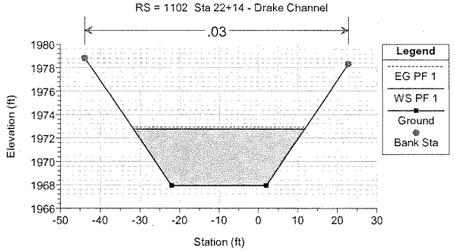
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1104 Sta 22+50 - Drake Channel



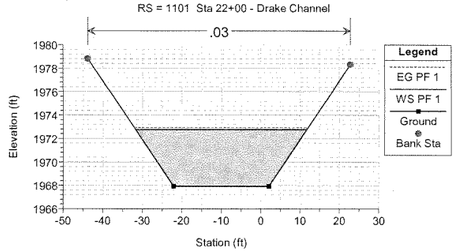
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1103 Sta 22+26 - Drake Channel



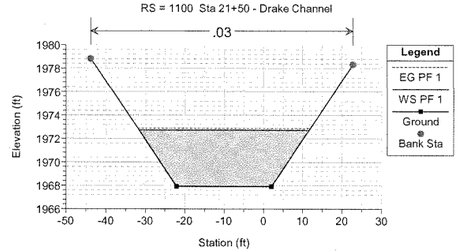
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1102 Sta 22+14 - Drake Channel



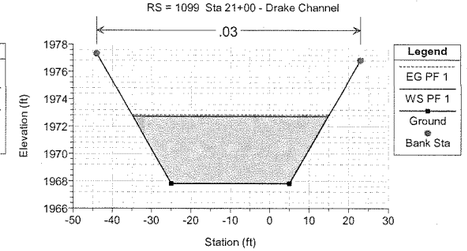
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1101 Sta 22+00 - Drake Channel



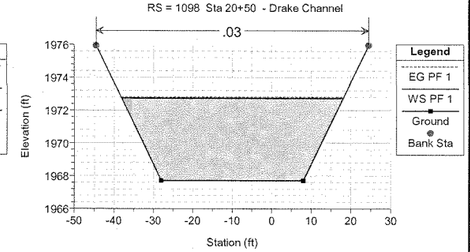
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1100 Sta 21+50 - Drake Channel



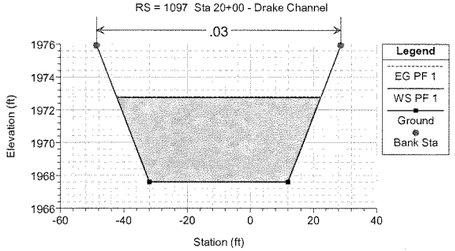
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1099 Sta 21+00 - Drake Channel



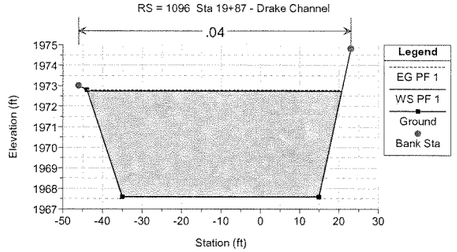
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1098 Sta 20+50 - Drake Channel



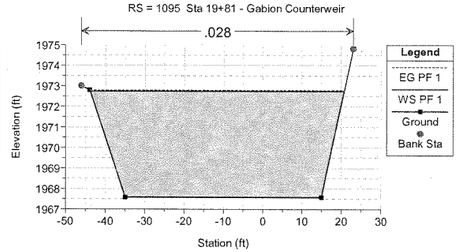
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1097 Sta 20+00 - Drake Channel



C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1096 Sta 19+87 - Drake Channel



C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1095 Sta 19+81 - Gabion Counterweir



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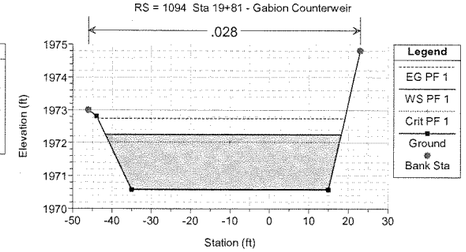
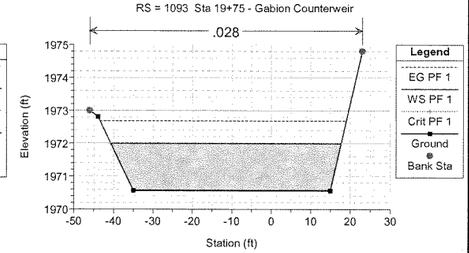
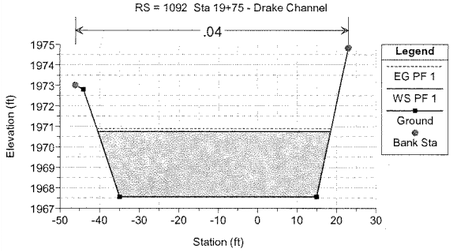
RS = 1094 Sta 19+81 - Gabion Counterweir



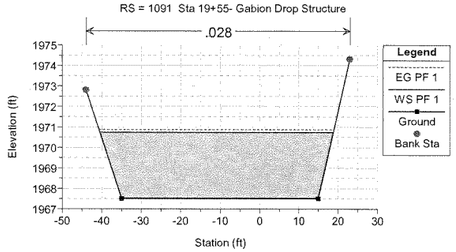
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1093 Sta 19+75 - Gabion Counterweir



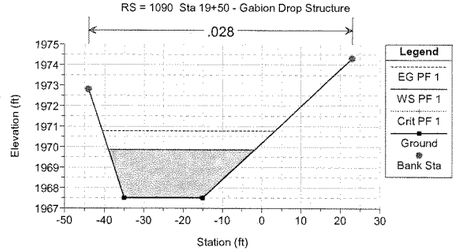
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1092 Sta 19+75 - Drake Channel



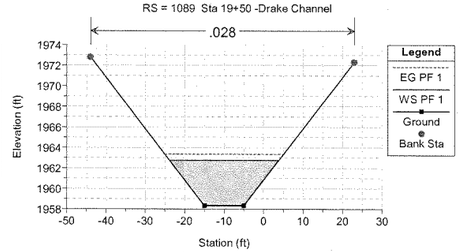
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1091 Sta 19+55- Gabion Drop Structure



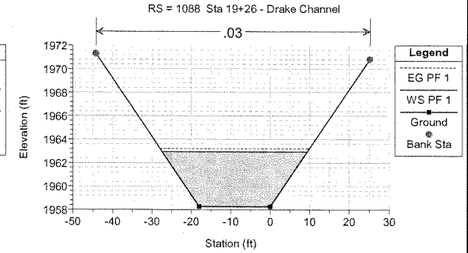
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1090 Sta 19+50 - Gabion Drop Structure



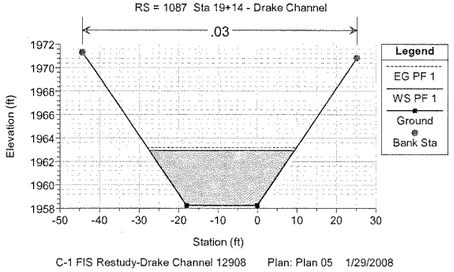
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1089 Sta 19+50 -Drake Channel



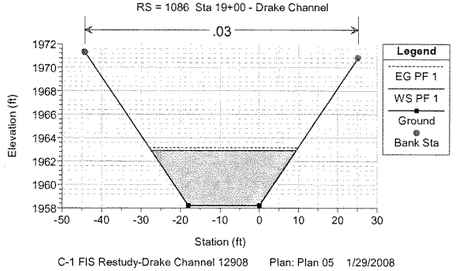
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1088 Sta 19+26 - Drake Channel



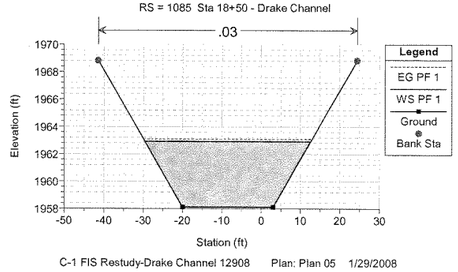
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1087 Sta 19+14 - Drake Channel



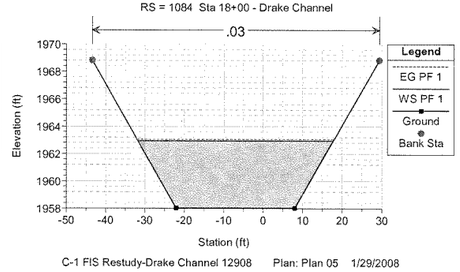
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1086 Sta 19+00 - Drake Channel



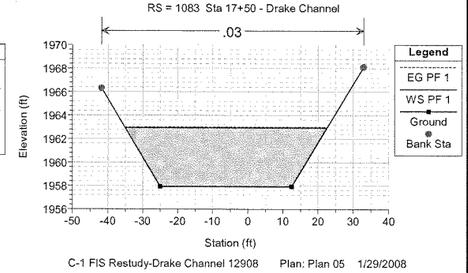
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1085 Sta 18+50 - Drake Channel



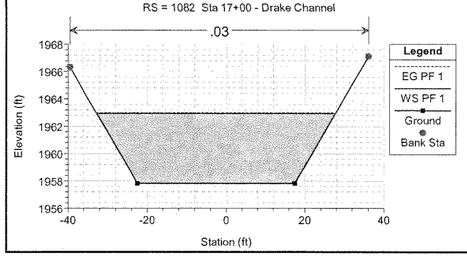
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1084 Sta 18+00 - Drake Channel



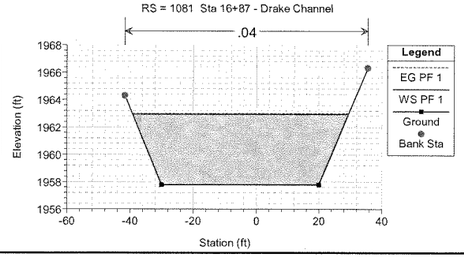
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1083 Sta 17+50 - Drake Channel



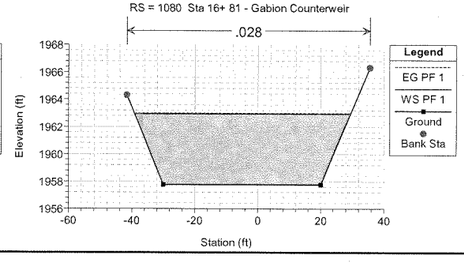
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1082 Sta 17+00 - Drake Channel



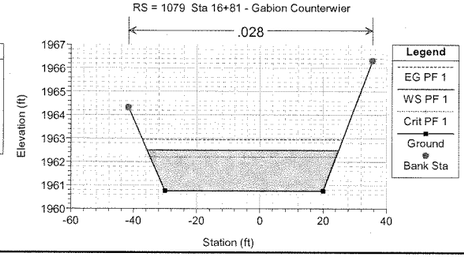
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1081 Sta 16+87 - Drake Channel



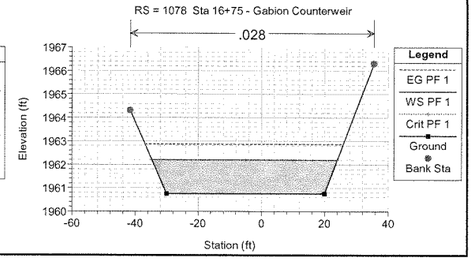
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1080 Sta 16+ 81 - Gabion Counterweir



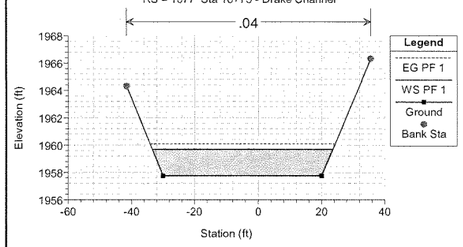
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1079 Sta 16+81 - Gabion Counterweir



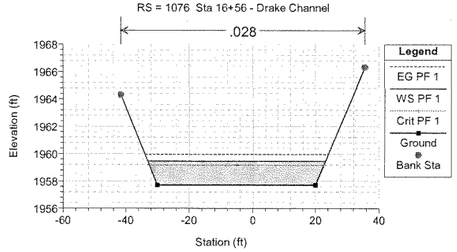
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1078 Sta 16+75 - Gabion Counterweir



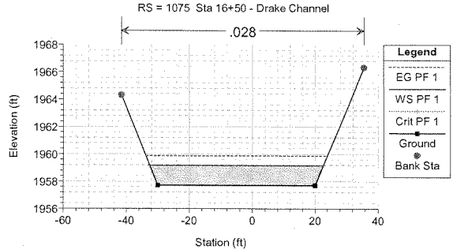
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1077 Sta 16+75 - Drake Channel



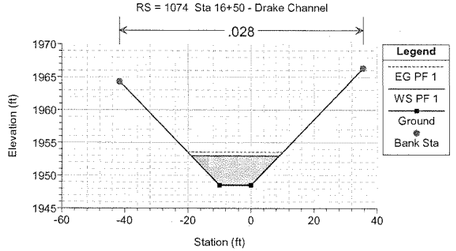
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1076 Sta 16+56 - Drake Channel



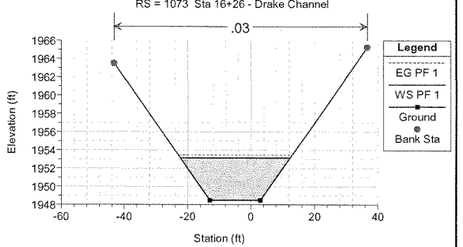
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1075 Sta 16+50 - Drake Channel



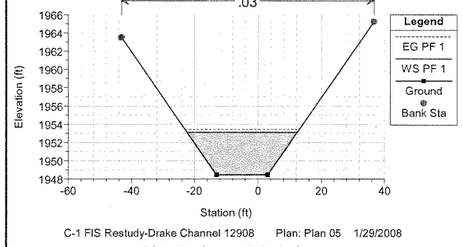
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1074 Sta 16+50 - Drake Channel



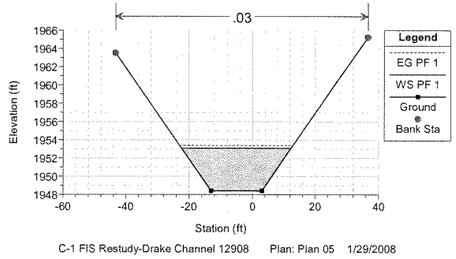
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1073 Sta 16+26 - Drake Channel



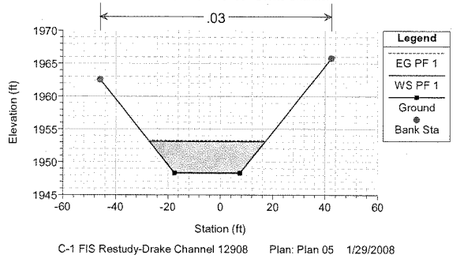
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1072 Sta 16+14 - Drake Channel



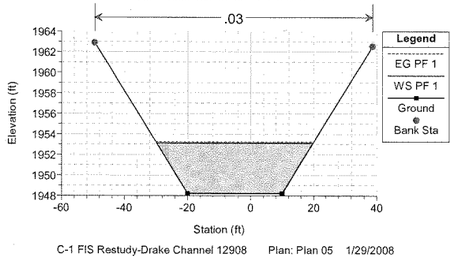
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1071 Sta 16+00 - Drake Channel



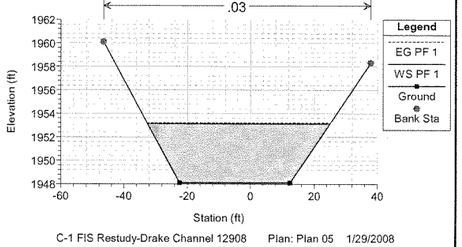
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1070 Sta 15+50 - Drake Channel



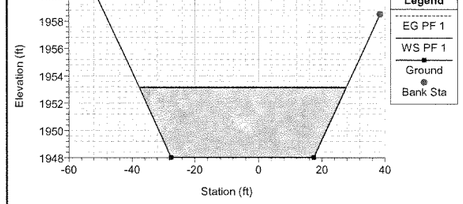
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1069 Sta 15+00 -Drake Channel



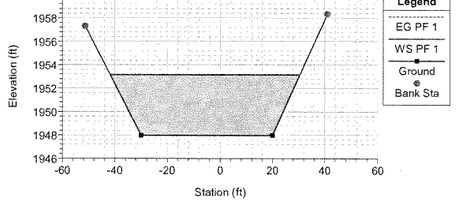
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1068 Sta 14+50 - Drake Channel



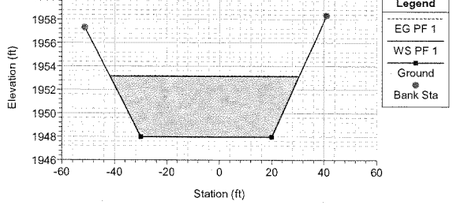
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1067 Sta 14+00 - Drake Channel



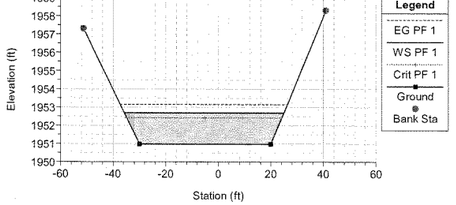
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1066 Sta 13+87 - Drake Channel



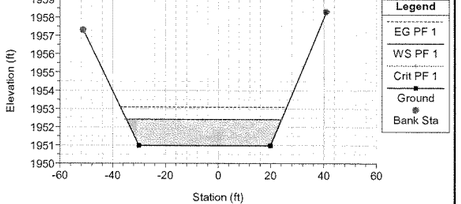
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1065 Sta 13+81 - Drake Channel



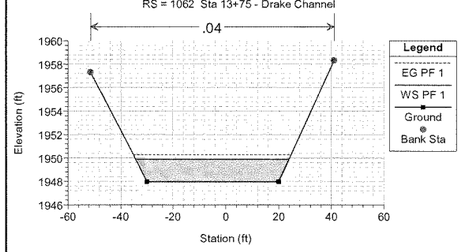
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1064 Sta 13+ 81 - Drake Channel



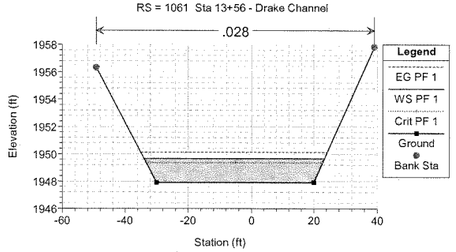
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1063 Sta 13+75 - Gabion Counterwier



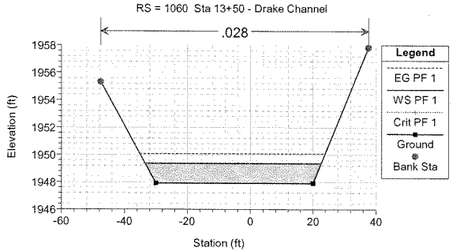
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1062 Sta 13+75 - Drake Channel



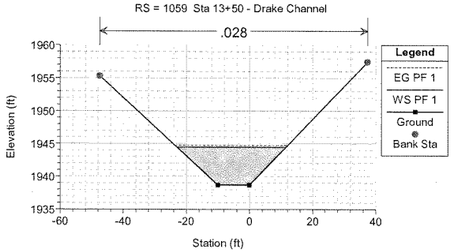
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1061 Sta 13+56 - Drake Channel



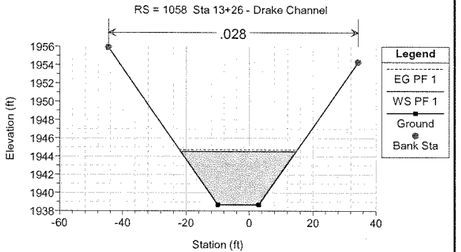
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1060 Sta 13+50 - Drake Channel



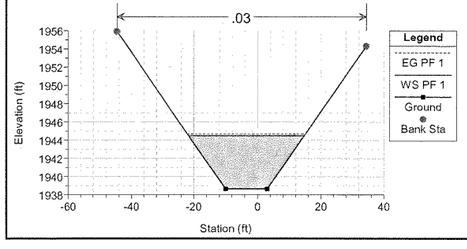
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1059 Sta 13+50 - Drake Channel



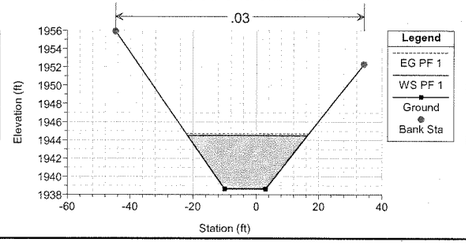
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1058 Sta 13+26 - Drake Channel



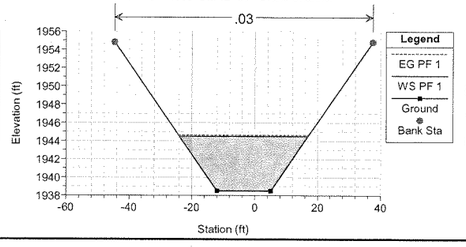
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1057 Sta 13+14 - Drake Channel



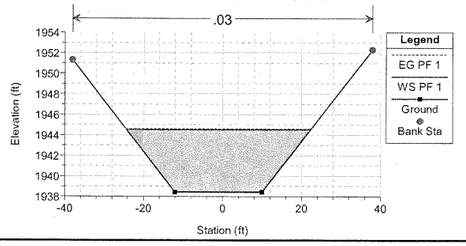
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1056 Sta 13+00 - Drake Channel



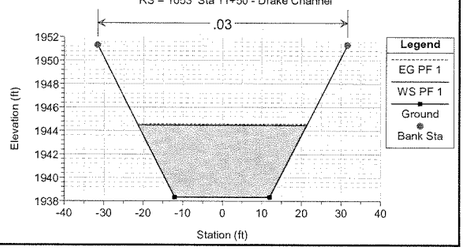
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1055 Sta 12+50 - Drake Channel



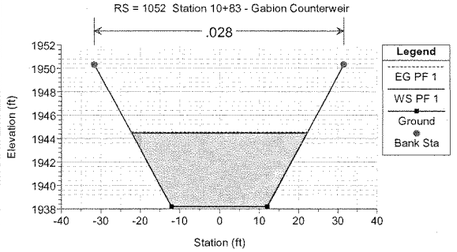
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1054 Sta 12+00 - Drake Channel



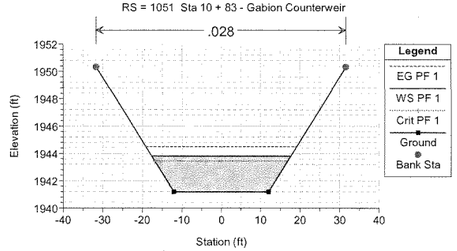
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1053 Sta 11+50 - Drake Channel



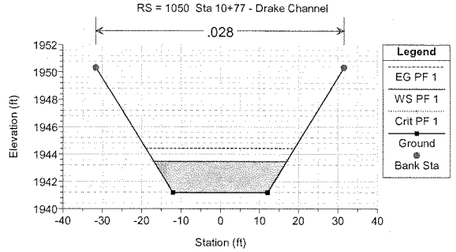
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1052 Station 10+83 - Gabion Counterweir



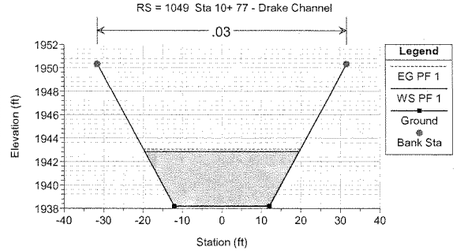
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1051 Sta 10 + 83 - Gabion Counterweir



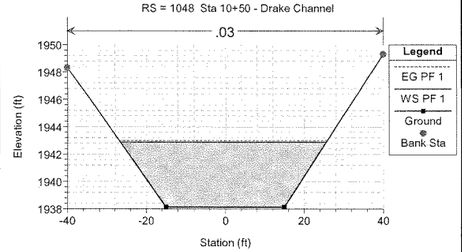
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1050 Sta 10+77 - Drake Channel



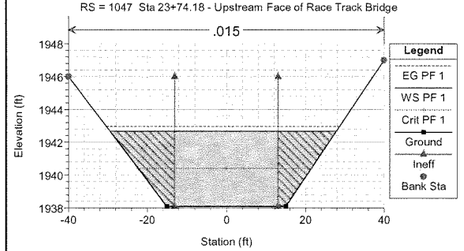
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1049 Sta 10+ 77 - Drake Channel



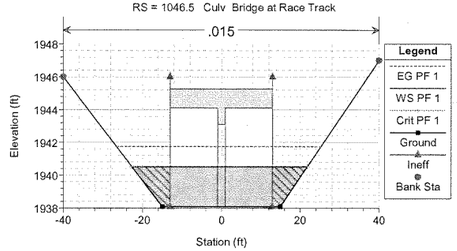
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1048 Sta 10+50 - Drake Channel



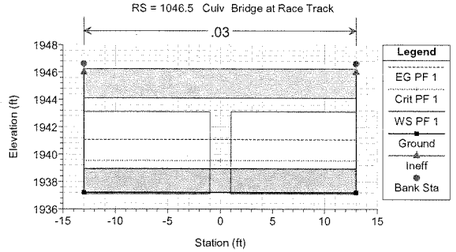
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1047 Sta 23+74.18 - Upstream Face of Race Track Bridge



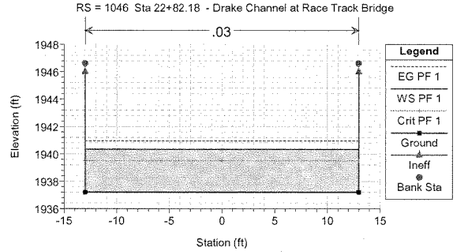
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1046.5 Culv Bridge at Race Track



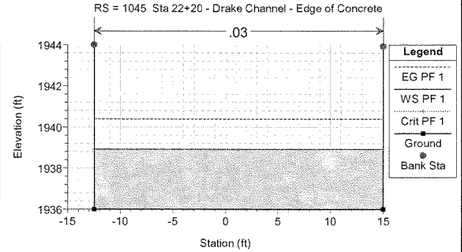
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1046.5 Culv Bridge at Race Track



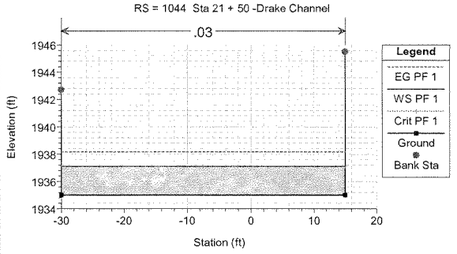
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1046 Sta 22+82.18 - Drake Channel at Race Track Bridge



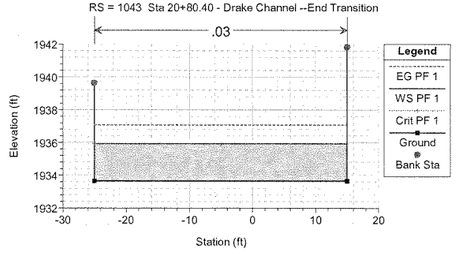
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1045 Sta 22+20 - Drake Channel - Edge of Concrete



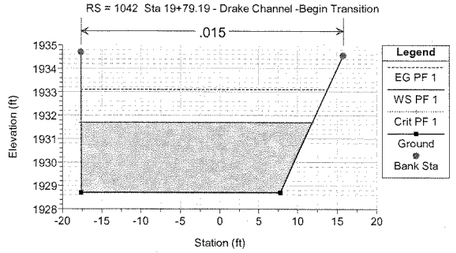
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1044 Sta 21 + 50 -Drake Channel



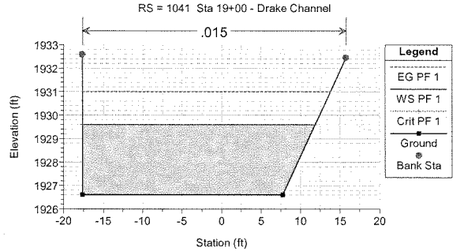
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1043 Sta 20+80.40 - Drake Channel --End Transition



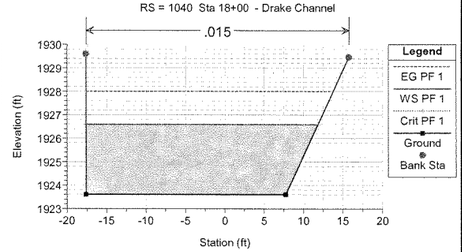
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1042 Sta 19+79.19 - Drake Channel -Begin Transition



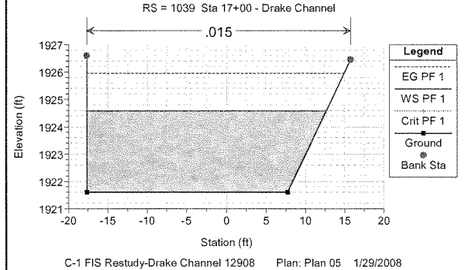
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1041 Sta 19+00 - Drake Channel



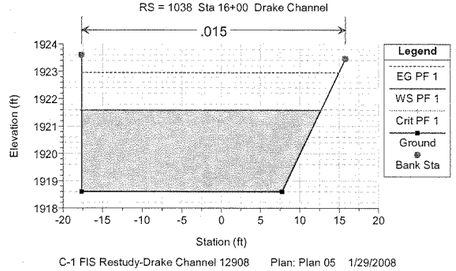
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1040 Sta 18+00 - Drake Channel



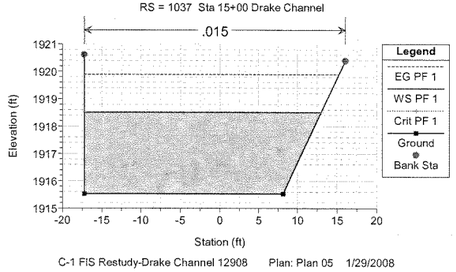
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1039 Sta 17+00 - Drake Channel



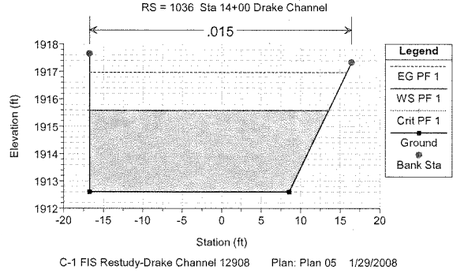
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1038 Sta 16+00 Drake Channel



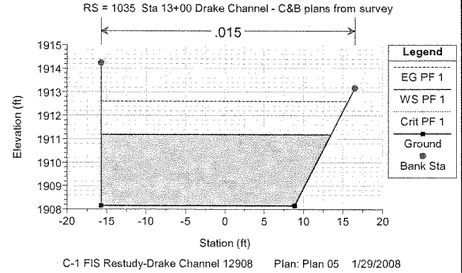
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1037 Sta 15+00 Drake Channel



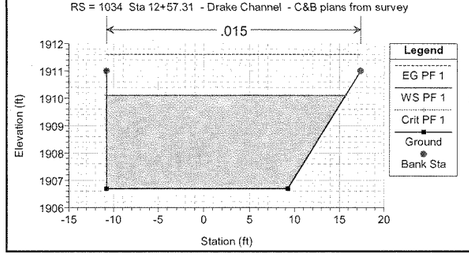
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1036 Sta 14+00 Drake Channel



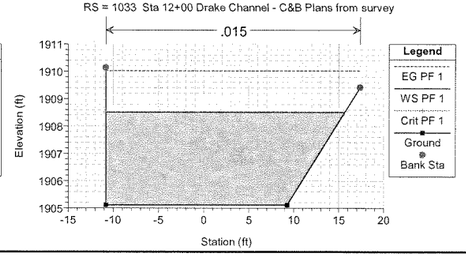
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1035 Sta 13+00 Drake Channel - C&B plans from survey



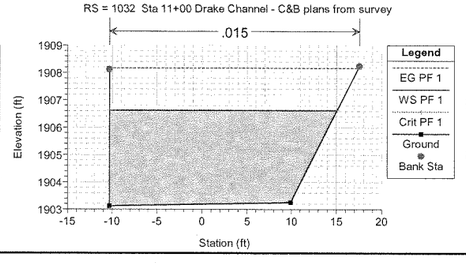
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1034 Sta 12+57.31 - Drake Channel - C&B plans from survey



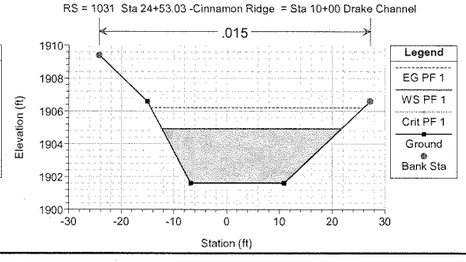
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1033 Sta 12+00 Drake Channel - C&B Plans from survey



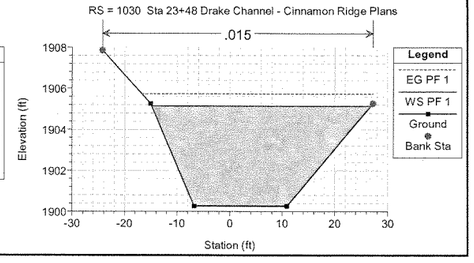
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1032 Sta 11+00 Drake Channel - C&B plans from survey

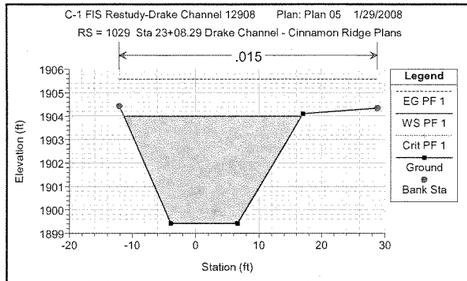


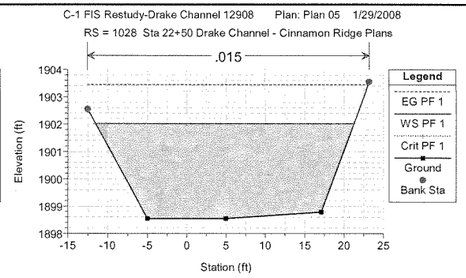
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1031 Sta 24+53.03 -Cinnamon Ridge = Sta 10+00 Drake Channel



C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1030 Sta 23+48 Drake Channel - Cinnamon Ridge Plans




C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1029 Sta 23+08.29 Drake Channel - Cinnamon Ridge Plans
.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1028 Sta 22+50 Drake Channel - Cinnamon Ridge Plans
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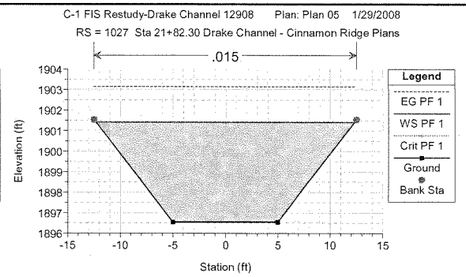
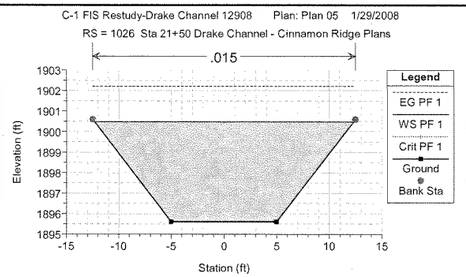
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1027 Sta 21+82.30 Drake Channel - Cinnamon Ridge Plans
.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1026 Sta 21+50 Drake Channel - Cinnamon Ridge Plans
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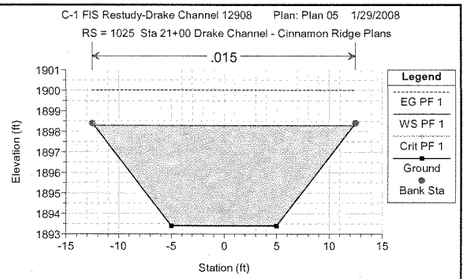
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1025 Sta 21+00 Drake Channel - Cinnamon Ridge Plans
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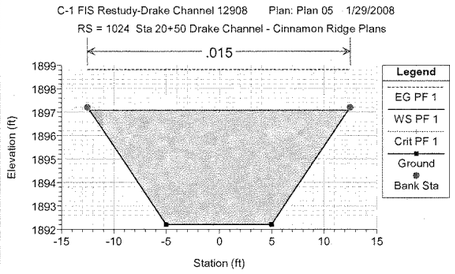
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1024 Sta 20+50 Drake Channel - Cinnamon Ridge Plans
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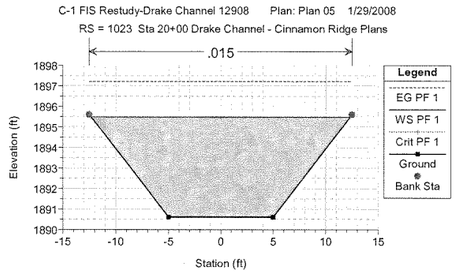
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1023 Sta 20+00 Drake Channel - Cinnamon Ridge Plans
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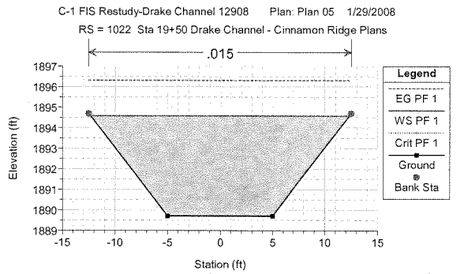
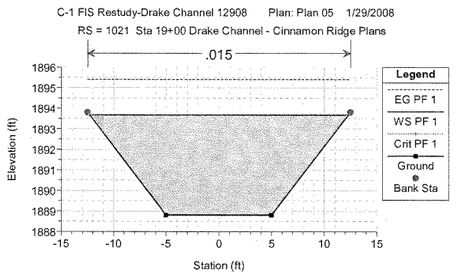
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1022 Sta 19+50 Drake Channel - Cinnamon Ridge Plans
.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1021 Sta 19+00 Drake Channel - Cinnamon Ridge Plans
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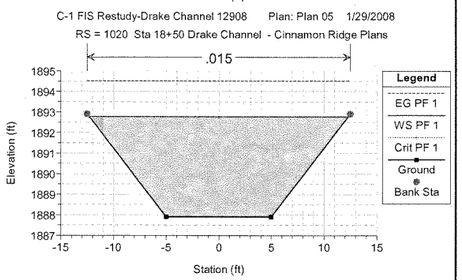
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1020 Sta 18+50 Drake Channel - Cinnamon Ridge Plans
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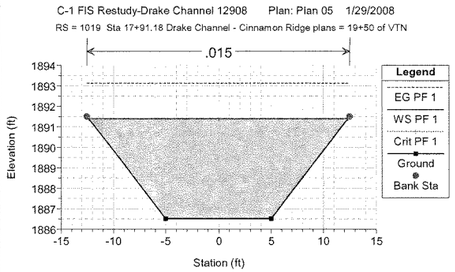
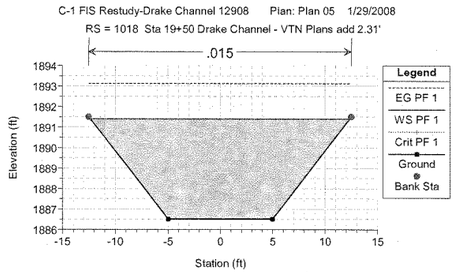
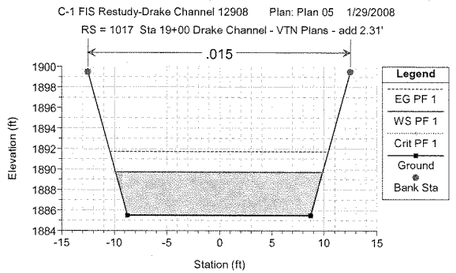
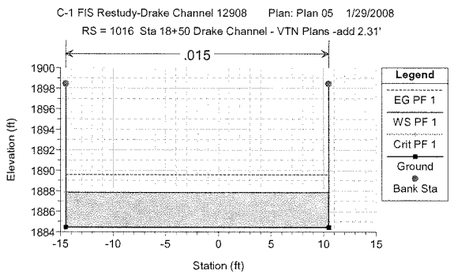
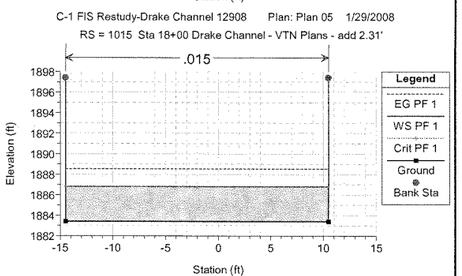
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

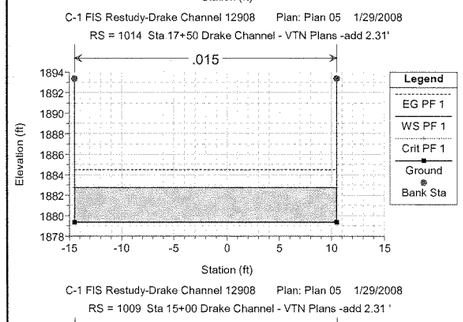

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1019 Sta 17+91.18 Drake Channel - Cinnamon Ridge plans = 19+50 of VTN
.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

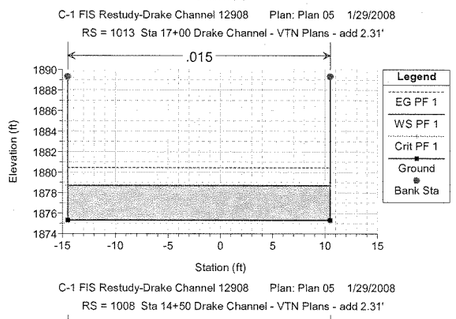

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1018 Sta 19+50 Drake Channel - VTN Plans add 2.31'
.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

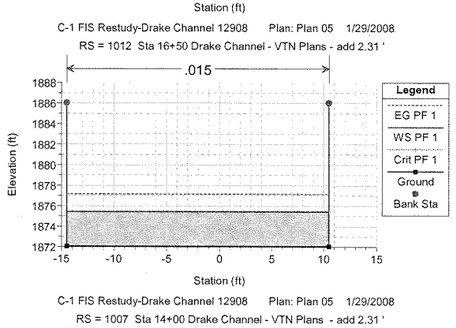

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1017 Sta 19+00 Drake Channel - VTN Plans - add 2.31'
.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

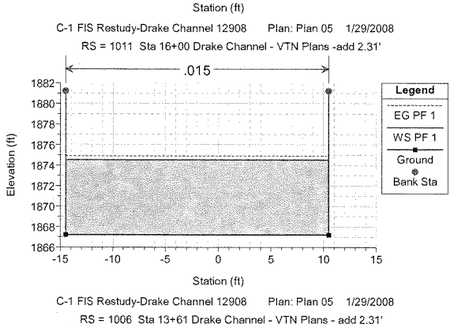

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1016 Sta 18+50 Drake Channel - VTN Plans -add 2.31'
.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

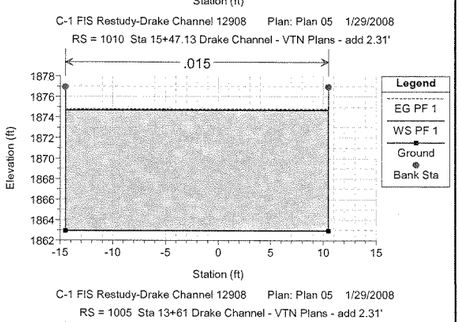

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1015 Sta 18+00 Drake Channel - VTN Plans - add 2.31'
.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1014 Sta 17+50 Drake Channel - VTN Plans -add 2.31'
.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1013 Sta 17+00 Drake Channel - VTN Plans - add 2.31'
.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1012 Sta 16+50 Drake Channel - VTN Plans - add 2.31 '
.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1011 Sta 16+00 Drake Channel - VTN Plans -add 2.31'
.015
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1010 Sta 15+47.13 Drake Channel - VTN Plans - add 2.31'
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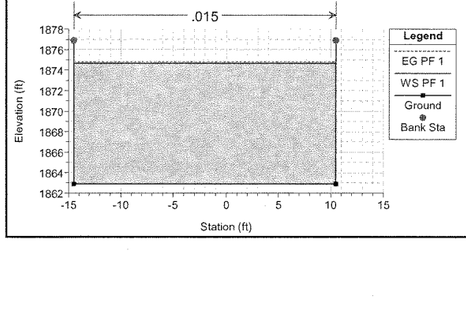
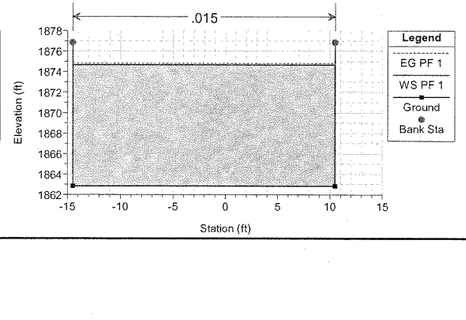
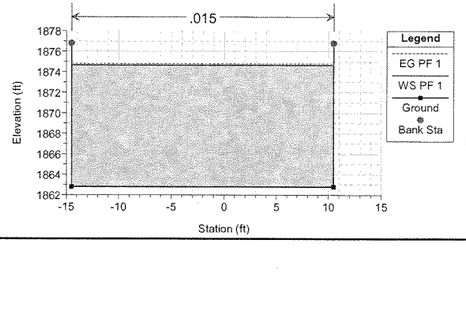
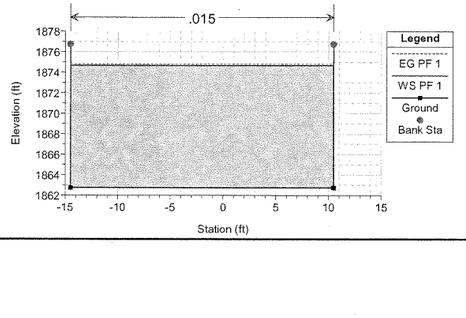
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1009 Sta 15+00 Drake Channel - VTN Plans -add 2.31 '
.015
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1008 Sta 14+50 Drake Channel - VTN Plans - add 2.31'
.015
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1007 Sta 14+00 Drake Channel - VTN Plans - add 2.31 '
.015
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1006 Sta 13+61 Drake Channel - VTN Plans - add 2.31'
.015
Legend
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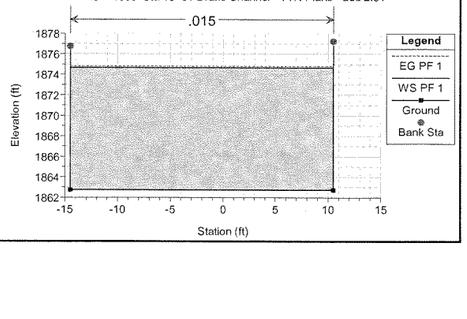
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
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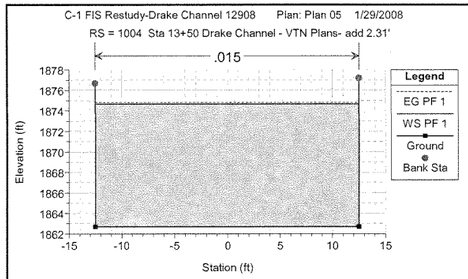
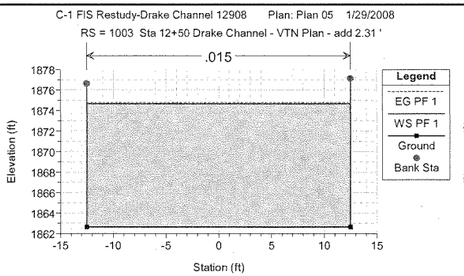
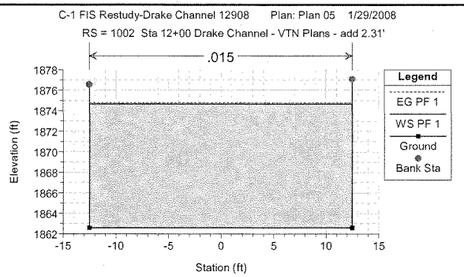
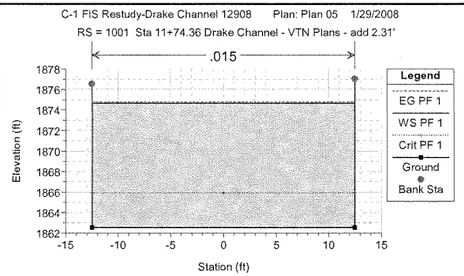
.015
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1004 Sta 13+50 Drake Channel - VTN Plans- add 2.31'
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1003 Sta 12+50 Drake Channel - VTN Plan - add 2.31 '
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1002 Sta 12+00 Drake Channel - VTN Plans - add 2.31'
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Ground
Bank Sta


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1001 Sta 11+74.36 Drake Channel - VTN Plans - add 2.31'
.015
Elevation (ft)
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta

HEC-RAS Version 3.1.3 May 2005
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

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X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X        X    X      X   X     X  X     X
X     X  X        X           X   X    X    X    X
XXXXXXX  XXXX     X       XXX  XXXX    XXXXXX    XXXX
X     X  X        X           X  X    X    X        X
X     X  X        X    X      X   X   X    X        X
X     X  XXXXXX    XXXX       X    X  X    X   XXXXX
```

****

PROJECT DATA
Project Title: C-1 FIS Restudy-Drake Channel 12908
Project File : drake12908.prj
Run Date and Time: 1/29/2008 1:01:18 PM

Project in English units

Project Description:
Drake Channel from confluence of C-1 to system headworks, 9000 ft east.

****

PLAN DATA

Plan Title: Plan 05
Plan File : f:\504-424\Drainage\CLOMR\HEC-RAS\DRAKE\12808\drake12908.p05

Geometry Title: Drake Channel Geometrics revised C
Geometry File : f:\504-424\Drainage\CLOMR\HEC-RAS\DRAKE\12808\drake12908.g02

Flow Title : City of Henderson Master Plan - Exist2
Flow File : f:\504-424\Drainage\CLOMR\HEC-RAS\DRAKE\12808\drake12908.f03

Plan Summary Information:
Number of: Cross Sections = 327 Multiple Openings = 0
Culverts = 1 Inline Structures = 0
Bridges = 0 Lateral Structures = 0

Computational Information
Water surface calculation tolerance = 0.003
Critical depth calculation tolerance = 0.003
Maximum number of iterations = 20
Maximum difference tolerance = 0.1
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Subcritical Flow

****

FLOW DATA

Flow Title: City of Henderson Master Plan - Exist2
Flow File : f:\504-424\Drainage\CLOMR\HEC-RAS\DRAKE\12808\drake12908.f03

Flow Data (cfs)

River	Reach	RS	PF 1
Drake Channel	C-1 to 9000 ft	E1328	1.1
Drake Channel	C-1 to 9000 ft	E1251	255
Drake Channel	C-1 to 9000 ft	E1167	371
Drake Channel	C-1 to 9000 ft	E1104	516
Drake Channel	C-1 to 9000 ft	E1045	781
Drake Channel	C-1 to 9000 ft	E1030	893

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Drake Channel	C-1 to 9000 ft	EPF 1	Normal S = 0.002	Known WS = 1874.66

****

GEOMETRY DATA

Geometry Title: Drake Channel Geometrics revised C
Geometry File : f:\504-424\Drainage\CLOMR\HEC-RAS\DRAKE\12808\drake12908.g02

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1328

INPUT
Description: Sta 72+00 - Drake Channel - Headworks
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-30.6	2129.61	-6	2114.81	4	2114.81	33	2131.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-30.6	.03	-30.6	.03	33	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-30.6	33	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2117.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.030	
W.S. Elev (ft)	2117.23	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		34.09	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		34.09	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	18.16	Top Width (ft)		18.16	
Vel Total (ft/s)	0.03	Avg. Vel. (ft/s)		0.03	
Max Chl Dpth (ft)	2.42	Hydr. Depth (ft)		1.88	
Conv. Total (cfs)	2451.3	Conv. (cfs)		2451.3	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		19.48	
Min Ch El (ft)	2114.81	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		27.95	
C & E Loss (ft)	0.00	Cum SA (acres)		8.38	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1327

INPUT
Description: Sta 71+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-38.2	2128.81	-10	2114.71	6	2114.71	38.2	2130.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-38.2	.03	-38.2	.03	38.2	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-38.2	38.2	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2117.23	Element	Left OB	Channel	Right OB

* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	*	*	*	*
* W.S. Elev (ft)	* 2117.23	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*		
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 53.06	*	*	*	*
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 53.06	*	*	*	*
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	*	*	*	*
* Top Width (ft)	* 26.09	* Top Width (ft)	*	* 26.09	*	*	*	*
* Vel Total (ft/s)	* 0.02	* Avg. Vel. (ft/s)	*	* 0.02	*	*	*	*
* Max Chl Dpth (ft)	* 2.52	* Hydr. Depth (ft)	*	* 2.03	*	*	*	*
* Conv. Total (cfs)	* 4095.3	* Conv. (cfs)	*	* 4095.3	*	*	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 27.28	*	*	*	*
* Min Ch El (ft)	* 2114.71	* Shear (lb/sq ft)	*	* 0.00	*	*	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	*	*	*	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 27.90	*	*	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 8.36	*	*	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1326

INPUT
Description: Sta 71+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.4	2128.31	-14	2114.61	7	2114.61	36.4	2129.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.4	.03	-41.4	.03	36.4	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.4 36.4 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2117.23	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2117.23	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 68.79	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 68.79	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *
* Top Width (ft)	* 31.49	* Top Width (ft)	*	* 31.49	* *
* Vel Total (ft/s)	* 0.02	* Avg. Vel. (ft/s)	*	* 0.02	* *
* Max Chl Dpth (ft)	* 2.62	* Hydr. Depth (ft)	*	* 2.18	* *
* Conv. Total (cfs)	* 5591.4	* Conv. (cfs)	*	* 5591.4	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 32.72	* *
* Min Ch El (ft)	* 2114.61	* Shear (lb/sq ft)	*	* 0.00	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 27.83	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 8.33	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1325

INPUT
Description: Sta 70+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.4	2127.21	-18	2114.51	10	2114.51	36.6	2127.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.4	.03	-43.4	.03	36.6	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-43.4 36.6 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2117.23	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2117.23	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 91.01	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 91.01	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *
* Top Width (ft)	* 38.89	* Top Width (ft)	*	* 38.89	* *
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	* *
* Max Chl Dpth (ft)	* 2.72	* Hydr. Depth (ft)	*	* 2.34	* *
* Conv. Total (cfs)	* 7776.3	* Conv. (cfs)	*	* 7776.3	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 40.17	* *
* Min Ch El (ft)	* 2114.51	* Shear (lb/sq ft)	*	* 0.00	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 27.73	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 8.29	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1324

INPUT
Description: Sta 70 +00 Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.8	2125.81	-22	2114.41	12	2114.41	35.8	2126.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.8	.03	-44.8	.03	35.8	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-44.8 35.8 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2117.23	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2117.23	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 111.85	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 111.85	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *
* Top Width (ft)	* 45.29	* Top Width (ft)	*	* 45.29	* *
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	* *
* Max Chl Dpth (ft)	* 2.82	* Hydr. Depth (ft)	*	* 2.47	* *
* Conv. Total (cfs)	* 9929.4	* Conv. (cfs)	*	* 9929.4	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 46.62	* *
* Min Ch El (ft)	* 2114.41	* Shear (lb/sq ft)	*	* 0.00	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 27.62	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 8.24	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1323

INPUT
Description: Sta 69+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	2124.31	-25	2114.31	15	2114.31	36	2124.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.03	-45	.03	36	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45 36 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2117.23	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	* *

* W.S. Elev (ft)	* 2117.23	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 133.92	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 133.92	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *
* Top Width (ft)	* 51.69	* Top Width (ft)	*	* 51.69	* *
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	* *
* Max Chl Dpth (ft)	* 2.92	* Hydr. Depth (ft)	*	* 2.59	* *
* Conv. Total (cfs)	* 12296.2	* Conv. (cfs)	*	* 12296.2	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 53.06	* *
* Min Ch El (ft)	* 2114.31	* Shear (lb/sq ft)	*	* 0.00	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 27.48	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 8.18	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1322

INPUT
Description: Sta 69+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.2	2122.81	-29	2114.21	15	2114.21	32.2	2122.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.2	.03	-46.2	.03	32.2	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff	Expan.
-46.2	32.2		13	13	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2117.23	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2117.23	* Reach Len. (ft)	* 13.00	* 13.00	* 13.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 151.20	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 151.20	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *
* Top Width (ft)	* 56.09	* Top Width (ft)	*	* 56.09	* *
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	* *
* Max Chl Dpth (ft)	* 3.02	* Hydr. Depth (ft)	*	* 2.70	* *
* Conv. Total (cfs)	* 14266.1	* Conv. (cfs)	*	* 14266.1	* *
* Length Wtd. (ft)	* 13.00	* Wetted Per. (ft)	*	* 57.51	* *
* Min Ch El (ft)	* 2114.21	* Shear (lb/sq ft)	*	* 0.00	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 27.31	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 8.12	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1321

INPUT
Description: Sta 68+87 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.4	2121.31	-32.5	2114.18	17.5	2114.18	30.6	2120.91

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.4	.04	-47.4	.04	30.6	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff	Expan.
-47.4	30.6		6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2117.23	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.040	* *
* W.S. Elev (ft)	* 2117.23	* Reach Len. (ft)	* 6.00	* 6.00	* 6.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 171.37	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 171.37	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *
* Top Width (ft)	* 62.32	* Top Width (ft)	*	* 62.32	* *
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	* *
* Max Chl Dpth (ft)	* 3.05	* Hydr. Depth (ft)	*	* 2.75	* *
* Conv. Total (cfs)	* 12307.7	* Conv. (cfs)	*	* 12307.7	* *
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	* 63.75	* *
* Min Ch El (ft)	* 2114.18	* Shear (lb/sq ft)	*	* 0.00	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 27.26	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 8.10	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1320

INPUT
Description: Sta 68+81 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.4	2121.31	-32.5	2114.17	17.5	2114.17	30.6	2120.91

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.4	.028	-47.4	.028	30.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff	Expan.
-47.4	30.6		.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2117.23	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 2117.23	* Reach Len. (ft)	* 0.10	* 0.10	* 0.10 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 171.96	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 171.96	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *
* Top Width (ft)	* 62.34	* Top Width (ft)	*	* 62.34	* *
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	* *
* Max Chl Dpth (ft)	* 3.06	* Hydr. Depth (ft)	*	* 2.76	* *
* Conv. Total (cfs)	* 17679.2	* Conv. (cfs)	*	* 17679.2	* *
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	* 63.78	* *
* Min Ch El (ft)	* 2114.17	* Shear (lb/sq ft)	*	* 0.00	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 27.24	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 8.09	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1319

INPUT
Description: Sta 68+81 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.4	2121.31	-32.5	2117.17	17.5	2117.17	30.6	2120.91

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.4	.028	-47.4	.028	30.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff	Expan.
-47.4	30.6		6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2117.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.028	
W.S. Elev (ft)	2117.23	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		2.97	
E.G. Slope (ft/ft)	*0.002134	Area (sq ft)		2.97	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.42	Top Width (ft)		50.42	
Vel Total (ft/s)	0.37	Avg. Vel. (ft/s)		0.37	
Max Chl Dpth (ft)	0.06	Hydr. Depth (ft)		0.06	
Conv. Total (cfs)	23.8	Conv. (cfs)		23.8	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		50.44	
Min Ch El (ft)	2117.17	Shear (lb/sq ft)		0.01	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)		27.24	
C & E Loss (ft)	0.00	Cum SA (acres)		8.09	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1318

INPUT
Description: Sta 68+75 -Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.4	2121.31	-32.5	2117.16	17.5	2117.16	30.6	2120.91

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.4	.028	-47.4	.028	30.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-47.4 30.6 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2117.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.		0.028	
W.S. Elev (ft)	2117.18	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	2117.18	Flow Area (sq ft)		1.19	
E.G. Slope (ft/ft)	*0.045018	Area (sq ft)		1.19	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.17	Top Width (ft)		50.17	
Vel Total (ft/s)	0.93	Avg. Vel. (ft/s)		0.93	
Max Chl Dpth (ft)	0.02	Hydr. Depth (ft)		0.02	
Conv. Total (cfs)	5.2	Conv. (cfs)		5.2	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		50.17	
Min Ch El (ft)	2117.16	Shear (lb/sq ft)		0.07	
Alpha	1.00	Stream Power (lb/ft s)		0.06	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		27.24	
C & E Loss (ft)	0.00	Cum SA (acres)		8.09	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1317

INPUT
Description: Sta 68 + 75 Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.4	2121.31	-32.5	2114.16	17.5	2114.16	30.6	2120.91

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.4	.04	-47.4	.04	30.6	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-47.4 30.6 19 19 19 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2114.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.040	
W.S. Elev (ft)	2114.23	Reach Len. (ft)	19.00	19.00	19.00
Crit W.S. (ft)		Flow Area (sq ft)		3.35	
E.G. Slope (ft/ft)	*0.002883	Area (sq ft)		3.35	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.27	Top Width (ft)		50.27	
Vel Total (ft/s)	0.33	Avg. Vel. (ft/s)		0.33	
Max Chl Dpth (ft)	0.07	Hydr. Depth (ft)		0.07	
Conv. Total (cfs)	20.5	Conv. (cfs)		20.5	
Length Wtd. (ft)	19.00	Wetted Per. (ft)		50.30	
Min Ch El (ft)	2114.16	Shear (lb/sq ft)		0.01	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		27.24	
C & E Loss (ft)	0.00	Cum SA (acres)		8.09	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1316

INPUT
Description: Sta 68+56 - Inline Gabion Drop Sructure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.4	2121.31	-32.5	2114.12	17.5	2114.12	30.6	2120.91

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.4	.028	-47.4	.028	30.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-47.4 30.6 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2114.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.028	
W.S. Elev (ft)	2114.18	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		2.94	
E.G. Slope (ft/ft)	*0.002198	Area (sq ft)		2.94	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.23	Top Width (ft)		50.23	
Vel Total (ft/s)	0.37	Avg. Vel. (ft/s)		0.37	
Max Chl Dpth (ft)	0.06	Hydr. Depth (ft)		0.06	
Conv. Total (cfs)	23.5	Conv. (cfs)		23.5	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		50.26	
Min Ch El (ft)	2114.12	Shear (lb/sq ft)		0.01	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)		27.24	
C & E Loss (ft)	0.00	Cum SA (acres)		8.06	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1315

```
INPUT
Description: Sta 68+50 - Inline Gabion Drop Structure
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -47.4 2121.31   -32.5 2114.11     17.5 2114.11     30.6 2120.91

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*****************************************
   -47.4    .028   -47.4    .028     30.6    .028

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -47.4    30.6                  .1       .1       .1             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2114.15  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.01  * Wt. n-Val.             *          *    0.028 *          *
* W.S. Elev (ft)          * 2114.14  * Reach Len. (ft)       *    0.10  *     0.10 *    0.10  *
* Crit W.S. (ft)          * 2114.14  * Flow Area (sq ft)     *          *     1.31 *          *
* E.G. Slope (ft/ft)      *0.032479  * Area (sq ft)          *          *     1.31 *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)            *          *     1.10 *          *
* Top Width (ft)          *   50.10  * Top Width (ft)        *          *    50.10 *          *
* Vel Total (ft/s)        *    0.84  * Avg. Vel. (ft/s)      *          *     0.84 *          *
* Max Chl Dpth (ft)       *    0.03  * Hydr. Depth (ft)      *          *     0.03 *          *
* Conv. Total (cfs)       *     6.1  * Conv. (cfs)           *          *      6.1 *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)      *          *    50.12 *          *
* Min Ch El (ft)          * 2114.11  * Shear (lb/sq ft)     *          *     0.05 *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *         *     0.04 *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *    27.24 *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *     8.06 *          *
*************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1314

INPUT
Description: Sta 68+50 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -47.4 2121.31     -13 2104.11       -3 2104.11     30.6 2120.91

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*****************************************
   -47.4    .028   -47.4    .028     30.6    .028

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -47.4    30.6                   24       24       24             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2106.53  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.             *          *    0.028 *          *
* W.S. Elev (ft)          * 2106.53  * Reach Len. (ft)       *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)     *          *   35.94  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)          *          *   35.94  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)          *   19.69  * Top Width (ft)        *          *   19.69  *          *
* Vel Total (ft/s)        *    0.03  * Avg. Vel. (ft/s)      *          *    0.03  *          *
* Max Chl Dpth (ft)       *    2.42  * Hydr. Depth (ft)      *          *    1.83  *          *
* Conv. Total (cfs)       *  2744.4  * Conv. (cfs)           *          * 2744.4  *          *
* Length Wtd. (ft)        *   24.00  * Wetted Per. (ft)      *          *   20.83  *          *
* Min Ch El (ft)          * 2104.11  * Shear (lb/sq ft)     *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *         *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *   27.24  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    8.06  *          *
*************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1313

INPUT
Description: Sta 68+26 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -47.6 2120.31     -15 2104.06         0 2104.06     29.6 2118.81

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*****************************************
   -47.6    .028   -47.6     .03     29.6    .028

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -47.6    29.6                   12       12       12             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2106.53  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.             *          *    0.030 *          *
* W.S. Elev (ft)          * 2106.53  * Reach Len. (ft)       *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)     *          *   49.33  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)          *          *   49.33  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)          *   24.92  * Top Width (ft)        *          *   24.92  *          *
* Vel Total (ft/s)        *    0.02  * Avg. Vel. (ft/s)      *          *    0.02  *          *
* Max Chl Dpth (ft)       *    2.47  * Hydr. Depth (ft)      *          *    1.98  *          *
* Conv. Total (cfs)       *  3737.2  * Conv. (cfs)           *          * 3737.2  *          *
* Length Wtd. (ft)        *   12.00  * Wetted Per. (ft)      *          *   26.08  *          *
* Min Ch El (ft)          * 2104.06  * Shear (lb/sq ft)     *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *         *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *   27.22  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    8.05  *          *
*************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1312

INPUT
Description: Sta 68+14 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -47.6 2120.31     -15 2104.04         0 2104.04     29.6 2118.81

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*****************************************
   -47.6     .03   -47.6     .03     29.6     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -47.6    29.6                   14       14       14             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2106.53  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.             *          *    0.030 *          *
* W.S. Elev (ft)          * 2106.53  * Reach Len. (ft)       *   14.00  *   14.00  *   14.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)     *          *   49.82  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)          *          *   49.82  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)          *   24.99  * Top Width (ft)        *          *   24.99  *          *
* Vel Total (ft/s)        *    0.02  * Avg. Vel. (ft/s)      *          *    0.02  *          *
* Max Chl Dpth (ft)       *    2.49  * Hydr. Depth (ft)      *          *    1.99  *          *
* Conv. Total (cfs)       *  3790.8  * Conv. (cfs)           *          * 3790.8  *          *
* Length Wtd. (ft)        *   14.00  * Wetted Per. (ft)      *          *   26.16  *          *
* Min Ch El (ft)          * 2104.04  * Shear (lb/sq ft)     *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *         *    0.00  *          *
```

* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 27.20	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 8.04	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1311

INPUT
Description: Sta 68+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.6	2120.31	-15	2104.01	0	2104.01	29.6	2118.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.6	.03	-47.6	.03	29.6	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Right	Coeff Contr.	Expan.
-47.6	29.6	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2106.53	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	*
* W.S. Elev (ft)	* 2106.53	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 50.54	*
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 50.54	*
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	*
* Top Width (ft)	* 25.09	* Top Width (ft)	*	* 25.09	*
* Vel Total (ft/s)	* 0.02	* Avg. Vel. (ft/s)	*	* 0.02	*
* Max Chl Dpth (ft)	* 2.52	* Hydr. Depth (ft)	*	* 2.01	*
* Conv. Total (cfs)	* 3872.0	* Conv. (cfs)	*	* 3872.0	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 26.28	*
* Min Ch El (ft)	* 2104.01	* Shear (lb/sq ft)	*	* 0.00	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 27.19	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 8.03	*

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1310

INPUT
Description: Sta 67+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.4	2116.51	-21	2103.91	7	2103.91	32.4	2116.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.4	.03	-46.4	.03	32.4	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Right	Coeff Contr.	Expan.
-46.4	32.4	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2106.53	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	*
* W.S. Elev (ft)	* 2106.53	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 87.27	*
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 87.27	*
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	*
* Top Width (ft)	* 38.57	* Top Width (ft)	*	* 38.57	*
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	*
* Max Chl Dpth (ft)	* 2.62	* Hydr. Depth (ft)	*	* 2.26	*
* Conv. Total (cfs)	* 7295.4	* Conv. (cfs)	*	* 7295.4	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 39.80	*
* Min Ch El (ft)	* 2103.91	* Shear (lb/sq ft)	*	* 0.00	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 27.11	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.99	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1309

INPUT
Description: Sta 67+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.4	2116.51	-21	2103.81	7	2103.81	32.4	2116.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.4	.03	-46.4	.03	32.4	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Right	Coeff Contr.	Expan.
-46.4	32.4	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2106.53	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	*
* W.S. Elev (ft)	* 2106.53	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 91.02	*
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 91.02	*
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	*
* Top Width (ft)	* 38.89	* Top Width (ft)	*	* 38.89	*
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	*
* Max Chl Dpth (ft)	* 2.72	* Hydr. Depth (ft)	*	* 2.34	*
* Conv. Total (cfs)	* 7777.5	* Conv. (cfs)	*	* 7777.5	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 40.17	*
* Min Ch El (ft)	* 2103.81	* Shear (lb/sq ft)	*	* 0.00	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 27.00	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.95	*

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1308

INPUT
Description: Sta 66+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.8	2114.61	-24	2103.71	19	2103.71	40.8	2114.61

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45.8	.03	-45.8	.03	40.8	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Right	Coeff Contr.	Expan.
-45.8	40.8	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2106.53	* Element	* Left OB	* Channel	* Right OB
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	*
* W.S. Elev (ft)	* 2106.53	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 137.26	*
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 137.26	*
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	*
* Top Width (ft)	* 54.29	* Top Width (ft)	*	* 54.29	*
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	*

* Max Chl Dpth (ft)	* 2.82	* Hydr. Depth (ft)	*	* 2.53	*
* Conv. Total (cfs)	* 12415.7	* Conv. (cfs)	*	* 12415.7	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 55.62	*
* Min Ch El (ft)	* 2103.71	* Shear (lb/sq ft)	*	* 0.00	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 26.87	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.90	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1307

INPUT
Description: Sta 66+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.4	2111.81	-27	2103.61	12	2103.61	30.6	2112.91

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.4	.03	-43.4	.03	30.6	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Left	Right
-43.4	30.6	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2106.53	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2106.53	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 131.02	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 131.02	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *
* Top Width (ft)	* 50.69	* Top Width (ft)	*	* 50.69	* *
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	* *
* Max Chl Dpth (ft)	* 2.92	* Hydr. Depth (ft)	*	* 2.58	* *
* Conv. Total (cfs)	* 12005.4	* Conv. (cfs)	*	* 12005.4	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 52.07	* *
* Min Ch El (ft)	* 2103.61	* Shear (lb/sq ft)	*	* 0.00	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 26.72	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.84	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1306

INPUT
Description: Sta 65+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.8	2111.91	-30	2103.51	15	2103.51	31	2111.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.8	.03	-46.8	.03	31	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Left	Right
-46.8	31	13	13	13	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2106.53	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2106.53	* Reach Len. (ft)	* 13.00	* 13.00	* 13.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 154.24	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 154.24	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *
* Top Width (ft)	* 57.09	* Top Width (ft)	*	* 57.09	* *
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	* *
* Max Chl Dpth (ft)	* 3.02	* Hydr. Depth (ft)	*	* 2.70	* *
* Conv. Total (cfs)	* 14577.9	* Conv. (cfs)	*	* 14577.9	* *
* Length Wtd. (ft)	* 13.00	* Wetted Per. (ft)	*	* 58.51	* *
* Min Ch El (ft)	* 2103.51	* Shear (lb/sq ft)	*	* 0.00	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 26.56	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.77	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1305

INPUT
Description: Sta 65+37 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.6	2110.21	-32.5	2103.48	17.5	2103.48	29.2	2109.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.6	.04	-46.6	.04	29.2	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Left	Right
-46.6	29.2	6	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2106.53	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.040	* *
* W.S. Elev (ft)	* 2106.53	* Reach Len. (ft)	* 6.00	* 6.00	* 6.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 171.38	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 171.38	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *
* Top Width (ft)	* 62.32	* Top Width (ft)	*	* 62.32	* *
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	* *
* Max Chl Dpth (ft)	* 3.05	* Hydr. Depth (ft)	*	* 2.75	* *
* Conv. Total (cfs)	* 12309.2	* Conv. (cfs)	*	* 12309.2	* *
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	* 63.75	* *
* Min Ch El (ft)	* 2103.48	* Shear (lb/sq ft)	*	* 0.00	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 26.51	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.76	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1304

INPUT
Description: Sta 65+31 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.6	2110.21	-32.5	2103.47	17.5	2103.47	29.2	2109.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.6	.028	-46.6	.028	29.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Left	Right
-46.6	29.2	.1	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2106.53	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 2106.53	* Reach Len. (ft)	* 0.10	* 0.10	* 0.10 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 171.97	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 171.97	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *

Top Width (ft)	62.34	Top Width (ft)		62.34	
Vel Total (ft/s)	0.01	Avg. Vel. (ft/s)		0.01	
Max Chl Dpth (ft)	3.06	Hydr. Depth (ft)		2.76	
Conv. Total (cfs)	17681.2	Conv. (cfs)		17681.2	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		63.77	
Min Ch El (ft)	2103.47	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		26.48	
C & E Loss (ft)	0.00	Cum SA (acres)		7.75	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1303

INPUT
Description: Sta 65+31 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.6	2110.21	-32.5	2106.47	17.5	2106.47	29.2	2109.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.6	.028	-46.6	.028	29.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff	Expan.
-46.6	29.2	6	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2106.53	Element		0.028	
Vel Head (ft)	0.00	Wt. n-Val.			
W.S. Elev (ft)	2106.53	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		2.99	
E.G. Slope (ft/ft)	*0.002076	Area (sq ft)		2.99	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.45	Top Width (ft)		50.45	
Vel Total (ft/s)	0.37	Avg. Vel. (ft/s)		0.37	
Max Chl Dpth (ft)	0.06	Hydr. Depth (ft)		0.06	
Conv. Total (cfs)	24.1	Conv. (cfs)		24.1	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		50.47	
Min Ch El (ft)	2106.47	Shear (lb/sq ft)		0.01	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)		26.48	
C & E Loss (ft)	0.00	Cum SA (acres)		7.75	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1302

INPUT
Description: Sta 65+25 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.6	2110.21	-32.5	2106.46	17.5	2106.46	29.2	2109.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.6	.028	-46.6	.028	29.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff	Expan.
-46.6	29.2	.1	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2106.50	Element		0.028	
Vel Head (ft)	0.01	Wt. n-Val.			
W.S. Elev (ft)	2106.49	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	2106.49	Flow Area (sq ft)		1.24	
E.G. Slope (ft/ft)	*0.039340	Area (sq ft)		1.24	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.19	Top Width (ft)		50.19	
Vel Total (ft/s)	0.89	Avg. Vel. (ft/s)		0.89	
Max Chl Dpth (ft)	0.02	Hydr. Depth (ft)		0.02	
Conv. Total (cfs)	5.5	Conv. (cfs)		5.5	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		50.19	
Min Ch El (ft)	2106.46	Shear (lb/sq ft)		0.06	
Alpha	1.00	Stream Power (lb/ft s)		0.05	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		26.48	
C & E Loss (ft)	0.00	Cum SA (acres)		7.74	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1301

INPUT
Description: Sta 65+25 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.6	2110.21	-32.5	2103.46	17.5	2103.46	29.2	2109.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.6	.04	-46.6	.04	29.2	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff	Expan.
-46.6	29.2	19	19	19	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2103.53	Element		0.040	
Vel Head (ft)	0.00	Wt. n-Val.			
W.S. Elev (ft)	2103.53	Reach Len. (ft)	19.00	19.00	19.00
Crit W.S. (ft)		Flow Area (sq ft)		3.34	
E.G. Slope (ft/ft)	*0.002919	Area (sq ft)		3.34	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.27	Top Width (ft)		50.27	
Vel Total (ft/s)	0.33	Avg. Vel. (ft/s)		0.33	
Max Chl Dpth (ft)	0.07	Hydr. Depth (ft)		0.07	
Conv. Total (cfs)	20.4	Conv. (cfs)		20.4	
Length Wtd. (ft)	19.00	Wetted Per. (ft)		50.30	
Min Ch El (ft)	2103.46	Shear (lb/sq ft)		0.01	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		26.48	
C & E Loss (ft)	0.00	Cum SA (acres)		7.74	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1300

INPUT
Description: Sta 65+06 - Inline Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.6	2110.21	-32.5	2103.42	17.5	2103.42	29.2	2109.51

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   -46.6    .028   -46.6    .028    29.2    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -46.6    29.2                6       6       6            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)        * 2103.48  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.00  * Wt. n-Val.            *          *    0.028  *          *
* W.S. Elev (ft)        * 2103.48  * Reach Len. (ft)       *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)      *          *    2.94  *          *
* E.G. Slope (ft/ft)    *0.002198  * Area (sq ft)          *          *    2.94  *          *
* Q Total (cfs)         *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)        *   50.23  * Top Width (ft)        *          *   50.23  *          *
* Vel Total (ft/s)      *    0.37  * Avg. Vel. (ft/s)      *          *    0.37  *          *
* Max Chl Dpth (ft)     *    0.06  * Hydr. Depth (ft)      *          *    0.06  *          *
* Conv. Total (cfs)     *    23.5  * Conv. (cfs)           *          *    23.5  *          *
* Length Wtd. (ft)      *    6.00  * Wetted Per. (ft)      *          *   50.26  *          *
* Min Ch El (ft)        * 2103.42  * Shear (lb/sq ft)      *          *    0.01  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)       *    0.03  * Cum Volume (acre-ft)  *          *   26.48  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *          *    7.72  *          *
*************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1299

INPUT
Description: Sta 65+00 - Inline Gabion Drop Srructrure
Station Elevation Data    num=      4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*********************************************************************
   -46.6 2110.21    -32.5 2103.41     17.5 2103.41     29.2 2109.51

Manning's n Values          num=      3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   -46.6    .028   -46.6    .028    29.2    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -46.6    29.2                .1      .1      .1            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)        * 2103.45  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.01  * Wt. n-Val.            *          *    0.028  *          *
* W.S. Elev (ft)        * 2103.44  * Reach Len. (ft)       *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)        * 2103.44  * Flow Area (sq ft)      *          *    1.31  *          *
* E.G. Slope (ft/ft)    *0.032479  * Area (sq ft)          *          *    1.31  *          *
* Q Total (cfs)         *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)        *   50.10  * Top Width (ft)        *          *   50.10  *          *
* Vel Total (ft/s)      *    0.84  * Avg. Vel. (ft/s)      *          *    0.84  *          *
* Max Chl Dpth (ft)     *    0.03  * Hydr. Depth (ft)      *          *    0.03  *          *
* Conv. Total (cfs)     *     6.1  * Conv. (cfs)           *          *     6.1  *          *
* Length Wtd. (ft)      *    0.10  * Wetted Per. (ft)      *          *   50.12  *          *
* Min Ch El (ft)        * 2103.41  * Shear (lb/sq ft)      *          *    0.05  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.04  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *          *   26.48  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *          *    7.71  *          *
*************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1298

INPUT
Description: Sta 65+00 - Drake Channel
Station Elevation Data    num=      4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*********************************************************************
   -46.6 2110.21     -13 2093.41      -3 2093.41     29.2 2109.51

Manning's n Values          num=      3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   -46.6    .028   -46.6    .028    29.2    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -46.6    29.2                  24      24      24            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)        * 2095.83  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.00  * Wt. n-Val.            *          *    0.028  *          *
* W.S. Elev (ft)        * 2095.83  * Reach Len. (ft)       *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)      *          *   35.92  *          *
* E.G. Slope (ft/ft)    *0.000000  * Area (sq ft)          *          *   35.92  *          *
* Q Total (cfs)         *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)        *   19.68  * Top Width (ft)        *          *   19.68  *          *
* Vel Total (ft/s)      *    0.03  * Avg. Vel. (ft/s)      *          *    0.03  *          *
* Max Chl Dpth (ft)     *    2.42  * Hydr. Depth (ft)      *          *    1.83  *          *
* Conv. Total (cfs)     *  2741.8  * Conv. (cfs)           *          *  2741.8  *          *
* Length Wtd. (ft)      *   24.00  * Wetted Per. (ft)      *          *   20.82  *          *
* Min Ch El (ft)        * 2093.41  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *          *   26.48  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *          *    7.71  *          *
*************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1297

INPUT
Description: Sta 64+76 - Drake Channel
Station Elevation Data    num=      4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*********************************************************************
   -46.6 2110.21     -13 2093.36      -3 2093.36     29.2 2109.51

Manning's n Values          num=      3
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   -46.6    .028   -46.6    .03     29.2    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -46.6    29.2                  12      12      12            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)        * 2095.83  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.00  * Wt. n-Val.            *          *    0.030  *          *
* W.S. Elev (ft)        * 2095.83  * Reach Len. (ft)       *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)      *          *   36.87  *          *
* E.G. Slope (ft/ft)    *0.000000  * Area (sq ft)          *          *   36.87  *          *
* Q Total (cfs)         *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)        *   19.85  * Top Width (ft)        *          *   19.85  *          *
* Vel Total (ft/s)      *    0.03  * Avg. Vel. (ft/s)      *          *    0.03  *          *
* Max Chl Dpth (ft)     *    2.47  * Hydr. Depth (ft)      *          *    1.86  *          *
* Conv. Total (cfs)     *  2655.9  * Conv. (cfs)           *          *  2655.9  *          *
* Length Wtd. (ft)      *   12.00  * Wetted Per. (ft)      *          *   21.02  *          *
* Min Ch El (ft)        * 2093.36  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *          *   26.46  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *          *    7.70  *          *
*************************************************************************************************

CROSS SECTION
```

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1296

INPUT
Description: Sta 64+64 -Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.6	2110.21	-13	2093.34	-3	2093.34	29.2	2109.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.6	.03	-46.6	.03	29.2	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-46.6 29.2 14 14 14 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.030	
W.S. Elev (ft)	2095.83	Reach Len. (ft)	14.00	14.00	14.00
Crit W.S. (ft)		Flow Area (sq ft)		37.25	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		37.25	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	19.92	Top Width (ft)		19.92	
Vel Total (ft/s)	0.03	Avg. Vel. (ft/s)		0.03	
Max Chl Dpth (ft)	2.49	Hydr. Depth (ft)		1.87	
Conv. Total (cfs)	2695.4	Conv. (cfs)		2695.4	
Length Wtd. (ft)	14.00	Wetted Per. (ft)		21.10	
Min Ch El (ft)	2093.34	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		26.45	
C & E Loss (ft)	0.00	Cum SA (acres)		7.69	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1295

INPUT
Description: Sta 64+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.6	2110.21	-13	2093.31	-3	2093.31	29.2	2109.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.6	.03	-46.6	.03	29.2	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-46.6 29.2 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.030	
W.S. Elev (ft)	2095.83	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		37.83	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		37.83	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	20.02	Top Width (ft)		20.02	
Vel Total (ft/s)	0.03	Avg. Vel. (ft/s)		0.03	
Max Chl Dpth (ft)	2.52	Hydr. Depth (ft)		1.89	
Conv. Total (cfs)	2755.1	Conv. (cfs)		2755.1	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		21.22	
Min Ch El (ft)	2093.31	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		26.44	
C & E Loss (ft)	0.00	Cum SA (acres)		7.69	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1294

INPUT
Description: Sta 64+00 - Drake Channel
Sta 64+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.2	2107.81	-18	2093.21	4	2093.21	30.6	2106.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.2	.03	-47.2	.03	30.6	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-47.2 30.6 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.030	
W.S. Elev (ft)	2095.83	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		71.38	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		71.38	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	32.48	Top Width (ft)		32.48	
Vel Total (ft/s)	0.02	Avg. Vel. (ft/s)		0.02	
Max Chl Dpth (ft)	2.62	Hydr. Depth (ft)		2.20	
Conv. Total (cfs)	5829.0	Conv. (cfs)		5829.0	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		33.72	
Min Ch El (ft)	2093.21	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		26.38	
C & E Loss (ft)	0.00	Cum SA (acres)		7.66	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1293

INPUT
Description: Sta 63+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.8	2106.01	-21	2093.11	7	2093.11	30.4	2104.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.8	.03	-46.8	.03	30.4	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-46.8 30.4 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.030	
W.S. Elev (ft)	2095.83	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		90.97	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		90.97	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	38.88	Top Width (ft)		38.88	
Vel Total (ft/s)	0.01	Avg. Vel. (ft/s)		0.01	
Max Chl Dpth (ft)	2.72	Hydr. Depth (ft)		2.34	
Conv. Total (cfs)	7770.2	Conv. (cfs)		7770.2	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		40.17	
Min Ch El (ft)	2093.11	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		26.28	
C & E Loss (ft)	0.00	Cum SA (acres)		7.62	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1292

INPUT
Description: Sta 63+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.6	2104.81	-24	2093.01	10	2093.01	31.6	2103.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.6	.03	-47.6	.03	31.6	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-47.6	31.6	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.030	
W.S. Elev (ft)	2095.83	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		111.80	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		111.80	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	45.28	Top Width (ft)		45.28	
Vel Total (ft/s)	0.01	Avg. Vel. (ft/s)		0.01	
Max Chl Dpth (ft)	2.82	Hydr. Depth (ft)		2.47	
Conv. Total (cfs)	9922.0	Conv. (cfs)		9922.0	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		46.61	
Min Ch El (ft)	2093.01	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		26.17	
C & E Loss (ft)	0.00	Cum SA (acres)		7.57	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1291

INPUT
Description: Sta 62+50 -Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-48.2	2103.51	-27	2092.91	12	2092.91	31.8	2102.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-48.2	.03	-48.2	.03	31.8	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-48.2	31.8	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.030	
W.S. Elev (ft)	2095.83	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		130.95	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		130.95	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.68	Top Width (ft)		50.68	
Vel Total (ft/s)	0.01	Avg. Vel. (ft/s)		0.01	
Max Chl Dpth (ft)	2.92	Hydr. Depth (ft)		2.58	
Conv. Total (cfs)	11996.8	Conv. (cfs)		11996.8	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		52.06	
Min Ch El (ft)	2092.91	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		26.03	
C & E Loss (ft)	0.00	Cum SA (acres)		7.51	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1290

INPUT
Description: Sta 62+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-48	2101.81	-30	2092.81	15	2092.81	33	2101.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-48	.03	-48	.03	33	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-48	33	13	13	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.030	
W.S. Elev (ft)	2095.83	Reach Len. (ft)	13.00	13.00	13.00
Crit W.S. (ft)		Flow Area (sq ft)		154.16	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		154.16	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	57.08	Top Width (ft)		57.08	
Vel Total (ft/s)	0.01	Avg. Vel. (ft/s)		0.01	
Max Chl Dpth (ft)	3.02	Hydr. Depth (ft)		2.70	
Conv. Total (cfs)	14565.8	Conv. (cfs)		14565.8	
Length Wtd. (ft)	13.00	Wetted Per. (ft)		58.51	
Min Ch El (ft)	2092.81	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		25.86	
C & E Loss (ft)	0.00	Cum SA (acres)		7.45	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1289

INPUT
Description: Sta 61+87 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.2	2099.81	-32.5	2092.77	17.5	2092.77	31.2	2099.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.2	.04	-47.2	.04	31.2	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-47.2	31.2	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.040	
W.S. Elev (ft)	2095.83	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		171.91	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		171.91	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	62.35	Top Width (ft)		62.35	
Vel Total (ft/s)	0.01	Avg. Vel. (ft/s)		0.01	
Max Chl Dpth (ft)	3.06	Hydr. Depth (ft)		2.76	
Conv. Total (cfs)	12367.8	Conv. (cfs)		12367.8	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		63.78	
Min Ch El (ft)	2092.77	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		25.81	
C & E Loss (ft)	0.00	Cum SA (acres)		7.43	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1288

INPUT
Description: Sta 61+81 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.2	2099.81	-32.5	2092.77	17.5	2092.77	31.2	2099.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.2	.028	-47.2	.028	31.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-47.2 31.2 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.028	
W.S. Elev (ft)	2095.83	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)		Flow Area (sq ft)		171.91	
E.G. Slope (ft/ft)	*0.000000	Area (sq ft)		171.91	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	62.35	Top Width (ft)		62.35	
Vel Total (ft/s)	0.01	Avg. Vel. (ft/s)		0.01	
Max Chl Dpth (ft)	3.06	Hydr. Depth (ft)		2.76	
Conv. Total (cfs)	17668.3	Conv. (cfs)		17668.3	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		63.78	
Min Ch El (ft)	2092.77	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		25.79	
C & E Loss (ft)	0.00	Cum SA (acres)		7.43	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1287

INPUT
Description: Sta 61+81 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.2	2099.81	-32.5	2095.77	17.5	2095.77	31.2	2099.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.2	.028	-47.2	.028	31.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-47.2 31.2 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.028	
W.S. Elev (ft)	2095.83	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		2.90	
E.G. Slope (ft/ft)	*0.002288	Area (sq ft)		2.90	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.41	Top Width (ft)		50.41	
Vel Total (ft/s)	0.38	Avg. Vel. (ft/s)		0.38	
Max Chl Dpth (ft)	0.06	Hydr. Depth (ft)		0.06	
Conv. Total (cfs)	23.0	Conv. (cfs)		23.0	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		50.42	
Min Ch El (ft)	2095.77	Shear (lb/sq ft)		0.01	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)		25.79	
C & E Loss (ft)	0.00	Cum SA (acres)		7.43	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1286

INPUT
Description: Sta 61+75 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.2	2099.81	-32.5	2095.76	17.5	2095.76	31.2	2099.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.2	.028	-47.2	.028	31.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-47.2 31.2 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.		0.028	
W.S. Elev (ft)	2095.80	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	2095.80	Flow Area (sq ft)		1.81	
E.G. Slope (ft/ft)	*0.011004	Area (sq ft)		1.81	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.25	Top Width (ft)		50.25	
Vel Total (ft/s)	0.61	Avg. Vel. (ft/s)		0.61	
Max Chl Dpth (ft)	0.04	Hydr. Depth (ft)		0.04	
Conv. Total (cfs)	10.5	Conv. (cfs)		10.5	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		50.26	
Min Ch El (ft)	2095.76	Shear (lb/sq ft)		0.02	
Alpha	1.00	Stream Power (lb/ft s)		0.02	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		25.79	
C & E Loss (ft)	0.00	Cum SA (acres)		7.42	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1285

INPUT
Description: Sta 61+75 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.2	2099.81	-32.5	2092.76	17.5	2092.76	31.2	2099.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.2	.04	-47.2	.04	31.2	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-47.2 31.2 19 19 19 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2092.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.040	

```
* W.S. Elev (ft)         * 2092.83  * Reach Len. (ft)        *   19.00  *   19.00  *   19.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *    3.38  *          *
* E.G. Slope (ft/ft)     *0.002814  * Area (sq ft)           *          *    3.38  *          *
* Q Total (cfs)          *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)         *   50.27  * Top Width (ft)        *          *   50.27  *          *
* Vel Total (ft/s)       *    0.33  * Avg. Vel. (ft/s)      *          *    0.33  *          *
* Max Chl Dpth (ft)      *    0.07  * Hydr. Depth (ft)      *          *    0.07  *          *
* Conv. Total (cfs)      *    20.7  * Conv. (cfs)           *          *    20.7  *          *
* Length Wtd. (ft)       *   19.00  * Wetted Per. (ft)      *          *   50.30  *          *
* Min Ch El (ft)         * 2092.76  * Shear (lb/sq ft)      *          *    0.01  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)        *    0.05  * Cum Volume (acre-ft)   *          *   25.79  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    7.42  *          *
*********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1284

INPUT
Description: Sta 61+56 - Inline Gabion Drop Structure
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
***********************************************************************
   -47.2 2099.81   -32.5 2092.72    17.5 2092.72    31.2 2099.81

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*****************************************************
   -47.2    .028   -47.2    .028    31.2    .028

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -47.2    31.2                   6       6       6          .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)         * 2092.78  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.00  * Wt. n-Val.            *          *    0.028  *          *
* W.S. Elev (ft)         * 2092.78  * Reach Len. (ft)       *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *    2.84  *          *
* E.G. Slope (ft/ft)     *0.002461  * Area (sq ft)           *          *    2.84  *          *
* Q Total (cfs)          *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)         *   50.23  * Top Width (ft)        *          *   50.23  *          *
* Vel Total (ft/s)       *    0.39  * Avg. Vel. (ft/s)      *          *    0.39  *          *
* Max Chl Dpth (ft)      *    0.06  * Hydr. Depth (ft)      *          *    0.06  *          *
* Conv. Total (cfs)      *    22.2  * Conv. (cfs)           *          *    22.2  *          *
* Length Wtd. (ft)       *    6.00  * Wetted Per. (ft)      *          *   50.25  *          *
* Min Ch El (ft)         * 2092.72  * Shear (lb/sq ft)      *          *    0.01  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)        *    0.03  * Cum Volume (acre-ft)   *          *   25.79  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    7.40  *          *
*********************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1283

INPUT
Description: Sta 61+50 - Inline Gabion Drop Structure
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
***********************************************************************
   -47.2 2099.81   -32.5 2092.71    17.5 2092.71    31.2 2099.81

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*****************************************************
   -47.2    .028   -47.2    .028    31.2    .028

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -47.2    31.2                  .1       .1       .1          .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)         * 2092.75  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.01  * Wt. n-Val.            *          *    0.028  *          *
* W.S. Elev (ft)         * 2092.74  * Reach Len. (ft)       *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)         * 2092.74  * Flow Area (sq ft)     *          *    1.59  *          *
* E.G. Slope (ft/ft)     *0.016971  * Area (sq ft)           *          *    1.59  *          *
* Q Total (cfs)          *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)         *   50.13  * Top Width (ft)        *          *   50.13  *          *
* Vel Total (ft/s)       *    0.69  * Avg. Vel. (ft/s)      *          *    0.69  *          *
* Max Chl Dpth (ft)      *    0.03  * Hydr. Depth (ft)      *          *    0.03  *          *
* Conv. Total (cfs)      *     8.4  * Conv. (cfs)           *          *     8.4  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)      *          *   50.14  *          *
* Min Ch El (ft)         * 2092.71  * Shear (lb/sq ft)      *          *    0.03  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.02  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)   *          *   25.79  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    7.39  *          *
*********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1282

INPUT
Description: Sta 61+50 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
***********************************************************************
   -47.2 2099.81     -13 2082.71      -3 2082.71    31.2 2099.81

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*****************************************************
   -47.2    .028   -47.2    .028    31.2    .028

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -47.2    31.2                  24       24       24          .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)         * 2085.13  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.00  * Wt. n-Val.            *          *    0.028  *          *
* W.S. Elev (ft)         * 2085.13  * Reach Len. (ft)       *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *   35.94  *          *
* E.G. Slope (ft/ft)     *0.000000  * Area (sq ft)           *          *   35.94  *          *
* Q Total (cfs)          *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)         *   19.69  * Top Width (ft)        *          *   19.69  *          *
* Vel Total (ft/s)       *    0.03  * Avg. Vel. (ft/s)      *          *    0.03  *          *
* Max Chl Dpth (ft)      *    2.42  * Hydr. Depth (ft)      *          *    1.83  *          *
* Conv. Total (cfs)      *  2744.4  * Conv. (cfs)           *          *  2744.4  *          *
* Length Wtd. (ft)       *   24.00  * Wetted Per. (ft)      *          *   20.83  *          *
* Min Ch El (ft)         * 2082.71  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)   *          *   25.79  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    7.39  *          *
*********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1281

INPUT
Description: Sta 61+26 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
***********************************************************************
   -47.2 2099.81     -13 2082.66      -3 2082.66    31.2 2099.81
```

```
Manning's n Values          num=          3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
    -47.2     .028    -47.2     .03     31.2     .028

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          -47.2     31.2                  12         12         12              .1       .3


CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2085.13  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2085.13  * Reach Len. (ft)        *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *   36.90  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)           *          *   36.90  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)             *          *    1.10  *          *
* Top Width (ft)          *   19.86  * Top Width (ft)        *          *   19.86  *          *
* Vel Total (ft/s)        *    0.03  * Avg. Vel. (ft/s)      *          *    0.03  *          *
* Max Chl Dpth (ft)       *    2.47  * Hydr. Depth (ft)      *          *    1.86  *          *
* Conv. Total (cfs)       *  2659.0  * Conv. (cfs)           *          *  2659.0  *          *
* Length Wtd. (ft)        *   12.00  * Wetted Per. (ft)      *          *   21.03  *          *
* Min Ch El (ft)          * 2082.66  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *   25.77  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    7.38  *          *
*************************************************************************************************


CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1280

INPUT
Description: Sta 61+14- Drake Channel
Station Elevation Data    num=          4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -47.2 2099.81      -13 2082.64       -3 2082.64     31.2 2099.81

Manning's n Values          num=          3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
   -47.2     .03     -47.2     .03     31.2     .03

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          -47.2     31.2                  14         14         14              .1       .3


CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2085.13  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2085.13  * Reach Len. (ft)        *   14.00  *   14.00  *   14.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *   37.28  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)           *          *   37.28  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)             *          *    1.10  *          *
* Top Width (ft)          *   19.93  * Top Width (ft)        *          *   19.93  *          *
* Vel Total (ft/s)        *    0.03  * Avg. Vel. (ft/s)      *          *    0.03  *          *
* Max Chl Dpth (ft)       *    2.49  * Hydr. Depth (ft)      *          *    1.87  *          *
* Conv. Total (cfs)       *  2698.5  * Conv. (cfs)           *          *  2698.5  *          *
* Length Wtd. (ft)        *   14.00  * Wetted Per. (ft)      *          *   21.11  *          *
* Min Ch El (ft)          * 2082.64  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *   25.76  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    7.37  *          *
*************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1279

INPUT
Description: Sta 61+00 - Drake Channel
Station Elevation Data    num=          4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -46.4 2098.31      -15 2082.52        0 2082.52     31.4 2098.31

Manning's n Values          num=          3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
   -46.4     .03     -46.4     .03     31.4     .03

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          -46.4     31.4                  50         50         50              .1       .3


CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2085.13  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2085.13  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *   52.74  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)           *          *   52.74  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)             *          *    1.10  *          *
* Top Width (ft)          *   25.39  * Top Width (ft)        *          *   25.39  *          *
* Vel Total (ft/s)        *    0.02  * Avg. Vel. (ft/s)      *          *    0.02  *          *
* Max Chl Dpth (ft)       *    2.61  * Hydr. Depth (ft)      *          *    2.08  *          *
* Conv. Total (cfs)       *  4119.6  * Conv. (cfs)           *          *  4119.6  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   26.63  *          *
* Min Ch El (ft)          * 2082.52  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *   25.74  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    7.37  *          *
*************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1278

INPUT
Description: Sta 60+50 - Drake Channel
Station Elevation Data    num=          4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -46.2 2096.61      -18 2082.44        5 2082.44     33.6 2096.81

Manning's n Values          num=          3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
   -46.2     .03     -46.2     .03     33.6     .03

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          -46.2     33.6                  50         50         50              .1       .3


CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2085.13  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2085.13  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *   76.33  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)           *          *   76.33  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)             *          *    1.10  *          *
* Top Width (ft)          *   33.71  * Top Width (ft)        *          *   33.71  *          *
* Vel Total (ft/s)        *    0.01  * Avg. Vel. (ft/s)      *          *    0.01  *          *
* Max Chl Dpth (ft)       *    2.68  * Hydr. Depth (ft)      *          *    2.26  *          *
* Conv. Total (cfs)       *  6358.7  * Conv. (cfs)           *          *  6358.7  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   34.99  *          *
* Min Ch El (ft)          * 2082.44  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *   25.67  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    7.33  *          *
*************************************************************************************************


CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1277

INPUT
Description: Sta 60+00 - Drake Channel
```

```
Station Elevation Data     num=       4
   Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**************************************************************************
   -45.8 2094.81     -21 2082.35        7 2082.35     33.2 2095.51

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
   -45.8     .03    -45.8     .03     33.2     .03

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          -45.8     33.2                   50       50        50             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2085.13  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2085.13  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *   93.28  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)            *          *   93.28  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)              *          *    1.10  *          *
* Top Width (ft)          *   39.07  * Top Width (ft)         *          *   39.07  *          *
* Vel Total (ft/s)        *    0.01  * Avg. Vel. (ft/s)       *          *    0.01  *          *
* Max Chl Dpth (ft)       *    2.78  * Hydr. Depth (ft)       *          *    2.39  *          *
* Conv. Total (cfs)       *  8072.5  * Conv. (cfs)            *          *  8072.5  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)       *          *   40.39  *          *
* Min Ch El (ft)          * 2082.35  * Shear (lb/sq ft)       *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   25.57  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    7.29  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1276

INPUT
Description: Sta 59+50 - Drake Channel
Station Elevation Data     num=       4
   Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**************************************************************************
     -46 2093.31     -24 2082.27       10 2082.27     33.4 2094.01

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
     -46     .03      -46     .03     33.4     .03

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          -46     33.4                   50       50        50             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2085.13  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2085.13  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *  113.61  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)            *          *  113.61  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)              *          *    1.10  *          *
* Top Width (ft)          *   45.41  * Top Width (ft)         *          *   45.41  *          *
* Vel Total (ft/s)        *    0.01  * Avg. Vel. (ft/s)       *          *    0.01  *          *
* Max Chl Dpth (ft)       *    2.86  * Hydr. Depth (ft)       *          *    2.50  *          *
* Conv. Total (cfs)       * 10170.2  * Conv. (cfs)            *          * 10170.2  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)       *          *   46.76  *          *
* Min Ch El (ft)          * 2082.27  * Shear (lb/sq ft)       *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   25.45  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    7.24  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1275

INPUT
Description: Sta 59+00  -Drake Channel
Station Elevation Data     num=       4
   Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**************************************************************************
   -46.6 2091.51     -28 2082.18       11 2082.18     32.2 2092.81

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
   -46.6     .03    -46.6     .03     32.2     .03

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          -46.6    32.2                   50       50        50             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2085.13  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2085.13  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *  132.49  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)            *          *  132.49  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)              *          *    1.10  *          *
* Top Width (ft)          *   50.77  * Top Width (ft)         *          *   50.77  *          *
* Vel Total (ft/s)        *    0.01  * Avg. Vel. (ft/s)       *          *    0.01  *          *
* Max Chl Dpth (ft)       *    2.95  * Hydr. Depth (ft)       *          *    2.61  *          *
* Conv. Total (cfs)       * 12214.9  * Conv. (cfs)            *          * 12214.9  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)       *          *   52.17  *          *
* Min Ch El (ft)          * 2082.18  * Shear (lb/sq ft)       *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   25.31  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    7.19  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1274

INPUT
Description: Sta 58+50 - Drake Channel
Station Elevation Data     num=       4
   Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**************************************************************************
  -47.22 2090.72     -30 2082.09       15 2082.09     33.4 2091.31

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
  -47.22     .03   -47.22     .03     33.4     .03

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          -47.22    33.4                   13       13        13             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2085.13  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2085.13  * Reach Len. (ft)        *   13.00  *   13.00  *   13.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *  155.33  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)            *          *  155.33  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)              *          *    1.10  *          *
* Top Width (ft)          *   57.14  * Top Width (ft)         *          *   57.14  *          *
* Vel Total (ft/s)        *    0.01  * Avg. Vel. (ft/s)       *          *    0.01  *          *
* Max Chl Dpth (ft)       *    3.04  * Hydr. Depth (ft)       *          *    2.72  *          *
* Conv. Total (cfs)       * 14739.0  * Conv. (cfs)            *          * 14739.0  *          *
* Length Wtd. (ft)        *   13.00  * Wetted Per. (ft)       *          *   58.58  *          *
* Min Ch El (ft)          * 2082.09  * Shear (lb/sq ft)       *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   25.15  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    7.12  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1273

INPUT
Description: Sta 58+37  - Drake Channel
Station Elevation Data     num=       4
```

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.6	2088.31	-32.5	2082.08	17.5	2082.08	32.6	2089.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45.6	.04	-45.6	.04	32.6	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45.6 32.6 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2085.13	Element			
Vel Head (ft)	0.00	Wt. n-Val.		0.040	
W.S. Elev (ft)	2085.13	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		171.46	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		171.46	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	62.38	Top Width (ft)		62.38	
Vel Total (ft/s)	0.01	Avg. Vel. (ft/s)		0.01	
Max Chl Dpth (ft)	3.05	Hydr. Depth (ft)		2.75	
Conv. Total (cfs)	12311.8	Conv. (cfs)		12311.8	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		63.80	
Min Ch El (ft)	2082.08	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		25.10	
C & E Loss (ft)	0.00	Cum SA (acres)		7.11	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1272

INPUT
Description: Sta 58+31 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.6	2088.31	-32.5	2082.07	17.5	2082.07	32.6	2089.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45.6	.028	-45.6	.028	32.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45.6 32.6 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2085.13	Element			
Vel Head (ft)	0.00	Wt. n-Val.		0.028	
W.S. Elev (ft)	2085.13	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)		Flow Area (sq ft)		172.06	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		172.06	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	62.40	Top Width (ft)		62.40	
Vel Total (ft/s)	0.01	Avg. Vel. (ft/s)		0.01	
Max Chl Dpth (ft)	3.06	Hydr. Depth (ft)		2.76	
Conv. Total (cfs)	17685.1	Conv. (cfs)		17685.1	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		63.83	
Min Ch El (ft)	2082.07	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		25.08	
C & E Loss (ft)	0.00	Cum SA (acres)		7.10	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1271

INPUT
Description: Sta 58+31 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.6	2088.31	-32.5	2085.07	17.5	2085.07	32.6	2089.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45.6	.028	-45.6	.028	32.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45.6 32.6 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2085.13	Element			
Vel Head (ft)	0.00	Wt. n-Val.		0.028	
W.S. Elev (ft)	2085.13	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		2.97	
E.G. Slope (ft/ft)	0.002134	Area (sq ft)		2.97	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.43	Top Width (ft)		50.43	
Vel Total (ft/s)	0.37	Avg. Vel. (ft/s)		0.37	
Max Chl Dpth (ft)	0.06	Hydr. Depth (ft)		0.06	
Conv. Total (cfs)	23.8	Conv. (cfs)		23.8	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		50.44	
Min Ch El (ft)	2085.07	Shear (lb/sq ft)		0.01	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)		25.07	
C & E Loss (ft)	0.00	Cum SA (acres)		7.10	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1270

INPUT
Description: Sta 58+25 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.6	2088.31	-32.5	2085.06	17.5	2085.06	32.6	2089.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45.6	.028	-45.6	.028	32.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45.6 32.6 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2085.10	Element			
Vel Head (ft)	0.01	Wt. n-Val.		0.028	
W.S. Elev (ft)	2085.09	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	2085.09	Flow Area (sq ft)		1.28	
E.G. Slope (ft/ft)	0.034564	Area (sq ft)		1.28	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.18	Top Width (ft)		50.18	
Vel Total (ft/s)	0.86	Avg. Vel. (ft/s)		0.86	
Max Chl Dpth (ft)	0.03	Hydr. Depth (ft)		0.03	
Conv. Total (cfs)	5.9	Conv. (cfs)		5.9	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		50.19	
Min Ch El (ft)	2085.06	Shear (lb/sq ft)		0.06	
Alpha	1.00	Stream Power (lb/ft s)		0.05	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		25.07	
C & E Loss (ft)	0.00	Cum SA (acres)		7.09	

Warning: The energy equation could not be balanced within the specified number of iterations. The

program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1269

INPUT
Description: Sta 58+25 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.6	2088.31	-32.5	2082.06	17.5	2082.06	32.6	2089.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45.6	.04	-45.6	.04	32.6	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45.6 32.6 19 19 19 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2082.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.040	
W.S. Elev (ft)	2082.12	Reach Len. (ft)	19.00	19.00	19.00
Crit W.S. (ft)		Flow Area (sq ft)		2.97	
E.G. Slope (ft/ft)	0.004303	Area (sq ft)		2.97	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.24	Top Width (ft)		50.24	
Vel Total (ft/s)	0.37	Avg. Vel. (ft/s)		0.37	
Max Chl Dpth (ft)	0.06	Hydr. Depth (ft)		0.06	
Conv. Total (cfs)	16.8	Conv. (cfs)		16.8	
Length Wtd. (ft)	19.00	Wetted Per. (ft)		50.27	
Min Ch El (ft)	2082.06	Shear (lb/sq ft)		0.02	
Alpha	1.00	Stream Power (lb/ft s)		0.01	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		25.07	
C & E Loss (ft)	0.00	Cum SA (acres)		7.09	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1268

INPUT
Description: Sta 58+06 - Inline Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.6	2088.31	-32.5	2082.01	17.5	2082.01	32.6	2089.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45.6	.028	-45.6	.028	32.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45.6 32.6 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2082.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.028	
W.S. Elev (ft)	2082.07	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		3.15	
E.G. Slope (ft/ft)	0.001749	Area (sq ft)		3.15	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.25	Top Width (ft)		50.25	
Vel Total (ft/s)	0.35	Avg. Vel. (ft/s)		0.35	
Max Chl Dpth (ft)	0.06	Hydr. Depth (ft)		0.06	
Conv. Total (cfs)	26.3	Conv. (cfs)		26.3	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		50.28	
Min Ch El (ft)	2082.01	Shear (lb/sq ft)		0.01	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)		25.07	
C & E Loss (ft)	0.00	Cum SA (acres)		7.07	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1267

INPUT
Description: Sta 58+00 Inline Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.6	2088.31	-32.5	2082.01	17.5	2082.01	32.6	2089.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45.6	.028	-45.6	.028	32.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45.6 32.6 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2082.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.		0.028	
W.S. Elev (ft)	2082.04	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	2082.04	Flow Area (sq ft)		1.33	
E.G. Slope (ft/ft)	0.030534	Area (sq ft)		1.33	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.11	Top Width (ft)		50.11	
Vel Total (ft/s)	0.83	Avg. Vel. (ft/s)		0.83	
Max Chl Dpth (ft)	0.03	Hydr. Depth (ft)		0.03	
Conv. Total (cfs)	6.3	Conv. (cfs)		6.3	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		50.12	
Min Ch El (ft)	2082.01	Shear (lb/sq ft)		0.05	
Alpha	1.00	Stream Power (lb/ft s)		0.04	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		25.07	
C & E Loss (ft)	0.00	Cum SA (acres)		7.06	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1266

INPUT
Description: Sta 58+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.6	2088.31	-13	2072.01	-3	2072.01	32.6	2089.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

```
   -45.6    .028   -45.6    .028    32.6    .028

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -45.6    32.6                 24        24        24        .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 2074.43  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.00  * Wt. n-Val.            *          *    0.028  *          *
* W.S. Elev (ft)        * 2074.43  * Reach Len. (ft)       *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)      *          *   35.94  *          *
* E.G. Slope (ft/ft)    *0.000000  * Area (sq ft)          *          *   35.94  *          *
* Q Total (cfs)         *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)        *   19.69  * Top Width (ft)        *          *   19.69  *          *
* Vel Total (ft/s)      *    0.03  * Avg. Vel. (ft/s)      *          *    0.03  *          *
* Max Chl Dpth (ft)     *    2.42  * Hydr. Depth (ft)      *          *    1.83  *          *
* Conv. Total (cfs)     *  2743.8  * Conv. (cfs)           *          *  2743.8  *          *
* Length Wtd. (ft)      *   24.00  * Wetted Per. (ft)      *          *   20.83  *          *
* Min Ch El (ft)        * 2072.01  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *          *   25.07  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *          *    7.06  *          *
************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1265

INPUT
Description: Sta 57+76 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
   -46.8 2087.31      -16 2071.96        0 2071.96     32.8 2088.31

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -46.8    .028   -46.8     .03    32.8    .028

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -46.8    32.8                 12        12        12        .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 2074.43  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.00  * Wt. n-Val.            *          *    0.030  *          *
* W.S. Elev (ft)        * 2074.43  * Reach Len. (ft)       *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)      *          *   51.80  *          *
* E.G. Slope (ft/ft)    *0.000000  * Area (sq ft)          *          *   51.80  *          *
* Q Total (cfs)         *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)        *   25.92  * Top Width (ft)        *          *   25.92  *          *
* Vel Total (ft/s)      *    0.02  * Avg. Vel. (ft/s)      *          *    0.02  *          *
* Max Chl Dpth (ft)     *    2.47  * Hydr. Depth (ft)      *          *    2.00  *          *
* Conv. Total (cfs)     *  3953.2  * Conv. (cfs)           *          *  3953.2  *          *
* Length Wtd. (ft)      *   12.00  * Wetted Per. (ft)      *          *   27.08  *          *
* Min Ch El (ft)        * 2071.96  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *          *   25.05  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *          *    7.05  *          *
************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1264

INPUT
Description: Sta 57+64 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
   -46.8 2087.31      -16 2071.94        0 2071.94     32.8 2088.31

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -46.8     .03   -46.8     .03    32.8     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -46.8    32.8                 14        14        14        .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 2074.43  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.00  * Wt. n-Val.            *          *    0.030  *          *
* W.S. Elev (ft)        * 2074.43  * Reach Len. (ft)       *   14.00  *   14.00  *   14.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)      *          *   52.30  *          *
* E.G. Slope (ft/ft)    *0.000000  * Area (sq ft)          *          *   52.30  *          *
* Q Total (cfs)         *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)        *   25.98  * Top Width (ft)        *          *   25.98  *          *
* Vel Total (ft/s)      *    0.02  * Avg. Vel. (ft/s)      *          *    0.02  *          *
* Max Chl Dpth (ft)     *    2.49  * Hydr. Depth (ft)      *          *    2.01  *          *
* Conv. Total (cfs)     *  4009.8  * Conv. (cfs)           *          *  4009.8  *          *
* Length Wtd. (ft)      *   14.00  * Wetted Per. (ft)      *          *   27.16  *          *
* Min Ch El (ft)        * 2071.94  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *          *   25.03  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *          *    7.04  *          *
************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1263

INPUT
Description: Sta 57+50 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
   -46.8 2087.31      -16 2071.91        0 2071.91     32.8 2088.31

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -46.8     .03   -46.8     .03    32.8     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -46.8    32.8                 50        50        50        .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 2074.43  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.00  * Wt. n-Val.            *          *    0.030  *          *
* W.S. Elev (ft)        * 2074.43  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)      *          *   53.06  *          *
* E.G. Slope (ft/ft)    *0.000000  * Area (sq ft)          *          *   53.06  *          *
* Q Total (cfs)         *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)        *   26.09  * Top Width (ft)        *          *   26.09  *          *
* Vel Total (ft/s)      *    0.02  * Avg. Vel. (ft/s)      *          *    0.02  *          *
* Max Chl Dpth (ft)     *    2.52  * Hydr. Depth (ft)      *          *    2.03  *          *
* Conv. Total (cfs)     *  4095.3  * Conv. (cfs)           *          *  4095.3  *          *
* Length Wtd. (ft)      *   50.00  * Wetted Per. (ft)      *          *   27.28  *          *
* Min Ch El (ft)        * 2071.91  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *          *   25.02  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *          *    7.03  *          *
************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1262

INPUT
Description: Sta 57+00 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
     -46 2085.81      -18 2071.81        4 2071.81     33.4 2086.51

Manning's n Values        num=       3
```

```
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
     -46      .03      -46      .03     33.4      .03

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
            -46    33.4                  50       50       50              .1       .3


CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2074.43  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.             *          *    0.030 *          *
* W.S. Elev (ft)          * 2074.43  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *   71.41  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)           *          *   71.41  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)             *          *    1.10  *          *
* Top Width (ft)          *   32.49  * Top Width (ft)        *          *   32.49  *          *
* Vel Total (ft/s)        *    0.02  * Avg. Vel. (ft/s)      *          *    0.02  *          *
* Max Chl Dpth (ft)       *    2.62  * Hydr. Depth (ft)      *          *    2.20  *          *
* Conv. Total (cfs)       *  5832.8  * Conv. (cfs)           *          *  5832.8  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   33.72  *          *
* Min Ch El (ft)          * 2071.81  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   24.95  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    7.00  *          *
*************************************************************************************************


CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1261

INPUT
Description: Sta 56+50 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -46.6 2084.01     -22 2071.71       7 2071.71    34.2 2085.31

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
   -46.6      .03    -46.6      .03     34.2      .03

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
            -46.6  34.2                  50       50       50              .1       .3


CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2074.43  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.             *          *    0.030 *          *
* W.S. Elev (ft)          * 2074.43  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *   93.73  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)           *          *   93.73  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)             *          *    1.10  *          *
* Top Width (ft)          *   39.89  * Top Width (ft)        *          *   39.89  *          *
* Vel Total (ft/s)        *    0.01  * Avg. Vel. (ft/s)      *          *    0.01  *          *
* Max Chl Dpth (ft)       *    2.72  * Hydr. Depth (ft)      *          *    2.35  *          *
* Conv. Total (cfs)       *  8034.8  * Conv. (cfs)           *          *  8034.8  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   41.17  *          *
* Min Ch El (ft)          * 2071.71  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   24.85  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    6.96  *          *
*************************************************************************************************


CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1260

INPUT
Description: Sta 56+00 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -46.4 2082.81     -24 2071.61      10 2071.61    33.4 2083.31

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
   -46.4      .03    -46.4      .03     33.4      .03

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
            -46.4  33.4                  50       50       50              .1       .3


CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2074.43  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.             *          *    0.030 *          *
* W.S. Elev (ft)          * 2074.43  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *  111.84  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)           *          *  111.84  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)             *          *    1.10  *          *
* Top Width (ft)          *   45.29  * Top Width (ft)        *          *   45.29  *          *
* Vel Total (ft/s)        *    0.01  * Avg. Vel. (ft/s)      *          *    0.01  *          *
* Max Chl Dpth (ft)       *    2.82  * Hydr. Depth (ft)      *          *    2.47  *          *
* Conv. Total (cfs)       *  9927.9  * Conv. (cfs)           *          *  9927.9  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   46.62  *          *
* Min Ch El (ft)          * 2071.61  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   24.73  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    6.91  *          *
*************************************************************************************************


CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1259

INPUT
Description: Sta 55+50 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
     -47 2081.51     -27 2071.51      12 2071.51    33.4 2082.21

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
     -47      .03      -47      .03     33.4      .03

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
            -47    33.4                  50       50       50              .1       .3


CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2074.43  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.             *          *    0.030 *          *
* W.S. Elev (ft)          * 2074.43  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *  131.00  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)           *          *  131.00  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)             *          *    1.10  *          *
* Top Width (ft)          *   50.69  * Top Width (ft)        *          *   50.69  *          *
* Vel Total (ft/s)        *    0.01  * Avg. Vel. (ft/s)      *          *    0.01  *          *
* Max Chl Dpth (ft)       *    2.92  * Hydr. Depth (ft)      *          *    2.58  *          *
* Conv. Total (cfs)       * 12003.7  * Conv. (cfs)           *          * 12003.7  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   52.06  *          *
* Min Ch El (ft)          * 2071.51  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   24.59  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    6.85  *          *
*************************************************************************************************


CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1258

INPUT
Description: Sta 55+00 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
  -47.36 2080.09     -30 2071.41      15 2071.41    32.36 2080.09

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
```

```
*********************************************
  -47.36     .03  -47.36     .03   32.36     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -47.36  32.36                 13       13        13             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)        * 2074.43  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.00  * Wt. n-Val.            *         *    0.030 *          *
* W.S. Elev (ft)        * 2074.43  * Reach Len. (ft)       *   13.00  *   13.00  *   13.00  *
* Crit W.S. (ft)        *         * Flow Area (sq ft)      *         *  154.23  *          *
* E.G. Slope (ft/ft)    *0.000000  * Area (sq ft)          *         *  154.23  *          *
* Q Total (cfs)         *    1.10  * Flow (cfs)            *         *    1.10  *          *
* Top Width (ft)        *   57.09  * Top Width (ft)        *         *   57.09  *          *
* Vel Total (ft/s)      *    0.01  * Avg. Vel. (ft/s)      *         *    0.01  *          *
* Max Chl Dpth (ft)     *    3.02  * Hydr. Depth (ft)      *         *    2.70  *          *
* Conv. Total (cfs)     * 14575.9  * Conv. (cfs)           *         * 14575.9  *          *
* Length Wtd. (ft)      *   13.00  * Wetted Per. (ft)      *         *   58.51  *          *
* Min Ch El (ft)        * 2071.41  * Shear (lb/sq ft)      *         *    0.00  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *         *    0.00  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *         *   24.43  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *         *    6.79  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-I to 9000 ft E   RS: 1257

INPUT
Description: Sta 54+87 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -47.36 2080.09   -32.5 2071.38     17.5 2071.38    32.36 2080.09

Manning's n Values        num=        3
      Sta    n Val      Sta    n Val     Sta    n Val
*************************************************
  -47.36     .04  -47.36     .04   32.36     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -47.36  32.36                 6        6         6              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)        * 2074.43  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.00  * Wt. n-Val.            *         *    0.040 *          *
* W.S. Elev (ft)        * 2074.43  * Reach Len. (ft)       *    6.00 *    6.00  *    6.00  *
* Crit W.S. (ft)        *         * Flow Area (sq ft)      *         *  168.46  *          *
* E.G. Slope (ft/ft)    *0.000000  * Area (sq ft)          *         *  168.46  *          *
* Q Total (cfs)         *    1.10  * Flow (cfs)            *         *    1.10  *          *
* Top Width (ft)        *   60.41  * Top Width (ft)        *         *   60.41  *          *
* Vel Total (ft/s)      *    0.01  * Avg. Vel. (ft/s)      *         *    0.01  *          *
* Max Chl Dpth (ft)     *    3.05  * Hydr. Depth (ft)      *         *    2.79  *          *
* Conv. Total (cfs)     * 12176.5  * Conv. (cfs)           *         * 12176.5  *          *
* Length Wtd. (ft)      *    6.00  * Wetted Per. (ft)      *         *   62.07  *          *
* Min Ch El (ft)        * 2071.38  * Shear (lb/sq ft)      *         *    0.00  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *         *    0.00  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *         *   24.38  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *         *    6.78  *          *
*****************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1256

INPUT
Description: Sta 54+81 - Gabion Counterweir
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
     -47 2078.31   -32.5 2071.37     17.5 2071.37      30 2077.81

Manning's n Values        num=        3
      Sta    n Val      Sta    n Val     Sta    n Val
*************************************************
     -47     .028      -47     .028      30     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -47    30                 .1       .1        .1             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)        * 2074.43  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.00  * Wt. n-Val.            *         *    0.028 *          *
* W.S. Elev (ft)        * 2074.43  * Reach Len. (ft)       *    0.10 *    0.10  *    0.10  *
* Crit W.S. (ft)        *         * Flow Area (sq ft)      *         *  171.95  *          *
* E.G. Slope (ft/ft)    *0.000000  * Area (sq ft)          *         *  171.95  *          *
* Q Total (cfs)         *    1.10  * Flow (cfs)            *         *    1.10  *          *
* Top Width (ft)        *   62.34  * Top Width (ft)        *         *   62.34  *          *
* Vel Total (ft/s)      *    0.01  * Avg. Vel. (ft/s)      *         *    0.01  *          *
* Max Chl Dpth (ft)     *    3.06  * Hydr. Depth (ft)      *         *    2.76  *          *
* Conv. Total (cfs)     * 17676.8  * Conv. (cfs)           *         * 17676.8  *          *
* Length Wtd. (ft)      *    0.10  * Wetted Per. (ft)      *         *   63.78  *          *
* Min Ch El (ft)        * 2071.37  * Shear (lb/sq ft)      *         *    0.00  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *         *    0.00  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *         *   24.36  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *         *    6.77  *          *
*****************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1255

INPUT
Description: Sta 54+81 - Gabion Counterweir
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
     -47 2078.31   -32.5 2074.37     17.5 2074.37      30 2077.81

Manning's n Values        num=        3
      Sta    n Val      Sta    n Val     Sta    n Val
*************************************************
     -47     .028      -47     .028      30     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -47    30                 6        6         6              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)        * 2074.43  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.00  * Wt. n-Val.            *         *    0.028 *          *
* W.S. Elev (ft)        * 2074.43  * Reach Len. (ft)       *    6.00 *    6.00  *    6.00  *
* Crit W.S. (ft)        *         * Flow Area (sq ft)      *         *    2.95  *          *
* E.G. Slope (ft/ft)    *0.002164  * Area (sq ft)          *         *    2.95  *          *
* Q Total (cfs)         *    1.10  * Flow (cfs)            *         *    1.10  *          *
* Top Width (ft)        *   50.43  * Top Width (ft)        *         *   50.43  *          *
* Vel Total (ft/s)      *    0.37  * Avg. Vel. (ft/s)      *         *    0.37  *          *
* Max Chl Dpth (ft)     *    0.06  * Hydr. Depth (ft)      *         *    0.06  *          *
* Conv. Total (cfs)     *    23.6  * Conv. (cfs)           *         *    23.6  *          *
* Length Wtd. (ft)      *    6.00  * Wetted Per. (ft)      *         *   50.45  *          *
* Min Ch El (ft)        * 2074.37  * Shear (lb/sq ft)      *         *    0.01  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *         *    0.00  *          *
* Frctn Loss (ft)       *    0.03  * Cum Volume (acre-ft)  *         *   24.36  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *         *    6.77  *          *
*****************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1254

INPUT
```

Description: Sta 54+75 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47	2078.31	-32.5	2074.36	17.5	2074.36	30	2077.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47	.028	-47	.028	30	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Left	Right
-47	30	.1	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2074.40	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.01	* Wt. n-Val.	*	* 0.028 *	*
* W.S. Elev (ft)	* 2074.39	* Reach Len. (ft)	* 0.10 *	0.10 *	0.10 *
* Crit W.S. (ft)	* 2074.39	* Flow Area (sq ft)	*	* 1.30 *	*
* E.G. Slope (ft/ft)	*0.033488	* Area (sq ft)	*	* 1.30 *	*
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10 *	*
* Top Width (ft)	* 50.19	* Top Width (ft)	*	* 50.19 *	*
* Vel Total (ft/s)	* 0.85	* Avg. Vel. (ft/s)	*	* 0.85 *	*
* Max Chl Dpth (ft)	* 0.03	* Hydr. Depth (ft)	*	* 0.03 *	*
* Conv. Total (cfs)	* 6.0	* Conv. (cfs)	*	* 6.0 *	*
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	* 50.20 *	*
* Min Ch El (ft)	* 2074.36	* Shear (lb/sq ft)	*	* 0.05 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.05 *	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 24.36 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 6.76 *	*

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1253

INPUT
Description: Sta 54+75 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47	2078.31	-32.5	2071.37	17.5	2071.37	30	2077.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47	.04	-47	.04	30	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Left	Right
-47	30	19	19	19	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2072.73	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.040 *	*
* W.S. Elev (ft)	* 2072.73	* Reach Len. (ft)	* 19.00 *	19.00 *	19.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 71.61 *	*
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 71.61 *	*
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10 *	*
* Top Width (ft)	* 55.47	* Top Width (ft)	*	* 55.47 *	*
* Vel Total (ft/s)	* 0.02	* Avg. Vel. (ft/s)	*	* 0.02 *	*
* Max Chl Dpth (ft)	* 1.36	* Hydr. Depth (ft)	*	* 1.29 *	*
* Conv. Total (cfs)	* 3130.0	* Conv. (cfs)	*	* 3130.0 *	*
* Length Wtd. (ft)	* 19.00	* Wetted Per. (ft)	*	* 56.11 *	*
* Min Ch El (ft)	* 2071.37	* Shear (lb/sq ft)	*	* 0.00 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00 *	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 24.36 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 6.76 *	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1252

INPUT
Description: Sta 54+56 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47	2078.31	-32.5	2071.41	17.5	2071.41	30	2077.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47	.028	-47	.028	30	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Left	Right
-47	30	6	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2072.73	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.028 *	*
* W.S. Elev (ft)	* 2072.73	* Reach Len. (ft)	* 6.00 *	6.00 *	6.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 69.43 *	*
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 69.43 *	*
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10 *	*
* Top Width (ft)	* 55.34	* Top Width (ft)	*	* 55.34 *	*
* Vel Total (ft/s)	* 0.02	* Avg. Vel. (ft/s)	*	* 0.02 *	*
* Max Chl Dpth (ft)	* 1.32	* Hydr. Depth (ft)	*	* 1.25 *	*
* Conv. Total (cfs)	* 4254.1	* Conv. (cfs)	*	* 4254.1 *	*
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	* 55.96 *	*
* Min Ch El (ft)	* 2071.41	* Shear (lb/sq ft)	*	* 0.00 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00 *	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 24.33 *	*
* C & E Loss (ft)	* 0.04	* Cum SA (acres)	*	* 6.74 *	*

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1251

INPUT
Description: Sta 54+50 - Inline Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47	2078.31	-32.5	2071.31	17.5	2071.31	30	2077.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47	.028	-47	.028	30	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Left	Right
-47	30	.1	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2072.67	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.45	* Wt. n-Val.	*	* 0.028 *	*
* W.S. Elev (ft)	* 2072.23	* Reach Len. (ft)	* 0.10 *	0.10 *	0.10 *
* Crit W.S. (ft)	* 2072.23	* Flow Area (sq ft)	*	* 47.50 *	*
* E.G. Slope (ft/ft)	*0.012168	* Area (sq ft)	*	* 47.50 *	*
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00 *	*
* Top Width (ft)	* 53.66	* Top Width (ft)	*	* 53.66 *	*
* Vel Total (ft/s)	* 5.37	* Avg. Vel. (ft/s)	*	* 5.37 *	*
* Max Chl Dpth (ft)	* 0.92	* Hydr. Depth (ft)	*	* 0.89 *	*
* Conv. Total (cfs)	* 2311.7	* Conv. (cfs)	*	* 2311.7 *	*
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	* 54.09 *	*
* Min Ch El (ft)	* 2071.31	* Shear (lb/sq ft)	*	* 0.67 *	*

```
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    3.58  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)   *          *   24.32  *          *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)         *          *    6.73  *          *
*********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1250

INPUT
Description: Sa 54+50 - Drake Channel
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
     -47 2078.31      -13 2061.31       -3 2061.31       30 2077.81

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
     -47    .028     -47    .028       30    .028

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
            -47      30                      24      24        24              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************************
* E.G. Elev (ft)          * 2065.21  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.25  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)          * 2064.95  * Reach Len. (ft)       *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)      *          *   62.93  *          *
* E.G. Slope (ft/ft)      *0.001821  * Area (sq ft)           *          *   62.93  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)          *   24.56  * Top Width (ft)         *          *   24.56  *          *
* Vel Total (ft/s)        *    4.05  * Avg. Vel. (ft/s)       *          *    4.05  *          *
* Max Chl Dpth (ft)       *    3.64  * Hydr. Depth (ft)       *          *    2.56  *          *
* Conv. Total (cfs)       *  5976.4  * Conv. (cfs)            *          *  5976.4  *          *
* Length Wtd. (ft)        *   24.00  * Wetted Per. (ft)       *          *   26.28  *          *
* Min Ch El (ft)          * 2061.31  * Shear (lb/sq ft)      *          *    0.27  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    1.10  *          *
* Frctn Loss (ft)         *    0.03  * Cum Volume (acre-ft)   *          *   24.32  *          *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)         *          *    6.73  *          *
*********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1249

INPUT
Description: Sta 54+26 - Drake Channel
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -45.6 2076.51      -15 2061.26         0 2061.26     33.2 2077.81

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -45.6    .028    -45.6     .03     33.2    .028

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -45.6    33.2                      12      12        12              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************************
* E.G. Elev (ft)          * 2065.14  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.14  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)          * 2065.00  * Reach Len. (ft)       *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)      *          *   84.09  *          *
* E.G. Slope (ft/ft)      *0.001023  * Area (sq ft)           *          *   84.09  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)          *   30.00  * Top Width (ft)         *          *   30.00  *          *
* Vel Total (ft/s)        *    3.03  * Avg. Vel. (ft/s)       *          *    3.03  *          *
* Max Chl Dpth (ft)       *    3.74  * Hydr. Depth (ft)       *          *    2.80  *          *
* Conv. Total (cfs)       *  7971.7  * Conv. (cfs)            *          *  7971.7  *          *
* Length Wtd. (ft)        *   12.00  * Wetted Per. (ft)       *          *   31.76  *          *
* Min Ch El (ft)          * 2061.26  * Shear (lb/sq ft)      *          *    0.17  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.51  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)   *          *   24.28  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    6.71  *          *
*********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1248

INPUT
Description: Sta 54+14 - Drake Channel
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -45.6 2076.51      -15 2061.24         0 2061.24     33.2 2077.81

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -45.6     .03    -45.6     .03     33.2     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -45.6    33.2                      14      14        14              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************************
* E.G. Elev (ft)          * 2065.13  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.14  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)          * 2064.99  * Reach Len. (ft)       *   14.00  *   14.00  *   14.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)      *          *   84.30  *          *
* E.G. Slope (ft/ft)      *0.001016  * Area (sq ft)           *          *   84.30  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)          *   30.01  * Top Width (ft)         *          *   30.01  *          *
* Vel Total (ft/s)        *    3.03  * Avg. Vel. (ft/s)       *          *    3.03  *          *
* Max Chl Dpth (ft)       *    3.75  * Hydr. Depth (ft)       *          *    2.81  *          *
* Conv. Total (cfs)       *  8001.1  * Conv. (cfs)            *          *  8001.1  *          *
* Length Wtd. (ft)        *   14.00  * Wetted Per. (ft)       *          *   31.78  *          *
* Min Ch El (ft)          * 2061.24  * Shear (lb/sq ft)      *          *    0.17  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.51  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)   *          *   24.26  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    6.70  *          *
*********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1247

INPUT
Description: Sta 54+00 - Drake Channel
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -45.6 2076.51      -15 2061.21         0 2061.21     33.2 2077.81

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -45.6     .03    -45.6     .03     33.2     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -45.6    33.2                      50      50        50              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************************
* E.G. Elev (ft)          * 2065.11  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.14  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)          * 2064.97  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
```

* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 84.76	*
* E.G. Slope (ft/ft)	*0.001000	* Area (sq ft)	*	* 84.76	*
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00	*
* Top Width (ft)	* 30.05	* Top Width (ft)	*	* 30.05	*
* Vel Total (ft/s)	* 3.01	* Avg. Vel. (ft/s)	*	* 3.01	*
* Max Chl Dpth (ft)	* 3.76	* Hydr. Depth (ft)	*	* 2.82	*
* Conv. Total (cfs)	* 8065.4	* Conv. (cfs)	*	* 8065.4	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 31.83	*
* Min Ch El (ft)	* 2061.21	* Shear (lb/sq ft)	*	* 0.17	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.50	*
* Frctn Loss (ft)	* 0.03	* Cum Volume (acre-ft)	*	* 24.23	*
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	*	* 6.70	*

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1246

INPUT
Description: Sta 53+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.4	2075.31	-18	2061.11	4	2061.11	34.4	2076.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.4	.03	-46.4	.03	34.4	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-46.4 34.4 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2065.06	* Element	* Left OB *	Channel	* Right OB *
* Vel Head (ft)	* 0.08	* Wt. n-Val.	*	* 0.030	*
* W.S. Elev (ft)	* 2064.99	* Reach Len. (ft)	* 50.00 *	50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 115.26	*
* E.G. Slope (ft/ft)	*0.000476	* Area (sq ft)	*	* 115.26	*
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00	*
* Top Width (ft)	* 37.50	* Top Width (ft)	*	* 37.50	*
* Vel Total (ft/s)	* 2.21	* Avg. Vel. (ft/s)	*	* 2.21	*
* Max Chl Dpth (ft)	* 3.87	* Hydr. Depth (ft)	*	* 3.07	*
* Conv. Total (cfs)	* 11692.1	* Conv. (cfs)	*	* 11692.1	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 39.33	*
* Min Ch El (ft)	* 2061.11	* Shear (lb/sq ft)	*	* 0.09	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.19	*
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	*	* 24.11	*
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 6.66	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1245

INPUT
Description: Sta 53+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.6	2073.81	-20	2061.01	5	2061.01	31.6	2074.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45.6	.03	-45.6	.03	31.6	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45.6 31.6 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2065.04	* Element	* Left OB *	Channel	* Right OB *
* Vel Head (ft)	* 0.06	* Wt. n-Val.	*	* 0.030	*
* W.S. Elev (ft)	* 2064.98	* Reach Len. (ft)	* 50.00 *	50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 130.61	*
* E.G. Slope (ft/ft)	*0.000350	* Area (sq ft)	*	* 130.61	*
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00	*
* Top Width (ft)	* 40.86	* Top Width (ft)	*	* 40.86	*
* Vel Total (ft/s)	* 1.95	* Avg. Vel. (ft/s)	*	* 1.95	*
* Max Chl Dpth (ft)	* 3.97	* Hydr. Depth (ft)	*	* 3.20	*
* Conv. Total (cfs)	* 13624.0	* Conv. (cfs)	*	* 13624.0	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 42.74	*
* Min Ch El (ft)	* 2061.01	* Shear (lb/sq ft)	*	* 0.07	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.13	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 23.97	*
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 6.61	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1244

INPUT
Description: Sta 52+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.8	2072.31	-22	2060.91	8	2060.91	31.8	2072.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.8	.03	-44.8	.03	31.8	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-44.8 31.8 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2065.02	* Element	* Left OB *	Channel	* Right OB *
* Vel Head (ft)	* 0.04	* Wt. n-Val.	*	* 0.030	*
* W.S. Elev (ft)	* 2064.97	* Reach Len. (ft)	* 50.00 *	50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 154.95	*
* E.G. Slope (ft/ft)	*0.000233	* Area (sq ft)	*	* 154.95	*
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00	*
* Top Width (ft)	* 46.26	* Top Width (ft)	*	* 46.26	*
* Vel Total (ft/s)	* 1.65	* Avg. Vel. (ft/s)	*	* 1.65	*
* Max Chl Dpth (ft)	* 4.06	* Hydr. Depth (ft)	*	* 3.35	*
* Conv. Total (cfs)	* 16723.1	* Conv. (cfs)	*	* 16723.1	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 48.17	*
* Min Ch El (ft)	* 2060.91	* Shear (lb/sq ft)	*	* 0.05	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.08	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 23.81	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 6.56	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1243

INPUT
Description: Sta 52+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.4	2071.01	-25	2060.81	10	2060.81	33	2072.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45.4	.03	-45.4	.03	33	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45.4 33 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2065.00	* Element	* Left OB *	Channel	* Right OB *

* Vel Head (ft)	* 0.03	* Wt. n-Val.	*	* 0.030	*	*		
* W.S. Elev (ft)	* 2064.97	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*		
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 180.31	*	*		
* E.G. Slope (ft/ft)	*0.000162	* Area (sq ft)	*	* 180.31	*	*		
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00	*	*		
* Top Width (ft)	* 51.65	* Top Width (ft)	*	* 51.65	*	*		
* Vel Total (ft/s)	* 1.41	* Avg. Vel. (ft/s)	*	* 1.41	*	*		
* Max Chl Dpth (ft)	* 4.16	* Hydr. Depth (ft)	*	* 3.49	*	*		
* Conv. Total (cfs)	* 20047.2	* Conv. (cfs)	*	* 20047.2	*	*		
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 53.61	*	*		
* Min Ch El (ft)	* 2060.81	* Shear (lb/sq ft)	*	* 0.03	*	*		
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.05	*	*		
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 23.62	*	*		
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 6.51	*	*		

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1242

INPUT
Description: Sta 51+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.2	2069.31	-28	2060.71	13	2060.71	32.2	2070.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45.2	.03	-45.2	.03	32.2	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-45.2	32.2	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2064.99	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.02	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 2064.97	* Reach Len. (ft)	* 50.00	* 50.00 *	50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 211.03 *	*
* E.G. Slope (ft/ft)	*0.000111	* Area (sq ft)	*	* 211.03 *	*
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00 *	*
* Top Width (ft)	* 58.04	* Top Width (ft)	*	* 58.04 *	*
* Vel Total (ft/s)	* 1.21	* Avg. Vel. (ft/s)	*	* 1.21 *	*
* Max Chl Dpth (ft)	* 4.26	* Hydr. Depth (ft)	*	* 3.64 *	*
* Conv. Total (cfs)	* 24158.0	* Conv. (cfs)	*	* 24158.0 *	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 60.06 *	*
* Min Ch El (ft)	* 2060.71	* Shear (lb/sq ft)	*	* 0.02 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.03 *	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 23.39 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 6.44 *	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1241

INPUT
Description: Sta 51+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.36	2068.79	-30	2060.61	15	2060.61	31.4	2068.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.36	.03	-46.36	.03	31.4	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-46.36	31.4	13	13	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2064.99	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.02	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 2064.97	* Reach Len. (ft)	* 13.00	* 13.00 *	13.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 234.17 *	*
* E.G. Slope (ft/ft)	*0.000087	* Area (sq ft)	*	* 234.17 *	*
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00 *	*
* Top Width (ft)	* 62.44	* Top Width (ft)	*	* 62.44 *	*
* Vel Total (ft/s)	* 1.09	* Avg. Vel. (ft/s)	*	* 1.09 *	*
* Max Chl Dpth (ft)	* 4.36	* Hydr. Depth (ft)	*	* 3.75 *	*
* Conv. Total (cfs)	* 27398.6	* Conv. (cfs)	*	* 27398.6 *	*
* Length Wtd. (ft)	* 13.00	* Wetted Per. (ft)	*	* 64.49 *	*
* Min Ch El (ft)	* 2060.61	* Shear (lb/sq ft)	*	* 0.02 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.02 *	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 23.14 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 6.37 *	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1240

INPUT
Description: Sta 50+87 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.36	2068.79	-30	2060.58	15	2060.58	31.4	2068.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.36	.04	-46.36	.04	31.4	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-46.36	31.4	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2064.99	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.02	* Wt. n-Val.	*	* 0.040 *	*
* W.S. Elev (ft)	* 2064.97	* Reach Len. (ft)	* 6.00	* 6.00 *	6.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 235.82 *	*
* E.G. Slope (ft/ft)	*0.000151	* Area (sq ft)	*	* 235.82 *	*
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00 *	*
* Top Width (ft)	* 62.49	* Top Width (ft)	*	* 62.49 *	*
* Vel Total (ft/s)	* 1.08	* Avg. Vel. (ft/s)	*	* 1.08 *	*
* Max Chl Dpth (ft)	* 4.39	* Hydr. Depth (ft)	*	* 3.77 *	*
* Conv. Total (cfs)	* 20776.9	* Conv. (cfs)	*	* 20776.9 *	*
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	* 64.57 *	*
* Min Ch El (ft)	* 2060.58	* Shear (lb/sq ft)	*	* 0.03 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.04 *	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 23.07 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 6.35 *	*

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1239

INPUT
Description: Sta 50+81 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	2066.51	-32.5	2060.56	17.5	2060.56	30.2	2067.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.028	-45	.028	30.2	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-45	30.2	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2064.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.		0.028	
W.S. Elev (ft)	2064.97	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)		Flow Area (sq ft)		259.76	
E.G. Slope (ft/ft)	0.000059	Area (sq ft)		259.76	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	67.81	Top Width (ft)		67.81	
Vel Total (ft/s)	0.98	Avg. Vel. (ft/s)		0.98	
Max Chl Dpth (ft)	4.41	Hydr. Depth (ft)		3.83	
Conv. Total (cfs)	33079.3	Conv. (cfs)		33079.3	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		69.88	
Min Ch El (ft)	2060.56	Shear (lb/sq ft)		0.01	
Alpha	1.00	Stream Power (lb/ft s)		0.01	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		23.03	
C & E Loss (ft)	0.02	Cum SA (acres)		6.35	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1238

INPUT
Description: Sta 50+81 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	2066.51	-32.5	2063.56	17.5	2063.56	30.2	2067.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.028	-45	.028	30.2	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-45	30.2	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2064.96	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.		0.028	
W.S. Elev (ft)	2064.70	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		61.80	
E.G. Slope (ft/ft)	0.005704	Area (sq ft)		61.80	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	58.87	Top Width (ft)		58.87	
Vel Total (ft/s)	4.13	Avg. Vel. (ft/s)		4.13	
Max Chl Dpth (ft)	1.14	Hydr. Depth (ft)		1.05	
Conv. Total (cfs)	3376.4	Conv. (cfs)		3376.4	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		59.16	
Min Ch El (ft)	2063.56	Shear (lb/sq ft)		0.37	
Alpha	1.00	Stream Power (lb/ft s)		1.53	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		23.03	
C & E Loss (ft)	0.02	Cum SA (acres)		6.35	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1237

INPUT
Description: Sta 50+75 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	2066.51	-32.5	2063.56	17.5	2063.56	30.2	2067.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.028	-45	.028	30.2	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-45	30.2	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2064.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.43	Wt. n-Val.		0.028	
W.S. Elev (ft)	2064.47	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	2064.47	Flow Area (sq ft)		48.54	
E.G. Slope (ft/ft)	0.012234	Area (sq ft)		48.54	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	57.08	Top Width (ft)		57.08	
Vel Total (ft/s)	5.25	Avg. Vel. (ft/s)		5.25	
Max Chl Dpth (ft)	0.91	Hydr. Depth (ft)		0.85	
Conv. Total (cfs)	2305.5	Conv. (cfs)		2305.5	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		57.31	
Min Ch El (ft)	2063.56	Shear (lb/sq ft)		0.65	
Alpha	1.00	Stream Power (lb/ft s)		3.40	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		23.02	
C & E Loss (ft)	0.06	Cum SA (acres)		6.34	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1236

INPUT
Description: Sta 50+75 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	2066.51	-32.5	2060.56	17.5	2060.56	30.2	2067.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.04	-45	.04	30.2	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-45	30.2	19	19	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2062.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.22	Wt. n-Val.		0.040	
W.S. Elev (ft)	2061.86	Reach Len. (ft)	19.00	19.00	19.00
Crit W.S. (ft)		Flow Area (sq ft)		68.39	
E.G. Slope (ft/ft)	0.007692	Area (sq ft)		68.39	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	55.25	Top Width (ft)		55.25	
Vel Total (ft/s)	3.73	Avg. Vel. (ft/s)		3.73	
Max Chl Dpth (ft)	1.30	Hydr. Depth (ft)		1.24	
Conv. Total (cfs)	2907.5	Conv. (cfs)		2907.5	
Length Wtd. (ft)	19.00	Wetted Per. (ft)		55.86	
Min Ch El (ft)	2060.56	Shear (lb/sq ft)		0.59	
Alpha	1.00	Stream Power (lb/ft s)		2.19	
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)		23.02	
C & E Loss (ft)	0.01	Cum SA (acres)		6.34	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1235

INPUT
Description: Sta 50+56 - Inline Gabion Drop Structure
Station Elevation Data num= 4

```
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*****************************************************************
     -45 2066.51    -32.5 2060.52     17.5 2060.52     30.2 2067.11

Manning's n Values         num=         3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
     -45    .028     -45    .028     30.2    .028

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.   Expan.
           -45    30.2                   6         6          6              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2061.94  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.29  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)          * 2061.65  * Reach Len. (ft)       *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)          * 2061.44  * Flow Area (sq ft)     *          *   58.96  *          *
* E.G. Slope (ft/ft)      *0.006062  * Area (sq ft)          *          *   58.96  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)          *   54.53  * Top Width (ft)        *          *   54.53  *          *
* Vel Total (ft/s)        *    4.32  * Avg. Vel. (ft/s)      *          *    4.32  *          *
* Max Chl Dpth (ft)       *    1.13  * Hydr. Depth (ft)      *          *    1.08  *          *
* Conv. Total (cfs)       *  3275.3  * Conv. (cfs)           *          *  3275.3  *          *
* Length Wtd. (ft)        *    6.00  * Wetted Per. (ft)      *          *   55.06  *          *
* Min Ch El (ft)          * 2060.52  * Shear (lb/sq ft)     *          *    0.41  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    1.75  *          *
* Frctn Loss (ft)         *    0.05  * Cum Volume (acre-ft)  *          *   23.00  *          *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)        *          *    6.31  *          *
*************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1234

INPUT
Description: Sta 50+50 - Inline Gabion Drop Structure
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*****************************************************************
     -45 2066.51    -32.5 2060.51     17.5 2060.51     30.2 2067.11

Manning's n Values         num=         3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
     -45    .028     -45    .028     30.2    .028

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.   Expan.
           -45    30.2                  .1        .1         .1             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2061.87  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.45  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)          * 2061.43  * Reach Len. (ft)       *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)          * 2061.43  * Flow Area (sq ft)     *          *   47.48  *          *
* E.G. Slope (ft/ft)      *0.012188  * Area (sq ft)          *          *   47.48  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)          *   53.67  * Top Width (ft)        *          *   53.67  *          *
* Vel Total (ft/s)        *    5.37  * Avg. Vel. (ft/s)      *          *    5.37  *          *
* Max Chl Dpth (ft)       *    0.92  * Hydr. Depth (ft)      *          *    0.88  *          *
* Conv. Total (cfs)       *  2309.8  * Conv. (cfs)           *          *  2309.8  *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)      *          *   54.10  *          *
* Min Ch El (ft)          * 2060.51  * Shear (lb/sq ft)     *          *    0.67  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    3.59  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *   22.99  *          *
* C & E Loss (ft)         *    0.06  * Cum SA (acres)        *          *    6.31  *          *
*************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1233

INPUT
Description: Sta 50+50 - Drake Channel
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*****************************************************************
     -45 2066.51     -13 2050.51      -3 2050.51     30.2 2067.11

Manning's n Values         num=         3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
     -45    .028     -45    .028     30.2    .028

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.   Expan.
           -45    30.2                  24        24         24             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2054.47  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.24  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)          * 2054.23  * Reach Len. (ft)       *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)     *          *   64.88  *          *
* E.G. Slope (ft/ft)      *0.001674  * Area (sq ft)          *          *   64.88  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)          *   24.88  * Top Width (ft)        *          *   24.88  *          *
* Vel Total (ft/s)        *    3.93  * Avg. Vel. (ft/s)      *          *    3.93  *          *
* Max Chl Dpth (ft)       *    3.72  * Hydr. Depth (ft)      *          *    2.61  *          *
* Conv. Total (cfs)       *  6232.5  * Conv. (cfs)           *          *  6232.5  *          *
* Length Wtd. (ft)        *   24.00  * Wetted Per. (ft)      *          *   26.64  *          *
* Min Ch El (ft)          * 2050.51  * Shear (lb/sq ft)     *          *    0.25  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    1.00  *          *
* Frctn Loss (ft)         *    0.03  * Cum Volume (acre-ft)  *          *   22.99  *          *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)        *          *    6.31  *          *
*************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1232

INPUT
Description: Sta 50+26 - Drake Channel
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*****************************************************************
   -44.8 2065.31     -15 2050.46       0 2050.46     29.8 2065.31

Manning's n Values         num=         3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -44.8    .028    -44.8     .03     29.8    .028

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.   Expan.
          -44.8    29.8                  12        12         12             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2054.41  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.14  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)          * 2054.27  * Reach Len. (ft)       *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)     *          *   86.39  *          *
* E.G. Slope (ft/ft)      *0.000949  * Area (sq ft)          *          *   86.39  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)          *   30.31  * Top Width (ft)        *          *   30.31  *          *
* Vel Total (ft/s)        *    2.95  * Avg. Vel. (ft/s)      *          *    2.95  *          *
* Max Chl Dpth (ft)       *    3.81  * Hydr. Depth (ft)      *          *    2.85  *          *
* Conv. Total (cfs)       *  8278.1  * Conv. (cfs)           *          *  8278.1  *          *
* Length Wtd. (ft)        *   12.00  * Wetted Per. (ft)      *          *   32.10  *          *
* Min Ch El (ft)          * 2050.46  * Shear (lb/sq ft)     *          *    0.16  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.47  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)  *          *   22.95  *          *
```

```
* C & E Loss (ft)        *     0.00  * Cum SA (acres)          *           *    6.29  *           *
*********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1231

INPUT
Description: Sta 50+14 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
   -44.8 2065.31      -15 2050.44        0 2050.44     29.8 2065.31

Manning's n Values         num=       3
     Sta   n Val       Sta   n Val       Sta   n Val
*****************************************************
   -44.8     .03    -44.8     .03     29.8     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
          -44.8    29.8                  14       14       14              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)          * 2054.40  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.13  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2054.26  * Reach Len. (ft)        *   14.00  *   14.00  *   14.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *   86.62  *          *
* E.G. Slope (ft/ft)      *0.000941  * Area (sq ft)           *          *   86.62  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)          *   30.32  * Top Width (ft)         *          *   30.32  *          *
* Vel Total (ft/s)        *    2.94  * Avg. Vel. (ft/s)       *          *    2.94  *          *
* Max Chl Dpth (ft)       *    3.82  * Hydr. Depth (ft)       *          *    2.86  *          *
* Conv. Total (cfs)       *  8311.8  * Conv. (cfs)           *          *  8311.8  *          *
* Length Wtd. (ft)        *   14.00  * Wetted Per. (ft)       *          *   32.12  *          *
* Min Ch El (ft)          * 2050.44  * Shear (lb/sq ft)      *          *    0.16  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.47  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)   *          *   22.92  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    6.28  *          *
*********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1230

INPUT
Description: Sta 50+00 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
   -44.8 2065.31      -15 2050.41        0 2050.41     29.8 2065.31

Manning's n Values         num=       3
     Sta   n Val       Sta   n Val       Sta   n Val
*****************************************************
   -44.8     .03    -44.8     .03     29.8     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
          -44.8    29.8                  50       50       50              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)          * 2054.38  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.13  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2054.25  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *   87.11  *          *
* E.G. Slope (ft/ft)      *0.000926  * Area (sq ft)           *          *   87.11  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)          *   30.36  * Top Width (ft)         *          *   30.36  *          *
* Vel Total (ft/s)        *    2.93  * Avg. Vel. (ft/s)       *          *    2.93  *          *
* Max Chl Dpth (ft)       *    3.84  * Hydr. Depth (ft)       *          *    2.87  *          *
* Conv. Total (cfs)       *  8380.9  * Conv. (cfs)           *          *  8380.9  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)       *          *   32.18  *          *
* Min Ch El (ft)          * 2050.41  * Shear (lb/sq ft)      *          *    0.16  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.46  *          *
* Frctn Loss (ft)         *    0.03  * Cum Volume (acre-ft)   *          *   22.89  *          *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)         *          *    6.27  *          *
*********************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1229

INPUT
Description: Sta 49+50 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
     -44 2063.31      -18 2050.31        4 2050.31     30.6 2063.61

Manning's n Values         num=       3
     Sta   n Val       Sta   n Val       Sta   n Val
*****************************************************
     -44     .03     -44     .03     30.6     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
          -44    30.6                  50       50       50              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)          * 2054.33  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.07  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2054.26  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *  118.19  *          *
* E.G. Slope (ft/ft)      *0.000443  * Area (sq ft)           *          *  118.19  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)          *   37.81  * Top Width (ft)         *          *   37.81  *          *
* Vel Total (ft/s)        *    2.16  * Avg. Vel. (ft/s)       *          *    2.16  *          *
* Max Chl Dpth (ft)       *    3.95  * Hydr. Depth (ft)       *          *    3.13  *          *
* Conv. Total (cfs)       * 12119.3  * Conv. (cfs)           *          * 12119.3  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)       *          *   39.67  *          *
* Min Ch El (ft)          * 2050.31  * Shear (lb/sq ft)      *          *    0.08  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.18  *          *
* Frctn Loss (ft)         *    0.02  * Cum Volume (acre-ft)   *          *   22.78  *          *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)         *          *    6.23  *          *
*********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1228

INPUT
Description: Sta 49+00 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
   -43.8 2061.61      -21 2050.21        7 2050.21     30.2 2061.81

Manning's n Values         num=       3
     Sta   n Val       Sta   n Val       Sta   n Val
*****************************************************
   -43.8     .03    -43.8     .03     30.2     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
          -43.8    30.2                  50       50       50              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)          * 2054.31  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.05  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2054.26  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *  146.34  *          *
* E.G. Slope (ft/ft)      *0.000266  * Area (sq ft)           *          *  146.34  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)          *   44.21  * Top Width (ft)         *          *   44.21  *          *
* Vel Total (ft/s)        *    1.74  * Avg. Vel. (ft/s)       *          *    1.74  *          *
* Max Chl Dpth (ft)       *    4.05  * Hydr. Depth (ft)       *          *    3.31  *          *
* Conv. Total (cfs)       * 15649.5  * Conv. (cfs)           *          * 15649.5  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)       *          *   46.13  *          *
* Min Ch El (ft)          * 2050.21  * Shear (lb/sq ft)      *          *    0.05  *          *
```

* Alpha	*	1.00	* Stream Power (lb/ft s)	*	*	0.09	*
* Frctn Loss (ft)	*	0.01	* Cum Volume (acre-ft)	*	*	22.63	*
* C & E Loss (ft)	*	0.00	* Cum SA (acres)	*	*	6.19	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1227

INPUT
Description: Sta 48+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.24	2059.73	-24	2050.11	10	2050.11	29.24	2059.73

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.24	.03	-43.24	.03	29.24	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-43.24 29.24 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2054.30	* Element	*	Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.03	* Wt. n-Val.	*		* 0.030	*	*
* W.S. Elev (ft)	* 2054.26	* Reach Len. (ft)	*	50.00	* 50.00	* 50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*		* 175.66	*	*
* E.G. Slope (ft/ft)	*0.000172	* Area (sq ft)	*		* 175.66	*	*
* Q Total (cfs)	* 255.00	* Flow (cfs)	*		* 255.00	*	*
* Top Width (ft)	* 50.61	* Top Width (ft)	*		* 50.61	*	*
* Vel Total (ft/s)	* 1.45	* Avg. Vel. (ft/s)	*		* 1.45	*	*
* Max Chl Dpth (ft)	* 4.15	* Hydr. Depth (ft)	*		* 3.47	*	*
* Conv. Total (cfs)	* 19447.0	* Conv. (cfs)	*		* 19447.0	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*		* 52.57	*	*
* Min Ch El (ft)	* 2050.11	* Shear (lb/sq ft)	*		* 0.04	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*		* 0.05	*	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*		* 22.44	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*		* 6.13	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1226

INPUT
Description: Sta 48+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.44	2059.73	-27	2050.01	12	2050.01	31.44	2059.73

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.44	.03	-46.44	.03	31.44	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-46.44 31.44 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2054.29	* Element	*	Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.02	* Wt. n-Val.	*		* 0.030	*	*
* W.S. Elev (ft)	* 2054.26	* Reach Len. (ft)	*	50.00	* 50.00	* 50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*		* 201.92	*	*
* E.G. Slope (ft/ft)	*0.000123	* Area (sq ft)	*		* 201.92	*	*
* Q Total (cfs)	* 255.00	* Flow (cfs)	*		* 255.00	*	*
* Top Width (ft)	* 56.00	* Top Width (ft)	*		* 56.00	*	*
* Vel Total (ft/s)	* 1.26	* Avg. Vel. (ft/s)	*		* 1.26	*	*
* Max Chl Dpth (ft)	* 4.25	* Hydr. Depth (ft)	*		* 3.61	*	*
* Conv. Total (cfs)	* 22969.8	* Conv. (cfs)	*		* 22969.8	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*		* 58.01	*	*
* Min Ch El (ft)	* 2050.01	* Shear (lb/sq ft)	*		* 0.03	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*		* 0.03	*	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*		* 22.22	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*		* 6.07	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1225

INPUT
Description: Sta 47+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44	2056.91	-30	2049.91	15	2049.91	34.62	2059.72

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44	.03	-44	.03	34.62	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-44 34.62 13 13 13 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2054.28	* Element	*	Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.02	* Wt. n-Val.	*		* 0.030	*	*
* W.S. Elev (ft)	* 2054.26	* Reach Len. (ft)	*	13.00	* 13.00	* 13.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*		* 233.60	*	*
* E.G. Slope (ft/ft)	*0.000087	* Area (sq ft)	*		* 233.60	*	*
* Q Total (cfs)	* 255.00	* Flow (cfs)	*		* 255.00	*	*
* Top Width (ft)	* 62.40	* Top Width (ft)	*		* 62.40	*	*
* Vel Total (ft/s)	* 1.09	* Avg. Vel. (ft/s)	*		* 1.09	*	*
* Max Chl Dpth (ft)	* 4.35	* Hydr. Depth (ft)	*		* 3.74	*	*
* Conv. Total (cfs)	* 27300.1	* Conv. (cfs)	*		* 27300.1	*	*
* Length Wtd. (ft)	* 13.00	* Wetted Per. (ft)	*		* 64.45	*	*
* Min Ch El (ft)	* 2049.91	* Shear (lb/sq ft)	*		* 0.02	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*		* 0.02	*	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*		* 21.97	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*		* 6.00	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1224

INPUT
Description: Sta 47+37 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44	2056.91	-30	2049.87	15	2049.87	34.62	2059.72

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44	.04	-44	.04	34.62	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-44 34.62 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2054.28	* Element	*	Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.02	* Wt. n-Val.	*		* 0.040	*	*
* W.S. Elev (ft)	* 2054.26	* Reach Len. (ft)	*	6.00	* 6.00	* 6.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*		* 235.82	*	*
* E.G. Slope (ft/ft)	*0.000151	* Area (sq ft)	*		* 235.82	*	*
* Q Total (cfs)	* 255.00	* Flow (cfs)	*		* 255.00	*	*
* Top Width (ft)	* 62.47	* Top Width (ft)	*		* 62.47	*	*
* Vel Total (ft/s)	* 1.08	* Avg. Vel. (ft/s)	*		* 1.08	*	*
* Max Chl Dpth (ft)	* 4.39	* Hydr. Depth (ft)	*		* 3.78	*	*
* Conv. Total (cfs)	* 20780.2	* Conv. (cfs)	*		* 20780.2	*	*
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*		* 64.55	*	*
* Min Ch El (ft)	* 2049.87	* Shear (lb/sq ft)	*		* 0.03	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*		* 0.04	*	*

```
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)   *          *   21.90  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    5.98  *          *
*****************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1223

INPUT
Description: Sta 47+31 - Gabion Counterweir
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
     -43 2054.81    -32.5 2049.86     17.5 2049.86     29.8 2056.21

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
     -43     .028     -43     .028     29.8     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -43    29.8                    .1       .1       .1             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2054.28  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.02  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)          * 2054.26  * Reach Len. (ft)       *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *  259.31  *          *
* E.G. Slope (ft/ft)      *0.000060  * Area (sq ft)          *          *  259.31  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)          *   67.86  * Top Width (ft)        *          *   67.86  *          *
* Vel Total (ft/s)        *    0.98  * Avg. Vel. (ft/s)      *          *    0.98  *          *
* Max Chl Dpth (ft)       *    4.40  * Hydr. Depth (ft)      *          *    3.82  *          *
* Conv. Total (cfs)       * 32973.8  * Conv. (cfs)           *          * 32973.8  *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)      *          *   69.91  *          *
* Min Ch El (ft)          * 2049.86  * Shear (lb/sq ft)      *          *    0.01  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.01  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *   21.87  *          *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)        *          *    5.98  *          *
*****************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1222

INPUT
Description: Sta 47+31 - Gabion Counterweir
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
     -43 2054.81    -32.5 2052.86     17.5 2052.86     29.8 2056.21

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
     -43     .028     -43     .028     29.8     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -43    29.8                    6        6        6              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2054.25  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.26  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)          * 2053.99  * Reach Len. (ft)       *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *   62.35  *          *
* E.G. Slope (ft/ft)      *0.005706  * Area (sq ft)          *          *   62.35  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)          *   60.24  * Top Width (ft)        *          *   60.24  *          *
* Vel Total (ft/s)        *    4.09  * Avg. Vel. (ft/s)      *          *    4.09  *          *
* Max Chl Dpth (ft)       *    1.13  * Hydr. Depth (ft)      *          *    1.03  *          *
* Conv. Total (cfs)       *  3375.8  * Conv. (cfs)           *          *  3375.8  *          *
* Length Wtd. (ft)        *    6.00  * Wetted Per. (ft)      *          *   60.60  *          *
* Min Ch El (ft)          * 2052.86  * Shear (lb/sq ft)      *          *    0.37  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    1.50  *          *
* Frctn Loss (ft)         *    0.05  * Cum Volume (acre-ft)  *          *   21.87  *          *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)        *          *    5.97  *          *
*****************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1221

INPUT
Description: Sta 47+ 25- Gabion Counterweir
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
     -43 2054.81    -32.5 2052.86     17.5 2052.86     29.8 2056.21

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
     -43     .028     -43     .028     29.8     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -43    29.8                    .1       .1       .1             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2054.19  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.43  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)          * 2053.76  * Reach Len. (ft)       *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)          * 2053.76  * Flow Area (sq ft)     *          *   48.73  *          *
* E.G. Slope (ft/ft)      *0.012865  * Area (sq ft)          *          *   48.73  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)          *   58.16  * Top Width (ft)        *          *   58.16  *          *
* Vel Total (ft/s)        *    5.23  * Avg. Vel. (ft/s)      *          *    5.23  *          *
* Max Chl Dpth (ft)       *    0.90  * Hydr. Depth (ft)      *          *    0.84  *          *
* Conv. Total (cfs)       *  2293.2  * Conv. (cfs)           *          *  2293.2  *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)      *          *   58.36  *          *
* Min Ch El (ft)          * 2052.86  * Shear (lb/sq ft)      *          *    0.64  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    3.37  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *   21.86  *          *
* C & E Loss (ft)         *    0.07  * Cum SA (acres)        *          *    5.97  *          *
*****************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1220

INPUT
Description: Sta 47+25 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
     -43 2054.81    -32.5 2049.86     17.5 2049.86     29.8 2056.21

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
     -43     .04      -43     .04      29.8     .04
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -43    29.8               19      19      19            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)        * 2051.45  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.18  * Wt. n-Val.             *          *    0.040  *          *
* W.S. Elev (ft)        * 2051.27  * Reach Len. (ft)        *   19.00  *   19.00  *   19.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)      *          *   74.72  *          *
* E.G. Slope (ft/ft)    *0.005800  * Area (sq ft)           *          *   74.72  *          *
* Q Total (cfs)         *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)        *   55.74  * Top Width (ft)         *          *   55.74  *          *
* Vel Total (ft/s)      *    3.41  * Avg. Vel. (ft/s)       *          *    3.41  *          *
* Max Chl Dpth (ft)     *    1.41  * Hydr. Depth (ft)       *          *    1.34  *          *
* Conv. Total (cfs)     *  3348.4  * Conv. (cfs)            *          *  3348.4  *          *
* Length Wtd. (ft)      *   19.00  * Wetted Per. (ft)       *          *   56.40  *          *
* Min Ch El (ft)        * 2049.86  * Shear (lb/sq ft)       *          *    0.48  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    1.64  *          *
* Frctn Loss (ft)       *    0.15  * Cum Volume (acre-ft)   *          *   21.86  *          *
* C & E Loss (ft)       *    0.03  * Cum SA (acres)         *          *    5.97  *          *
*************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1219

INPUT
Description: Sta 47+06 - Inline Gabion Drop Structure
Station Elevation Data    num=      4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************
     -43 2054.81   -32.5 2049.91    17.5 2049.91    29.8 2056.21

Manning's n Values        num=      3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
     -43    .028     -43    .028    29.8    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -43    29.8                 6       6       6            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)        * 2051.27  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.45  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)        * 2050.83  * Reach Len. (ft)        *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)        * 2050.83  * Flow Area (sq ft)      *          *   47.49  *          *
* E.G. Slope (ft/ft)    *0.012200  * Area (sq ft)           *          *   47.49  *          *
* Q Total (cfs)         *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)        *   53.75  * Top Width (ft)         *          *   53.75  *          *
* Vel Total (ft/s)      *    5.37  * Avg. Vel. (ft/s)       *          *    5.37  *          *
* Max Chl Dpth (ft)     *    0.92  * Hydr. Depth (ft)       *          *    0.88  *          *
* Conv. Total (cfs)     *  2308.6  * Conv. (cfs)            *          *  2308.6  *          *
* Length Wtd. (ft)      *    6.00  * Wetted Per. (ft)       *          *   54.17  *          *
* Min Ch El (ft)        * 2049.91  * Shear (lb/sq ft)       *          *    0.67  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    3.59  *          *
* Frctn Loss (ft)       *    0.07  * Cum Volume (acre-ft)   *          *   21.83  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)         *          *    5.94  *          *
*************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program selected the water surface that had the least amount of error between computed and
         assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1218

INPUT
Description: Sta 47+00 - Inline Gabion Drop Structure
Station Elevation Data    num=      4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************
     -43 2054.81   -32.5 2049.81    17.5 2049.81    29.8 2056.21

Manning's n Values        num=      3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
     -43    .028     -43    .028    29.8    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -43    29.8                .1      .1      .1            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)        * 2051.17  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.45  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)        * 2050.73  * Reach Len. (ft)        *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)        * 2050.73  * Flow Area (sq ft)      *          *   47.62  *          *
* E.G. Slope (ft/ft)    *0.012078  * Area (sq ft)           *          *   47.62  *          *
* Q Total (cfs)         *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)        *   53.69  * Top Width (ft)         *          *   53.69  *          *
* Vel Total (ft/s)      *    5.35  * Avg. Vel. (ft/s)       *          *    5.35  *          *
* Max Chl Dpth (ft)     *    0.92  * Hydr. Depth (ft)       *          *    0.89  *          *
* Conv. Total (cfs)     *  2320.3  * Conv. (cfs)            *          *  2320.3  *          *
* Length Wtd. (ft)      *    0.10  * Wetted Per. (ft)       *          *   54.13  *          *
* Min Ch El (ft)        * 2049.81  * Shear (lb/sq ft)       *          *    0.66  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    3.55  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)   *          *   21.83  *          *
* C & E Loss (ft)       *    0.07  * Cum SA (acres)         *          *    5.94  *          *
*************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1217

INPUT
Description: Sta 47+00 - Drake Channel
Station Elevation Data    num=      4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************
     -43 2054.81    -13 2039.81     -3 2039.81    29.8 2056.21

Manning's n Values        num=      3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
     -43    .028     -43    .028    29.8    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -43    29.8                24      24      24            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)        * 2043.84  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.22  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)        * 2043.62  * Reach Len. (ft)        *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)      *          *   67.03  *          *
* E.G. Slope (ft/ft)    *0.001530  * Area (sq ft)           *          *   67.03  *          *
* Q Total (cfs)         *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)        *   25.22  * Top Width (ft)         *          *   25.22  *          *
* Vel Total (ft/s)      *    3.80  * Avg. Vel. (ft/s)       *          *    3.80  *          *
* Max Chl Dpth (ft)     *    3.81  * Hydr. Depth (ft)       *          *    2.66  *          *
* Conv. Total (cfs)     *  6518.9  * Conv. (cfs)            *          *  6518.9  *          *
* Length Wtd. (ft)      *   24.00  * Wetted Per. (ft)       *          *   27.02  *          *
* Min Ch El (ft)        * 2039.81  * Shear (lb/sq ft)       *          *    0.24  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.90  *          *
* Frctn Loss (ft)       *    0.03  * Cum Volume (acre-ft)   *          *   21.83  *          *
* C & E Loss (ft)       *    0.03  * Cum SA (acres)         *          *    5.94  *          *
*************************************************************************************************
```

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1216

INPUT
Description: Sta 46+76 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-42.2	2053.31	-15	2039.76	0	2039.76	29.2	2054.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-42.2	.028	-42.2	.03	29.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right		
-42.2	29.2	12	12	12	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2043.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.		0.030	
W.S. Elev (ft)	2043.66	Reach Len. (ft)	12.00	12.00	12.00
Crit W.S. (ft)		Flow Area (sq ft)		88.93	
E.G. Slope (ft/ft)	0.000875	Area (sq ft)		88.93	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	30.64	Top Width (ft)		30.64	
Vel Total (ft/s)	2.87	Avg. Vel. (ft/s)		2.87	
Max Chl Dpth (ft)	3.90	Hydr. Depth (ft)		2.90	
Conv. Total (cfs)	8621.1	Conv. (cfs)		8621.1	
Length Wtd. (ft)	12.00	Wetted Per. (ft)		32.48	
Min Ch El (ft)	2039.76	Shear (lb/sq ft)		0.15	
Alpha	1.00	Stream Power (lb/ft s)		0.43	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		21.79	
C & E Loss (ft)	0.00	Cum SA (acres)		5.92	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1215

INPUT
Description: Sta 46+64 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-42.2	2053.31	-15	2039.74	0	2039.74	29.2	2054.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-42.2	.03	-42.2	.03	29.2	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right		
-42.2	29.2	14	14	14	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2043.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.		0.030	
W.S. Elev (ft)	2043.65	Reach Len. (ft)	14.00	14.00	14.00
Crit W.S. (ft)		Flow Area (sq ft)		89.19	
E.G. Slope (ft/ft)	0.000867	Area (sq ft)		89.19	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	30.66	Top Width (ft)		30.66	
Vel Total (ft/s)	2.86	Avg. Vel. (ft/s)		2.86	
Max Chl Dpth (ft)	3.91	Hydr. Depth (ft)		2.91	
Conv. Total (cfs)	8659.2	Conv. (cfs)		8659.2	
Length Wtd. (ft)	14.00	Wetted Per. (ft)		32.50	
Min Ch El (ft)	2039.74	Shear (lb/sq ft)		0.15	
Alpha	1.00	Stream Power (lb/ft s)		0.42	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		21.76	
C & E Loss (ft)	0.00	Cum SA (acres)		5.91	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1214

INPUT
Description: Sta 46+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-42.2	2053.31	-15	2039.71	0	2039.71	29.2	2054.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-42.2	.03	-42.2	.03	29.2	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right		
-42.2	29.2	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2043.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.		0.030	
W.S. Elev (ft)	2043.64	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		89.71	
E.G. Slope (ft/ft)	0.000853	Area (sq ft)		89.71	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	30.70	Top Width (ft)		30.70	
Vel Total (ft/s)	2.84	Avg. Vel. (ft/s)		2.84	
Max Chl Dpth (ft)	3.93	Hydr. Depth (ft)		2.92	
Conv. Total (cfs)	8733.4	Conv. (cfs)		8733.4	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		32.56	
Min Ch El (ft)	2039.71	Shear (lb/sq ft)		0.15	
Alpha	1.00	Stream Power (lb/ft s)		0.42	
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)		21.73	
C & E Loss (ft)	0.00	Cum SA (acres)		5.90	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1212

INPUT
Description: Sta 46+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-42.2	2053.31	-15	2039.61	0	2039.61	29.2	2054.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-42.2	.03	-42.2	.03	29.2	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right		
-42.2	29.2	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2043.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.		0.030	
W.S. Elev (ft)	2043.60	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		91.39	
E.G. Slope (ft/ft)	0.000807	Area (sq ft)		91.39	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	30.84	Top Width (ft)		30.84	
Vel Total (ft/s)	2.79	Avg. Vel. (ft/s)		2.79	
Max Chl Dpth (ft)	3.99	Hydr. Depth (ft)		2.96	
Conv. Total (cfs)	8974.9	Conv. (cfs)		8974.9	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		32.73	
Min Ch El (ft)	2039.61	Shear (lb/sq ft)		0.14	
Alpha	1.00	Stream Power (lb/ft s)		0.39	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		21.63	
C & E Loss (ft)	0.01	Cum SA (acres)		5.87	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1211

INPUT
Description: Sta 45+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43	2054.81	-13	2039.51	-3	2039.51	29.8	2056.21

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43	.03	-43	.03	29.8	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-43	29.8	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2043.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.		0.030	
W.S. Elev (ft)	2043.45	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		69.81	
E.G. Slope (ft/ft)	0.001559	Area (sq ft)		69.81	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	25.46	Top Width (ft)		25.46	
Vel Total (ft/s)	3.65	Avg. Vel. (ft/s)		3.65	
Max Chl Dpth (ft)	3.94	Hydr. Depth (ft)		2.74	
Conv. Total (cfs)	6458.5	Conv. (cfs)		6458.5	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		27.35	
Min Ch El (ft)	2039.51	Shear (lb/sq ft)		0.25	
Alpha	1.00	Stream Power (lb/ft s)		0.91	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)		21.54	
C & E Loss (ft)	0.05	Cum SA (acres)		5.83	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1210

INPUT
Description: Sta 45+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.8	2049.21	-25	2039.41	9	2039.41	31	2050.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.8	.03	-44.8	.03	31	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-44.8	31	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2043.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.		0.030	
W.S. Elev (ft)	2043.55	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		175.39	
E.G. Slope (ft/ft)	0.000173	Area (sq ft)		175.39	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	50.72	Top Width (ft)		50.72	
Vel Total (ft/s)	1.45	Avg. Vel. (ft/s)		1.45	
Max Chl Dpth (ft)	4.14	Hydr. Depth (ft)		3.46	
Conv. Total (cfs)	19374.5	Conv. (cfs)		19374.5	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		52.66	
Min Ch El (ft)	2039.41	Shear (lb/sq ft)		0.04	
Alpha	1.00	Stream Power (lb/ft s)		0.05	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		21.39	
C & E Loss (ft)	0.00	Cum SA (acres)		5.79	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1209

INPUT
Description: Sta 44+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.8	2047.81	-28	2039.31	12	2039.31	30.8	2048.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.8	.03	-44.8	.03	30.8	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-44.8	30.8	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2043.57	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.030	
W.S. Elev (ft)	2043.55	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		205.12	
E.G. Slope (ft/ft)	0.000119	Area (sq ft)		205.12	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	56.77	Top Width (ft)		56.77	
Vel Total (ft/s)	1.24	Avg. Vel. (ft/s)		1.24	
Max Chl Dpth (ft)	4.24	Hydr. Depth (ft)		3.61	
Conv. Total (cfs)	23371.2	Conv. (cfs)		23371.2	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		58.79	
Min Ch El (ft)	2039.31	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.03	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		21.18	
C & E Loss (ft)	0.00	Cum SA (acres)		5.73	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1208

INPUT
Description: Sta 44+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.94	2046.18	-30	2039.21	15	2039.21	30.8	2047.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.94	.03	-43.94	.03	30.8	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-43.94	30.8	13	13	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2043.57	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.030	
W.S. Elev (ft)	2043.55	Reach Len. (ft)	13.00	13.00	13.00
Crit W.S. (ft)		Flow Area (sq ft)		232.85	
E.G. Slope (ft/ft)	0.000088	Area (sq ft)		232.85	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	62.35	Top Width (ft)		62.35	
Vel Total (ft/s)	1.10	Avg. Vel. (ft/s)		1.10	
Max Chl Dpth (ft)	4.34	Hydr. Depth (ft)		3.73	
Conv. Total (cfs)	27169.9	Conv. (cfs)		27169.9	
Length Wtd. (ft)	13.00	Wetted Per. (ft)		64.40	
Min Ch El (ft)	2039.21	Shear (lb/sq ft)		0.02	
Alpha	1.00	Stream Power (lb/ft s)		0.02	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		20.92	
C & E Loss (ft)	0.00	Cum SA (acres)		5.66	

****

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1207

INPUT
Description: Sta 43+87 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.94	2046.18	-30	2039.18	15	2039.18	30.8	2047.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.94	.04	-43.94	.04	30.8	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-43.94 30.8 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2043.57	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.040	
W.S. Elev (ft)	2043.55	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		234.48	
E.G. Slope (ft/ft)	0.000153	Area (sq ft)		234.48	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	62.40	Top Width (ft)		62.40	
Vel Total (ft/s)	1.09	Avg. Vel. (ft/s)		1.09	
Max Chl Dpth (ft)	4.37	Hydr. Depth (ft)		3.76	
Conv. Total (cfs)	20601.8	Conv. (cfs)		20601.8	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		64.47	
Min Ch El (ft)	2039.18	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.04	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		20.86	
C & E Loss (ft)	0.00	Cum SA (acres)		5.64	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1206

INPUT
Description: Sta 43+81 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.4	2045.31	-32.5	2039.17	17.5	2039.17	33.4	2044.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.4	.028	-43.4	.028	33.4	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-43.4 33.4 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2043.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.		0.028	
W.S. Elev (ft)	2043.55	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)		Flow Area (sq ft)		265.63	
E.G. Slope (ft/ft)	0.000059	Area (sq ft)		265.63	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	71.32	Top Width (ft)		71.32	
Vel Total (ft/s)	0.96	Avg. Vel. (ft/s)		0.96	
Max Chl Dpth (ft)	4.38	Hydr. Depth (ft)		3.72	
Conv. Total (cfs)	33301.2	Conv. (cfs)		33301.2	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		73.16	
Min Ch El (ft)	2039.17	Shear (lb/sq ft)		0.01	
Alpha	1.00	Stream Power (lb/ft s)		0.01	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		20.82	
C & E Loss (ft)	0.02	Cum SA (acres)		5.63	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1205

INPUT
Description: Sta 43+81 - Gabion Counterweir
Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.4	2045.31	-32.5	2042.17	17.5	2042.17	33.4	2044.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.4	.028	-43.4	.028	33.4	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-43.4 33.4 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2043.54	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.26	Wt. n-Val.		0.028	
W.S. Elev (ft)	2043.28	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		61.90	
E.G. Slope (ft/ft)	0.006076	Area (sq ft)		61.90	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	62.04	Top Width (ft)		62.04	
Vel Total (ft/s)	4.12	Avg. Vel. (ft/s)		4.12	
Max Chl Dpth (ft)	1.10	Hydr. Depth (ft)		1.00	
Conv. Total (cfs)	3271.5	Conv. (cfs)		3271.5	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		62.27	
Min Ch El (ft)	2042.17	Shear (lb/sq ft)		0.38	
Alpha	1.00	Stream Power (lb/ft s)		1.55	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		20.82	
C & E Loss (ft)	0.02	Cum SA (acres)		5.63	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1204

INPUT
Description: Sta 43+75 -Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.4	2045.31	-32.5	2042.16	17.5	2042.16	33.4	2044.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.4	.028	-43.4	.028	33.4	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-43.4 33.4 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2043.47	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.42	Wt. n-Val.		0.028	
W.S. Elev (ft)	2043.06	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	2043.06	Flow Area (sq ft)		49.25	
E.G. Slope (ft/ft)	0.012365	Area (sq ft)		49.25	
Q Total (cfs)	255.00	Flow (cfs)		255.00	

* Top Width (ft)	* 59.74	* Top Width (ft)	*	* 59.74 * *
* Vel Total (ft/s)	* 5.18	* Avg. Vel. (ft/s)	*	* 5.18 * *
* Max Chl Dpth (ft)	* 0.90	* Hydr. Depth (ft)	*	* 0.82 * *
* Conv. Total (cfs)	* 2293.2	* Conv. (cfs)	*	* 2293.2 * *
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	* 59.93 * *
* Min Ch El (ft)	* 2042.16	* Shear (lb/sq ft)	*	* 0.63 * *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 3.28 * *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 20.81 * *
* C & E Loss (ft)	* 0.06	* Cum SA (acres)	*	* 5.62 * *

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1203

INPUT
Description: Sta 43+75 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.4	2045.31	-32.5	2039.16	17.5	2039.16	33.4	2044.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.4	.04	-43.4	.04	33.4	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-43.4 33.4 19 19 19 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2040.67	* Element	* Left OB *	Channel * Right OB *
* Vel Head (ft)	* 0.21	* Wt. n-Val.	*	* 0.040 * *
* W.S. Elev (ft)	* 2040.46	* Reach Len. (ft)	* 19.00 *	19.00 * 19.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 68.88 * *
* E.G. Slope (ft/ft)	*0.007687	* Area (sq ft)	*	* 68.88 * *
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00 * *
* Top Width (ft)	* 56.30	* Top Width (ft)	*	* 56.30 * *
* Vel Total (ft/s)	* 3.70	* Avg. Vel. (ft/s)	*	* 3.70 * *
* Max Chl Dpth (ft)	* 1.30	* Hydr. Depth (ft)	*	* 1.22 * *
* Conv. Total (cfs)	* 2908.5	* Conv. (cfs)	*	* 2908.5 * *
* Length Wtd. (ft)	* 19.00	* Wetted Per. (ft)	*	* 56.84 * *
* Min Ch El (ft)	* 2039.16	* Shear (lb/sq ft)	*	* 0.58 * *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 2.15 * *
* Frctn Loss (ft)	* 0.13	* Cum Volume (acre-ft)	*	* 20.81 * *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 5.62 * *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1202

INPUT
Description: Sta 43+56 - Inline Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.4	2045.31	-32.5	2039.12	17.5	2039.12	33.4	2044.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.4	.028	-43.4	.028	33.4	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-43.4 33.4 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2040.53	* Element	* Left OB *	Channel * Right OB *
* Vel Head (ft)	* 0.29	* Wt. n-Val.	*	* 0.028 * *
* W.S. Elev (ft)	* 2040.25	* Reach Len. (ft)	* 6.00 *	6.00 * 6.00 *
* Crit W.S. (ft)	* 2040.04	* Flow Area (sq ft)	*	* 59.28 * *
* E.G. Slope (ft/ft)	*0.006077	* Area (sq ft)	*	* 59.28 * *
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00 * *
* Top Width (ft)	* 55.43	* Top Width (ft)	*	* 55.43 * *
* Vel Total (ft/s)	* 4.30	* Avg. Vel. (ft/s)	*	* 4.30 * *
* Max Chl Dpth (ft)	* 1.12	* Hydr. Depth (ft)	*	* 1.07 * *
* Conv. Total (cfs)	* 3271.1	* Conv. (cfs)	*	* 3271.1 * *
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	* 55.90 * *
* Min Ch El (ft)	* 2039.12	* Shear (lb/sq ft)	*	* 0.40 * *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 1.73 * *
* Frctn Loss (ft)	* 0.05	* Cum Volume (acre-ft)	*	* 20.78 * *
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	*	* 5.60 * *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1201

INPUT
Description: Sta 43+50 Inline Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.4	2045.31	-32.5	2039.11	17.5	2039.11	33.4	2044.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.4	.028	-43.4	.028	33.4	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-43.4 33.4 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2040.47	* Element	* Left OB *	Channel * Right OB *
* Vel Head (ft)	* 0.44	* Wt. n-Val.	*	* 0.028 * *
* W.S. Elev (ft)	* 2040.03	* Reach Len. (ft)	* 0.10 *	0.10 * 0.10 *
* Crit W.S. (ft)	* 2040.03	* Flow Area (sq ft)	*	* 47.77 * *
* E.G. Slope (ft/ft)	*0.012145	* Area (sq ft)	*	* 47.77 * *
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00 * *
* Top Width (ft)	* 54.41	* Top Width (ft)	*	* 54.41 * *
* Vel Total (ft/s)	* 5.34	* Avg. Vel. (ft/s)	*	* 5.34 * *
* Max Chl Dpth (ft)	* 0.92	* Hydr. Depth (ft)	*	* 0.88 * *
* Conv. Total (cfs)	* 2313.9	* Conv. (cfs)	*	* 2313.9 * *
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	* 54.80 * *
* Min Ch El (ft)	* 2039.11	* Shear (lb/sq ft)	*	* 0.66 * *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 3.53 * *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 20.78 * *
* C & E Loss (ft)	* 0.09	* Cum SA (acres)	*	* 5.59 * *

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1200

INPUT
Description: Sta 43+50 - Drake Channel
Station Elevation Data num= 4

```
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
**************************************************************
   -43.4 2045.31     -13 2029.11       3 2029.11    33.4 2044.31

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
***********************************************
   -43.4    .03    -43.4     .03     33.4     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -43.4    33.4               24      24        24             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************************
* E.G. Elev (ft)         * 2032.87  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.15  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)         * 2032.73  * Reach Len. (ft)        *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *   83.16  *          *
* E.G. Slope (ft/ft)     *0.001062  * Area (sq ft)           *          *   83.16  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)         *   30.01  * Top Width (ft)         *          *   30.01  *          *
* Vel Total (ft/s)       *    3.07  * Avg. Vel. (ft/s)       *          *    3.07  *          *
* Max Chl Dpth (ft)      *    3.61  * Hydr. Depth (ft)       *          *    2.77  *          *
* Conv. Total (cfs)      *  7823.2  * Conv. (cfs)           *          *  7823.2  *          *
* Length Wtd. (ft)       *   24.00  * Wetted Per. (ft)       *          *   31.77  *          *
* Min Ch El (ft)         * 2029.11  * Shear (lb/sq ft)      *          *    0.17  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.53  *          *
* Frctn Loss (ft)        *    0.03  * Cum Volume (acre-ft)   *          *   20.78  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    5.59  *          *
************************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1199

INPUT
Description: Sta 43+26 - Drake Channel
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
**************************************************************
   -42.6 2042.81     -15 2029.06       0 2029.06    29.6 2043.81

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
***********************************************
   -42.6    .028    -42.6     .03     29.6    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -42.6    29.6               12      12        12             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************************
* E.G. Elev (ft)         * 2032.84  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.15  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)         * 2032.69  * Reach Len. (ft)        *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *   80.86  *          *
* E.G. Slope (ft/ft)     *0.001142  * Area (sq ft)           *          *   80.86  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)         *   29.57  * Top Width (ft)         *          *   29.57  *          *
* Vel Total (ft/s)       *    3.15  * Avg. Vel. (ft/s)       *          *    3.15  *          *
* Max Chl Dpth (ft)      *    3.63  * Hydr. Depth (ft)       *          *    2.73  *          *
* Conv. Total (cfs)      *  7544.3  * Conv. (cfs)           *          *  7544.3  *          *
* Length Wtd. (ft)       *   12.00  * Wetted Per. (ft)       *          *   31.27  *          *
* Min Ch El (ft)         * 2029.06  * Shear (lb/sq ft)      *          *    0.18  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.58  *          *
* Frctn Loss (ft)        *    0.01  * Cum Volume (acre-ft)   *          *   20.73  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    5.58  *          *
************************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1198

INPUT
Description: Sta 43+14 - Drake Channel
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
**************************************************************
   -42.6 2042.81     -15 2029.04       0 2029.04    29.6 2043.81

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
***********************************************
   -42.6     .03    -42.6     .03     29.6     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -42.6    29.6               14      14        14             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************************
* E.G. Elev (ft)         * 2032.83  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.15  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)         * 2032.68  * Reach Len. (ft)        *   14.00  *   14.00  *   14.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *   81.01  *          *
* E.G. Slope (ft/ft)     *0.001136  * Area (sq ft)           *          *   81.01  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)         *   29.57  * Top Width (ft)         *          *   29.57  *          *
* Vel Total (ft/s)       *    3.15  * Avg. Vel. (ft/s)       *          *    3.15  *          *
* Max Chl Dpth (ft)      *    3.64  * Hydr. Depth (ft)       *          *    2.74  *          *
* Conv. Total (cfs)      *  7567.0  * Conv. (cfs)           *          *  7567.0  *          *
* Length Wtd. (ft)       *   14.00  * Wetted Per. (ft)       *          *   31.28  *          *
* Min Ch El (ft)         * 2029.04  * Shear (lb/sq ft)      *          *    0.18  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.58  *          *
* Frctn Loss (ft)        *    0.02  * Cum Volume (acre-ft)   *          *   20.71  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    5.57  *          *
************************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1197

INPUT
Description: Sta 43+00 - Drake Channel
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
**************************************************************
   -42.6 2042.81     -15 2029.01       0 2029.01    29.6 2043.81

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
***********************************************
   -42.6     .03    -42.6     .03     29.6     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -42.6    29.6               50      50        50             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************************
* E.G. Elev (ft)         * 2032.81  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.15  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)         * 2032.66  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *   81.41  *          *
* E.G. Slope (ft/ft)     *0.001119  * Area (sq ft)           *          *   81.41  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)         *   29.60  * Top Width (ft)         *          *   29.60  *          *
* Vel Total (ft/s)       *    3.13  * Avg. Vel. (ft/s)       *          *    3.13  *          *
* Max Chl Dpth (ft)      *    3.65  * Hydr. Depth (ft)       *          *    2.75  *          *
* Conv. Total (cfs)      *  7621.6  * Conv. (cfs)           *          *  7621.6  *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)       *          *   31.33  *          *
* Min Ch El (ft)         * 2029.01  * Shear (lb/sq ft)      *          *    0.18  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.57  *          *
* Frctn Loss (ft)        *    0.04  * Cum Volume (acre-ft)   *          *   20.68  *          *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *          *    5.56  *          *
************************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1196

INPUT
Description: Sta 42+50 - Drake Channel
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
```

```
*************************************************************
   -41.8 2040.81     -18 2028.91       3 2028.91    29.2 2042.01

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   -41.8     .03   -41.8     .03    29.2     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -41.8    29.2                 50       50       50            .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2032.75  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.09  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2032.67  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *  107.10  *          *
* E.G. Slope (ft/ft)      *0.000576  * Area (sq ft)            *          *  107.10  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)              *          *  255.00  *          *
* Top Width (ft)          *   36.03  * Top Width (ft)         *          *   36.03  *          *
* Vel Total (ft/s)        *    2.38  * Avg. Vel. (ft/s)       *          *    2.38  *          *
* Max Chl Dpth (ft)       *    3.76  * Hydr. Depth (ft)       *          *    2.97  *          *
* Conv. Total (cfs)       * 10622.5  * Conv. (cfs)           *          * 10622.5  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   37.80  *          *
* Min Ch El (ft)          * 2028.91  * Shear (lb/sq ft)      *          *    0.10  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.24  *          *
* Frctn Loss (ft)         *    0.02  * Cum Volume (acre-ft)   *          *   20.58  *          *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)         *          *    5.52  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1195

INPUT
Description: Sta 42+00 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
     -41 2039.31      -20 2028.81        6 2028.81       30 2040.81

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
     -41     .03     -41     .03      30     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -41       30                 50       50       50            .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2032.72  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.06  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2032.66  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *  129.89  *          *
* E.G. Slope (ft/ft)      *0.000362  * Area (sq ft)            *          *  129.89  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)              *          *  255.00  *          *
* Top Width (ft)          *   41.41  * Top Width (ft)         *          *   41.41  *          *
* Vel Total (ft/s)        *    1.96  * Avg. Vel. (ft/s)       *          *    1.96  *          *
* Max Chl Dpth (ft)       *    3.85  * Hydr. Depth (ft)       *          *    3.14  *          *
* Conv. Total (cfs)       * 13395.4  * Conv. (cfs)           *          * 13395.4  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   43.23  *          *
* Min Ch El (ft)          * 2028.81  * Shear (lb/sq ft)      *          *    0.07  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.13  *          *
* Frctn Loss (ft)         *    0.02  * Cum Volume (acre-ft)   *          *   20.44  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    5.48  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1194

INPUT
Description: Sta 41+50 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
   -40.2 2037.81     -22 2028.71        8 2028.71     29.8 2039.61

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   -40.2     .03   -40.2     .03    29.8     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -40.2    29.8                 50       50       50            .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2032.70  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.05  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2032.66  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *  149.65  *          *
* E.G. Slope (ft/ft)      *0.000257  * Area (sq ft)            *          *  149.65  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)              *          *  255.00  *          *
* Top Width (ft)          *   45.79  * Top Width (ft)         *          *   45.79  *          *
* Vel Total (ft/s)        *    1.70  * Avg. Vel. (ft/s)       *          *    1.70  *          *
* Max Chl Dpth (ft)       *    3.95  * Hydr. Depth (ft)       *          *    3.27  *          *
* Conv. Total (cfs)       * 15893.6  * Conv. (cfs)           *          * 15893.6  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   47.66  *          *
* Min Ch El (ft)          * 2028.71  * Shear (lb/sq ft)      *          *    0.05  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.09  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)   *          *   20.28  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    5.43  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1193

INPUT
Description: Sta 41+00 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
  -40.96 2036.59     -25 2028.61       10 2028.61     29.4 2038.31

Manning's n Values         num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  -40.96     .03  -40.96     .03    29.4     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -40.96    29.4                 50       50       50            .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2032.69  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.03  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2032.66  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *  174.37  *          *
* E.G. Slope (ft/ft)      *0.000179  * Area (sq ft)            *          *  174.37  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)              *          *  255.00  *          *
* Top Width (ft)          *   51.19  * Top Width (ft)         *          *   51.19  *          *
* Vel Total (ft/s)        *    1.46  * Avg. Vel. (ft/s)       *          *    1.46  *          *
* Max Chl Dpth (ft)       *    4.05  * Hydr. Depth (ft)       *          *    3.41  *          *
* Conv. Total (cfs)       * 19081.8  * Conv. (cfs)           *          * 19081.8  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   53.10  *          *
* Min Ch El (ft)          * 2028.61  * Shear (lb/sq ft)      *          *    0.04  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.05  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)   *          *   20.09  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    5.37  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1192

INPUT
Description: Sta 40+50 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
```

```
  -44.16 2036.59     -28 2028.51      12 2028.51    28.6 2036.81

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
  -44.16     .03  -44.16     .03    28.6     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -44.16    28.6                  50      50      50          .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 2032.68  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.03  * Wt. n-Val.             *          *    0.030 *          *
* W.S. Elev (ft)        * 2032.65  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)      *          *  200.13  *          *
* E.G. Slope (ft/ft)    *0.000128  * Area (sq ft)          *          *  200.13  *          *
* Q Total (cfs)         *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)        *   56.58  * Top Width (ft)        *          *   56.58  *          *
* Vel Total (ft/s)      *    1.27  * Avg. Vel. (ft/s)      *          *    1.27  *          *
* Max Chl Dpth (ft)     *    4.14  * Hydr. Depth (ft)      *          *    3.54  *          *
* Conv. Total (cfs)     * 22496.5  * Conv. (cfs)           *          * 22496.5  *          *
* Length Wtd. (ft)      *   50.00  * Wetted Per. (ft)      *          *   58.53  *          *
* Min Ch El (ft)        * 2028.51  * Shear (lb/sq ft)      *          *    0.03  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.03  *          *
* Frctn Loss (ft)       *    0.01  * Cum Volume (acre-ft)  *          *   19.88  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *          *    5.31  *          *
************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1191

INPUT
Description: Sta 40+00 - Drake Channel
Station Elevation Data    num=        4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************************
  -46.56 2036.59     -30 2028.41      15 2028.41    31.56 2036.59

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
  -46.56     .03  -46.56     .03    31.56     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -46.56   31.56                  13      13      13          .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 2032.67  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.02  * Wt. n-Val.             *          *    0.030 *          *
* W.S. Elev (ft)        * 2032.65  * Reach Len. (ft)       *   13.00  *   13.00  *   13.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)      *          *  227.38  *          *
* E.G. Slope (ft/ft)    *0.000095  * Area (sq ft)          *          *  227.38  *          *
* Q Total (cfs)         *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)        *   62.18  * Top Width (ft)        *          *   62.18  *          *
* Vel Total (ft/s)      *    1.12  * Avg. Vel. (ft/s)      *          *    1.12  *          *
* Max Chl Dpth (ft)     *    4.24  * Hydr. Depth (ft)      *          *    3.66  *          *
* Conv. Total (cfs)     * 26178.0  * Conv. (cfs)           *          * 26178.0  *          *
* Length Wtd. (ft)      *   13.00  * Wetted Per. (ft)      *          *   64.16  *          *
* Min Ch El (ft)        * 2028.41  * Shear (lb/sq ft)      *          *    0.02  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.02  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *          *   19.63  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *          *    5.24  *          *
************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1190

INPUT
Description: Sta 39+87 - Drake Channel
Station Elevation Data    num=        4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************************
  -46.56 2036.59     -30 2028.38      15 2028.38    31.56 2036.59

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
  -46.56     .04  -46.56     .04    31.56     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -46.56   31.56                   6       6       6          .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 2032.67  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.02  * Wt. n-Val.             *          *    0.040 *          *
* W.S. Elev (ft)        * 2032.65  * Reach Len. (ft)       *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)      *          *  229.03  *          *
* E.G. Slope (ft/ft)    *0.000165  * Area (sq ft)          *          *  229.03  *          *
* Q Total (cfs)         *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)        *   62.23  * Top Width (ft)        *          *   62.23  *          *
* Vel Total (ft/s)      *    1.11  * Avg. Vel. (ft/s)      *          *    1.11  *          *
* Max Chl Dpth (ft)     *    4.27  * Hydr. Depth (ft)      *          *    3.68  *          *
* Conv. Total (cfs)     * 19856.6  * Conv. (cfs)           *          * 19856.6  *          *
* Length Wtd. (ft)      *    6.00  * Wetted Per. (ft)      *          *   64.23  *          *
* Min Ch El (ft)        * 2028.38  * Shear (lb/sq ft)      *          *    0.04  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.04  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *          *   19.56  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *          *    5.22  *          *
************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1189

INPUT
Description: Sta 39+81 - Gabion Counterweir
Station Elevation Data    num=        6
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************************************
     -48     2035   -42.2 2031.81   -32.5 2028.37    17.5 2028.37    31.2 2032.81
      35     2035

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
     -48    .028      -48    .028       35    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -48      35                  .1      .1      .1          .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 2032.67  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.01  * Wt. n-Val.             *          *    0.028 *          *
* W.S. Elev (ft)        * 2032.66  * Reach Len. (ft)       *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)      *          *  268.08  *          *
* E.G. Slope (ft/ft)    *0.000060  * Area (sq ft)          *          *  268.08  *          *
* Q Total (cfs)         *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)        *   74.46  * Top Width (ft)        *          *   74.46  *          *
* Vel Total (ft/s)      *    0.95  * Avg. Vel. (ft/s)      *          *    0.95  *          *
* Max Chl Dpth (ft)     *    4.28  * Hydr. Depth (ft)      *          *    3.60  *          *
* Conv. Total (cfs)     * 32983.3  * Conv. (cfs)           *          * 32983.3  *          *
* Length Wtd. (ft)      *    0.10  * Wetted Per. (ft)      *          *   75.94  *          *
* Min Ch El (ft)        * 2028.37  * Shear (lb/sq ft)      *          *    0.01  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.01  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *          *   19.53  *          *
* C & E Loss (ft)       *    0.02  * Cum SA (acres)        *          *    5.21  *          *
************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1188
```

```
INPUT
Description: Sta 39+81 - Gabion Counterweir
Station Elevation Data    num=       6
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************************
     -48     2035    -42.2 2031.81    -32.5 2031.37     17.5 2031.37     31.2 2032.81
      35     2035

Manning's n Values          num=       3
     Sta    n Val       Sta    n Val      Sta    n Val
*****************************************************
     -48     .028       -48     .028       35     .028

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
             -48       35                 6          6          6              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)          * 2032.65  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.24  * Wt. n-Val.              *          *    0.028  *          *
* W.S. Elev (ft)          * 2032.41  * Reach Len. (ft)        *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *          *   65.53  *          *
* E.G. Slope (ft/ft)      *0.005974  * Area (sq ft)           *          *   65.53  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)          *   70.70  * Top Width (ft)         *          *   70.70  *          *
* Vel Total (ft/s)        *    3.89  * Avg. Vel. (ft/s)       *          *    3.89  *          *
* Max Chl Dpth (ft)       *    1.04  * Hydr. Depth (ft)       *          *    0.93  *          *
* Conv. Total (cfs)       *  3299.2  * Conv. (cfs)           *          *  3299.2  *          *
* Length Wtd. (ft)        *    6.00  * Wetted Per. (ft)       *          *   70.92  *          *
* Min Ch El (ft)          * 2031.37  * Shear (lb/sq ft)      *          *    0.34  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    1.34  *          *
* Frctn Loss (ft)         *    0.05  * Cum Volume (acre-ft)   *          *   19.53  *          *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)         *          *    5.21  *          *
**********************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1187

INPUT
Description: Sta 39+75 - Gabion Counterweir
Station Elevation Data    num=       6
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************************
     -48     2035    -42.2 2031.81    -32.5 2031.36     17.5 2031.36     31.2 2032.81
      35     2035

Manning's n Values          num=       3
     Sta    n Val       Sta    n Val      Sta    n Val
*****************************************************
     -48     .028       -48     .028       35     .028

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
             -48       35                .1         .1         .1              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)          * 2032.58  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.38  * Wt. n-Val.              *          *    0.028  *          *
* W.S. Elev (ft)          * 2032.20  * Reach Len. (ft)        *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)          * 2032.20  * Flow Area (sq ft)      *          *   51.43  *          *
* E.G. Slope (ft/ft)      *0.012788  * Area (sq ft)           *          *   51.43  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)          *   68.34  * Top Width (ft)         *          *   68.34  *          *
* Vel Total (ft/s)        *    4.96  * Avg. Vel. (ft/s)       *          *    4.96  *          *
* Max Chl Dpth (ft)       *    0.84  * Hydr. Depth (ft)       *          *    0.75  *          *
* Conv. Total (cfs)       *  2254.9  * Conv. (cfs)           *          *  2254.9  *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)       *          *   68.50  *          *
* Min Ch El (ft)          * 2031.36  * Shear (lb/sq ft)      *          *    0.60  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    2.97  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   19.52  *          *
* C & E Loss (ft)         *    0.05  * Cum SA (acres)         *          *    5.20  *          *
**********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1186

INPUT
Description: Sta 39+75 - Gabion Counterweir
Station Elevation Data    num=       6
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************************
     -48     2035    -42.2 2031.81    -32.5 2028.36     17.5 2028.36     31.2 2032.81
      35     2035

Manning's n Values          num=       3
     Sta    n Val       Sta    n Val      Sta    n Val
*****************************************************
     -48      .04       -48      .04       35      .04

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
             -48       35                19         19         19              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)          * 2029.86  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.21  * Wt. n-Val.              *          *    0.040  *          *
* W.S. Elev (ft)          * 2029.65  * Reach Len. (ft)        *   19.00  *   19.00  *   19.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *          *   69.14  *          *
* E.G. Slope (ft/ft)      *0.007799  * Area (sq ft)           *          *   69.14  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)          *   57.57  * Top Width (ft)         *          *   57.57  *          *
* Vel Total (ft/s)        *    3.69  * Avg. Vel. (ft/s)       *          *    3.69  *          *
* Max Chl Dpth (ft)       *    1.29  * Hydr. Depth (ft)       *          *    1.20  *          *
* Conv. Total (cfs)       *  2887.4  * Conv. (cfs)           *          *  2887.4  *          *
* Length Wtd. (ft)        *   19.00  * Wetted Per. (ft)       *          *   58.00  *          *
* Min Ch El (ft)          * 2028.36  * Shear (lb/sq ft)      *          *    0.58  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    2.14  *          *
* Frctn Loss (ft)         *    0.13  * Cum Volume (acre-ft)   *          *   19.52  *          *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)         *          *    5.20  *          *
**********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1185

INPUT
Description: Sta 39+56 - Inline Gabion Drop Structure
Station Elevation Data    num=       6
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************************
     -48     2035    -42.2 2031.81    -32.5 2028.31     17.5 2028.31     31.2 2032.81
      37     2034

Manning's n Values          num=       3
     Sta    n Val       Sta    n Val      Sta    n Val
*****************************************************
     -48     .028       -48     .028       37     .028

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
             -48       37                 6          6          6              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)          * 2029.72  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.27  * Wt. n-Val.              *          *    0.028  *          *
* W.S. Elev (ft)          * 2029.45  * Reach Len. (ft)        *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)          * 2029.22  * Flow Area (sq ft)      *          *   60.90  *          *
* E.G. Slope (ft/ft)      *0.005702  * Area (sq ft)           *          *   60.90  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)          *   56.64  * Top Width (ft)         *          *   56.64  *          *
* Vel Total (ft/s)        *    4.19  * Avg. Vel. (ft/s)       *          *    4.19  *          *
```

* Max Chl Dpth (ft)	* 1.14	* Hydr. Depth (ft)	*	* 1.08	* *
* Conv. Total (cfs)	* 3377.1	* Conv. (cfs)	*	* 3377.1	* *
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	* 57.03	* *
* Min Ch El (ft)	* 2028.31	* Shear (lb/sq ft)	*	* 0.38	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 1.59	* *
* Frctn Loss (ft)	* 0.05	* Cum Volume (acre-ft)	*	* 19.49	* *
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	*	* 5.18	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1184

INPUT
Description: Sta 39+50 - Inline Gabion Drop Structure -
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-48	2035	-42.2	2031.81	-32.5	2028.31	17.5	2028.31	31.2	2032.81
37	2034								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-48	.028	-42.2	.028	31.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Right	Coeff Contr.	Expan.
-42.2	31.2	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2029.66	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.44	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 2029.22	* Reach Len. (ft)	* 0.10	* 0.10	* 0.10 *
* Crit W.S. (ft)	* 2029.22	* Flow Area (sq ft)	*	* 48.03	* *
* E.G. Slope (ft/ft)	*0.012167	* Area (sq ft)	*	* 48.03	* *
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00	* *
* Top Width (ft)	* 55.31	* Top Width (ft)	*	* 55.31	* *
* Vel Total (ft/s)	* 5.31	* Avg. Vel. (ft/s)	*	* 5.31	* *
* Max Chl Dpth (ft)	* 0.91	* Hydr. Depth (ft)	*	* 0.87	* *
* Conv. Total (cfs)	* 2311.7	* Conv. (cfs)	*	* 2311.7	* *
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	* 55.61	* *
* Min Ch El (ft)	* 2028.31	* Shear (lb/sq ft)	*	* 0.66	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 3.48	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 19.49	* *
* C & E Loss (ft)	* 0.09	* Cum SA (acres)	*	* 5.17	* *

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1183

INPUT
Description: Sta 39+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-42.2	2031.81	-15	2018.31	2	2018.31	31.2	2032.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-42.2	.028	-42.2	.028	31.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Right	Coeff Contr.	Expan.
-42.2	31.2	24	24	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2022.10	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.13	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 2021.97	* Reach Len. (ft)	* 24.00	* 24.00	* 24.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 89.15	* *
* E.G. Slope (ft/ft)	*0.000786	* Area (sq ft)	*	* 89.15	* *
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00	* *
* Top Width (ft)	* 31.74	* Top Width (ft)	*	* 31.74	* *
* Vel Total (ft/s)	* 2.86	* Avg. Vel. (ft/s)	*	* 2.86	* *
* Max Chl Dpth (ft)	* 3.66	* Hydr. Depth (ft)	*	* 2.81	* *
* Conv. Total (cfs)	* 9093.6	* Conv. (cfs)	*	* 9093.6	* *
* Length Wtd. (ft)	* 24.00	* Wetted Per. (ft)	*	* 33.45	* *
* Min Ch El (ft)	* 2018.31	* Shear (lb/sq ft)	*	* 0.13	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.37	* *
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 19.49	* *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 5.17	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1182

INPUT
Description: Sta 39+26 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.2	2030.71	-18	2018.25	5	2018.25	30	2030.61

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.2	.028	-43.2	.03	30	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Right	Coeff Contr.	Expan.
-43.2	30	12	12	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2022.07	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.08	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2021.99	* Reach Len. (ft)	* 12.00	* 12.00	* 12.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 114.25	* *
* E.G. Slope (ft/ft)	*0.000499	* Area (sq ft)	*	* 114.25	* *
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00	* *
* Top Width (ft)	* 38.12	* Top Width (ft)	*	* 38.12	* *
* Vel Total (ft/s)	* 2.23	* Avg. Vel. (ft/s)	*	* 2.23	* *
* Max Chl Dpth (ft)	* 3.74	* Hydr. Depth (ft)	*	* 3.00	* *
* Conv. Total (cfs)	* 11416.0	* Conv. (cfs)	*	* 11416.0	* *
* Length Wtd. (ft)	* 12.00	* Wetted Per. (ft)	*	* 39.87	* *
* Min Ch El (ft)	* 2018.25	* Shear (lb/sq ft)	*	* 0.09	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.20	* *
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 19.43	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 5.15	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1181

INPUT
Description: Sta 39+14 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.2	2030.71	-18	2018.23	5	2018.23	30	2030.61

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.2	.03	-43.2	.03	30	.03

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -43.2      30                  14       14       14              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)          * 2022.06  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.08  * Wt. n-Val.            *         *    0.030 *          *
* W.S. Elev (ft)          * 2021.98  * Reach Len. (ft)       *   14.00  *   14.00  *   14.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)     *          *  114.75  *          *
* E.G. Slope (ft/ft)      *0.000492  * Area (sq ft)          *          *  114.75  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)           *          *  255.00  *          *
* Top Width (ft)          *   38.16  * Top Width (ft)       *          *   38.16  *          *
* Vel Total (ft/s)        *    2.22  * Avg. Vel. (ft/s)     *          *    2.22  *          *
* Max Chl Dpth (ft)       *    3.75  * Hydr. Depth (ft)     *          *    3.01  *          *
* Conv. Total (cfs)       * 11492.4  * Conv. (cfs)         *          * 11492.4  *          *
* Length Wtd. (ft)        *   14.00  * Wetted Per. (ft)     *          *   39.91  *          *
* Min Ch El (ft)          * 2018.23  * Shear (lb/sq ft)     *          *    0.09  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *        *    0.20  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)  *          *   19.40  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    5.14  *          *
************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1180

INPUT
Description: Sta 39+00 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -43.2 2030.71      -18 2018.21        5 2018.21       30 2030.61

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*****************************************************
   -43.2      .03    -43.2      .03       30      .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -43.2      30                  50       50       50              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)          * 2022.05  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.08  * Wt. n-Val.            *         *    0.030 *          *
* W.S. Elev (ft)          * 2021.98  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)     *          *  115.23  *          *
* E.G. Slope (ft/ft)      *0.000486  * Area (sq ft)          *          *  115.23  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)           *          *  255.00  *          *
* Top Width (ft)          *   38.19  * Top Width (ft)       *          *   38.19  *          *
* Vel Total (ft/s)        *    2.21  * Avg. Vel. (ft/s)     *          *    2.21  *          *
* Max Chl Dpth (ft)       *    3.77  * Hydr. Depth (ft)     *          *    3.02  *          *
* Conv. Total (cfs)       * 11563.6  * Conv. (cfs)         *          * 11563.6  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)     *          *   39.95  *          *
* Min Ch El (ft)          * 2018.21  * Shear (lb/sq ft)     *          *    0.09  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *        *    0.19  *          *
* Frctn Loss (ft)         *    0.02  * Cum Volume (acre-ft)  *          *   19.36  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    5.13  *          *
************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1179

INPUT
Description: Sta 38+50 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -43.2 2030.71      -18 2018.11        5 2018.11       30 2030.61

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*****************************************************
   -43.2      .03    -43.2      .03       30      .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -43.2      30                  50       50       50              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)          * 2022.03  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.07  * Wt. n-Val.            *         *    0.030 *          *
* W.S. Elev (ft)          * 2021.96  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)     *          *  118.02  *          *
* E.G. Slope (ft/ft)      *0.000453  * Area (sq ft)          *          *  118.02  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)           *          *  255.00  *          *
* Top Width (ft)          *   38.38  * Top Width (ft)       *          *   38.38  *          *
* Vel Total (ft/s)        *    2.16  * Avg. Vel. (ft/s)     *          *    2.16  *          *
* Max Chl Dpth (ft)       *    3.85  * Hydr. Depth (ft)     *          *    3.07  *          *
* Conv. Total (cfs)       * 11985.3  * Conv. (cfs)         *          * 11985.3  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)     *          *   40.20  *          *
* Min Ch El (ft)          * 2018.11  * Shear (lb/sq ft)     *          *    0.08  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *        *    0.18  *          *
* Frctn Loss (ft)         *    0.02  * Cum Volume (acre-ft)  *          *   19.23  *          *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)        *          *    5.08  *          *
************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1178

INPUT
Description: Sta 38+00 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -43.2 2029.11      -21 2018.01        8 2018.01     28.6 2028.31

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*****************************************************
   -43.2      .03    -43.2      .03     28.6      .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -43.2    28.6                  50       50       50              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)          * 2022.00  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.05  * Wt. n-Val.            *         *    0.030 *          *
* W.S. Elev (ft)          * 2021.96  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)     *          *  145.55  *          *
* E.G. Slope (ft/ft)      *0.000274  * Area (sq ft)          *          *  145.55  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)           *          *  255.00  *          *
* Top Width (ft)          *   44.78  * Top Width (ft)       *          *   44.78  *          *
* Vel Total (ft/s)        *    1.75  * Avg. Vel. (ft/s)     *          *    1.75  *          *
* Max Chl Dpth (ft)       *    3.95  * Hydr. Depth (ft)     *          *    3.25  *          *
* Conv. Total (cfs)       * 15393.6  * Conv. (cfs)         *          * 15393.6  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)     *          *   46.64  *          *
* Min Ch El (ft)          * 2018.01  * Shear (lb/sq ft)     *          *    0.05  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *        *    0.09  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)  *          *   19.08  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    5.04  *          *
************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1177

INPUT
Description: Sta 37+50 --Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -43.6 2027.71      -24 2017.91       12 2017.91     31.8 2027.81

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*****************************************************
   -43.6      .03    -43.6      .03     31.8      .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
```

```
         -43.6    31.8                50      50      50             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************************
* E.G. Elev (ft)         * 2021.99  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.03  * Wt. n-Val.              *          *    0.030 *          *
* W.S. Elev (ft)         * 2021.96  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *  178.38  *          *
* E.G. Slope (ft/ft)     *0.000170  * Area (sq ft)           *          *  178.38  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)         *   52.18  * Top Width (ft)         *          *   52.18  *          *
* Vel Total (ft/s)       *    1.43  * Avg. Vel. (ft/s)       *          *    1.43  *          *
* Max Chl Dpth (ft)      *    4.05  * Hydr. Depth (ft)       *          *    3.42  *          *
* Conv. Total (cfs)      * 19575.3  * Conv. (cfs)           *          * 19575.3  *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)       *          *   54.06  *          *
* Min Ch El (ft)         * 2017.91  * Shear (lb/sq ft)      *          *    0.03  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.05  *          *
* Frctn Loss (ft)        *    0.01  * Cum Volume (acre-ft)   *          *   18.89  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    4.98  *          *
************************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1176

INPUT
Description: Sta 37+00 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
     -43 2025.81      -27 2017.81       16 2017.81       33 2026.31

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
     -43     .03      -43     .03       33     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
              -43      33                  50      50      50             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************************
* E.G. Elev (ft)         * 2021.98  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.02  * Wt. n-Val.              *          *    0.030 *          *
* W.S. Elev (ft)         * 2021.96  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *  212.63  *          *
* E.G. Slope (ft/ft)     *0.000112  * Area (sq ft)           *          *  212.63  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)         *   59.58  * Top Width (ft)         *          *   59.58  *          *
* Vel Total (ft/s)       *    1.20  * Avg. Vel. (ft/s)       *          *    1.20  *          *
* Max Chl Dpth (ft)      *    4.15  * Hydr. Depth (ft)       *          *    3.57  *          *
* Conv. Total (cfs)      * 24069.7  * Conv. (cfs)           *          * 24069.7  *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)       *          *   61.54  *          *
* Min Ch El (ft)         * 2017.81  * Shear (lb/sq ft)      *          *    0.02  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.03  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)   *          *   18.67  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    4.92  *          *
************************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1175

INPUT
Description: Sta 36+50  - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -44.14 2025.28      -29 2017.71       19 2017.71    34.14 2025.28

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -44.14     .03   -44.14     .03    34.14     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -44.14   34.14                  50      50      50             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************************
* E.G. Elev (ft)         * 2021.97  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.02  * Wt. n-Val.              *          *    0.030 *          *
* W.S. Elev (ft)         * 2021.95  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *  239.74  *          *
* E.G. Slope (ft/ft)     *0.000084  * Area (sq ft)           *          *  239.74  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)         *   64.98  * Top Width (ft)         *          *   64.98  *          *
* Vel Total (ft/s)       *    1.06  * Avg. Vel. (ft/s)       *          *    1.06  *          *
* Max Chl Dpth (ft)      *    4.24  * Hydr. Depth (ft)       *          *    3.69  *          *
* Conv. Total (cfs)      * 27785.7  * Conv. (cfs)           *          * 27785.7  *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)       *          *   66.98  *          *
* Min Ch El (ft)         * 2017.71  * Shear (lb/sq ft)      *          *    0.02  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.02  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)   *          *   18.41  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    4.84  *          *
************************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1174

INPUT
Description: Sta 36+00 - Drake Channel
Station Elevation Data    num=       5
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************************
     -43     2024    -40.4 2021.81      -32 2017.61       20 2017.61       33 2024.11

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
     -43     .03      -43     .03       33     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
              -43      33                  13      13      13             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************************
* E.G. Elev (ft)         * 2021.97  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.01  * Wt. n-Val.              *          *    0.030 *          *
* W.S. Elev (ft)         * 2021.95  * Reach Len. (ft)        *   13.00  *   13.00  *   13.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *  263.52  *          *
* E.G. Slope (ft/ft)     *0.000067  * Area (sq ft)           *          *  263.52  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)         *   69.25  * Top Width (ft)         *          *   69.25  *          *
* Vel Total (ft/s)       *    0.97  * Avg. Vel. (ft/s)       *          *    0.97  *          *
* Max Chl Dpth (ft)      *    4.34  * Hydr. Depth (ft)       *          *    3.81  *          *
* Conv. Total (cfs)      * 31194.1  * Conv. (cfs)           *          * 31194.1  *          *
* Length Wtd. (ft)       *   13.00  * Wetted Per. (ft)       *          *   71.32  *          *
* Min Ch El (ft)         * 2017.61  * Shear (lb/sq ft)      *          *    0.02  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.01  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)   *          *   18.12  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    4.77  *          *
************************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1173

INPUT
Description: Sta 35+87 - Drake Channel
Station Elevation Data    num=       5
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************************
     -43     2024    -40.4 2021.81      -32 2017.61       20 2017.61       33 2024.11

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
     -43     .04      -43     .04       33     .04

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
              -43      33                   6       6       6             .1       .3
```

```
CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 2021.97  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.01  * Wt. n-Val.             *         *    0.040 *          *
* W.S. Elev (ft)         * 2021.95  * Reach Len. (ft)       *    6.00 *    6.00 *    6.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *         *  263.44 *          *
* E.G. Slope (ft/ft)     *0.000119  * Area (sq ft)           *         *  263.44 *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)             *         *  255.00 *          *
* Top Width (ft)         *   69.25  * Top Width (ft)         *         *   69.25 *          *
* Vel Total (ft/s)       *    0.97  * Avg. Vel. (ft/s)       *         *    0.97 *          *
* Max Chl Dpth (ft)      *    4.34  * Hydr. Depth (ft)       *         *    3.80 *          *
* Conv. Total (cfs)      * 23385.2  * Conv. (cfs)           *         * 23385.2 *          *
* Length Wtd. (ft)       *    6.00  * Wetted Per. (ft)       *         *   71.32 *          *
* Min Ch El (ft)         * 2017.61  * Shear (lb/sq ft)      *         *    0.03 *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *         *    0.03 *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)   *         *   18.04 *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *         *    4.75 *          *
************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1172

INPUT
Description: Sta 35+81 - Gabion Counterweir
Station Elevation Data    num=       5
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************************
     -43     2024    -40.4 2021.81    -32.5 2017.57      17.5 2017.57       33 2024.11

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
     -43     .028      -43     .028       33     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -43      33                  .1       .1       .1            .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 2021.97  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.01  * Wt. n-Val.             *         *    0.028 *          *
* W.S. Elev (ft)         * 2021.95  * Reach Len. (ft)       *    0.10 *    0.10 *    0.10  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *         *  259.63 *          *
* E.G. Slope (ft/ft)     *0.000060  * Area (sq ft)           *         *  259.63 *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)             *         *  255.00 *          *
* Top Width (ft)         *   68.45  * Top Width (ft)         *         *   68.45 *          *
* Vel Total (ft/s)       *    0.98  * Avg. Vel. (ft/s)       *         *    0.98 *          *
* Max Chl Dpth (ft)      *    4.38  * Hydr. Depth (ft)       *         *    3.79 *          *
* Conv. Total (cfs)      * 32873.1  * Conv. (cfs)           *         * 32873.1 *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)       *         *   70.45 *          *
* Min Ch El (ft)         * 2017.57  * Shear (lb/sq ft)      *         *    0.01 *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *         *    0.01 *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)   *         *   18.00 *          *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *         *    4.74 *          *
************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1171

INPUT
Description: Sta 35+81 - Gabion Counterweir
Station Elevation Data    num=       5
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************************
     -43     2024    -40.4 2021.81    -32.5 2020.57      17.5 2020.57       33 2024.11

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
     -43     .028      -43     .028       33     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -43      33                  6        6        6             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 2021.94  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.26  * Wt. n-Val.             *         *    0.028 *          *
* W.S. Elev (ft)         * 2021.68  * Reach Len. (ft)       *    6.00 *    6.00 *    6.00  *
* Crit W.S. (ft)         * 2021.47  * Flow Area (sq ft)      *         *   61.99 *          *
* E.G. Slope (ft/ft)     *0.006024  * Area (sq ft)           *         *   61.99 *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)             *         *  255.00 *          *
* Top Width (ft)         *   61.91  * Top Width (ft)         *         *   61.91 *          *
* Vel Total (ft/s)       *    4.11  * Avg. Vel. (ft/s)       *         *    4.11 *          *
* Max Chl Dpth (ft)      *    1.11  * Hydr. Depth (ft)       *         *    1.00 *          *
* Conv. Total (cfs)      *  3285.3  * Conv. (cfs)           *         *  3285.3 *          *
* Length Wtd. (ft)       *    6.00  * Wetted Per. (ft)       *         *   62.12 *          *
* Min Ch El (ft)         * 2020.57  * Shear (lb/sq ft)      *         *    0.38 *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *         *    1.54 *          *
* Frctn Loss (ft)        *    0.05  * Cum Volume (acre-ft)   *         *   18.00 *          *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)         *         *    4.74 *          *
************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1170

INPUT
Description: Sta 35+75 - Gabion Counterweir
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
    -40.4 2021.81    -32.5 2020.56      17.5 2020.56       33 2024.11

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
    -40.4     .028    -40.4     .028       33     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -40.4      33                  .1       .1       .1            .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 2021.88  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.42  * Wt. n-Val.             *         *    0.028 *          *
* W.S. Elev (ft)         * 2021.46  * Reach Len. (ft)       *    0.10 *    0.10 *    0.10  *
* Crit W.S. (ft)         * 2021.46  * Flow Area (sq ft)      *         *   49.17 *          *
* E.G. Slope (ft/ft)     *0.012388  * Area (sq ft)           *         *   49.17 *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)             *         *  255.00 *          *
* Top Width (ft)         *   59.59  * Top Width (ft)         *         *   59.59 *          *
* Vel Total (ft/s)       *    5.19  * Avg. Vel. (ft/s)       *         *    5.19 *          *
* Max Chl Dpth (ft)      *    0.90  * Hydr. Depth (ft)       *         *    0.83 *          *
* Conv. Total (cfs)      *  2291.1  * Conv. (cfs)           *         *  2291.1 *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)       *         *   59.76 *          *
* Min Ch El (ft)         * 2020.56  * Shear (lb/sq ft)      *         *    0.64 *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *         *    3.30 *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)   *         *   17.99 *          *
* C & E Loss (ft)        *    0.09  * Cum SA (acres)         *         *    4.73 *          *
************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1169
```

```
INPUT
Description: Sta 35+75 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -40.4 2021.81    -32.5 2017.57     17.5 2017.57       33 2024.11

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -40.4     .04    -40.4     .04       33     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -40.4      33                 19      19      19            .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)         * 2019.37  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.13  * Wt. n-Val.             *          *    0.040  *          *
* W.S. Elev (ft)         * 2019.24  * Reach Len. (ft)       *   19.00  *   19.00  *   19.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *   89.54  *          *
* E.G. Slope (ft/ft)     *0.003281  * Area (sq ft)           *          *   89.54  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)         *   57.08  * Top Width (ft)        *          *   57.08  *          *
* Vel Total (ft/s)       *    2.85  * Avg. Vel. (ft/s)      *          *    2.85  *          *
* Max Chl Dpth (ft)      *    1.67  * Hydr. Depth (ft)      *          *    1.57  *          *
* Conv. Total (cfs)      *  4451.7  * Conv. (cfs)           *          *  4451.7  *          *
* Length Wtd. (ft)       *   19.00  * Wetted Per. (ft)      *          *   57.84  *          *
* Min Ch El (ft)         * 2017.57  * Shear (lb/sq ft)      *          *    0.32  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.90  *          *
* Frctn Loss (ft)        *    0.04  * Cum Volume (acre-ft)  *          *   17.99  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *          *    4.73  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1168

INPUT
Description: Sta 35+56 - Inline Gabion Drop Structure
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
      -40 2020.81    -32.5 2017.52     17.5 2017.52       23 2022.31

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
      -40    .028      -40    .028       23    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -40      23                  6       6       6            .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)         * 2019.33  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.13  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)         * 2019.20  * Reach Len. (ft)       *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *   88.68  *          *
* E.G. Slope (ft/ft)     *0.001618  * Area (sq ft)           *          *   88.68  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)         *   55.75  * Top Width (ft)        *          *   55.75  *          *
* Vel Total (ft/s)       *    2.88  * Avg. Vel. (ft/s)      *          *    2.88  *          *
* Max Chl Dpth (ft)      *    1.68  * Hydr. Depth (ft)      *          *    1.59  *          *
* Conv. Total (cfs)      *  6339.3  * Conv. (cfs)           *          *  6339.3  *          *
* Length Wtd. (ft)       *    6.00  * Wetted Per. (ft)      *          *   56.73  *          *
* Min Ch El (ft)         * 2017.52  * Shear (lb/sq ft)      *          *    0.16  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.45  *          *
* Frctn Loss (ft)        *    0.02  * Cum Volume (acre-ft)  *          *   17.96  *          *
* C & E Loss (ft)        *    0.04  * Cum SA (acres)        *          *    4.70  *          *
*****************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1167

INPUT
Description: Sta 35+50 - Inline Gabion Drop Structure
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
      -40 2020.81    -32.5 2017.51     17.5 2017.51       23 2022.31

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
      -40    .028      -40    .028       23    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -40      23                 .1      .1      .1            .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)         * 2019.26  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.57  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)         * 2018.69  * Reach Len. (ft)       *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)         * 2018.69  * Flow Area (sq ft)      *          *   61.15  *          *
* E.G. Slope (ft/ft)     *0.011266  * Area (sq ft)           *          *   61.15  *          *
* Q Total (cfs)          *  371.00  * Flow (cfs)            *          *  371.00  *          *
* Top Width (ft)         *   54.02  * Top Width (ft)        *          *   54.02  *          *
* Vel Total (ft/s)       *    6.07  * Avg. Vel. (ft/s)      *          *    6.07  *          *
* Max Chl Dpth (ft)      *    1.18  * Hydr. Depth (ft)      *          *    1.13  *          *
* Conv. Total (cfs)      *  3495.3  * Conv. (cfs)           *          *  3495.3  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)      *          *   54.71  *          *
* Min Ch El (ft)         * 2017.51  * Shear (lb/sq ft)      *          *    0.79  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    4.77  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  *          *   17.95  *          *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)        *          *    4.70  *          *
*****************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1166

INPUT
Description: Sta 35+ 50 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
      -40 2020.81      -15 2008.31       -5 2008.31       23 2022.31

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
      -40    .028      -40    .028       23    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -40      23                 24      24      24            .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)         * 2012.83  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.37  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)         * 2012.45  * Reach Len. (ft)       *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *   75.74  *          *
* E.G. Slope (ft/ft)     *0.002317  * Area (sq ft)           *          *   75.74  *          *
* Q Total (cfs)          *  371.00  * Flow (cfs)            *          *  371.00  *          *
* Top Width (ft)         *   26.57  * Top Width (ft)        *          *   26.57  *          *
* Vel Total (ft/s)       *    4.90  * Avg. Vel. (ft/s)      *          *    4.90  *          *
* Max Chl Dpth (ft)      *    4.14  * Hydr. Depth (ft)      *          *    2.85  *          *
* Conv. Total (cfs)      *  7706.9  * Conv. (cfs)           *          *  7706.9  *          *
```

* Length Wtd. (ft)	* 24.00	* Wetted Per. (ft)	*	* 28.52	* *
* Min Ch El (ft)	* 2008.31	* Shear (lb/sq ft)	*	* 0.38	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 1.88	* *
* Frctn Loss (ft)	* 0.04	* Cum Volume (acre-ft)	*	* 17.95	* *
* C & E Loss (ft)	* 0.06	* Cum SA (acres)	*	* 4.70	* *

warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1165

INPUT
Description: Sta 35+26 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-40.2	2019.31	-18	2008.26	-1	2008.26	23.2	2020.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-40.2	.028	-40.2	.03	23.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-40.2 23.2 12 12 12 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2012.73	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.18	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2012.55	* Reach Len. (ft)	* 12.00	* 12.00	* 12.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 110.01	* *
* E.G. Slope (ft/ft)	*0.001056	* Area (sq ft)	*	* 110.01	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 34.25	* Top Width (ft)	*	* 34.25	* *
* Vel Total (ft/s)	* 3.37	* Avg. Vel. (ft/s)	*	* 3.37	* *
* Max Chl Dpth (ft)	* 4.29	* Hydr. Depth (ft)	*	* 3.21	* *
* Conv. Total (cfs)	* 11417.6	* Conv. (cfs)	*	* 11417.6	* *
* Length Wtd. (ft)	* 12.00	* Wetted Per. (ft)	*	* 36.27	* *
* Min Ch El (ft)	* 2008.26	* Shear (lb/sq ft)	*	* 0.20	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.67	* *
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 17.89	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 4.68	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1164

INPUT
Description: Sta 35+14 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-40.2	2019.31	-18	2008.24	-1	2008.24	23.2	2020.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-40.2	.03	-40.2	.03	23.2	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-40.2 23.2 14 14 14 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2012.72	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.18	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2012.54	* Reach Len. (ft)	* 14.00	* 14.00	* 14.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 110.21	* *
* E.G. Slope (ft/ft)	*0.001050	* Area (sq ft)	*	* 110.21	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 34.25	* Top Width (ft)	*	* 34.25	* *
* Vel Total (ft/s)	* 3.37	* Avg. Vel. (ft/s)	*	* 3.37	* *
* Max Chl Dpth (ft)	* 4.30	* Hydr. Depth (ft)	*	* 3.22	* *
* Conv. Total (cfs)	* 11450.5	* Conv. (cfs)	*	* 11450.5	* *
* Length Wtd. (ft)	* 14.00	* Wetted Per. (ft)	*	* 36.27	* *
* Min Ch El (ft)	* 2008.24	* Shear (lb/sq ft)	*	* 0.20	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.67	* *
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 17.86	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 4.67	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1163

INPUT
Description: Sta 35+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-40.2	2019.31	-18	2008.21	-1	2008.21	23.2	2020.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-40.2	.03	-40.2	.03	23.2	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-40.2 23.2 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2012.70	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.17	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2012.53	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 110.67	* *
* E.G. Slope (ft/ft)	*0.001036	* Area (sq ft)	*	* 110.67	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 34.27	* Top Width (ft)	*	* 34.27	* *
* Vel Total (ft/s)	* 3.35	* Avg. Vel. (ft/s)	*	* 3.35	* *
* Max Chl Dpth (ft)	* 4.32	* Hydr. Depth (ft)	*	* 3.23	* *
* Conv. Total (cfs)	* 11523.9	* Conv. (cfs)	*	* 11523.9	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 36.31	* *
* Min Ch El (ft)	* 2008.21	* Shear (lb/sq ft)	*	* 0.20	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.66	* *
* Frctn Loss (ft)	* 0.04	* Cum Volume (acre-ft)	*	* 17.83	* *
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	*	* 4.66	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1162

INPUT
Description: Sta 34+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41	2018.11	-21	2008.11	3	2008.11	20.4	2016.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41	.03	-41	.03	20.4	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41 20.4 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2012.64	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.10	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2012.54	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 145.68	* *
* E.G. Slope (ft/ft)	*0.000533	* Area (sq ft)	*	* 145.68	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 41.73	* Top Width (ft)	*	* 41.73	* *
* Vel Total (ft/s)	* 2.55	* Avg. Vel. (ft/s)	*	* 2.55	* *

* Max Chl Dpth (ft)	* 4.43	* Hydr. Depth (ft)	*	* 3.49	* *
* Conv. Total (cfs)	* 16072.6	* Conv. (cfs)	*	* 16072.6	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 43.82	* *
* Min Ch El (ft)	* 2008.11	* Shear (lb/sq ft)	*	* 0.11	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.28	* *
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	*	* 17.68	* *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 4.62	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1161

INPUT
Description: Sta 34+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-39.6	2016.31	-23	2008.01	7	2008.01	23.6	2016.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-39.6	.03	-39.6	.03	23.6	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-39.6 23.6 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2012.61	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.07	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2012.55	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 177.17	* *
* E.G. Slope (ft/ft)	*0.000333	* Area (sq ft)	*	* 177.17	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 48.14	* Top Width (ft)	*	* 48.14	* *
* Vel Total (ft/s)	* 2.09	* Avg. Vel. (ft/s)	*	* 2.09	* *
* Max Chl Dpth (ft)	* 4.53	* Hydr. Depth (ft)	*	* 3.68	* *
* Conv. Total (cfs)	* 20320.5	* Conv. (cfs)	*	* 20320.5	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 50.28	* *
* Min Ch El (ft)	* 2008.01	* Shear (lb/sq ft)	*	* 0.07	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.15	* *
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 17.50	* *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 4.56	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1160

INPUT
Description: Sta 33+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.12	2014.97	-27	2007.91	10	2007.91	25.8	2015.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.12	.03	-41.12	.03	25.8	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.12 25.8 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2012.59	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.05	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2012.55	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 214.56	* *
* E.G. Slope (ft/ft)	*0.000212	* Area (sq ft)	*	* 214.56	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 55.55	* Top Width (ft)	*	* 55.55	* *
* Vel Total (ft/s)	* 1.73	* Avg. Vel. (ft/s)	*	* 1.73	* *
* Max Chl Dpth (ft)	* 4.64	* Hydr. Depth (ft)	*	* 3.86	* *
* Conv. Total (cfs)	* 25497.7	* Conv. (cfs)	*	* 25497.7	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 57.74	* *
* Min Ch El (ft)	* 2007.91	* Shear (lb/sq ft)	*	* 0.05	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.08	* *
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 17.27	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 4.50	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1159

INPUT
Description: Sta 33+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44	2014.81	-30	2007.81	14	2007.81	28	2014.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44	.03	-44	.03	28	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-44 28 13 13 13 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2012.58	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.03	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2012.55	* Reach Len. (ft)	* 13.00	* 13.00	* 13.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 253.33	* *
* E.G. Slope (ft/ft)	*0.000143	* Area (sq ft)	*	* 253.33	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 62.95	* Top Width (ft)	*	* 62.95	* *
* Vel Total (ft/s)	* 1.46	* Avg. Vel. (ft/s)	*	* 1.46	* *
* Max Chl Dpth (ft)	* 4.74	* Hydr. Depth (ft)	*	* 4.02	* *
* Conv. Total (cfs)	* 31016.3	* Conv. (cfs)	*	* 31016.3	* *
* Length Wtd. (ft)	* 13.00	* Wetted Per. (ft)	*	* 65.19	* *
* Min Ch El (ft)	* 2007.81	* Shear (lb/sq ft)	*	* 0.03	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.05	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 17.00	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 4.44	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1158

INPUT
Description: Sta 32+87 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44	2014.81	-30	2008.61	14	2008.61	28	2014.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44	.04	-44	.04	28	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-44 28 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2012.58	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.05	* Wt. n-Val.	*	* 0.040	* *
* W.S. Elev (ft)	* 2012.53	* Reach Len. (ft)	* 6.00	* 6.00	* 6.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 206.94	* *
* E.G. Slope (ft/ft)	*0.000480	* Area (sq ft)	*	* 206.94	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *

* Top Width (ft)	* 61.69	* Top Width (ft)	*	* 61.69	*
* Vel Total (ft/s)	* 1.79	* Avg. Vel. (ft/s)	*	* 1.79	*
* Max Chl Dpth (ft)	* 3.92	* Hydr. Depth (ft)	*	* 3.35	*
* Conv. Total (cfs)	* 16925.7	* Conv. (cfs)	*	* 16925.7	*
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	* 63.34	*
* Min Ch El (ft)	* 2008.61	* Shear (lb/sq ft)	*	* 0.10	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.18	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 16.93	*
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 4.42	*

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1157

INPUT
Description: Sta 32+81 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.2	2013.31	-32.5	2007.77	17.5	2007.77	25.6	2013.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.2	.028	-41.2	.028	25.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.2 25.6 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2012.57	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.03	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 2012.54	* Reach Len. (ft)	* 0.10	* 0.10	* 0.10 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 272.98	* *
* E.G. Slope (ft/ft)	*0.000101	* Area (sq ft)	*	* 272.98	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 64.46	* Top Width (ft)	*	* 64.46	* *
* Vel Total (ft/s)	* 1.36	* Avg. Vel. (ft/s)	*	* 1.36	* *
* Max Chl Dpth (ft)	* 4.77	* Hydr. Depth (ft)	*	* 4.23	* *
* Conv. Total (cfs)	* 36835.3	* Conv. (cfs)	*	* 36835.3	* *
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	* 67.33	* *
* Min Ch El (ft)	* 2007.77	* Shear (lb/sq ft)	*	* 0.03	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.03	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 16.90	* *
* C & E Loss (ft)	* 0.03	* Cum SA (acres)	*	* 4.41	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1156

INPUT
Description: Sta 32 + 81 -Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.2	2013.31	-32.5	2010.77	17.5	2010.77	25.6	2013.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.2	.028	-41.2	.028	25.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.2 25.6 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2012.54	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.37	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 2012.17	* Reach Len. (ft)	* 6.00	* 6.00	* 6.00 *
* Crit W.S. (ft)	* 2011.93	* Flow Area (sq ft)	*	* 76.39	* *
* E.G. Slope (ft/ft)	*0.006024	* Area (sq ft)	*	* 76.39	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 59.25	* Top Width (ft)	*	* 59.25	* *
* Vel Total (ft/s)	* 4.86	* Avg. Vel. (ft/s)	*	* 4.86	* *
* Max Chl Dpth (ft)	* 1.40	* Hydr. Depth (ft)	*	* 1.29	* *
* Conv. Total (cfs)	* 4779.9	* Conv. (cfs)	*	* 4779.9	* *
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	* 59.66	* *
* Min Ch El (ft)	* 2010.77	* Shear (lb/sq ft)	*	* 0.48	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 2.34	* *
* Frctn Loss (ft)	* 0.05	* Cum Volume (acre-ft)	*	* 16.90	* *
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	*	* 4.41	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1155

INPUT
Description: Sta 32+ 75 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.2	2013.31	-32.5	2010.76	17.5	2010.76	25.6	2013.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.2	.028	-41.2	.028	25.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.2 25.6 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2012.47	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.55	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 2011.92	* Reach Len. (ft)	* 0.10	* 0.10	* 0.10 *
* Crit W.S. (ft)	* 2011.92	* Flow Area (sq ft)	*	* 62.43	* *
* E.G. Slope (ft/ft)	*0.011362	* Area (sq ft)	*	* 62.43	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 57.64	* Top Width (ft)	*	* 57.64	* *
* Vel Total (ft/s)	* 5.94	* Avg. Vel. (ft/s)	*	* 5.94	* *
* Max Chl Dpth (ft)	* 1.16	* Hydr. Depth (ft)	*	* 1.08	* *
* Conv. Total (cfs)	* 3480.6	* Conv. (cfs)	*	* 3480.6	* *
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	* 57.99	* *
* Min Ch El (ft)	* 2010.76	* Shear (lb/sq ft)	*	* 0.76	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 4.54	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 16.89	* *
* C & E Loss (ft)	* 0.07	* Cum SA (acres)	*	* 4.40	* *

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1154

INPUT
Description: Sta 32+75 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.2	2013.31	-32.5	2007.76	17.5	2007.76	25.6	2013.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

```
   -41.2     .04   -41.2     .04    25.6     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -41.2    25.6              19       19       19            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)         * 2009.66  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.31  * Wt. n-Val.            *         *    0.040 *          *
* W.S. Elev (ft)         * 2009.36  * Reach Len. (ft)       *   19.00  *   19.00  *   19.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          *   83.67  *          *
* E.G. Slope (ft/ft)     *0.008299  * Area (sq ft)          *          *   83.67  *          *
* Q Total (cfs)          *  371.00  * Flow (cfs)           *          *  371.00  *          *
* Top Width (ft)         *   54.83  * Top Width (ft)       *          *   54.83  *          *
* Vel Total (ft/s)       *    4.43  * Avg. Vel. (ft/s)     *          *    4.43  *          *
* Max Chl Dpth (ft)      *    1.60  * Hydr. Depth (ft)     *          *    1.53  *          *
* Conv. Total (cfs)      *  4072.5  * Conv. (cfs)          *          *  4072.5  *          *
* Length Wtd. (ft)       *   19.00  * Wetted Per. (ft)     *          *   55.79  *          *
* Min Ch El (ft)         * 2007.76  * Shear (lb/sq ft)     *          *    0.78  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *        *    3.45  *          *
* Frctn Loss (ft)        *    0.13  * Cum Volume (acre-ft)  *          *   16.89  *          *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)        *          *    4.40  *          *
**********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1153

INPUT
Description: Sta 32+56 - Inline Gabion Drop Structure
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -41.2 2012.61    -32.5 2007.71     17.5 2007.71     25.6 2012.81

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
**************************************************
   -41.2     .028   -41.2     .028    25.6     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -41.2    25.6              6        6        6            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)         * 2009.52  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.38  * Wt. n-Val.            *         *    0.028 *          *
* W.S. Elev (ft)         * 2009.13  * Reach Len. (ft)       *    6.00 *    6.00  *    6.00  *
* Crit W.S. (ft)         * 2008.89  * Flow Area (sq ft)     *          *   75.40  *          *
* E.G. Slope (ft/ft)     *0.005730  * Area (sq ft)          *          *   75.40  *          *
* Q Total (cfs)          *  371.00  * Flow (cfs)           *          *  371.00  *          *
* Top Width (ft)         *   54.84  * Top Width (ft)       *          *   54.84  *          *
* Vel Total (ft/s)       *    4.92  * Avg. Vel. (ft/s)     *          *    4.92  *          *
* Max Chl Dpth (ft)      *    1.44  * Hydr. Depth (ft)     *          *    1.38  *          *
* Conv. Total (cfs)      *  4901.0  * Conv. (cfs)          *          *  4901.0  *          *
* Length Wtd. (ft)       *    6.00  * Wetted Per. (ft)     *          *   55.63  *          *
* Min Ch El (ft)         * 2007.71  * Shear (lb/sq ft)     *          *    0.48  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *        *    2.39  *          *
* Frctn Loss (ft)        *    0.05  * Cum Volume (acre-ft)  *          *   16.86  *          *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)        *          *    4.38  *          *
**********************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1152

INPUT
Description: Sta 32+50 - Inline Gabion Weir Drop Structure
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -41.2 2012.61    -32.5 2007.71     17.5 2007.71     25.6 2012.81

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
**************************************************
   -41.2     .028   -41.2     .028    25.6     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -41.2    25.6              .1       .1       .1            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)         * 2009.46  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.57  * Wt. n-Val.            *         *    0.028 *          *
* W.S. Elev (ft)         * 2008.89  * Reach Len. (ft)       *    0.10 *    0.10  *    0.10  *
* Crit W.S. (ft)         * 2008.89  * Flow Area (sq ft)     *          *   61.11  *          *
* E.G. Slope (ft/ft)     *0.011260  * Area (sq ft)          *          *   61.11  *          *
* Q Total (cfs)          *  371.00  * Flow (cfs)           *          *  371.00  *          *
* Top Width (ft)         *   53.95  * Top Width (ft)       *          *   53.95  *          *
* Vel Total (ft/s)       *    6.07  * Avg. Vel. (ft/s)     *          *    6.07  *          *
* Max Chl Dpth (ft)      *    1.18  * Hydr. Depth (ft)     *          *    1.13  *          *
* Conv. Total (cfs)      *  3496.2  * Conv. (cfs)          *          *  3496.2  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)     *          *   54.60  *          *
* Min Ch El (ft)         * 2007.71  * Shear (lb/sq ft)     *          *    0.79  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *        *    4.78  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  *          *   16.85  *          *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)        *          *    4.37  *          *
**********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1151

INPUT
Description: Sta 32+50 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -41.2 2012.61      -13 1998.51      -3 1998.51     25.6 2012.81

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
**************************************************
   -41.2     .028   -41.2     .028    25.6     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -41.2    25.6              24       24       24            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)         * 2003.03  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.37  * Wt. n-Val.            *         *    0.028 *          *
* W.S. Elev (ft)         * 2002.65  * Reach Len. (ft)       *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          *   75.80  *          *
* E.G. Slope (ft/ft)     *0.002312  * Area (sq ft)          *          *   75.80  *          *
* Q Total (cfs)          *  371.00  * Flow (cfs)           *          *  371.00  *          *
* Top Width (ft)         *   26.58  * Top Width (ft)       *          *   26.58  *          *
* Vel Total (ft/s)       *    4.89  * Avg. Vel. (ft/s)     *          *    4.89  *          *
* Max Chl Dpth (ft)      *    4.14  * Hydr. Depth (ft)     *          *    2.85  *          *
* Conv. Total (cfs)      *  7715.0  * Conv. (cfs)          *          *  7715.0  *          *
* Length Wtd. (ft)       *   24.00  * Wetted Per. (ft)     *          *   28.53  *          *
* Min Ch El (ft)         * 1998.51  * Shear (lb/sq ft)     *          *    0.38  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *        *    1.88  *          *
* Frctn Loss (ft)        *    0.04  * Cum Volume (acre-ft)  *          *   16.85  *          *
* C & E Loss (ft)        *    0.05  * Cum SA (acres)        *          *    4.37  *          *
**********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
```

REACH: C-1 to 9000 ft E RS: 1150

INPUT
Description: Sta 32+26 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-40.8	2011.31	-15	1998.46	0	1998.46	25.8	2011.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-40.8	.028	-40.8	.03	25.8	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-40.8	25.8	12	12	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2002.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.		0.030	
W.S. Elev (ft)	2002.73	Reach Len. (ft)	12.00	12.00	12.00
Crit W.S. (ft)		Flow Area (sq ft)		100.52	
E.G. Slope (ft/ft)	0.001316	Area (sq ft)		100.52	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	32.13	Top Width (ft)		32.13	
Vel Total (ft/s)	3.69	Avg. Vel. (ft/s)		3.69	
Max Chl Dpth (ft)	4.27	Hydr. Depth (ft)		3.13	
Conv. Total (cfs)	10228.2	Conv. (cfs)		10228.2	
Length Wtd. (ft)	12.00	Wetted Per. (ft)		34.14	
Min Ch El (ft)	1998.46	Shear (lb/sq ft)		0.24	
Alpha	1.00	Stream Power (lb/ft s)		0.89	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)		16.80	
C & E Loss (ft)	0.00	Cum SA (acres)		4.35	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1149

INPUT
Description: Sta 32+14 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-40.8	2011.31	-15	1998.44	0	1998.44	25.8	2011.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-40.8	.03	-40.8	.03	25.8	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-40.8	25.8	14	14	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2002.92	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.		0.030	
W.S. Elev (ft)	2002.71	Reach Len. (ft)	14.00	14.00	14.00
Crit W.S. (ft)		Flow Area (sq ft)		100.60	
E.G. Slope (ft/ft)	0.001312	Area (sq ft)		100.60	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	32.12	Top Width (ft)		32.12	
Vel Total (ft/s)	3.69	Avg. Vel. (ft/s)		3.69	
Max Chl Dpth (ft)	4.27	Hydr. Depth (ft)		3.13	
Conv. Total (cfs)	10243.3	Conv. (cfs)		10243.3	
Length Wtd. (ft)	14.00	Wetted Per. (ft)		34.13	
Min Ch El (ft)	1998.44	Shear (lb/sq ft)		0.24	
Alpha	1.00	Stream Power (lb/ft s)		0.89	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)		16.77	
C & E Loss (ft)	0.00	Cum SA (acres)		4.34	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1148

INPUT
Description: Sta 32+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-40.8	2011.31	-15	1998.41	0	1998.41	25.8	2011.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-40.8	.03	-40.8	.03	25.8	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-40.8	25.8	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2002.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.		0.030	
W.S. Elev (ft)	2002.69	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		100.92	
E.G. Slope (ft/ft)	0.001299	Area (sq ft)		100.92	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	32.13	Top Width (ft)		32.13	
Vel Total (ft/s)	3.68	Avg. Vel. (ft/s)		3.68	
Max Chl Dpth (ft)	4.28	Hydr. Depth (ft)		3.14	
Conv. Total (cfs)	10292.8	Conv. (cfs)		10292.8	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		34.15	
Min Ch El (ft)	1998.41	Shear (lb/sq ft)		0.24	
Alpha	1.00	Stream Power (lb/ft s)		0.88	
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)		16.74	
C & E Loss (ft)	0.03	Cum SA (acres)		4.33	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1147

INPUT
Description: Sta 31 + 50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-42.6	2009.61	-20	1998.31	5	1998.31	27.6	2009.61

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-42.6	.03	-42.6	.03	27.6	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-42.6	27.6	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2002.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.10	Wt. n-Val.		0.030	
W.S. Elev (ft)	2002.74	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		149.77	
E.G. Slope (ft/ft)	0.000500	Area (sq ft)		149.77	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	42.70	Top Width (ft)		42.70	
Vel Total (ft/s)	2.48	Avg. Vel. (ft/s)		2.48	
Max Chl Dpth (ft)	4.42	Hydr. Depth (ft)		3.51	
Conv. Total (cfs)	16588.3	Conv. (cfs)		16588.3	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		44.79	
Min Ch El (ft)	1998.31	Shear (lb/sq ft)		0.10	
Alpha	1.00	Stream Power (lb/ft s)		0.26	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)		16.59	
C & E Loss (ft)	0.01	Cum SA (acres)		4.29	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1146

INPUT
Description: Sta 31+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.8	2008.11	-22	1998.21	8	1998.21	27.8	2008.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.8	.03	-41.8	.03	27.8	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-41.8	27.8	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2002.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.		0.030	
W.S. Elev (ft)	2002.73	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		176.61	
E.G. Slope (ft/ft)	0.000336	Area (sq ft)		176.61	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	48.09	Top Width (ft)		48.09	
Vel Total (ft/s)	2.10	Avg. Vel. (ft/s)		2.10	
Max Chl Dpth (ft)	4.52	Hydr. Depth (ft)		3.67	
Conv. Total (cfs)	20227.0	Conv. (cfs)		20227.0	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		50.23	
Min Ch El (ft)	1998.21	Shear (lb/sq ft)		0.07	
Alpha	1.00	Stream Power (lb/ft s)		0.16	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		16.41	
C & E Loss (ft)	0.01	Cum SA (acres)		4.24	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1145

INPUT
Description: Sta 30+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.4	2006.31	-25	1998.11	10	1998.11	26.4	2006.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.4	.03	-41.4	.03	26.4	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-41.4	26.4	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2002.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.		0.030	
W.S. Elev (ft)	2002.73	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		204.45	
E.G. Slope (ft/ft)	0.000237	Area (sq ft)		204.45	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	53.48	Top Width (ft)		53.48	
Vel Total (ft/s)	1.81	Avg. Vel. (ft/s)		1.81	
Max Chl Dpth (ft)	4.62	Hydr. Depth (ft)		3.82	
Conv. Total (cfs)	24106.6	Conv. (cfs)		24106.6	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		55.67	
Min Ch El (ft)	1998.11	Shear (lb/sq ft)		0.05	
Alpha	1.00	Stream Power (lb/ft s)		0.10	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		16.19	
C & E Loss (ft)	0.01	Cum SA (acres)		4.18	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1144

INPUT
Description: Sta 30+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-42.2	2004.11	-30	1998.01	15	1998.01	27.2	2004.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-42.2	.03	-42.2	.03	27.2	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-42.2	27.2	13	13	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2002.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.		0.030	
W.S. Elev (ft)	2002.74	Reach Len. (ft)	13.00	13.00	13.00
Crit W.S. (ft)		Flow Area (sq ft)		257.31	
E.G. Slope (ft/ft)	0.000138	Area (sq ft)		257.31	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	63.90	Top Width (ft)		63.90	
Vel Total (ft/s)	1.44	Avg. Vel. (ft/s)		1.44	
Max Chl Dpth (ft)	4.73	Hydr. Depth (ft)		4.03	
Conv. Total (cfs)	31526.7	Conv. (cfs)		31526.7	
Length Wtd. (ft)	13.00	Wetted Per. (ft)		66.13	
Min Ch El (ft)	1998.01	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.05	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		15.92	
C & E Loss (ft)	0.00	Cum SA (acres)		4.11	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1143

INPUT
Description: Sta 29+87 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-42.2	2004.11	-30	1997.98	15	1997.98	27.2	2004.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-42.2	.04	-42.2	.04	27.2	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-42.2	27.2	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2002.77	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.		0.040	
W.S. Elev (ft)	2002.73	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		258.87	
E.G. Slope (ft/ft)	0.000241	Area (sq ft)		258.87	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	63.92	Top Width (ft)		63.92	
Vel Total (ft/s)	1.43	Avg. Vel. (ft/s)		1.43	
Max Chl Dpth (ft)	4.75	Hydr. Depth (ft)		4.05	
Conv. Total (cfs)	23875.4	Conv. (cfs)		23875.4	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		66.17	
Min Ch El (ft)	1997.98	Shear (lb/sq ft)		0.06	
Alpha	1.00	Stream Power (lb/ft s)		0.08	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		15.85	
C & E Loss (ft)	0.00	Cum SA (acres)		4.09	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1142

INPUT
Description: Sta 29+81 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.2	2003.31	-32.5	1997.97	17.5	1997.97	25.2	2003.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.2	.028	-41.2	.028	25.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.2 25.2 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2002.76	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.		0.028	
W.S. Elev (ft)	2002.74	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)		Flow Area (sq ft)		273.10	
E.G. Slope (ft/ft)	0.000102	Area (sq ft)		273.10	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	64.63	Top Width (ft)		64.63	
Vel Total (ft/s)	1.36	Avg. Vel. (ft/s)		1.36	
Max Chl Dpth (ft)	4.76	Hydr. Depth (ft)		4.23	
Conv. Total (cfs)	36810.3	Conv. (cfs)		36810.3	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		67.47	
Min Ch El (ft)	1997.97	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.03	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		15.81	
C & E Loss (ft)	0.03	Cum SA (acres)		4.09	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1141

INPUT
Description: Sta 29+81 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.2	2003.31	-32.5	2000.97	17.5	2000.97	25.2	2003.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.2	.028	-41.2	.028	25.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.2 25.2 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2002.73	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.36	Wt. n-Val.		0.028	
W.S. Elev (ft)	2002.37	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)	2002.13	Flow Area (sq ft)		76.61	
E.G. Slope (ft/ft)	0.006036	Area (sq ft)		76.61	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	59.78	Top Width (ft)		59.78	
Vel Total (ft/s)	4.84	Avg. Vel. (ft/s)		4.84	
Max Chl Dpth (ft)	1.40	Hydr. Depth (ft)		1.28	
Conv. Total (cfs)	4775.5	Conv. (cfs)		4775.5	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		60.17	
Min Ch El (ft)	2000.97	Shear (lb/sq ft)		0.48	
Alpha	1.00	Stream Power (lb/ft s)		2.32	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		15.81	
C & E Loss (ft)	0.02	Cum SA (acres)		4.08	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1140

INPUT
Description: Sta 29+75 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.2	2003.31	-32.5	2000.96	17.5	2000.96	25.2	2003.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.2	.028	-41.2	.028	25.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.2 25.2 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2002.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.54	Wt. n-Val.		0.028	
W.S. Elev (ft)	2002.12	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	2002.12	Flow Area (sq ft)		62.72	
E.G. Slope (ft/ft)	0.011304	Area (sq ft)		62.72	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	58.10	Top Width (ft)		58.10	
Vel Total (ft/s)	5.92	Avg. Vel. (ft/s)		5.92	
Max Chl Dpth (ft)	1.16	Hydr. Depth (ft)		1.08	
Conv. Total (cfs)	3489.5	Conv. (cfs)		3489.5	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		58.42	
Min Ch El (ft)	2000.96	Shear (lb/sq ft)		0.76	
Alpha	1.00	Stream Power (lb/ft s)		4.48	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		15.80	
C & E Loss (ft)	0.07	Cum SA (acres)		4.08	

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there
is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1139

INPUT
Description: Sta 29+75 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.2	2003.31	-32.5	1997.97	17.5	1997.97	25.2	2003.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.2	.04	-41.2	.04	25.2	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.2 25.2 19 19 19 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1999.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.31	Wt. n-Val.		0.040	
W.S. Elev (ft)	1999.56	Reach Len. (ft)	19.00	19.00	19.00
Crit W.S. (ft)		Flow Area (sq ft)		83.38	
E.G. Slope (ft/ft)	0.008404	Area (sq ft)		83.38	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	54.88	Top Width (ft)		54.88	

* Vel Total (ft/s)	* 4.45	* Avg. Vel. (ft/s)	*	* 4.45	*
* Max Chl Dpth (ft)	* 1.59	* Hydr. Depth (ft)	*	* 1.52	*
* Conv. Total (cfs)	* 4047.0	* Conv. (cfs)	*	* 4047.0	*
* Length Wtd. (ft)	* 19.00	* Wetted Per. (ft)	*	* 55.83	*
* Min Ch El (ft)	* 1997.97	* Shear (lb/sq ft)	*	* 0.78	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 3.49	*
* Frctn Loss (ft)	* 0.13	* Cum Volume (acre-ft)	*	* 15.80	*
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 4.08	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1138

INPUT
Description: Sta 29+56 - Inline Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.2	2002.81	-32.5	1997.92	17.5	1997.92	25.2	2002.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.2	.028	-41.2	.028	25.2	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-41.2	25.2	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1999.72	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.39	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 1999.34	* Reach Len. (ft)	* 6.00	* 6.00	* 6.00 *
* Crit W.S. (ft)	* 1999.10	* Flow Area (sq ft)	*	* 74.10	* *
* E.G. Slope (ft/ft)	*0.006058	* Area (sq ft)	*	* 74.10	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 54.75	* Top Width (ft)	*	* 54.75	* *
* Vel Total (ft/s)	* 5.01	* Avg. Vel. (ft/s)	*	* 5.01	* *
* Max Chl Dpth (ft)	* 1.41	* Hydr. Depth (ft)	*	* 1.35	* *
* Conv. Total (cfs)	* 4766.8	* Conv. (cfs)	*	* 4766.8	* *
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	* 55.53	* *
* Min Ch El (ft)	* 1997.92	* Shear (lb/sq ft)	*	* 0.50	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 2.53	* *
* Frctn Loss (ft)	* 0.05	* Cum Volume (acre-ft)	*	* 15.76	* *
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	*	* 4.05	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1137

INPUT
Description: Sta 29+50 - Inline Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.2	2002.81	-32.5	1997.91	17.5	1997.91	25.2	2002.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.2	.028	-41.2	.028	25.2	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-41.2	25.2	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1999.66	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.57	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 1999.09	* Reach Len. (ft)	* 6.00	* 6.10	* 6.10 *
* Crit W.S. (ft)	* 1999.09	* Flow Area (sq ft)	*	* 61.27	* *
* E.G. Slope (ft/ft)	*0.011166	* Area (sq ft)	*	* 61.27	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 53.95	* Top Width (ft)	*	* 53.95	* *
* Vel Total (ft/s)	* 6.06	* Avg. Vel. (ft/s)	*	* 6.06	* *
* Max Chl Dpth (ft)	* 1.18	* Hydr. Depth (ft)	*	* 1.14	* *
* Conv. Total (cfs)	* 3511.0	* Conv. (cfs)	*	* 3511.0	* *
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	* 54.60	* *
* Min Ch El (ft)	* 1997.91	* Shear (lb/sq ft)	*	* 0.78	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 4.74	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 15.76	* *
* C & E Loss (ft)	* 0.05	* Cum SA (acres)	*	* 4.05	* *

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1136

INPUT
Description: Sta 29+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.2	2002.81	-13	1988.71	-3	1988.71	25.2	2002.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.2	.028	-41.2	.028	25.2	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-41.2	25.2	24	24	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1993.17	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.39	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 1992.77	* Reach Len. (ft)	* 24.00	* 24.00	* 24.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 73.61	* *
* E.G. Slope (ft/ft)	*0.002505	* Area (sq ft)	*	* 73.61	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 26.25	* Top Width (ft)	*	* 26.25	* *
* Vel Total (ft/s)	* 5.04	* Avg. Vel. (ft/s)	*	* 5.04	* *
* Max Chl Dpth (ft)	* 4.06	* Hydr. Depth (ft)	*	* 2.80	* *
* Conv. Total (cfs)	* 7412.4	* Conv. (cfs)	*	* 7412.4	* *
* Length Wtd. (ft)	* 24.00	* Wetted Per. (ft)	*	* 28.16	* *
* Min Ch El (ft)	* 1988.71	* Shear (lb/sq ft)	*	* 0.41	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 2.06	* *
* Frctn Loss (ft)	* 0.04	* Cum Volume (acre-ft)	*	* 15.76	* *
* C & E Loss (ft)	* 0.06	* Cum SA (acres)	*	* 4.05	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1135

INPUT
Description: Sta 29+26 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-36.5	1998.81	-16	1988.66	0	1988.66	26.5	2001.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-36.5	.028	-36.5	.03	26.5	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-36.5	26.5	12	12	.1	.3

```
CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)        * 1993.07  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.20  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)        * 1992.87  * Reach Len. (ft)        *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)      *          *  102.96  *          *
* E.G. Slope (ft/ft)    *0.001253  * Area (sq ft)           *          *  102.96  *          *
* Q Total (cfs)         *  371.00  * Flow (cfs)             *          *  371.00  *          *
* Top Width (ft)        *   32.97  * Top Width (ft)         *          *   32.97  *          *
* Vel Total (ft/s)      *    3.60  * Avg. Vel. (ft/s)       *          *    3.60  *          *
* Max Chl Dpth (ft)     *    4.21  * Hydr. Depth (ft)       *          *    3.12  *          *
* Conv. Total (cfs)     * 10482.8  * Conv. (cfs)           *          * 10482.8  *          *
* Length Wtd. (ft)      *   12.00  * Wetted Per. (ft)       *          *   34.94  *          *
* Min Ch El (ft)        * 1988.66  * Shear (lb/sq ft)       *          *    0.23  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.83  *          *
* Frctn Loss (ft)       *    0.02  * Cum Volume (acre-ft)   *          *   15.71  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)         *          *    4.03  *          *
*************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1134

INPUT
Description: Sta 29+14 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
   -36.5 1998.81     -16 1988.64        0 1988.64     26.5 2001.81

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -36.5      .03    -36.5      .03     26.5      .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -36.5    26.5                 14        14        14              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)        * 1993.05  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.20  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)        * 1992.85  * Reach Len. (ft)        *   14.00  *   14.00  *   14.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)      *          *  103.07  *          *
* E.G. Slope (ft/ft)    *0.001248  * Area (sq ft)           *          *  103.07  *          *
* Q Total (cfs)         *  371.00  * Flow (cfs)             *          *  371.00  *          *
* Top Width (ft)        *   32.96  * Top Width (ft)         *          *   32.96  *          *
* Vel Total (ft/s)      *    3.60  * Avg. Vel. (ft/s)       *          *    3.60  *          *
* Max Chl Dpth (ft)     *    4.21  * Hydr. Depth (ft)       *          *    3.13  *          *
* Conv. Total (cfs)     * 10501.6  * Conv. (cfs)           *          * 10501.6  *          *
* Length Wtd. (ft)      *   14.00  * Wetted Per. (ft)       *          *   34.93  *          *
* Min Ch El (ft)        * 1988.64  * Shear (lb/sq ft)       *          *    0.23  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.83  *          *
* Frctn Loss (ft)       *    0.02  * Cum Volume (acre-ft)   *          *   15.68  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)         *          *    4.02  *          *
*************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1133

INPUT
Description: Sta 29+00 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
   -36.5 1998.81     -16 1988.61        0 1988.61     26.5 2001.81

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -36.5      .03    -36.5      .03     26.5      .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -36.5    26.5                 50        50        50              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)        * 1993.03  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.20  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)        * 1992.83  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)      *          *  103.42  *          *
* E.G. Slope (ft/ft)    *0.001235  * Area (sq ft)           *          *  103.42  *          *
* Q Total (cfs)         *  371.00  * Flow (cfs)             *          *  371.00  *          *
* Top Width (ft)        *   32.97  * Top Width (ft)         *          *   32.97  *          *
* Vel Total (ft/s)      *    3.59  * Avg. Vel. (ft/s)       *          *    3.59  *          *
* Max Chl Dpth (ft)     *    4.22  * Hydr. Depth (ft)       *          *    3.14  *          *
* Conv. Total (cfs)     * 10536.8  * Conv. (cfs)           *          * 10536.8  *          *
* Length Wtd. (ft)      *   50.00  * Wetted Per. (ft)       *          *   34.96  *          *
* Min Ch El (ft)        * 1988.61  * Shear (lb/sq ft)       *          *    0.23  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.82  *          *
* Frctn Loss (ft)       *    0.03  * Cum Volume (acre-ft)   *          *   15.64  *          *
* C & E Loss (ft)       *    0.04  * Cum SA (acres)         *          *    4.01  *          *
*************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1132

INPUT
Description: Sta 28+50 -Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
   -42.7 1998.31     -22 1988.51        8 1988.51     28.7 1998.31

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -42.7      .03    -42.7      .03     28.7      .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -42.7    28.7                 50        50        50              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)        * 1992.96  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.07  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)        * 1992.89  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)      *          *  172.03  *          *
* E.G. Slope (ft/ft)    *0.000370  * Area (sq ft)           *          *  172.03  *          *
* Q Total (cfs)         *  371.00  * Flow (cfs)             *          *  371.00  *          *
* Top Width (ft)        *   48.51  * Top Width (ft)         *          *   48.51  *          *
* Vel Total (ft/s)      *    2.16  * Avg. Vel. (ft/s)       *          *    2.16  *          *
* Max Chl Dpth (ft)     *    4.38  * Hydr. Depth (ft)       *          *    3.55  *          *
* Conv. Total (cfs)     * 19295.2  * Conv. (cfs)           *          * 19295.2  *          *
* Length Wtd. (ft)      *   50.00  * Wetted Per. (ft)       *          *   50.48  *          *
* Min Ch El (ft)        * 1988.51  * Shear (lb/sq ft)       *          *    0.08  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.17  *          *
* Frctn Loss (ft)       *    0.02  * Cum Volume (acre-ft)   *          *   15.49  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)         *          *    3.96  *          *
*************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1131

INPUT
Description: Sta 28+00 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
   -42.7 1998.31     -22 1988.41        8 1988.41     28.7 1998.31

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -42.7      .03    -42.7      .03     28.7      .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
```

```
        -42.7     28.7                50       50       50              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1992.95  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.07  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 1992.88  * Reach Len. (ft)         *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *  175.70  *          *
* E.G. Slope (ft/ft)      *0.000347  * Area (sq ft)            *          *  175.70  *          *
* Q Total (cfs)           *  371.00  * Flow (cfs)              *          *  371.00  *          *
* Top Width (ft)          *   48.68  * Top Width (ft)          *          *   48.68  *          *
* Vel Total (ft/s)        *    2.11  * Avg. Vel. (ft/s)        *          *    2.11  *          *
* Max Chl Dpth (ft)       *    4.47  * Hydr. Depth (ft)        *          *    3.61  *          *
* Conv. Total (cfs)       * 19928.9  * Conv. (cfs)            *          * 19928.9  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)       *          *   50.70  *          *
* Min Ch El (ft)          * 1988.41  * Shear (lb/sq ft)       *          *    0.07  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.16  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)   *          *   15.29  *          *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)         *          *    3.91  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1130

INPUT
Description: Sta 27+50 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
***********************************************************************
    -42.4 1996.81      -25 1988.31       10 1988.31     29.4 1997.81

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
    -42.4     .03    -42.4     .03     29.4     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -42.4    29.4                  50       50       50              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1992.93  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.05  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 1992.87  * Reach Len. (ft)         *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *  202.32  *          *
* E.G. Slope (ft/ft)      *0.000246  * Area (sq ft)            *          *  202.32  *          *
* Q Total (cfs)           *  371.00  * Flow (cfs)              *          *  371.00  *          *
* Top Width (ft)          *   53.66  * Top Width (ft)          *          *   53.66  *          *
* Vel Total (ft/s)        *    1.83  * Avg. Vel. (ft/s)        *          *    1.83  *          *
* Max Chl Dpth (ft)       *    4.56  * Hydr. Depth (ft)        *          *    3.77  *          *
* Conv. Total (cfs)       * 23658.2  * Conv. (cfs)            *          * 23658.2  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)       *          *   55.77  *          *
* Min Ch El (ft)          * 1988.31  * Shear (lb/sq ft)       *          *    0.06  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.10  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)   *          *   13.07  *          *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)         *          *    3.85  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1129

INPUT
Description: Sta 27+00 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
***********************************************************************
  -47.96 1996.94      -30 1988.21       15 1988.21    32.96 1996.94

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
  -47.96     .03   -47.96     .03    32.96     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -47.96   32.96                  13       13       13              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1992.91  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.03  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 1992.88  * Reach Len. (ft)         *   13.00  *   13.00  *   13.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *  254.90  *          *
* E.G. Slope (ft/ft)      *0.000144  * Area (sq ft)            *          *  254.90  *          *
* Q Total (cfs)           *  371.00  * Flow (cfs)              *          *  371.00  *          *
* Top Width (ft)          *   64.21  * Top Width (ft)          *          *   64.21  *          *
* Vel Total (ft/s)        *    1.46  * Avg. Vel. (ft/s)        *          *    1.46  *          *
* Max Chl Dpth (ft)       *    4.67  * Hydr. Depth (ft)        *          *    3.97  *          *
* Conv. Total (cfs)       * 30967.6  * Conv. (cfs)            *          * 30967.6  *          *
* Length Wtd. (ft)        *   13.00  * Wetted Per. (ft)       *          *   66.36  *          *
* Min Ch El (ft)          * 1988.21  * Shear (lb/sq ft)       *          *    0.03  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.05  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   14.81  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    3.78  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1128

INPUT
Description: Sta 26+87 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
***********************************************************************
     -45 1993.31     -32.5 1988.17       17 1988.17       32 1993.31

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
     -45     .04      -45     .04       32     .04

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
            -45      32                   6        6        6              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1992.91  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.02  * Wt. n-Val.              *          *    0.040  *          *
* W.S. Elev (ft)          * 1992.88  * Reach Len. (ft)         *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *  292.61  *          *
* E.G. Slope (ft/ft)      *0.000194  * Area (sq ft)            *          *  292.61  *          *
* Q Total (cfs)           *  371.00  * Flow (cfs)              *          *  371.00  *          *
* Top Width (ft)          *   74.71  * Top Width (ft)          *          *   74.71  *          *
* Vel Total (ft/s)        *    1.27  * Avg. Vel. (ft/s)        *          *    1.27  *          *
* Max Chl Dpth (ft)       *    4.71  * Hydr. Depth (ft)        *          *    3.92  *          *
* Conv. Total (cfs)       * 26602.4  * Conv. (cfs)            *          * 26602.4  *          *
* Length Wtd. (ft)        *    6.00  * Wetted Per. (ft)       *          *   76.42  *          *
* Min Ch El (ft)          * 1988.17  * Shear (lb/sq ft)       *          *    0.05  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.06  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   14.73  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    3.76  *          *
*****************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1127

INPUT
Description: Sta 26+81 - Gabion Counterweir
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
***********************************************************************
     -45 1993.31     -32.5 1988.16       17 1988.16       32 1993.31

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
     -45     .028      -45     .028       32     .028
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -45      32              .1      .1      .1            .1         .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 1992.91  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.02  * Wt. n-Val.            *         *   0.028  *          *
* W.S. Elev (ft)         * 1992.88  * Reach Len. (ft)       *    0.10 *    0.10  *    0.10  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *         *  293.18  *          *
* E.G. Slope (ft/ft)     *0.000095  * Area (sq ft)          *         *  293.18  *          *
* Q Total (cfs)          *  371.00  * Flow (cfs)           *         *  371.00  *          *
* Top Width (ft)         *   74.71  * Top Width (ft)        *         *   74.71  *          *
* Vel Total (ft/s)       *    1.27  * Avg. Vel. (ft/s)      *         *    1.27  *          *
* Max Chl Dpth (ft)      *    4.72  * Hydr. Depth (ft)      *         *    3.92  *          *
* Conv. Total (cfs)      * 38126.2  * Conv. (cfs)          *         * 38126.2  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)      *         *   76.43  *          *
* Min Ch El (ft)         * 1988.16  * Shear (lb/sq ft)     *         *    0.02  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *        *    0.03  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  *         *   14.69  *          *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)        *         *    3.75  *          *
************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1126

INPUT
Description: Sta 26+81 - Gabion Counterweir
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**************************************************************************
      -45 1993.31    -32.5 1991.16       17 1991.16       32 1993.31

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
      -45    .028      -45    .028       32    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -45      32              6       6       6            .1         .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 1992.88  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.32  * Wt. n-Val.            *         *   0.028  *          *
* W.S. Elev (ft)         * 1992.55  * Reach Len. (ft)       *    6.00 *    6.00  *    6.00  *
* Crit W.S. (ft)         * 1992.30  * Flow Area (sq ft)     *         *   81.36  *          *
* E.G. Slope (ft/ft)     *0.005760  * Area (sq ft)          *         *   81.36  *          *
* Q Total (cfs)          *  371.00  * Flow (cfs)           *         *  371.00  *          *
* Top Width (ft)         *   67.32  * Top Width (ft)        *         *   67.32  *          *
* Vel Total (ft/s)       *    4.56  * Avg. Vel. (ft/s)      *         *    4.56  *          *
* Max Chl Dpth (ft)      *    1.39  * Hydr. Depth (ft)      *         *    1.21  *          *
* Conv. Total (cfs)      *  4888.4  * Conv. (cfs)          *         *  4888.4  *          *
* Length Wtd. (ft)       *    6.00  * Wetted Per. (ft)      *         *   67.53  *          *
* Min Ch El (ft)         * 1991.16  * Shear (lb/sq ft)     *         *    0.43  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *        *    1.98  *          *
* Frctn Loss (ft)        *    0.05  * Cum Volume (acre-ft)  *         *   14.69  *          *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)        *         *    3.75  *          *
************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1125

INPUT
Description: Sta 26+75 - Gabion Counterweir
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**************************************************************************
      -45 1993.31    -32.5 1991.16       17 1991.16       32 1993.31

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
      -45    .028      -45    .028       32    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -45      32              .1      .1      .1            .1         .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 1992.81  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.51  * Wt. n-Val.            *         *   0.028  *          *
* W.S. Elev (ft)         * 1992.30  * Reach Len. (ft)       *    0.10 *    0.10  *    0.10  *
* Crit W.S. (ft)         * 1992.30  * Flow Area (sq ft)     *         *   64.78  *          *
* E.G. Slope (ft/ft)     *0.011523  * Area (sq ft)          *         *   64.78  *          *
* Q Total (cfs)          *  371.00  * Flow (cfs)           *         *  371.00  *          *
* Top Width (ft)         *   64.09  * Top Width (ft)        *         *   64.09  *          *
* Vel Total (ft/s)       *    5.73  * Avg. Vel. (ft/s)      *         *    5.73  *          *
* Max Chl Dpth (ft)      *    1.14  * Hydr. Depth (ft)      *         *    1.01  *          *
* Conv. Total (cfs)      *  3456.1  * Conv. (cfs)          *         *  3456.1  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)      *         *   64.27  *          *
* Min Ch El (ft)         * 1991.16  * Shear (lb/sq ft)     *         *    0.73  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *        *    4.15  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  *         *   14.68  *          *
* C & E Loss (ft)        *    0.07  * Cum SA (acres)        *         *    3.74  *          *
************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1124

INPUT
Description: Sta 26+75 - Gabion Counterweir
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**************************************************************************
      -45 1993.31    -32.5 1988.16       17 1988.16       32 1993.31

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
      -45    .04       -45    .04        32    .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -45      32              19      19      19            .1         .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 1990.06  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.28  * Wt. n-Val.            *         *   0.040  *          *
* W.S. Elev (ft)         * 1989.78  * Reach Len. (ft)       *   19.00 *   19.00  *   19.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *         *   87.16  *          *
* E.G. Slope (ft/ft)     *0.007757  * Area (sq ft)          *         *   87.16  *          *
* Q Total (cfs)          *  371.00  * Flow (cfs)           *         *  371.00  *          *
* Top Width (ft)         *   58.15  * Top Width (ft)        *         *   58.15  *          *
* Vel Total (ft/s)       *    4.26  * Avg. Vel. (ft/s)      *         *    4.26  *          *
* Max Chl Dpth (ft)      *    1.62  * Hydr. Depth (ft)      *         *    1.50  *          *
* Conv. Total (cfs)      *  4212.4  * Conv. (cfs)          *         *  4212.4  *          *
* Length Wtd. (ft)       *   19.00  * Wetted Per. (ft)      *         *   58.74  *          *
* Min Ch El (ft)         * 1988.16  * Shear (lb/sq ft)     *         *    0.72  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *        *    3.06  *          *
* Frctn Loss (ft)        *    0.15  * Cum Volume (acre-ft)  *         *   14.68  *          *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)        *         *    3.74  *          *
************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
```

REACH: C-1 to 9000 ft E RS: 1123

INPUT
Description: Sta 26+56 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	1992.31	-32.5	1988.16	17	1988.16	32	1992.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.028	-45	.028	32	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45 32 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1989.90	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.44	Wt. n-Val.		0.028	
W.S. Elev (ft)	1989.46	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)	1989.33	Flow Area (sq ft)		69.64	
E.G. Slope (ft/ft)	*0.007981	Area (sq ft)		69.64	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	58.08	Top Width (ft)		58.08	
Vel Total (ft/s)	5.33	Avg. Vel. (ft/s)		5.33	
Max Chl Dpth (ft)	1.29	Hydr. Depth (ft)		1.20	
Conv. Total (cfs)	4152.8	Conv. (cfs)		4152.8	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		58.46	
Min Ch El (ft)	1988.16	Shear (lb/sq ft)		0.59	
Alpha	1.00	Stream Power (lb/ft s)		3.16	
Frctn Loss (ft)	0.06	Cum Volume (acre-ft)		14.64	
C & E Loss (ft)	0.01	Cum SA (acres)		3.71	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1122

INPUT
Description: Sta 26+50 -Inline Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	1992.31	-32.5	1988.11	17	1988.11	32	1992.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.028	-45	.028	32	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45 32 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1989.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.55	Wt. n-Val.		0.028	
W.S. Elev (ft)	1989.28	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	1989.28	Flow Area (sq ft)		62.29	
E.G. Slope (ft/ft)	*0.011319	Area (sq ft)		62.29	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	57.15	Top Width (ft)		57.15	
Vel Total (ft/s)	5.96	Avg. Vel. (ft/s)		5.96	
Max Chl Dpth (ft)	1.17	Hydr. Depth (ft)		1.09	
Conv. Total (cfs)	3487.1	Conv. (cfs)		3487.1	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		57.50	
Min Ch El (ft)	1988.11	Shear (lb/sq ft)		0.77	
Alpha	1.00	Stream Power (lb/ft s)		4.56	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		14.63	
C & E Loss (ft)	0.12	Cum SA (acres)		3.71	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1121

INPUT
Description: Sta 26+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	1992.31	-18	1978.11	5	1978.11	32	1992.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.03	-45	.03	32	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45 32 24 24 24 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1982.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.		0.030	
W.S. Elev (ft)	1982.17	Reach Len. (ft)	24.00	24.00	24.00
Crit W.S. (ft)		Flow Area (sq ft)		124.72	
E.G. Slope (ft/ft)	*0.000803	Area (sq ft)		124.72	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	38.44	Top Width (ft)		38.44	
Vel Total (ft/s)	2.97	Avg. Vel. (ft/s)		2.97	
Max Chl Dpth (ft)	4.06	Hydr. Depth (ft)		3.24	
Conv. Total (cfs)	13088.3	Conv. (cfs)		13088.3	
Length Wtd. (ft)	24.00	Wetted Per. (ft)		40.44	
Min Ch El (ft)	1978.11	Shear (lb/sq ft)		0.15	
Alpha	1.00	Stream Power (lb/ft s)		0.46	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)		14.63	
C & E Loss (ft)	0.00	Cum SA (acres)		3.71	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1120

INPUT
Description: Sta 26+26 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	1991.41	-18	1978.06	5	1978.06	32	1991.41

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.028	-45	.03	32	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45 32 12 12 12 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1982.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.		0.030	
W.S. Elev (ft)	1982.16	Reach Len. (ft)	12.00	12.00	12.00
Crit W.S. (ft)		Flow Area (sq ft)		128.15	
E.G. Slope (ft/ft)	*0.000759	Area (sq ft)		128.15	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	39.57	Top Width (ft)		39.57	
Vel Total (ft/s)	2.90	Avg. Vel. (ft/s)		2.90	
Max Chl Dpth (ft)	4.10	Hydr. Depth (ft)		3.24	
Conv. Total (cfs)	13463.6	Conv. (cfs)		13463.6	
Length Wtd. (ft)	12.00	Wetted Per. (ft)		41.48	
Min Ch El (ft)	1978.06	Shear (lb/sq ft)		0.15	

* Alpha	* 1.00	* Stream Power (lb/ft s) *	* 0.42	*	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft) *	* 14.56	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres) *	* 3.69	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1119

INPUT
Description: Sta 26+14 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	1991.41	-18	1978.04	5	1978.04	32	1991.41

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.03	-45	.03	32	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-45	32	14	14	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1982.28	* Element	* Left OB *	Channel *	Right OB *	
* Vel Head (ft)	* 0.13	* Wt. n-Val.	*	* 0.030 *	*	
* W.S. Elev (ft)	* 1982.15	* Reach Len. (ft)	* 14.00 *	14.00 *	* 14.00 *	
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 128.56 *	*	
* E.G. Slope (ft/ft)	*0.000752	* Area (sq ft)	*	* 128.56 *	*	
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00 *	*	
* Top Width (ft)	* 39.59	* Top Width (ft)	*	* 39.59 *	*	
* Vel Total (ft/s)	* 2.89	* Avg. Vel. (ft/s)	*	* 2.89 *	*	
* Max Chl Dpth (ft)	* 4.11	* Hydr. Depth (ft)	*	* 3.25 *	*	
* Conv. Total (cfs)	* 13527.9	* Conv. (cfs)	*	* 13527.9 *	*	
* Length Wtd. (ft)	* 14.00	* Wetted Per. (ft)	*	* 41.51 *	*	
* Min Ch El (ft)	* 1978.04	* Shear (lb/sq ft)	*	* 0.15 *	*	
* Alpha	* 1.00	* Stream Power (lb/ft s) *		* 0.42 *	*	
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft) *		* 14.53 *	*	
* C & E Loss (ft)	* 0.00	* Cum SA (acres) *		* 3.67 *	*	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1118

INPUT
Description: Sta 26+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	1991.41	-18	1978.01	5	1978.01	32	1991.41

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.03	-45	.03	32	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-45	32	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1982.27	* Element	* Left OB *	Channel *	Right OB *	
* Vel Head (ft)	* 0.13	* Wt. n-Val.	*	* 0.030 *	*	
* W.S. Elev (ft)	* 1982.14	* Reach Len. (ft)	* 50.00 *	50.00 *	* 50.00 *	
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 129.30 *	*	
* E.G. Slope (ft/ft)	*0.000739	* Area (sq ft)	*	* 129.30 *	*	
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00 *	*	
* Top Width (ft)	* 39.64	* Top Width (ft)	*	* 39.64 *	*	
* Vel Total (ft/s)	* 2.87	* Avg. Vel. (ft/s)	*	* 2.87 *	*	
* Max Chl Dpth (ft)	* 4.13	* Hydr. Depth (ft)	*	* 3.26 *	*	
* Conv. Total (cfs)	* 13644.9	* Conv. (cfs)	*	* 13644.9 *	*	
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 41.57 *	*	
* Min Ch El (ft)	* 1978.01	* Shear (lb/sq ft)	*	* 0.14 *	*	
* Alpha	* 1.00	* Stream Power (lb/ft s) *		* 0.41 *	*	
* Frctn Loss (ft)	* 0.04	* Cum Volume (acre-ft) *		* 14.49 *	*	
* C & E Loss (ft)	* 0.00	* Cum SA (acres) *		* 3.66 *	*	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1117

INPUT
Description: Sta 25+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	1991.41	-18	1977.91	5	1977.91	32	1991.41

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.03	-45	.03	32	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-45	32	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1982.23	* Element	* Left OB *	Channel *	Right OB *	
* Vel Head (ft)	* 0.12	* Wt. n-Val.	*	* 0.030 *	*	
* W.S. Elev (ft)	* 1982.11	* Reach Len. (ft)	* 50.00 *	50.00 *	* 50.00 *	
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 131.71 *	*	
* E.G. Slope (ft/ft)	*0.000699	* Area (sq ft)	*	* 131.71 *	*	
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00 *	*	
* Top Width (ft)	* 39.78	* Top Width (ft)	*	* 39.78 *	*	
* Vel Total (ft/s)	* 2.82	* Avg. Vel. (ft/s)	*	* 2.82 *	*	
* Max Chl Dpth (ft)	* 4.20	* Hydr. Depth (ft)	*	* 3.31 *	*	
* Conv. Total (cfs)	* 14029.1	* Conv. (cfs)	*	* 14029.1 *	*	
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 41.76 *	*	
* Min Ch El (ft)	* 1977.91	* Shear (lb/sq ft)	*	* 0.14 *	*	
* Alpha	* 1.00	* Stream Power (lb/ft s) *		* 0.39 *	*	
* Frctn Loss (ft)	* 0.03	* Cum Volume (acre-ft) *		* 14.34 *	*	
* C & E Loss (ft)	* 0.01	* Cum SA (acres) *		* 3.62 *	*	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1116

INPUT
Description: Sta 25+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.6	1990.11	-20	1977.81	8	1977.81	32.6	1990.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.6	.03	-44.6	.03	32.6	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-44.6	32.6	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1982.19	* Element	* Left OB *	Channel *	Right OB *	
* Vel Head (ft)	* 0.09	* Wt. n-Val.	*	* 0.030 *	*	
* W.S. Elev (ft)	* 1982.10	* Reach Len. (ft)	* 50.00 *	50.00 *	* 50.00 *	
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 157.08 *	*	
* E.G. Slope (ft/ft)	*0.000458	* Area (sq ft)	*	* 157.08 *	*	
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00 *	*	
* Top Width (ft)	* 45.17	* Top Width (ft)	*	* 45.17 *	*	
* Vel Total (ft/s)	* 2.36	* Avg. Vel. (ft/s)	*	* 2.36 *	*	
* Max Chl Dpth (ft)	* 4.29	* Hydr. Depth (ft)	*	* 3.48 *	*	
* Conv. Total (cfs)	* 17342.3	* Conv. (cfs)	*	* 17342.3 *	*	
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 47.20 *	*	
* Min Ch El (ft)	* 1977.81	* Shear (lb/sq ft)	*	* 0.10 *	*	
* Alpha	* 1.00	* Stream Power (lb/ft s) *		* 0.22 *	*	

* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	*	* 14.17	*	*
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 3.57	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1115

INPUT
Description: Sta 24+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.2	1988.31	-23	1977.71	12	1977.71	33.2	1988.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.2	.03	-44.2	.03	33.2	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-44.2	33.2	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1982.16	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.06	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 1982.11	* Reach Len. (ft)	* 50.00 *	50.00 *	50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 192.51 *	*
* E.G. Slope (ft/ft)	*0.000283	* Area (sq ft)	*	* 192.51 *	*
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00 *	*
* Top Width (ft)	* 52.58	* Top Width (ft)	*	* 52.58 *	*
* Vel Total (ft/s)	* 1.93	* Avg. Vel. (ft/s)	*	* 1.93 *	*
* Max Chl Dpth (ft)	* 4.40	* Hydr. Depth (ft)	*	* 3.66 *	*
* Conv. Total (cfs)	* 22072.4	* Conv. (cfs)	*	* 22072.4 *	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 54.66 *	*
* Min Ch El (ft)	* 1977.71	* Shear (lb/sq ft)	*	* 0.06 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.12 *	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 13.97 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 3.51 *	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1114

INPUT
Description: Sta 24+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.4	1986.81	-26	1977.61	15	1977.61	33	1986.61

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.4	.03	-44.4	.03	33	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-44.4	33	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1982.15	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.04	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 1982.11	* Reach Len. (ft)	* 50.00 *	50.00 *	50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 224.70 *	*
* E.G. Slope (ft/ft)	*0.000196	* Area (sq ft)	*	* 224.70 *	*
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00 *	*
* Top Width (ft)	* 58.98	* Top Width (ft)	*	* 58.98 *	*
* Vel Total (ft/s)	* 1.65	* Avg. Vel. (ft/s)	*	* 1.65 *	*
* Max Chl Dpth (ft)	* 4.49	* Hydr. Depth (ft)	*	* 3.81 *	*
* Conv. Total (cfs)	* 26516.9	* Conv. (cfs)	*	* 26516.9 *	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 61.10 *	*
* Min Ch El (ft)	* 1977.61	* Shear (lb/sq ft)	*	* 0.04 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.07 *	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 13.73 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 3.45 *	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1113

INPUT
Description: Sta 23+50 -Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.4	1986.21	-29	1977.51	19	1977.51	36.4	1986.21

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.4	.03	-46.4	.03	36.4	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-46.4	36.4	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1982.14	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.03	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 1982.11	* Reach Len. (ft)	* 50.00 *	50.00 *	50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 262.78 *	*
* E.G. Slope (ft/ft)	*0.000135	* Area (sq ft)	*	* 262.78 *	*
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00 *	*
* Top Width (ft)	* 66.38	* Top Width (ft)	*	* 66.38 *	*
* Vel Total (ft/s)	* 1.41	* Avg. Vel. (ft/s)	*	* 1.41 *	*
* Max Chl Dpth (ft)	* 4.59	* Hydr. Depth (ft)	*	* 3.96 *	*
* Conv. Total (cfs)	* 31880.3	* Conv. (cfs)	*	* 31880.3 *	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 68.55 *	*
* Min Ch El (ft)	* 1977.51	* Shear (lb/sq ft)	*	* 0.03 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.05 *	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 13.45 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 3.38 *	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1112

INPUT
Description: Sta 23+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-40.2	1983.51	-30	1977.41	20	1977.41	31.4	1983.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-40.2	.03	-40.2	.03	31.4	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-40.2	31.4	13	13	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1982.13	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.03	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 1982.10	* Reach Len. (ft)	* 13.00 *	13.00 *	13.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 274.91 *	*
* E.G. Slope (ft/ft)	*0.000119	* Area (sq ft)	*	* 274.91 *	*
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00 *	*
* Top Width (ft)	* 67.22	* Top Width (ft)	*	* 67.22 *	*
* Vel Total (ft/s)	* 1.35	* Avg. Vel. (ft/s)	*	* 1.35 *	*
* Max Chl Dpth (ft)	* 4.69	* Hydr. Depth (ft)	*	* 4.09 *	*
* Conv. Total (cfs)	* 34014.9	* Conv. (cfs)	*	* 34014.9 *	*
* Length Wtd. (ft)	* 13.00	* Wetted Per. (ft)	*	* 69.63 *	*
* Min Ch El (ft)	* 1977.41	* Shear (lb/sq ft)	*	* 0.03 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.04 *	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 13.14 *	*

```
* C & E Loss (ft)        *    0.00  * Cum SA (acres)          *           *    3.30  *           *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1111

INPUT
Description: Sta 22+87 - Drake Channel
Station Elevation Data    num=       6
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************************************
      -59     1983    -42.4 1981.81    -32.5 1977.37     17.5 1977.37     21.4 1981.31
       26  1982.5

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*****************************************************
      -59     .04      -59     .04       26     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            -59      26                 6         6         6          .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)         * 1982.13  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.03  * Wt. n-Val.             *          *    0.040  *          *
* W.S. Elev (ft)         * 1982.10  * Reach Len. (ft)       *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *  273.77  *          *
* E.G. Slope (ft/ft)     *0.000231  * Area (sq ft)          *          *  273.77  *          *
* Q Total (cfs)          *  371.00  * Flow (cfs)            *          *  371.00  *          *
* Top Width (ft)         *   70.86  * Top Width (ft)        *          *   70.86  *          *
* Vel Total (ft/s)       *    1.36  * Avg. Vel. (ft/s)      *          *    1.36  *          *
* Max Chl Dpth (ft)      *    4.73  * Hydr. Depth (ft)      *          *    3.86  *          *
* Conv. Total (cfs)      * 24421.6  * Conv. (cfs)          *          * 24421.6  *          *
* Length Wtd. (ft)       *    6.00  * Wetted Per. (ft)      *          *   73.57  *          *
* Min Ch El (ft)         * 1977.37  * Shear (lb/sq ft)     *          *    0.05  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.07  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  *          *   13.06  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *          *    3.28  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1110

INPUT
Description: Sta 22+81 - Gabion Counterweir
Station Elevation Data    num=       6
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************************************
      -59     1983    -42.4 1981.81    -32.5 1977.37     17.5 1977.37     21.4 1981.31
       26  1982.5

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*****************************************************
      -59     .028      -59     .028       26     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            -59      26                .1        .1        .1          .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)         * 1982.13  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.03  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)         * 1982.10  * Reach Len. (ft)       *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *  273.70  *          *
* E.G. Slope (ft/ft)     *0.000113  * Area (sq ft)          *          *  273.70  *          *
* Q Total (cfs)          *  371.00  * Flow (cfs)            *          *  371.00  *          *
* Top Width (ft)         *   70.85  * Top Width (ft)        *          *   70.85  *          *
* Vel Total (ft/s)       *    1.36  * Avg. Vel. (ft/s)      *          *    1.36  *          *
* Max Chl Dpth (ft)      *    4.73  * Hydr. Depth (ft)      *          *    3.86  *          *
* Conv. Total (cfs)      * 34878.9  * Conv. (cfs)          *          * 34878.9  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)      *          *   73.55  *          *
* Min Ch El (ft)         * 1977.37  * Shear (lb/sq ft)     *          *    0.03  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.04  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  *          *   13.02  *          *
* C & E Loss (ft)        *    0.03  * Cum SA (acres)        *          *    3.27  *          *
*****************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1109

INPUT
Description: Sta 22+81 - Gabion Counterweir
Station Elevation Data    num=       6
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************************************
      -59     1983    -42.4 1981.81    -32.5 1980.37     17.5 1980.37     21.4 1981.31
       26  1982.5

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*****************************************************
      -59     .028      -59     .028       26     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            -59      26                 6         6         6          .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)         * 1982.10  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.38  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)         * 1981.77  * Reach Len. (ft)       *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *   80.47  *          *
* E.G. Slope (ft/ft)     *0.005738  * Area (sq ft)          *          *   80.47  *          *
* Q Total (cfs)          *  371.00  * Flow (cfs)            *          *  371.00  *          *
* Top Width (ft)         *   65.25  * Top Width (ft)        *          *   65.25  *          *
* Vel Total (ft/s)       *    4.61  * Avg. Vel. (ft/s)      *          *    4.61  *          *
* Max Chl Dpth (ft)      *    1.40  * Hydr. Depth (ft)      *          *    1.23  *          *
* Conv. Total (cfs)      *  4897.5  * Conv. (cfs)          *          *  4897.5  *          *
* Length Wtd. (ft)       *    6.00  * Wetted Per. (ft)      *          *   65.52  *          *
* Min Ch El (ft)         * 1980.37  * Shear (lb/sq ft)     *          *    0.44  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    2.03  *          *
* Frctn Loss (ft)        *    0.05  * Cum Volume (acre-ft)  *          *   13.02  *          *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)        *          *    3.27  *          *
*****************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1108

INPUT
Description: Sta 22+75 - Gabion Counterweir
Station Elevation Data    num=       6
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************************************
      -59     1983    -42.4 1981.81    -32.5 1980.37     17.5 1980.37     21.4 1981.31
       26  1982.5

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*****************************************************
      -59     .028      -59     .028       26     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            -59      26                .1        .1        .1          .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)         * 1982.03  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.52  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)         * 1981.51  * Reach Len. (ft)       *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)         * 1981.51  * Flow Area (sq ft)     *          *   64.15  *          *
* E.G. Slope (ft/ft)     *0.011526  * Area (sq ft)          *          *   64.15  *          *
```

Q Total (cfs)	371.00	Flow (cfs)		371.00
Top Width (ft)	62.51	Top Width (ft)		62.51
Vel Total (ft/s)	5.78	Avg. Vel. (ft/s)		5.78
Max Chl Dpth (ft)	1.14	Hydr. Depth (ft)		1.03
Conv. Total (cfs)	3455.6	Conv. (cfs)		3455.6
Length Wtd. (ft)	0.10	Wetted Per. (ft)		62.73
Min Ch El (ft)	1980.37	Shear (lb/sq ft)		0.74
Alpha	1.00	Stream Power (lb/ft s)		4.26
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		13.01
C & E Loss (ft)	0.06	Cum SA (acres)		3.26

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1107

INPUT
Description: Sta 22+75 - Drake Channel
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-59	1983	-42.4	1981.81	-32.5	1977.37	17.5	1977.37	21.4	1981.31
26	1982.5								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-59	.04	-59	.04	26	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-59	26	19	19	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1979.27	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.31	Wt. n-Val.		0.040
W.S. Elev (ft)	1978.96	Reach Len. (ft)	19.00	19.00 / 19.00
Crit W.S. (ft)		Flow Area (sq ft)		83.43
E.G. Slope (ft/ft)	0.008443	Area (sq ft)		83.43
Q Total (cfs)	371.00	Flow (cfs)		371.00
Top Width (ft)	55.11	Top Width (ft)		55.11
Vel Total (ft/s)	4.45	Avg. Vel. (ft/s)		4.45
Max Chl Dpth (ft)	1.59	Hydr. Depth (ft)		1.51
Conv. Total (cfs)	4037.6	Conv. (cfs)		4037.6
Length Wtd. (ft)	19.00	Wetted Per. (ft)		56.11
Min Ch El (ft)	1977.37	Shear (lb/sq ft)		0.78
Alpha	1.00	Stream Power (lb/ft s)		3.49
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)		13.01
C & E Loss (ft)	0.01	Cum SA (acres)		3.26

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1106

INPUT
Description: Sta 22+56 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-42.4	1981.81	-32.5	1977.31	17.5	1977.31	21.4	1981.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-42.4	.028	-42.4	.028	21.4	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-42.4	21.4	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1979.13	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.38	Wt. n-Val.		0.028
W.S. Elev (ft)	1978.75	Reach Len. (ft)	6.00	6.00 / 6.00
Crit W.S. (ft)	1978.49	Flow Area (sq ft)		75.08
E.G. Slope (ft/ft)	0.005791	Area (sq ft)		75.08
Q Total (cfs)	371.00	Flow (cfs)		371.00
Top Width (ft)	54.56	Top Width (ft)		54.56
Vel Total (ft/s)	4.94	Avg. Vel. (ft/s)		4.94
Max Chl Dpth (ft)	1.44	Hydr. Depth (ft)		1.38
Conv. Total (cfs)	4875.2	Conv. (cfs)		4875.2
Length Wtd. (ft)	6.00	Wetted Per. (ft)		55.48
Min Ch El (ft)	1977.31	Shear (lb/sq ft)		0.49
Alpha	1.00	Stream Power (lb/ft s)		2.42
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		12.98
C & E Loss (ft)	0.02	Cum SA (acres)		3.23

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1105

INPUT
Description: Sta 22+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-42.4	1981.81	-32.5	1977.31	17.5	1977.31	21.4	1981.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-42.4	.028	-42.4	.028	21.4	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-42.4	21.4	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1979.06	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.57	Wt. n-Val.		0.028
W.S. Elev (ft)	1978.49	Reach Len. (ft)	0.10	0.10 / 0.10
Crit W.S. (ft)	1978.49	Flow Area (sq ft)		61.14
E.G. Slope (ft/ft)	0.011214	Area (sq ft)		61.14
Q Total (cfs)	371.00	Flow (cfs)		371.00
Top Width (ft)	53.74	Top Width (ft)		53.74
Vel Total (ft/s)	6.07	Avg. Vel. (ft/s)		6.07
Max Chl Dpth (ft)	1.18	Hydr. Depth (ft)		1.14
Conv. Total (cfs)	3503.4	Conv. (cfs)		3503.4
Length Wtd. (ft)	0.10	Wetted Per. (ft)		54.49
Min Ch El (ft)	1977.31	Shear (lb/sq ft)		0.79
Alpha	1.00	Stream Power (lb/ft s)		4.77
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		12.97
C & E Loss (ft)	0.00	Cum SA (acres)		3.23

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1104

INPUT
Description: Sta 22+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
*****************************************************************
   -42.4 1981.81     -15 1968.11       -5 1968.11    21.4 1981.31

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -42.4    .028   -42.4    .028    21.4    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -42.4    21.4                 24       24        24              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1973.11  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.60  * Wt. n-Val.             *          *    0.028 *          *
* W.S. Elev (ft)          * 1972.51  * Reach Len. (ft)       *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)      *          *   82.72  *          *
* E.G. Slope (ft/ft)      *0.003522  * Area (sq ft)           *          *   82.72  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)          *   27.60  * Top Width (ft)        *          *   27.60  *          *
* Vel Total (ft/s)        *    6.24  * Avg. Vel. (ft/s)      *          *    6.24  *          *
* Max Chl Dpth (ft)       *    4.40  * Hydr. Depth (ft)      *          *    3.00  *          *
* Conv. Total (cfs)       *  8694.4  * Conv. (cfs)           *          *  8694.4  *          *
* Length Wtd. (ft)        *   24.00  * Wetted Per. (ft)      *          *   29.68  *          *
* Min Ch El (ft)          * 1968.11  * Shear (lb/sq ft)      *          *    0.61  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    3.82  *          *
* Frctn Loss (ft)         *    0.03  * Cum Volume (acre-ft)   *          *   12.97  *          *
* C & E Loss (ft)         *    0.13  * Cum SA (acres)         *          *    3.23  *          *
*****************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1103

INPUT
Description: Sta 22+26 - Drake Channel
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*****************************************************************
   -43.8 1978.81     -22 1967.96        2 1967.96    22.8 1978.31

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -43.8    .028   -43.8     .03    22.8    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -43.8    22.8                 12       12        12              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1972.95  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.16  * Wt. n-Val.             *          *    0.030 *          *
* W.S. Elev (ft)          * 1972.79  * Reach Len. (ft)       *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)      *          *  162.80  *          *
* E.G. Slope (ft/ft)      *0.000752  * Area (sq ft)           *          *  162.80  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)          *   43.41  * Top Width (ft)        *          *   43.41  *          *
* Vel Total (ft/s)        *    3.17  * Avg. Vel. (ft/s)      *          *    3.17  *          *
* Max Chl Dpth (ft)       *    4.83  * Hydr. Depth (ft)      *          *    3.75  *          *
* Conv. Total (cfs)       * 18812.7  * Conv. (cfs)           *          * 18812.7  *          *
* Length Wtd. (ft)        *   12.00  * Wetted Per. (ft)      *          *   45.68  *          *
* Min Ch El (ft)          * 1967.96  * Shear (lb/sq ft)      *          *    0.17  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.53  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)   *          *   12.90  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    3.21  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1102

INPUT
Description: Sta 22+14 - Drake Channel
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*****************************************************************
   -43.8 1978.81     -22 1967.94        2 1967.94    22.8 1978.31

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -43.8     .03   -43.8     .03    22.8     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -43.8    22.8                 14       14        14              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1972.94  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.16  * Wt. n-Val.             *          *    0.030 *          *
* W.S. Elev (ft)          * 1972.78  * Reach Len. (ft)       *   14.00  *   14.00  *   14.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)      *          *  163.21  *          *
* E.G. Slope (ft/ft)      *0.000746  * Area (sq ft)           *          *  163.21  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)          *   43.42  * Top Width (ft)        *          *   43.42  *          *
* Vel Total (ft/s)        *    3.16  * Avg. Vel. (ft/s)      *          *    3.16  *          *
* Max Chl Dpth (ft)       *    4.84  * Hydr. Depth (ft)      *          *    3.76  *          *
* Conv. Total (cfs)       * 18886.5  * Conv. (cfs)           *          * 18886.5  *          *
* Length Wtd. (ft)        *   14.00  * Wetted Per. (ft)      *          *   45.70  *          *
* Min Ch El (ft)          * 1967.94  * Shear (lb/sq ft)      *          *    0.17  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.53  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)   *          *   12.85  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    3.20  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1101

INPUT
Description: Sta 22+00 - Drake Channel
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*****************************************************************
   -43.8 1978.81     -22 1967.91        2 1967.91    22.8 1978.31

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -43.8     .03   -43.8     .03    22.8     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -43.8    22.8                 50       50        50              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1972.93  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.15  * Wt. n-Val.             *          *    0.030 *          *
* W.S. Elev (ft)          * 1972.77  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)      *          *  163.96  *          *
* E.G. Slope (ft/ft)      *0.000736  * Area (sq ft)           *          *  163.96  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)          *   43.45  * Top Width (ft)        *          *   43.45  *          *
* Vel Total (ft/s)        *    3.15  * Avg. Vel. (ft/s)      *          *    3.15  *          *
* Max Chl Dpth (ft)       *    4.86  * Hydr. Depth (ft)      *          *    3.77  *          *
* Conv. Total (cfs)       * 19021.0  * Conv. (cfs)           *          * 19021.0  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   45.74  *          *
* Min Ch El (ft)          * 1967.91  * Shear (lb/sq ft)      *          *    0.16  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.52  *          *
* Frctn Loss (ft)         *    0.04  * Cum Volume (acre-ft)   *          *   12.80  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    3.18  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1100

INPUT
Description: Sta 21+50 - Drake Channel
```

```
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
    -43.8 1978.81      -22 1967.91        2 1967.91     22.8 1978.31

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
**************************************************
    -43.8     .03    -43.8     .03     22.8     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -43.8    22.8               50      50      50              .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)          * 1972.89  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.16  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)          * 1972.73  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *  162.18  *          *
* E.G. Slope (ft/ft)      *0.000759  * Area (sq ft)           *          *  162.18  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)          *   43.28  * Top Width (ft)        *          *   43.28  *          *
* Vel Total (ft/s)        *    3.18  * Avg. Vel. (ft/s)      *          *    3.18  *          *
* Max Chl Dpth (ft)       *    4.82  * Hydr. Depth (ft)      *          *    3.75  *          *
* Conv. Total (cfs)       * 18728.5  * Conv. (cfs)          *          * 18728.5  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)     *          *   45.56  *          *
* Min Ch El (ft)          * 1967.91  * Shear (lb/sq ft)     *          *    0.17  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.54  *          *
* Frctn Loss (ft)         *    0.03  * Cum Volume (acre-ft)  *          *   12.61  *          *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)        *          *    3.13  *          *
************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1099

INPUT
Description: Sta 21+00 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
     -44 1977.31      -25 1967.81        5 1967.81       23 1976.81

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
**************************************************
     -44     .03     -44     .03       23     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -44       23               50      50      50              .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)          * 1972.84  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.11  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)          * 1972.74  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *  196.31  *          *
* E.G. Slope (ft/ft)      *0.000479  * Area (sq ft)           *          *  196.31  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)          *   49.70  * Top Width (ft)        *          *   49.70  *          *
* Vel Total (ft/s)        *    2.63  * Avg. Vel. (ft/s)      *          *    2.63  *          *
* Max Chl Dpth (ft)       *    4.93  * Hydr. Depth (ft)      *          *    3.95  *          *
* Conv. Total (cfs)       * 23565.9  * Conv. (cfs)          *          * 23565.9  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)     *          *   52.03  *          *
* Min Ch El (ft)          * 1967.81  * Shear (lb/sq ft)     *          *    0.11  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.30  *          *
* Frctn Loss (ft)         *    0.02  * Cum Volume (acre-ft)  *          *   12.41  *          *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)        *          *    3.08  *          *
************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1098

INPUT
Description: Sta 20+50  - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
  -44.46 1975.94      -28 1967.71        8 1967.71     24.46 1975.94

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
**************************************************
  -44.46     .03   -44.46     .03    24.46     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -44.46   24.46               50      50      50              .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)          * 1972.82  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.08  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)          * 1972.74  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *  231.55  *          *
* E.G. Slope (ft/ft)      *0.000323  * Area (sq ft)           *          *  231.55  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)          *   56.11  * Top Width (ft)        *          *   56.11  *          *
* Vel Total (ft/s)        *    2.23  * Avg. Vel. (ft/s)      *          *    2.23  *          *
* Max Chl Dpth (ft)       *    5.03  * Hydr. Depth (ft)      *          *    4.13  *          *
* Conv. Total (cfs)       * 28703.3  * Conv. (cfs)          *          * 28703.3  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)     *          *   58.48  *          *
* Min Ch El (ft)          * 1967.71  * Shear (lb/sq ft)     *          *    0.08  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.18  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)  *          *   12.16  *          *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)        *          *    3.02  *          *
************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1097

INPUT
Description: Sta 20+00 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
  -48.64 1975.93      -32 1967.61       12 1967.61     28.64 1975.93

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
**************************************************
  -48.64     .03   -48.64     .03    28.64     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -48.64   28.64               13      13      13              .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)          * 1972.80  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.05  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)          * 1972.74  * Reach Len. (ft)       *   13.00  *   13.00  *   13.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *  278.45  *          *
* E.G. Slope (ft/ft)      *0.000209  * Area (sq ft)           *          *  278.45  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)          *   64.53  * Top Width (ft)        *          *   64.53  *          *
* Vel Total (ft/s)        *    1.85  * Avg. Vel. (ft/s)      *          *    1.85  *          *
* Max Chl Dpth (ft)       *    5.13  * Hydr. Depth (ft)      *          *    4.32  *          *
* Conv. Total (cfs)       * 35668.7  * Conv. (cfs)          *          * 35668.7  *          *
* Length Wtd. (ft)        *   13.00  * Wetted Per. (ft)     *          *   66.95  *          *
* Min Ch El (ft)          * 1967.61  * Shear (lb/sq ft)     *          *    0.05  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.10  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *   11.87  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    2.95  *          *
************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1096

INPUT
Description: Sta 19+87 - Drake Channel
Station Elevation Data    num=       5
```

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46	1973	-44	1972.81	-35	1967.59	15	1967.59	23	1974.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46	.04	-46	.04	23	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-46 23 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1972.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.		0.040	
W.S. Elev (ft)	1972.74	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		295.21	
E.G. Slope (ft/ft)	0.000312	Area (sq ft)		295.21	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	64.59	Top Width (ft)		64.59	
Vel Total (ft/s)	1.75	Avg. Vel. (ft/s)		1.75	
Max Chl Dpth (ft)	5.15	Hydr. Depth (ft)		4.57	
Conv. Total (cfs)	29195.6	Conv. (cfs)		29195.6	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		67.96	
Min Ch El (ft)	1967.59	Shear (lb/sq ft)		0.08	
Alpha	1.00	Stream Power (lb/ft s)		0.15	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		11.79	
C & E Loss (ft)	0.00	Cum SA (acres)		2.93	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1095

INPUT
Description: Sta 19+81 - Gabion Counterweir
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46	1973	-44	1972.81	-35	1967.58	15	1967.58	23	1974.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46	.028	-46	.028	23	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-46 23 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1972.79	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.		0.028	
W.S. Elev (ft)	1972.74	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)		Flow Area (sq ft)		295.71	
E.G. Slope (ft/ft)	0.000152	Area (sq ft)		295.71	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	64.59	Top Width (ft)		64.59	
Vel Total (ft/s)	1.74	Avg. Vel. (ft/s)		1.74	
Max Chl Dpth (ft)	5.16	Hydr. Depth (ft)		4.58	
Conv. Total (cfs)	41822.5	Conv. (cfs)		41822.5	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		67.97	
Min Ch El (ft)	1967.58	Shear (lb/sq ft)		0.04	
Alpha	1.00	Stream Power (lb/ft s)		0.07	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		11.74	
C & E Loss (ft)	0.04	Cum SA (acres)		2.92	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1094

INPUT
Description: Sta 19+81 - Gabion Counterweir
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46	1973	-44	1972.81	-35	1970.58	15	1970.58	23	1974.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46	.028	-46	.028	23	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-46 23 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1972.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.48	Wt. n-Val.		0.028	
W.S. Elev (ft)	1972.26	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)	1972.02	Flow Area (sq ft)		92.35	
E.G. Slope (ft/ft)	0.006318	Area (sq ft)		92.35	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	59.96	Top Width (ft)		59.96	
Vel Total (ft/s)	5.59	Avg. Vel. (ft/s)		5.59	
Max Chl Dpth (ft)	1.68	Hydr. Depth (ft)		1.54	
Conv. Total (cfs)	6492.0	Conv. (cfs)		6492.0	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		60.58	
Min Ch El (ft)	1970.58	Shear (lb/sq ft)		0.60	
Alpha	1.00	Stream Power (lb/ft s)		3.36	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		11.74	
C & E Loss (ft)	0.02	Cum SA (acres)		2.92	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1093

INPUT
Description: Sta 19+75 - Gabion Counterweir
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46	1973	-44	1972.81	-35	1970.56	15	1970.56	23	1974.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46	.028	-46	.028	23	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-46 23 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1972.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	6.68	Wt. n-Val.		0.028	
W.S. Elev (ft)	1972.00	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	1972.00	Flow Area (sq ft)		78.23	
E.G. Slope (ft/ft)	0.010610	Area (sq ft)		78.23	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	58.48	Top Width (ft)		58.48	
Vel Total (ft/s)	6.60	Avg. Vel. (ft/s)		6.60	
Max Chl Dpth (ft)	1.44	Hydr. Depth (ft)		1.34	
Conv. Total (cfs)	5009.6	Conv. (cfs)		5009.6	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		59.02	
Min Ch El (ft)	1970.56	Shear (lb/sq ft)		0.88	
Alpha	1.00	Stream Power (lb/ft s)		5.79	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		11.73	
C & E Loss (ft)	0.16	Cum SA (acres)		2.91	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1092

INPUT
Description: Sta 19+75 - Drake Channel
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46	1973	-44	1972.81	-35	1967.56	15	1967.56	23	1974.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46	.04	-46	.04	23	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-46 23 19 19 19 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1970.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.		0.040	
W.S. Elev (ft)	1970.75	Reach Len. (ft)	19.00	19.00	19.00
Crit W.S. (ft)		Flow Area (sq ft)		173.89	
E.G. Slope (ft/ft)	0.001582	Area (sq ft)		173.89	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	58.99	Top Width (ft)		58.99	
Vel Total (ft/s)	2.97	Avg. Vel. (ft/s)		2.97	
Max Chl Dpth (ft)	3.19	Hydr. Depth (ft)		2.95	
Conv. Total (cfs)	12975.0	Conv. (cfs)		12975.0	
Length Wtd. (ft)	19.00	Wetted Per. (ft)		61.08	
Min Ch El (ft)	1967.56	Shear (lb/sq ft)		0.28	
Alpha	1.00	Stream Power (lb/ft s)		0.83	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)		11.73	
C & E Loss (ft)	0.00	Cum SA (acres)		2.91	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1091

INPUT
Description: Sta 19+55- Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44	1972.81	-35	1967.51	15	1967.51	23	1974.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44	.028	-44	.028	23	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-44 23 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1970.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.		0.028	
W.S. Elev (ft)	1970.73	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		176.10	
E.G. Slope (ft/ft)	0.000747	Area (sq ft)		176.10	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	59.27	Top Width (ft)		59.27	
Vel Total (ft/s)	2.93	Avg. Vel. (ft/s)		2.93	
Max Chl Dpth (ft)	3.22	Hydr. Depth (ft)		2.97	
Conv. Total (cfs)	18880.1	Conv. (cfs)		18880.1	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		61.33	
Min Ch El (ft)	1967.51	Shear (lb/sq ft)		0.13	
Alpha	1.00	Stream Power (lb/ft s)		0.39	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		11.66	
C & E Loss (ft)	0.08	Cum SA (acres)		2.89	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1090

INPUT
Description: Sta 19+50 - Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44	1972.81	-35	1967.51	-15	1967.51	23	1974.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44	.028	-44	.028	23	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-44 23 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1970.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.91	Wt. n-Val.		0.028	
W.S. Elev (ft)	1969.86	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	1969.86	Flow Area (sq ft)		67.27	
E.G. Slope (ft/ft)	0.009758	Area (sq ft)		67.27	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	37.15	Top Width (ft)		37.15	
Vel Total (ft/s)	7.67	Avg. Vel. (ft/s)		7.67	
Max Chl Dpth (ft)	2.35	Hydr. Depth (ft)		1.81	
Conv. Total (cfs)	5223.7	Conv. (cfs)		5223.7	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		38.00	
Min Ch El (ft)	1967.51	Shear (lb/sq ft)		1.08	
Alpha	1.00	Stream Power (lb/ft s)		8.27	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		11.64	
C & E Loss (ft)	0.10	Cum SA (acres)		2.88	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1089

INPUT
Description: Sta 19+50 -Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44	1972.81	-15	1958.31	-5	1958.31	23	1972.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

```
**************************************************
     -44     .028     -44     .028      23     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -44      23                 24       24       24             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)          * 1963.35  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.58  * Wt. n-Val.             *          *    0.028 *          *
* W.S. Elev (ft)          * 1962.77  * Reach Len. (ft)        *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *   84.25  *          *
* E.G. Slope (ft/ft)      *0.003351  * Area (sq ft)           *          *   84.25  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)          *   27.82  * Top Width (ft)         *          *   27.82  *          *
* Vel Total (ft/s)        *    6.12  * Avg. Vel. (ft/s)       *          *    6.12  *          *
* Max Chl Dpth (ft)       *    4.46  * Hydr. Depth (ft)       *          *    3.03  *          *
* Conv. Total (cfs)       *  8914.1  * Conv. (cfs)           *          *  8914.1  *          *
* Length Wtd. (ft)        *   24.00  * Wetted Per. (ft)       *          *   29.92  *          *
* Min Ch El (ft)          * 1958.31  * Shear (lb/sq ft)      *          *    0.59  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    3.61  *          *
* Frctn Loss (ft)         *    0.05  * Cum Volume (acre-ft)   *          *   11.64  *          *
* C & E Loss (ft)         *    0.10  * Cum SA (acres)         *          *    2.88  *          *
*********************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1088

INPUT
Description: Sta 19+26 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**************************************************************************
   -44.2 1971.31      -18 1958.26        0 1958.26     25.2 1970.81

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
***************************************************
   -44.2     .028    -44.2     .03     25.2     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -44.2    25.2                 12       12       12             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)          * 1963.20  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.25  * Wt. n-Val.             *          *    0.030 *          *
* W.S. Elev (ft)          * 1962.95  * Reach Len. (ft)        *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *  128.54  *          *
* E.G. Slope (ft/ft)      *0.001341  * Area (sq ft)           *          *  128.54  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)          *   36.83  * Top Width (ft)         *          *   36.83  *          *
* Vel Total (ft/s)        *    4.01  * Avg. Vel. (ft/s)       *          *    4.01  *          *
* Max Chl Dpth (ft)       *    4.69  * Hydr. Depth (ft)       *          *    3.49  *          *
* Conv. Total (cfs)       * 14092.2  * Conv. (cfs)           *          * 14092.2  *          *
* Length Wtd. (ft)        *   12.00  * Wetted Per. (ft)       *          *   39.03  *          *
* Min Ch El (ft)          * 1958.26  * Shear (lb/sq ft)      *          *    0.28  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    1.11  *          *
* Frctn Loss (ft)         *    0.02  * Cum Volume (acre-ft)   *          *   11.58  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    2.86  *          *
*********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1087

INPUT
Description: Sta 19+14 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**************************************************************************
   -44.2 1971.31      -18 1958.24        0 1958.24     25.2 1970.81

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
***************************************************
   -44.2     .03     -44.2     .03     25.2     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -44.2    25.2                 14       14       14             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)          * 1963.18  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.25  * Wt. n-Val.             *          *    0.030 *          *
* W.S. Elev (ft)          * 1962.93  * Reach Len. (ft)        *   14.00  *   14.00  *   14.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *  128.62  *          *
* E.G. Slope (ft/ft)      *0.001338  * Area (sq ft)           *          *  128.62  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)          *   36.82  * Top Width (ft)         *          *   36.82  *          *
* Vel Total (ft/s)        *    4.01  * Avg. Vel. (ft/s)       *          *    4.01  *          *
* Max Chl Dpth (ft)       *    4.69  * Hydr. Depth (ft)       *          *    3.49  *          *
* Conv. Total (cfs)       * 14108.7  * Conv. (cfs)           *          * 14108.7  *          *
* Length Wtd. (ft)        *   14.00  * Wetted Per. (ft)       *          *   39.03  *          *
* Min Ch El (ft)          * 1958.24  * Shear (lb/sq ft)      *          *    0.28  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    1.10  *          *
* Frctn Loss (ft)         *    0.02  * Cum Volume (acre-ft)   *          *   11.54  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    2.85  *          *
*********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1086

INPUT
Description: Sta 19+00 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**************************************************************************
   -44.2 1971.31      -18 1958.21        0 1958.21     25.2 1970.81

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
***************************************************
   -44.2     .03     -44.2     .03     25.2     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -44.2    25.2                 50       50       50             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)          * 1963.16  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.25  * Wt. n-Val.             *          *    0.030 *          *
* W.S. Elev (ft)          * 1962.92  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *  128.97  *          *
* E.G. Slope (ft/ft)      *0.001326  * Area (sq ft)           *          *  128.97  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)          *   36.82  * Top Width (ft)         *          *   36.82  *          *
* Vel Total (ft/s)        *    4.00  * Avg. Vel. (ft/s)       *          *    4.00  *          *
* Max Chl Dpth (ft)       *    4.71  * Hydr. Depth (ft)       *          *    3.50  *          *
* Conv. Total (cfs)       * 14168.3  * Conv. (cfs)           *          * 14168.3  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)       *          *   39.04  *          *
* Min Ch El (ft)          * 1958.21  * Shear (lb/sq ft)      *          *    0.27  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    1.09  *          *
* Frctn Loss (ft)         *    0.05  * Cum Volume (acre-ft)   *          *   11.50  *          *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)         *          *    2.84  *          *
*********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1085

INPUT
Description: Sta 18+50 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**************************************************************************
   -41.4 1968.81      -20 1958.11        3 1958.11     24.4 1968.81
```

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
   -41.4     .03   -41.4     .03     24.4     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -41.4    24.4                 50       50       50          .1         .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)       * 1963.09  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)        *    0.17  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)       * 1962.92  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)       *          * Flow Area (sq ft)      *          *  156.90  *          *
* E.G. Slope (ft/ft)   *0.000822  * Area (sq ft)           *          *  156.90  *          *
* Q Total (cfs)        *  516.00  * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)       *   42.24  * Top Width (ft)         *          *   42.24  *          *
* Vel Total (ft/s)     *    3.29  * Avg. Vel. (ft/s)       *          *    3.29  *          *
* Max Chl Dpth (ft)    *    4.81  * Hydr. Depth (ft)       *          *    3.71  *          *
* Conv. Total (cfs)    * 18000.6  * Conv. (cfs)           *          * 18000.6  *          *
* Length Wtd. (ft)     *   50.00  * Wetted Per. (ft)      *          *   44.51  *          *
* Min Ch El (ft)       * 1958.11  * Shear (lb/sq ft)      *          *    0.18  *          *
* Alpha                *    1.00  * Stream Power (lb/ft s) *          *    0.59  *          *
* Frctn Loss (ft)      *    0.03  * Cum Volume (acre-ft)   *          *   11.34  *          *
* C & E Loss (ft)      *    0.02  * Cum SA (acres)         *          *    2.79  *          *
*************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1084

INPUT
Description: Sta 18+00 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -43.4 1968.81      -22 1958.01        8 1958.01     29.4 1968.81

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
   -43.4     .03   -43.4     .03     29.4     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -43.4    29.4                 50       50       50          .1         .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)       * 1963.04  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)        *    0.11  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)       * 1962.93  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)       *          * Flow Area (sq ft)      *          *  195.61  *          *
* E.G. Slope (ft/ft)   *0.000483  * Area (sq ft)           *          *  195.61  *          *
* Q Total (cfs)        *  516.00  * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)       *   49.50  * Top Width (ft)         *          *   49.50  *          *
* Vel Total (ft/s)     *    2.64  * Avg. Vel. (ft/s)       *          *    2.64  *          *
* Max Chl Dpth (ft)    *    4.92  * Hydr. Depth (ft)       *          *    3.95  *          *
* Conv. Total (cfs)    * 23482.4  * Conv. (cfs)           *          * 23482.4  *          *
* Length Wtd. (ft)     *   50.00  * Wetted Per. (ft)      *          *   51.84  *          *
* Min Ch El (ft)       * 1958.01  * Shear (lb/sq ft)      *          *    0.11  *          *
* Alpha                *    1.00  * Stream Power (lb/ft s) *          *    0.30  *          *
* Frctn Loss (ft)      *    0.02  * Cum Volume (acre-ft)   *          *   11.14  *          *
* C & E Loss (ft)      *    0.01  * Cum SA (acres)         *          *    2.74  *          *
*************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1083

INPUT
Description: Sta 17+50 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -41.8 1966.31      -25 1957.91     12.5 1957.91     32.9 1968.11

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
   -41.8     .03   -41.8     .03     32.9     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -41.8    32.9                 50       50       50          .1         .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)       * 1963.01  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)        *    0.07  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)       * 1962.94  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)       *          * Flow Area (sq ft)      *          *  239.07  *          *
* E.G. Slope (ft/ft)   *0.000301  * Area (sq ft)           *          *  239.07  *          *
* Q Total (cfs)        *  516.00  * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)       *   57.61  * Top Width (ft)         *          *   57.61  *          *
* Vel Total (ft/s)     *    2.16  * Avg. Vel. (ft/s)       *          *    2.16  *          *
* Max Chl Dpth (ft)    *    5.03  * Hydr. Depth (ft)       *          *    4.15  *          *
* Conv. Total (cfs)    * 29766.2  * Conv. (cfs)           *          * 29766.2  *          *
* Length Wtd. (ft)     *   50.00  * Wetted Per. (ft)      *          *   59.98  *          *
* Min Ch El (ft)       * 1957.91  * Shear (lb/sq ft)      *          *    0.07  *          *
* Alpha                *    1.00  * Stream Power (lb/ft s) *          *    0.16  *          *
* Frctn Loss (ft)      *    0.01  * Cum Volume (acre-ft)   *          *   10.89  *          *
* C & E Loss (ft)      *    0.00  * Cum SA (acres)         *          *    2.68  *          *
*************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1082

INPUT
Description: Sta 17+00 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -39.5 1966.31     -22.5 1957.81     17.5 1957.81     36.1 1967.11

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
   -39.5     .03   -39.5     .03     36.1     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -39.5    36.1                 13       13       13          .1         .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)       * 1962.99  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)        *    0.06  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)       * 1962.93  * Reach Len. (ft)        *   13.00  *   13.00  *   13.00  *
* Crit W.S. (ft)       *          * Flow Area (sq ft)      *          *  257.25  *          *
* E.G. Slope (ft/ft)   *0.000251  * Area (sq ft)           *          *  257.25  *          *
* Q Total (cfs)        *  516.00  * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)       *   60.48  * Top Width (ft)         *          *   60.48  *          *
* Vel Total (ft/s)     *    2.01  * Avg. Vel. (ft/s)       *          *    2.01  *          *
* Max Chl Dpth (ft)    *    5.12  * Hydr. Depth (ft)       *          *    4.25  *          *
* Conv. Total (cfs)    * 32586.6  * Conv. (cfs)           *          * 32586.6  *          *
* Length Wtd. (ft)     *   13.00  * Wetted Per. (ft)      *          *   62.90  *          *
* Min Ch El (ft)       * 1957.81  * Shear (lb/sq ft)      *          *    0.06  *          *
* Alpha                *    1.00  * Stream Power (lb/ft s) *          *    0.13  *          *
* Frctn Loss (ft)      *    0.00  * Cum Volume (acre-ft)   *          *   10.60  *          *
* C & E Loss (ft)      *    0.01  * Cum SA (acres)         *          *    2.61  *          *
*************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1081

INPUT
Description: Sta 16+87 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -41.6 1964.31      -30 1957.77       20 1957.77     35.6 1966.31

Manning's n Values          num=        3
```

Sta	n Val	Sta	n Val	Sta	n Val
-41.6	.04	-41.6	.04	35.6	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.6 35.6 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1962.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.		0.040	
W.S. Elev (ft)	1962.94	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		306.60	
E.G. Slope (ft/ft)	*0.000293	Area (sq ft)		306.60	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	68.61	Top Width (ft)		68.61	
Vel Total (ft/s)	1.68	Avg. Vel. (ft/s)		1.68	
Max Chl Dpth (ft)	5.17	Hydr. Depth (ft)		4.47	
Conv. Total (cfs)	30120.8	Conv. (cfs)		30120.8	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		71.29	
Min Ch El (ft)	1957.77	Shear (lb/sq ft)		0.08	
Alpha	1.00	Stream Power (lb/ft s)		0.13	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		10.52	
C & E Loss (ft)	0.00	Cum SA (acres)		2.59	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1080

INPUT
Description: Sta 16+ 81 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.6	1964.31	-30	1957.76	20	1957.76	35.6	1966.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.6	.028	-41.6	.028	35.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.6 35.6 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1962.98	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.		0.028	
W.S. Elev (ft)	1962.94	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)		Flow Area (sq ft)		307.15	
E.G. Slope (ft/ft)	*0.000143	Area (sq ft)		307.15	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	68.62	Top Width (ft)		68.62	
Vel Total (ft/s)	1.68	Avg. Vel. (ft/s)		1.68	
Max Chl Dpth (ft)	5.18	Hydr. Depth (ft)		4.48	
Conv. Total (cfs)	43151.7	Conv. (cfs)		43151.7	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		71.31	
Min Ch El (ft)	1957.76	Shear (lb/sq ft)		0.04	
Alpha	1.00	Stream Power (lb/ft s)		0.06	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		10.48	
C & E Loss (ft)	0.04	Cum SA (acres)		2.58	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1079

INPUT
Description: Sta 16+81 - Gabion Counterwier
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.6	1964.31	-30	1960.76	20	1960.76	35.6	1966.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.6	.028	-41.6	.028	35.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.6 35.6 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1962.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.45	Wt. n-Val.		0.028	
W.S. Elev (ft)	1962.49	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)	1962.20	Flow Area (sq ft)		95.47	
E.G. Slope (ft/ft)	*0.005716	Area (sq ft)		95.47	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	60.50	Top Width (ft)		60.50	
Vel Total (ft/s)	5.40	Avg. Vel. (ft/s)		5.40	
Max Chl Dpth (ft)	1.73	Hydr. Depth (ft)		1.58	
Conv. Total (cfs)	6825.1	Conv. (cfs)		6825.1	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		61.06	
Min Ch El (ft)	1960.76	Shear (lb/sq ft)		0.56	
Alpha	1.00	Stream Power (lb/ft s)		3.02	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		10.48	
C & E Loss (ft)	0.02	Cum SA (acres)		2.58	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1078

INPUT
Description: Sta 16+75 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.6	1964.31	-30	1960.76	20	1960.76	35.6	1966.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.6	.028	-41.6	.028	35.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.6 35.6 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1962.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.67	Wt. n-Val.		0.028	
W.S. Elev (ft)	1962.20	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	1962.20	Flow Area (sq ft)		78.38	
E.G. Slope (ft/ft)	*0.010589	Area (sq ft)		78.38	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	58.76	Top Width (ft)		58.76	
Vel Total (ft/s)	6.58	Avg. Vel. (ft/s)		6.58	
Max Chl Dpth (ft)	1.44	Hydr. Depth (ft)		1.33	
Conv. Total (cfs)	5014.4	Conv. (cfs)		5014.4	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		59.23	
Min Ch El (ft)	1960.76	Shear (lb/sq ft)		0.87	
Alpha	1.00	Stream Power (lb/ft s)		5.76	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		10.46	
C & E Loss (ft)	0.09	Cum SA (acres)		2.58	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1077

INPUT
Description: Sta 16+75 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.6	1964.31	-30	1957.76	20	1957.76	35.6	1966.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.6	.04	-41.6	.04	35.6	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.6 35.6 19 19 19 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1960.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.39	Wt. n-Val.		0.040	
W.S. Elev (ft)	1959.69	Reach Len. (ft)	19.00	19.00	19.00
Crit W.S. (ft)		Flow Area (sq ft)		103.19	
E.G. Slope (ft/ft)	*0.008393	Area (sq ft)		103.19	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	56.94	Top Width (ft)		56.94	
Vel Total (ft/s)	5.00	Avg. Vel. (ft/s)		5.00	
Max Chl Dpth (ft)	1.93	Hydr. Depth (ft)		1.81	
Conv. Total (cfs)	5632.4	Conv. (cfs)		5632.4	
Length Wtd. (ft)	19.00	Wetted Per. (ft)		57.94	
Min Ch El (ft)	1957.76	Shear (lb/sq ft)		0.93	
Alpha	1.00	Stream Power (lb/ft s)		4.67	
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)		10.46	
C & E Loss (ft)	0.01	Cum SA (acres)		2.58	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1076

INPUT
Description: Sta 16+56 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.6	1964.31	-30	1957.71	20	1957.71	35.6	1966.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.6	.028	-41.6	.028	35.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.6 35.6 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1959.94	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.48	Wt. n-Val.		0.028	
W.S. Elev (ft)	1959.46	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)	1959.17	Flow Area (sq ft)		92.93	
E.G. Slope (ft/ft)	*0.005726	Area (sq ft)		92.93	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	56.25	Top Width (ft)		56.25	
Vel Total (ft/s)	5.55	Avg. Vel. (ft/s)		5.55	
Max Chl Dpth (ft)	1.75	Hydr. Depth (ft)		1.65	
Conv. Total (cfs)	6819.2	Conv. (cfs)		6819.2	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		57.16	
Min Ch El (ft)	1957.71	Shear (lb/sq ft)		0.58	
Alpha	1.00	Stream Power (lb/ft s)		3.23	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		10.42	
C & E Loss (ft)	0.02	Cum SA (acres)		2.55	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1075

INPUT
Description: Sta 16+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.6	1964.31	-30	1957.71	20	1957.71	35.6	1966.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.6	.028	-41.6	.028	35.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.6 35.6 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1959.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.70	Wt. n-Val.		0.028	
W.S. Elev (ft)	1959.17	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	1959.17	Flow Area (sq ft)		76.84	
E.G. Slope (ft/ft)	*0.010494	Area (sq ft)		76.84	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	55.22	Top Width (ft)		55.22	
Vel Total (ft/s)	6.71	Avg. Vel. (ft/s)		6.71	
Max Chl Dpth (ft)	1.46	Hydr. Depth (ft)		1.39	
Conv. Total (cfs)	5037.0	Conv. (cfs)		5037.0	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		55.98	
Min Ch El (ft)	1957.71	Shear (lb/sq ft)		0.90	
Alpha	1.00	Stream Power (lb/ft s)		6.04	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		10.41	
C & E Loss (ft)	0.04	Cum SA (acres)		2.54	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1074

INPUT
Description: Sta 16+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.6	1964.31	-10	1948.51	0	1948.51	35.6	1966.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.6	.028	-41.6	.028	35.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.6 35.6 24 24 24 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1953.56	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.57	Wt. n-Val.		0.028	
W.S. Elev (ft)	1952.99	Reach Len. (ft)	24.00	24.00	24.00
Crit W.S. (ft)		Flow Area (sq ft)		84.95	
E.G. Slope (ft/ft)	*0.003275	Area (sq ft)		84.95	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	27.92	Top Width (ft)		27.92	
Vel Total (ft/s)	6.07	Avg. Vel. (ft/s)		6.07	
Max Chl Dpth (ft)	4.48	Hydr. Depth (ft)		3.04	

* Conv. Total (cfs)	* 9016.4	* Conv. (cfs)	*	* 9016.4	*	*	
* Length Wtd. (ft)	* 24.00	* Wetted Per. (ft)	*	* 30.04	*	*	
* Min Ch El (ft)	* 1948.51	* Shear (lb/sq ft)	*	* 0.58	*	*	
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 3.51	*	*	
* Frctn Loss (ft)	* 0.05	* Cum Volume (acre-ft)	*	* 10.41	*	*	
* C & E Loss (ft)	* 0.08	* Cum SA (acres)	*	* 2.54	*	*	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1073

INPUT
Description: Sta 16+26 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.2	1963.51	-13	1948.46	3	1948.46	36.6	1965.21

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.2	.028	-43.2	.03	36.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Right	Coeff Contr.	Expan.
-43.2	36.6	12	12	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1953.43	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.29	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 1953.13	* Reach Len. (ft)	* 12.00 *	12.00 *	12.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 118.52 *	*
* E.G. Slope (ft/ft)	*0.001633	* Area (sq ft)	*	* 118.52 *	*
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00 *	*
* Top Width (ft)	* 34.74	* Top Width (ft)	*	* 34.74 *	*
* Vel Total (ft/s)	* 4.35	* Avg. Vel. (ft/s)	*	* 4.35 *	*
* Max Chl Dpth (ft)	* 4.67	* Hydr. Depth (ft)	*	* 3.41 *	*
* Conv. Total (cfs)	* 12769.3	* Conv. (cfs)	*	* 12769.3 *	*
* Length Wtd. (ft)	* 12.00	* Wetted Per. (ft)	*	* 36.94 *	*
* Min Ch El (ft)	* 1948.46	* Shear (lb/sq ft)	*	* 0.33 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 1.42 *	*
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	*	* 10.35 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 2.53 *	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1072

INPUT
Description: Sta 16+14 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.2	1963.51	-13	1948.44	3	1948.44	36.6	1965.21

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.2	.03	-43.2	.03	36.6	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Right	Coeff Contr.	Expan.
-43.2	36.6	14	14	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1953.41	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.29	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 1953.11	* Reach Len. (ft)	* 14.00 *	14.00 *	14.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 118.47 *	*
* E.G. Slope (ft/ft)	*0.001634	* Area (sq ft)	*	* 118.47 *	*
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00 *	*
* Top Width (ft)	* 34.72	* Top Width (ft)	*	* 34.72 *	*
* Vel Total (ft/s)	* 4.36	* Avg. Vel. (ft/s)	*	* 4.36 *	*
* Max Chl Dpth (ft)	* 4.67	* Hydr. Depth (ft)	*	* 3.41 *	*
* Conv. Total (cfs)	* 12764.8	* Conv. (cfs)	*	* 12764.8 *	*
* Length Wtd. (ft)	* 14.00	* Wetted Per. (ft)	*	* 36.92 *	*
* Min Ch El (ft)	* 1948.44	* Shear (lb/sq ft)	*	* 0.33 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 1.43 *	*
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	*	* 10.32 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 2.52 *	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1071

INPUT
Description: Sta 16+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.2	1963.51	-13	1948.41	3	1948.41	36.6	1965.21

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.2	.03	-43.2	.03	36.6	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Right	Coeff Contr.	Expan.
-43.2	36.6	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1953.38	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.29	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 1953.09	* Reach Len. (ft)	* 50.00 *	50.00 *	50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 118.64 *	*
* E.G. Slope (ft/ft)	*0.001626	* Area (sq ft)	*	* 118.64 *	*
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00 *	*
* Top Width (ft)	* 34.71	* Top Width (ft)	*	* 34.71 *	*
* Vel Total (ft/s)	* 4.35	* Avg. Vel. (ft/s)	*	* 4.35 *	*
* Max Chl Dpth (ft)	* 4.68	* Hydr. Depth (ft)	*	* 3.42 *	*
* Conv. Total (cfs)	* 12795.4	* Conv. (cfs)	*	* 12795.4 *	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 36.92 *	*
* Min Ch El (ft)	* 1948.41	* Shear (lb/sq ft)	*	* 0.33 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 1.42 *	*
* Frctn Loss (ft)	* 0.05	* Cum Volume (acre-ft)	*	* 10.28 *	*
* C & E Loss (ft)	* 0.04	* Cum SA (acres)	*	* 2.51 *	*

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1070

INPUT
Description: Sta 15+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.9	1962.51	-17.5	1948.31	7.5	1948.31	42.5	1965.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45.9	.03	-45.9	.03	42.5	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Right	Coeff Contr.	Expan.
-45.9	42.5	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1953.29	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.15	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 1953.14	* Reach Len. (ft)	* 50.00 *	50.00 *	50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 167.40 *	*
* E.G. Slope (ft/ft)	*0.000704	* Area (sq ft)	*	* 167.40 *	*
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00 *	*
* Top Width (ft)	* 44.32	* Top Width (ft)	*	* 44.32 *	*

* Vel Total (ft/s)	* 3.08	* Avg. Vel. (ft/s)	*	* 3.08	*
* Max Chl Dpth (ft)	* 4.83	* Hydr. Depth (ft)	*	* 3.78	*
* Conv. Total (cfs)	* 19447.3	* Conv. (cfs)	*	* 19447.3	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 46.60	*
* Min Ch El (ft)	* 1948.31	* Shear (lb/sq ft)	*	* 0.16	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.49	*
* Frctn Loss (ft)	* 0.03	* Cum Volume (acre-ft)	*	* 10.12	*
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 2.46	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1069

INPUT
Description: Sta 15+00 -Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-49.38	1962.9	-20	1948.21	10	1948.21	38.6	1962.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-49.38	.03	-49.38	.03	38.6	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-49.38	38.6	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1953.25	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.11	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 1953.14	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 196.48	* *
* E.G. Slope (ft/ft)	*0.000478	* Area (sq ft)	*	* 196.48	* *
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00	* *
* Top Width (ft)	* 49.72	* Top Width (ft)	*	* 49.72	* *
* Vel Total (ft/s)	* 2.63	* Avg. Vel. (ft/s)	*	* 2.63	* *
* Max Chl Dpth (ft)	* 4.93	* Hydr. Depth (ft)	*	* 3.95	* *
* Conv. Total (cfs)	* 23594.2	* Conv. (cfs)	*	* 23594.2	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 52.04	* *
* Min Ch El (ft)	* 1948.21	* Shear (lb/sq ft)	*	* 0.11	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.30	* *
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	*	* 9.91	* *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 2.41	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1068

INPUT
Description: Sta 14+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.5	1960.11	-22.5	1948.11	12.5	1948.11	37.9	1958.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.5	.03	-46.5	.03	37.9	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-46.5	37.9	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1953.22	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.08	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 1953.14	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 232.93	* *
* E.G. Slope (ft/ft)	*0.000326	* Area (sq ft)	*	* 232.93	* *
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00	* *
* Top Width (ft)	* 57.59	* Top Width (ft)	*	* 57.59	* *
* Vel Total (ft/s)	* 2.22	* Avg. Vel. (ft/s)	*	* 2.22	* *
* Max Chl Dpth (ft)	* 5.03	* Hydr. Depth (ft)	*	* 4.04	* *
* Conv. Total (cfs)	* 28577.2	* Conv. (cfs)	*	* 28577.2	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 59.75	* *
* Min Ch El (ft)	* 1948.11	* Shear (lb/sq ft)	*	* 0.08	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.18	* *
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 9.66	* *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 2.34	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1067

INPUT
Description: Sta 14+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-51.1	1959.81	-27.5	1948.01	17.5	1948.01	38.5	1958.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-51.1	.03	-51.1	.03	38.5	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-51.1	38.5	13	13	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1953.20	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.05	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 1953.15	* Reach Len. (ft)	* 13.00	* 13.00	* 13.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 283.89	* *
* E.G. Slope (ft/ft)	*0.000200	* Area (sq ft)	*	* 283.89	* *
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00	* *
* Top Width (ft)	* 65.54	* Top Width (ft)	*	* 65.54	* *
* Vel Total (ft/s)	* 1.82	* Avg. Vel. (ft/s)	*	* 1.82	* *
* Max Chl Dpth (ft)	* 5.14	* Hydr. Depth (ft)	*	* 4.33	* *
* Conv. Total (cfs)	* 36468.5	* Conv. (cfs)	*	* 36468.5	* *
* Length Wtd. (ft)	* 13.00	* Wetted Per. (ft)	*	* 67.97	* *
* Min Ch El (ft)	* 1948.01	* Shear (lb/sq ft)	*	* 0.05	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.09	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 9.37	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 2.27	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1066

INPUT
Description: Sta 13+87 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-51.2	1957.31	-30	1947.97	20	1947.97	41	1958.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-51.2	.04	-51.2	.04	41	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-51.2	41	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1953.19	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.04	* Wt. n-Val.	*	* 0.040	* *
* W.S. Elev (ft)	* 1953.15	* Reach Len. (ft)	* 6.00	* 6.00	* 6.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 316.72	* *
* E.G. Slope (ft/ft)	*0.000280	* Area (sq ft)	*	* 316.72	* *
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00	* *
* Top Width (ft)	* 72.28	* Top Width (ft)	*	* 72.28	* *
* Vel Total (ft/s)	* 1.63	* Avg. Vel. (ft/s)	*	* 1.63	* *

* Max Chl Dpth (ft)	* 5.18	* Hydr. Depth (ft)	*	* 4.38	*	*
* Conv. Total (cfs)	* 30855.4	* Conv. (cfs)	*	* 30855.4	*	*
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	* 74.58	*	*
* Min Ch El (ft)	* 1947.97	* Shear (lb/sq ft)	*	* 0.07	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.12	*	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 9.28	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 2.25	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1065

INPUT
Description: Sta 13+81 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-51.2	1957.31	-30	1947.97	20	1947.97	41	1958.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-51.2	.028	-51.2	.028	41	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-51.2	41	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1953.19	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.04	* Wt. n-Val.	*	* 0.028 *	*
* W.S. Elev (ft)	* 1953.15	* Reach Len. (ft)	* 0.10 *	0.10 *	0.10 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 316.63 *	*
* E.G. Slope (ft/ft)	*0.000137	* Area (sq ft)	*	* 316.63 *	*
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00 *	*
* Top Width (ft)	* 72.27	* Top Width (ft)	*	* 72.27 *	*
* Vel Total (ft/s)	* 1.63	* Avg. Vel. (ft/s)	*	* 1.63 *	*
* Max Chl Dpth (ft)	* 5.18	* Hydr. Depth (ft)	*	* 4.38 *	*
* Conv. Total (cfs)	* 44060.9	* Conv. (cfs)	*	* 44060.9 *	*
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	* 74.57 *	*
* Min Ch El (ft)	* 1947.97	* Shear (lb/sq ft)	*	* 0.04 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.06 *	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 9.23 *	*
* C & E Loss (ft)	* 0.04	* Cum SA (acres)	*	* 2.24 *	*

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1064

INPUT
Description: Sta 13+ 81 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-51.2	1957.31	-30	1950.97	20	1950.97	41	1958.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-51.2	.028	-51.2	.028	41	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-51.2	41	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1953.15	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.45	* Wt. n-Val.	*	* 0.028 *	*
* W.S. Elev (ft)	* 1952.70	* Reach Len. (ft)	* 6.00 *	6.00 *	6.00 *
* Crit W.S. (ft)	* 1952.41	* Flow Area (sq ft)	*	* 95.57 *	*
* E.G. Slope (ft/ft)	*0.005721	* Area (sq ft)	*	* 95.57 *	*
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00 *	*
* Top Width (ft)	* 60.71	* Top Width (ft)	*	* 60.71 *	*
* Vel Total (ft/s)	* 5.40	* Avg. Vel. (ft/s)	*	* 5.40 *	*
* Max Chl Dpth (ft)	* 1.73	* Hydr. Depth (ft)	*	* 1.57 *	*
* Conv. Total (cfs)	* 6822.2	* Conv. (cfs)	*	* 6822.2 *	*
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	* 61.26 *	*
* Min Ch El (ft)	* 1950.97	* Shear (lb/sq ft)	*	* 0.56 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 3.01 *	*
* Frctn Loss (ft)	* 0.05	* Cum Volume (acre-ft)	*	* 9.23 *	*
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	*	* 2.24 *	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1063

INPUT
Description: Sta 13+75 - Gabion Counterwier
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-51.2	1957.31	-30	1950.97	20	1950.97	41	1958.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-51.2	.028	-51.2	.028	41	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-51.2	41	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1953.08	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.67	* Wt. n-Val.	*	* 0.028 *	*
* W.S. Elev (ft)	* 1952.41	* Reach Len. (ft)	* 0.10 *	0.10 *	0.10 *
* Crit W.S. (ft)	* 1952.41	* Flow Area (sq ft)	*	* 78.52 *	*
* E.G. Slope (ft/ft)	*0.010569	* Area (sq ft)	*	* 78.52 *	*
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00 *	*
* Top Width (ft)	* 58.94	* Top Width (ft)	*	* 58.94 *	*
* Vel Total (ft/s)	* 6.57	* Avg. Vel. (ft/s)	*	* 6.57 *	*
* Max Chl Dpth (ft)	* 1.44	* Hydr. Depth (ft)	*	* 1.33 *	*
* Conv. Total (cfs)	* 5019.3	* Conv. (cfs)	*	* 5019.3 *	*
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	* 59.40 *	*
* Min Ch El (ft)	* 1950.97	* Shear (lb/sq ft)	*	* 0.87 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 5.73 *	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 9.22 *	*
* C & E Loss (ft)	* 0.09	* Cum SA (acres)	*	* 2.23 *	*

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1062

INPUT
Description: Sta 13+75 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-51.2	1957.31	-30	1947.96	20	1947.96	41	1958.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-51.2	.04	-51.2	.04	41	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-51.2	41	19	19	.1	.3

```
CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 1950.27  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.38  * Wt. n-Val.            *          *    0.040  *          *
* W.S. Elev (ft)        * 1949.89  * Reach Len. (ft)       *   19.00  *   19.00  *   19.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)     *          *  104.27  *          *
* E.G. Slope (ft/ft)    *0.008330  * Area (sq ft)          *          *  104.27  *          *
* Q Total (cfs)         *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)        *   58.27  * Top Width (ft)        *          *   58.27  *          *
* Vel Total (ft/s)      *    4.95  * Avg. Vel. (ft/s)      *          *    4.95  *          *
* Max Chl Dpth (ft)     *    1.93  * Hydr. Depth (ft)      *          *    1.79  *          *
* Conv. Total (cfs)     *  5653.7  * Conv. (cfs)           *          *  5653.7  *          *
* Length Wtd. (ft)      *   19.00  * Wetted Per. (ft)      *          *   59.13  *          *
* Min Ch El (ft)        * 1947.96  * Shear (lb/sq ft)      *          *    0.92  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    4.54  *          *
* Frctn Loss (ft)       *    0.13  * Cum Volume (acre-ft)  *          *    9.22  *          *
* C & E Loss (ft)       *    0.01  * Cum SA (acres)        *          *    2.23  *          *
************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1061

INPUT
Description: Sta 13+56 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
    -49.2 1956.31     -30 1947.91       20 1947.91       39 1957.81

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
    -49.2    .028    -49.2    .028       39    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -49.2      39             6       6       6              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 1950.13  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.47  * Wt. n-Val.            *          *    0.028  *          *
* W.S. Elev (ft)        * 1949.66  * Reach Len. (ft)       *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)        * 1949.37  * Flow Area (sq ft)     *          *   93.73  *          *
* E.G. Slope (ft/ft)    *0.005693  * Area (sq ft)          *          *   93.73  *          *
* Q Total (cfs)         *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)        *   57.34  * Top Width (ft)        *          *   57.34  *          *
* Vel Total (ft/s)      *    5.51  * Avg. Vel. (ft/s)      *          *    5.51  *          *
* Max Chl Dpth (ft)     *    1.75  * Hydr. Depth (ft)      *          *    1.63  *          *
* Conv. Total (cfs)     *  6839.0  * Conv. (cfs)           *          *  6839.0  *          *
* Length Wtd. (ft)      *    6.00  * Wetted Per. (ft)      *          *   58.14  *          *
* Min Ch El (ft)        * 1947.91  * Shear (lb/sq ft)      *          *    0.57  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    3.13  *          *
* Frctn Loss (ft)       *    0.05  * Cum Volume (acre-ft)  *          *    9.18  *          *
* C & E Loss (ft)       *    0.02  * Cum SA (acres)        *          *    2.21  *          *
************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1060

INPUT
Description: Sta 13+50 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -47.6 1955.31     -30 1947.91       20 1947.91     37.6 1957.81

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
   -47.6    .028    -47.6    .028     37.6    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -47.6    37.6             .1      .1      .1              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 1950.06  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.69  * Wt. n-Val.            *          *    0.028  *          *
* W.S. Elev (ft)        * 1949.37  * Reach Len. (ft)       *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)        * 1949.37  * Flow Area (sq ft)     *          *   77.17  *          *
* E.G. Slope (ft/ft)    *0.010532  * Area (sq ft)          *          *   77.17  *          *
* Q Total (cfs)         *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)        *   56.05  * Top Width (ft)        *          *   56.05  *          *
* Vel Total (ft/s)      *    6.69  * Avg. Vel. (ft/s)      *          *    6.69  *          *
* Max Chl Dpth (ft)     *    1.46  * Hydr. Depth (ft)      *          *    1.38  *          *
* Conv. Total (cfs)     *  5027.9  * Conv. (cfs)           *          *  5027.9  *          *
* Length Wtd. (ft)      *    0.10  * Wetted Per. (ft)      *          *   56.72  *          *
* Min Ch El (ft)        * 1947.91  * Shear (lb/sq ft)      *          *    0.89  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    5.98  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *          *    9.17  *          *
* C & E Loss (ft)       *    0.13  * Cum SA (acres)        *          *    2.20  *          *
************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1059

INPUT
Description: Sta 13+50 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -47.4 1955.31     -10 1938.71        0 1938.71     37.4 1957.41

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
   -47.4    .028    -47.4    .028     37.4    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -47.4    37.4             24      24      24              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 1944.74  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.25  * Wt. n-Val.            *          *    0.028  *          *
* W.S. Elev (ft)        * 1944.49  * Reach Len. (ft)       *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)     *          *  128.98  *          *
* E.G. Slope (ft/ft)    *0.001083  * Area (sq ft)          *          *  128.98  *          *
* Q Total (cfs)         *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)        *   34.60  * Top Width (ft)        *          *   34.60  *          *
* Vel Total (ft/s)      *    4.00  * Avg. Vel. (ft/s)      *          *    4.00  *          *
* Max Chl Dpth (ft)     *    5.78  * Hydr. Depth (ft)      *          *    3.73  *          *
* Conv. Total (cfs)     * 15683.2  * Conv. (cfs)           *          * 15683.2  *          *
* Length Wtd. (ft)      *   24.00  * Wetted Per. (ft)      *          *   37.19  *          *
* Min Ch El (ft)        * 1938.71  * Shear (lb/sq ft)      *          *    0.23  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.94  *          *
* Frctn Loss (ft)       *    0.02  * Cum Volume (acre-ft)  *          *    9.16  *          *
* C & E Loss (ft)       *    0.02  * Cum SA (acres)        *          *    2.20  *          *
************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1058

INPUT
Description: Sta 13+26 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -44.6 1955.91     -10 1938.66        3 1938.66     34.4 1954.31
```

```
Manning's n Values          num=          3
      Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
    -44.6     .028    -44.6     .028     34.4     .028

Bank Sta: Left    Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -44.6     34.4                    12        12        12              .1       .3


CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1944.71  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.20  * Wt. n-Val.              *          *    0.028 *          *
* W.S. Elev (ft)          * 1944.51  * Reach Len. (ft)        *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *          *  144.61  *          *
* E.G. Slope (ft/ft)      *0.000794  * Area (sq ft)           *          *  144.61  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)          *   36.46  * Top Width (ft)         *          *   36.46  *          *
* Vel Total (ft/s)        *    3.57  * Avg. Vel. (ft/s)       *          *    3.57  *          *
* Max Chl Dpth (ft)       *    5.85  * Hydr. Depth (ft)       *          *    3.97  *          *
* Conv. Total (cfs)       * 18317.6  * Conv. (cfs)           *          * 18317.6  *          *
* Length Wtd. (ft)        *   12.00  * Wetted Per. (ft)      *          *   39.21  *          *
* Min Ch El (ft)          * 1938.66  * Shear (lb/sq ft)      *          *    0.18  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.65  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)   *          *    9.09  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    2.18  *          *
*****************************************************************************************************


CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1057

INPUT
Description: Sta 13+14 - Drake Channel
Station Elevation Data    num=       4
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -44.6 1955.91      -10 1938.64        3 1938.64     34.4 1954.31

Manning's n Values          num=          3
      Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
   -44.6     .028    -44.6     .03      34.4     .028

Bank Sta: Left    Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -44.6     34.4                    14        14        14              .1       .3


CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1944.70  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.20  * Wt. n-Val.              *          *    0.030 *          *
* W.S. Elev (ft)          * 1944.50  * Reach Len. (ft)        *   14.00  *   14.00  *   14.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *          *  144.90  *          *
* E.G. Slope (ft/ft)      *0.000905  * Area (sq ft)           *          *  144.90  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)          *   36.47  * Top Width (ft)         *          *   36.47  *          *
* Vel Total (ft/s)        *    3.56  * Avg. Vel. (ft/s)       *          *    3.56  *          *
* Max Chl Dpth (ft)       *    5.86  * Hydr. Depth (ft)       *          *    3.97  *          *
* Conv. Total (cfs)       * 17148.4  * Conv. (cfs)           *          * 17148.4  *          *
* Length Wtd. (ft)        *   14.00  * Wetted Per. (ft)      *          *   39.24  *          *
* Min Ch El (ft)          * 1938.64  * Shear (lb/sq ft)      *          *    0.21  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.74  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)   *          *    9.05  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    2.17  *          *
*****************************************************************************************************


CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1056

INPUT
Description: Sta 13+00 - Drake Channel
Station Elevation Data    num=       4
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -44.6 1955.91      -10 1938.61        3 1938.61     34.4 1952.31

Manning's n Values          num=          3
      Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
   -44.6     .03     -44.6     .03      34.4     .03

Bank Sta: Left    Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -44.6     34.4                    50        50        50              .1       .3


CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1944.68  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.18  * Wt. n-Val.              *          *    0.030 *          *
* W.S. Elev (ft)          * 1944.50  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *          *  150.88  *          *
* E.G. Slope (ft/ft)      *0.000836  * Area (sq ft)           *          *  150.88  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)          *   38.26  * Top Width (ft)         *          *   38.26  *          *
* Vel Total (ft/s)        *    3.42  * Avg. Vel. (ft/s)       *          *    3.42  *          *
* Max Chl Dpth (ft)       *    5.89  * Hydr. Depth (ft)       *          *    3.94  *          *
* Conv. Total (cfs)       * 17847.1  * Conv. (cfs)           *          * 17847.1  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   40.88  *          *
* Min Ch El (ft)          * 1938.61  * Shear (lb/sq ft)      *          *    0.19  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.66  *          *
* Frctn Loss (ft)         *    0.03  * Cum Volume (acre-ft)   *          *    9.00  *          *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)         *          *    2.16  *          *
*****************************************************************************************************


CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1055

INPUT
Description: Sta 12+50 - Drake Channel
Station Elevation Data    num=       4
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -44.6 1954.81      -12 1938.51        5 1938.51     37.6 1954.81

Manning's n Values          num=          3
      Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
   -44.6     .03     -44.6     .03      37.6     .03

Bank Sta: Left    Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -44.6     37.6                    50        50        50              .1       .3


CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1944.63  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.14  * Wt. n-Val.              *          *    0.030 *          *
* W.S. Elev (ft)          * 1944.49  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *          *  173.29  *          *
* E.G. Slope (ft/ft)      *0.000577  * Area (sq ft)           *          *  173.29  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)          *   40.93  * Top Width (ft)         *          *   40.93  *          *
* Vel Total (ft/s)        *    2.98  * Avg. Vel. (ft/s)       *          *    2.98  *          *
* Max Chl Dpth (ft)       *    5.98  * Hydr. Depth (ft)       *          *    4.23  *          *
* Conv. Total (cfs)       * 21485.3  * Conv. (cfs)           *          * 21485.3  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   43.76  *          *
* Min Ch El (ft)          * 1938.51  * Shear (lb/sq ft)      *          *    0.14  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.42  *          *
* Frctn Loss (ft)         *    0.02  * Cum Volume (acre-ft)   *          *    8.82  *          *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)         *          *    2.11  *          *
*****************************************************************************************************


CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1054

INPUT
Description: Sta 12+00 - Drake Channel
Station Elevation Data    num=       4
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
     -38 1951.31      -12 1938.41       10 1938.41     38 1952.31
```

```
Manning's n Values          num=          3
     Sta   n Val      Sta   n Val      Sta   n Val
*****************************************************
      -38     .03      -38     .03       38     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            -38      38                 50       50       50             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1944.60  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.09  * Wt. n-Val.             *          *    0.030 *          *
* W.S. Elev (ft)          * 1944.50  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *  208.71  *          *
* E.G. Slope (ft/ft)      *0.000365  * Area (sq ft)           *          *  208.71  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)          *   46.54  * Top Width (ft)        *          *   46.54  *          *
* Vel Total (ft/s)        *    2.47  * Avg. Vel. (ft/s)      *          *    2.47  *          *
* Max Chl Dpth (ft)       *    6.09  * Hydr. Depth (ft)      *          *    4.48  *          *
* Conv. Total (cfs)       * 27016.9  * Conv. (cfs)          *          * 27016.9  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   49.40  *          *
* Min Ch El (ft)          * 1938.41  * Shear (lb/sq ft)     *          *    0.10  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.24  *          *
* Frctn Loss (ft)         *    0.02  * Cum Volume (acre-ft)  *          *    8.60  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    2.06  *          *
*************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1053

INPUT
Description: Sta 11+50 - Drake Channel
Station Elevation Data    num=          4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -31.6 1951.31      -12 1938.32       12 1938.32     31.6 1951.31

Manning's n Values          num=          3
     Sta   n Val      Sta   n Val      Sta   n Val
*****************************************************
   -31.6     .03    -31.6     .03     31.6     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -31.6    31.6                 67       67       67             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1944.58  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.10  * Wt. n-Val.             *          *    0.030 *          *
* W.S. Elev (ft)          * 1944.48  * Reach Len. (ft)       *   67.00  *   67.00  *   67.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *  205.02  *          *
* E.G. Slope (ft/ft)      *0.000355  * Area (sq ft)           *          *  205.02  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)          *   42.58  * Top Width (ft)        *          *   42.58  *          *
* Vel Total (ft/s)        *    2.52  * Avg. Vel. (ft/s)      *          *    2.52  *          *
* Max Chl Dpth (ft)       *    6.16  * Hydr. Depth (ft)      *          *    4.81  *          *
* Conv. Total (cfs)       * 27385.6  * Conv. (cfs)          *          * 27385.6  *          *
* Length Wtd. (ft)        *   67.00  * Wetted Per. (ft)      *          *   46.29  *          *
* Min Ch El (ft)          * 1938.32  * Shear (lb/sq ft)     *          *    0.10  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.25  *          *
* Frctn Loss (ft)         *    0.02  * Cum Volume (acre-ft)  *          *    8.36  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    2.01  *          *
*************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1052

INPUT
Description: Station 10+83 - Gabion Counterweir
Station Elevation Data    num=          4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -31.6 1950.31      -12 1938.19       12 1938.19     31.6 1950.31

Manning's n Values          num=          3
     Sta   n Val      Sta   n Val      Sta   n Val
*****************************************************
   -31.6    .028    -31.6    .028     31.6    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -31.6    31.6                 .1       .1       .1             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1944.55  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.09  * Wt. n-Val.             *          *    0.028 *          *
* W.S. Elev (ft)          * 1944.46  * Reach Len. (ft)       *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *  214.19  *          *
* E.G. Slope (ft/ft)      *0.000279  * Area (sq ft)           *          *  214.19  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)          *   44.29  * Top Width (ft)        *          *   44.29  *          *
* Vel Total (ft/s)        *    2.41  * Avg. Vel. (ft/s)      *          *    2.41  *          *
* Max Chl Dpth (ft)       *    6.27  * Hydr. Depth (ft)      *          *    4.84  *          *
* Conv. Total (cfs)       * 30871.3  * Conv. (cfs)          *          * 30871.3  *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)      *          *   47.85  *          *
* Min Ch El (ft)          * 1938.19  * Shear (lb/sq ft)     *          *    0.08  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.19  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *    8.04  *          *
* C & E Loss (ft)         *    0.06  * Cum SA (acres)        *          *    1.95  *          *
*************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1051

INPUT
Description: Sta 10 + 83 - Gabion Counterweir
Station Elevation Data    num=          4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -31.6 1950.31      -12 1941.19       12 1941.19     31.6 1950.31

Manning's n Values          num=          3
     Sta   n Val      Sta   n Val      Sta   n Val
*****************************************************
   -31.6    .028    -31.6    .028     31.6    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -31.6    31.6                 6        6        6              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1944.49  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.69  * Wt. n-Val.             *          *    0.028 *          *
* W.S. Elev (ft)          * 1943.80  * Reach Len. (ft)       *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)          * 1943.45  * Flow Area (sq ft)     *          *   77.34  *          *
* E.G. Slope (ft/ft)      *0.005782  * Area (sq ft)           *          *   77.34  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)          *   35.23  * Top Width (ft)        *          *   35.23  *          *
* Vel Total (ft/s)        *    6.67  * Avg. Vel. (ft/s)      *          *    6.67  *          *
* Max Chl Dpth (ft)       *    2.61  * Hydr. Depth (ft)      *          *    2.20  *          *
* Conv. Total (cfs)       *  6786.1  * Conv. (cfs)          *          *  6786.1  *          *
* Length Wtd. (ft)        *    6.00  * Wetted Per. (ft)      *          *   36.38  *          *
* Min Ch El (ft)          * 1941.19  * Shear (lb/sq ft)     *          *    0.77  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    5.12  *          *
* Frctn Loss (ft)         *    0.04  * Cum Volume (acre-ft)  *          *    8.04  *          *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)        *          *    1.95  *          *
*************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1050

INPUT
Description: Sta 10+77 - Drake Channel
Station Elevation Data    num=          4
```

```
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -31.6 1950.31     -12 1941.19       12 1941.19     31.6 1950.31

Manning's n Values          num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -31.6     .028    -31.6     .028     31.6     .028

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          -31.6     31.6                   .1        .1        .1             .3


CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)          * 1944.42   * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.97   * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)          * 1943.45   * Reach Len. (ft)        *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)          * 1943.45   * Flow Area (sq ft)      *          *   65.32  *          *
* E.G. Slope (ft/ft)      *0.009542   * Area (sq ft)           *          *   65.32  *          *
* Q Total (cfs)           *  516.00   * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)          *   33.73   * Top Width (ft)         *          *   33.73  *          *
* Vel Total (ft/s)        *    7.90   * Avg. Vel. (ft/s)       *          *    7.90  *          *
* Max Chl Dpth (ft)       *    2.26   * Hydr. Depth (ft)       *          *    1.94  *          *
* Conv. Total (cfs)       *  5282.4   * Conv. (cfs)            *          *  5282.4  *          *
* Length Wtd. (ft)        *    0.10   * Wetted Per. (ft)       *          *   34.73  *          *
* Min Ch El (ft)          * 1941.19   * Shear (lb/sq ft)       *          *    1.12  *          *
* Alpha                   *    1.00   * Stream Power (lb/ft s) *          *    8.85  *          *
* Frctn Loss (ft)         *    0.00   * Cum Volume (acre-ft)   *          *    8.03  *          *
* C & E Loss (ft)         *    0.23   * Cum SA (acres)         *          *    1.94  *          *
*****************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1049

INPUT
Description: Sta 10+ 77 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -31.6 1950.31     -12 1938.19       12 1938.19     31.6 1950.31

Manning's n Values          num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -31.6     .03     -31.6     .03      31.6     .03

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          -31.6     31.6                  27        27        27             .1       .3


CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)          * 1943.04   * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.19   * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)          * 1942.85   * Reach Len. (ft)        *   27.00  *   27.00  *   27.00  *
* Crit W.S. (ft)          *           * Flow Area (sq ft)      *          *  146.80  *          *
* E.G. Slope (ft/ft)      *0.000941   * Area (sq ft)           *          *  146.80  *          *
* Q Total (cfs)           *  516.00   * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)          *   39.06   * Top Width (ft)         *          *   39.06  *          *
* Vel Total (ft/s)        *    3.51   * Avg. Vel. (ft/s)       *          *    3.51  *          *
* Max Chl Dpth (ft)       *    4.66   * Hydr. Depth (ft)       *          *    3.76  *          *
* Conv. Total (cfs)       * 16825.3   * Conv. (cfs)            *          * 16825.3  *          *
* Length Wtd. (ft)        *   27.00   * Wetted Per. (ft)       *          *   41.71  *          *
* Min Ch El (ft)          * 1938.19   * Shear (lb/sq ft)       *          *    0.21  *          *
* Alpha                   *    1.00   * Stream Power (lb/ft s) *          *    0.73  *          *
* Frctn Loss (ft)         *    0.02   * Cum Volume (acre-ft)   *          *    8.03  *          *
* C & E Loss (ft)         *    0.03   * Cum SA (acres)         *          *    1.94  *          *
*****************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1048

INPUT
Description: Sta 10+50 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
     -40 1948.31     -15 1938.13       15 1938.13       40 1949.31

Manning's n Values          num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
     -40     .03      -40     .03       40     .03

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
            -40       40                  43        43        43             .1       .3


CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)          * 1942.99   * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.11   * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)          * 1942.89   * Reach Len. (ft)        *   43.00  *   43.00  *   43.00  *
* Crit W.S. (ft)          *           * Flow Area (sq ft)      *          *  195.76  *          *
* E.G. Slope (ft/ft)      *0.000512   * Area (sq ft)           *          *  195.76  *          *
* Q Total (cfs)           *  516.00   * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)          *   52.32   * Top Width (ft)         *          *   52.32  *          *
* Vel Total (ft/s)        *    2.64   * Avg. Vel. (ft/s)       *          *    2.64  *          *
* Max Chl Dpth (ft)       *    4.76   * Hydr. Depth (ft)       *          *    3.74  *          *
* Conv. Total (cfs)       * 22808.1   * Conv. (cfs)            *          * 22808.1  *          *
* Length Wtd. (ft)        *   43.00   * Wetted Per. (ft)       *          *   54.26  *          *
* Min Ch El (ft)          * 1938.13   * Shear (lb/sq ft)       *          *    0.12  *          *
* Alpha                   *    1.00   * Stream Power (lb/ft s) *          *    0.30  *          *
* Frctn Loss (ft)         *    0.02   * Cum Volume (acre-ft)   *          *    7.92  *          *
* C & E Loss (ft)         *    0.02   * Cum SA (acres)         *          *    1.91  *          *
*****************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1047

INPUT
Description: Sta 23+74.18 - Upstream Face of Race Track Bridge
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
     -40     1946     -15  1938.1       15  1938.1       40     1947

Manning's n Values          num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
     -40     .015     -40     .015      40     .015

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
            -40       40                  92        92        92             .1       .3
Ineffective Flow     num=        2
   Sta L    Sta R    Elev  Permanent
     -40      -13     1946       F
      13       40     1946       F


CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)          * 1942.96   * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.29   * Wt. n-Val.             *          *    0.015  *          *
* W.S. Elev (ft)          * 1942.67   * Reach Len. (ft)        *   92.00  *   92.00  *   92.00  *
* Crit W.S. (ft)          * 1940.40   * Flow Area (sq ft)      *          *  118.76  *          *
* E.G. Slope (ft/ft)      *0.000254   * Area (sq ft)           *          *  199.34  *          *
* Q Total (cfs)           *  516.00   * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)          *   57.28   * Top Width (ft)         *          *   57.28  *          *
* Vel Total (ft/s)        *    4.35   * Avg. Vel. (ft/s)       *          *    4.35  *          *
* Max Chl Dpth (ft)       *    4.57   * Hydr. Depth (ft)       *          *    4.57  *          *
* Conv. Total (cfs)       * 32384.9   * Conv. (cfs)            *          * 32384.9  *          *
* Length Wtd. (ft)        *   92.00   * Wetted Per. (ft)       *          *   26.00  *          *
```

```
* Min Ch El (ft)        * 1938.10  * Shear (lb/sq ft)       *          *    0.07  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.31  *          *
* Frctn Loss (ft)       *          * Cum Volume (acre-ft)   *          *    7.73  *          *
* C & E Loss (ft)       *          * Cum SA (acres)         *          *    1.86  *          *
*****************************************************************************************************

Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         energy was used.

CULVERT


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1046.5

INPUT
Description: Bridge at Race Track
Distance from Upstream XS =       .1
Deck/Roadway Width        =     91.8
Weir Coefficient          =      2.6
Upstream  Deck/Roadway Coordinates
    num=        2
    Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*************************************************
     -13 1945.25  1943.1      13 1945.25  1943.1

Upstream Bridge Cross Section Data
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************
     -40    1946     -15  1938.1      15  1938.1      40    1947

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*****************************************************
     -40    .015      -40    .015       40    .015

Bank Sta: Left   Right    Coeff Contr.   Expan.
           -40      40          .1          .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
    -40     -13     1946       F
     13      40     1946       F

Downstream  Deck/Roadway Coordinates
    num=        2
    Sta Hi Cord Lo Cord     Sta Hi Cord Lo Cord
*************************************************
     -13 1946.25  1944.1      13 1946.25  1944.1

Downstream Bridge Cross Section Data
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************
     -13 1946.61     -13  1937.2      13  1937.2      13 1946.61

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*****************************************************
     -13    .03       -13    .03       13    .03

Bank Sta: Left   Right    Coeff Contr.   Expan.
           -13      13          .1          .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
    -13     -13     1946       F
     13      13     1946       F

Upstream Embankment side slope              =       0 horiz. to 1.0 vertical
Downstream Embankment side slope            =       0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins         =
Energy head used in spillway design         =
Spillway height used in design              =
Weir crest shape                            = Broad Crested

Number of Culverts =  1

Culvert Name      Shape      Rise    Span
Culvert #1        Box           6      12
FHWA Chart # 8 - Flared wingwalls
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
                 .1     91.9     .015      .015          0                   1                1
Number of Barrels =  2
Upstream   Elevation =  1938.1
Centerline Stations
    Sta,     Sta,
      -7        7
Downstream Elevation =  1937.1
Centerline Stations
    Sta,     Sta,
      -7        7

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1046

INPUT
Description: Sta 22+82.18  - Drake Channel at Race Track Bridge
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************
     -13 1946.61     -13  1937.2      13  1937.2      13 1946.61

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*****************************************************
     -13    .03       -13    .03       13    .03

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
           -13      13                62.18   62.18   62.18           .1       .3
Ineffective Flow     num=       2
   Sta L   Sta R    Elev  Permanent
    -13     -13     1946       F
     13      13     1946       F

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)        * 1940.96  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.62  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)        * 1940.34  * Reach Len. (ft)       *   62.18  *   62.18  *   62.18  *
* Crit W.S. (ft)        * 1939.52  * Flow Area (sq ft)     *          *   81.69  *          *
* E.G. Slope (ft/ft)    *0.004717  * Area (sq ft)          *          *   81.69  *          *
* Q Total (cfs)         *  516.00  * Flow (cfs)            *          * 516.00  *          *
* Top Width (ft)        *   26.00  * Top Width (ft)        *          *   26.00  *          *
* Vel Total (ft/s)      *    6.32  * Avg. Vel. (ft/s)      *          *    6.32  *          *
* Max Chl Dpth (ft)     *    3.14  * Hydr. Depth (ft)      *          *    3.14  *          *
* Conv. Total (cfs)     *  7513.0  * Conv. (cfs)           *          * 7513.0  *          *
* Length Wtd. (ft)      *   62.18  * Wetted Per. (ft)      *          *   32.28  *          *
* Min Ch El (ft)        * 1937.20  * Shear (lb/sq ft)      *          *    0.75  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    4.71  *          *
* Frctn Loss (ft)       *    0.49  * Cum Volume (acre-ft)   *          *    7.43  *          *
* C & E Loss (ft)       *    0.09  * Cum SA (acres)         *          *    1.77  *          *
*****************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         energy was used.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1045

INPUT
Description: Sta 22+20 - Drake Channel - Edge of Concrete
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************
   -12.5    1944   -12.5    1936      15    1936      15 1943.92

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*****************************************************
   -12.5    .03    -12.5    .03       15    .03
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -12.5      15             70      70      70            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 1940.39  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    1.47  * Wt. n-Val.            *          *    0.030  *          *
* W.S. Elev (ft)        * 1938.92  * Reach Len. (ft)       *   70.00  *   70.00  *   70.00  *
* Crit W.S. (ft)        * 1938.92  * Flow Area (sq ft)     *          *   80.24  *          *
* E.G. Slope (ft/ft)    *0.011972  * Area (sq ft)          *          *   80.24  *          *
* Q Total (cfs)         *  781.00  * Flow (cfs)            *          * 781.00  *          *
* Top Width (ft)        *   27.50  * Top Width (ft)        *          *   27.50  *          *
* Vel Total (ft/s)      *    9.73  * Avg. Vel. (ft/s)      *          *    9.73  *          *
* Max Chl Dpth (ft)     *    2.92  * Hydr. Depth (ft)      *          *    2.92  *          *
* Conv. Total (cfs)     *  7137.8  * Conv. (cfs)           *          * 7137.8  *          *
* Length Wtd. (ft)      *   70.00  * Wetted Per. (ft)      *          *   33.34  *          *
* Min Ch El (ft)        * 1936.00  * Shear (lb/sq ft)      *          *    1.80  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *   17.51  *          *
* Frctn Loss (ft)       *    0.82  * Cum Volume (acre-ft)  *          *    7.31  *          *
* C & E Loss (ft)       *    0.13  * Cum SA (acres)        *          *    1.73  *          *
************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1044

INPUT
Description: Sta 21 + 50 -Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************
     -30  1942.7       -30     1935       15     1935       15  1945.5

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
     -30      .03      -30      .03       15      .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -30       15             69.6    69.6    69.6            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 1938.16  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    1.05  * Wt. n-Val.            *          *    0.030  *          *
* W.S. Elev (ft)        * 1937.11  * Reach Len. (ft)       *   69.60  *   69.60  *   69.60  *
* Crit W.S. (ft)        * 1937.11  * Flow Area (sq ft)     *          *   94.79  *          *
* E.G. Slope (ft/ft)    *0.011547  * Area (sq ft)          *          *   94.79  *          *
* Q Total (cfs)         *  781.00  * Flow (cfs)            *          * 781.00  *          *
* Top Width (ft)        *   45.00  * Top Width (ft)        *          *   45.00  *          *
* Vel Total (ft/s)      *    8.24  * Avg. Vel. (ft/s)      *          *    8.24  *          *
* Max Chl Dpth (ft)     *    2.11  * Hydr. Depth (ft)      *          *    2.11  *          *
* Conv. Total (cfs)     *  7268.2  * Conv. (cfs)           *          * 7268.2  *          *
* Length Wtd. (ft)      *   69.60  * Wetted Per. (ft)      *          *   49.21  *          *
* Min Ch El (ft)        * 1935.00  * Shear (lb/sq ft)      *          *    1.39  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *   11.44  *          *
* Frctn Loss (ft)       *    0.80  * Cum Volume (acre-ft)  *          *    7.17  *          *
* C & E Loss (ft)       *    0.01  * Cum SA (acres)        *          *    1.67  *          *
************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1043

INPUT
Description: Sta 20+80.40 - Drake Channel --End Transition
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************
     -25 1939.62       -25 1933.65       15 1933.65       15 1941.82

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
     -25      .03      -25      .03       15      .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -25       15            101.21  101.21  101.21            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 1937.07  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    1.14  * Wt. n-Val.            *          *    0.030  *          *
* W.S. Elev (ft)        * 1935.93  * Reach Len. (ft)       *  101.21  *  101.21  *  101.21  *
* Crit W.S. (ft)        * 1935.93  * Flow Area (sq ft)     *          *   91.09  *          *
* E.G. Slope (ft/ft)    *0.011547  * Area (sq ft)          *          *   91.09  *          *
* Q Total (cfs)         *  781.00  * Flow (cfs)            *          * 781.00  *          *
* Top Width (ft)        *   40.00  * Top Width (ft)        *          *   40.00  *          *
* Vel Total (ft/s)      *    8.57  * Avg. Vel. (ft/s)      *          *    8.57  *          *
* Max Chl Dpth (ft)     *    2.28  * Hydr. Depth (ft)      *          *    2.28  *          *
* Conv. Total (cfs)     *  7268.2  * Conv. (cfs)           *          * 7268.2  *          *
* Length Wtd. (ft)      *  101.21  * Wetted Per. (ft)      *          *   44.55  *          *
* Min Ch El (ft)        * 1933.65  * Shear (lb/sq ft)      *          *    1.47  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *   12.64  *          *
* Frctn Loss (ft)       *    0.50  * Cum Volume (acre-ft)  *          *    7.02  *          *
* C & E Loss (ft)       *    0.03  * Cum SA (acres)        *          *    1.61  *          *
************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1042

INPUT
Description: Sta 19+79.19 - Drake Channel -Begin Transition
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************
  -17.63  1934.7   -17.63  1928.7     7.74  1928.7    15.75 1934.55

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
  -17.63      .015   -17.63      .015    15.75      .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -17.63   15.75            79.19   79.19   79.19            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 1933.10  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    1.40  * Wt. n-Val.            *          *    0.015  *          *
* W.S. Elev (ft)        * 1931.70  * Reach Len. (ft)       *   79.19  *   79.19  *   79.19  *
* Crit W.S. (ft)        * 1931.70  * Flow Area (sq ft)     *          *   82.38  *          *
* E.G. Slope (ft/ft)    *0.002755  * Area (sq ft)          *          *   82.38  *          *
* Q Total (cfs)         *  781.00  * Flow (cfs)            *          * 781.00  *          *
* Top Width (ft)        *   29.48  * Top Width (ft)        *          *   29.48  *          *
* Vel Total (ft/s)      *    9.48  * Avg. Vel. (ft/s)      *          *    9.48  *          *
* Max Chl Dpth (ft)     *    3.00  * Hydr. Depth (ft)      *          *    2.79  *          *
```

```
* Conv. Total (cfs)      * 14878.5  * Conv. (cfs)            *          * 14878.5  *          *
* Length Wtd. (ft)       *   79.19  * Wetted Per. (ft)       *          *   33.47  *          *
* Min Ch El (ft)         * 1928.70  * Shear (lb/sq ft)       *          *    0.42  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    4.01  *          *
* Frctn Loss (ft)        *    0.22  * Cum Volume (acre-ft)   *          *    6.82  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    1.53  *          *
*****************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1041

INPUT
Description: Sta 19+00 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
  -17.63 1932.59  -17.63  1926.6    7.74  1926.6    15.75 1932.45

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
  -17.63     .015   -17.63     .015    15.75     .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -17.63   15.75               100      100     100             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)          * 1931.00  * Element                *  Left OB *  Channel  * Right OB *
* Vel Head (ft)           *    1.40  * Wt. n-Val.             *          *   0.015  *          *
* W.S. Elev (ft)          * 1929.60  * Reach Len. (ft)        *  100.00  *  100.00  *  100.00  *
* Crit W.S. (ft)          * 1929.60  * Flow Area (sq ft)      *          *   82.25  *          *
* E.G. Slope (ft/ft)      *0.002769  * Area (sq ft)           *          *   82.25  *          *
* Q Total (cfs)           *  781.00  * Flow (cfs)            *          *  781.00  *          *
* Top Width (ft)          *   29.48  * Top Width (ft)        *          *   29.48  *          *
* Vel Total (ft/s)        *    9.50  * Avg. Vel. (ft/s)      *          *    9.50  *          *
* Max Chl Dpth (ft)       *    3.00  * Hydr. Depth (ft)      *          *    2.79  *          *
* Conv. Total (cfs)       * 14841.0  * Conv. (cfs)           *          * 14841.0  *          *
* Length Wtd. (ft)        *  100.00  * Wetted Per. (ft)      *          *   33.45  *          *
* Min Ch El (ft)          * 1926.60  * Shear (lb/sq ft)      *          *    0.43  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    4.04  *          *
* Frctn Loss (ft)         *    0.28  * Cum Volume (acre-ft)   *          *    6.67  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    1.47  *          *
*****************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1040

INPUT
Description: Sta 18+00  - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
  -17.63 1929.59  -17.63  1923.6    7.74  1923.6    15.75 1929.45

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
  -17.63     .015   -17.63     .015    15.75     .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -17.63   15.75               100      100     100             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)          * 1928.00  * Element                *  Left OB *  Channel  * Right OB *
* Vel Head (ft)           *    1.41  * Wt. n-Val.             *          *   0.015  *          *
* W.S. Elev (ft)          * 1926.59  * Reach Len. (ft)        *  100.00  *  100.00  *  100.00  *
* Crit W.S. (ft)          * 1926.59  * Flow Area (sq ft)      *          *   82.06  *          *
* E.G. Slope (ft/ft)      *0.002789  * Area (sq ft)           *          *   82.06  *          *
* Q Total (cfs)           *  781.00  * Flow (cfs)            *          *  781.00  *          *
* Top Width (ft)          *   29.47  * Top Width (ft)        *          *   29.47  *          *
* Vel Total (ft/s)        *    9.52  * Avg. Vel. (ft/s)      *          *    9.52  *          *
* Max Chl Dpth (ft)       *    2.99  * Hydr. Depth (ft)      *          *    2.78  *          *
* Conv. Total (cfs)       * 14788.9  * Conv. (cfs)           *          * 14788.9  *          *
* Length Wtd. (ft)        *  100.00  * Wetted Per. (ft)      *          *   33.44  *          *
* Min Ch El (ft)          * 1923.60  * Shear (lb/sq ft)      *          *    0.43  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    4.07  *          *
* Frctn Loss (ft)         *    0.28  * Cum Volume (acre-ft)   *          *    6.48  *          *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)         *          *    1.40  *          *
*****************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1039

INPUT
Description: Sta 17+00 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
  -17.63 1926.59  -17.63  1921.6    7.74  1921.6    15.75 1926.45

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
  -17.63     .015   -17.63     .015    15.75     .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
        -17.63   15.75               100      100     100             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)          * 1925.96  * Element                *  Left OB *  Channel  * Right OB *
* Vel Head (ft)           *    1.38  * Wt. n-Val.             *          *   0.015  *          *
* W.S. Elev (ft)          * 1924.58  * Reach Len. (ft)        *  100.00  *  100.00  *  100.00  *
* Crit W.S. (ft)          * 1924.58  * Flow Area (sq ft)      *          *   82.86  *          *
* E.G. Slope (ft/ft)      *0.002770  * Area (sq ft)           *          *   82.86  *          *
* Q Total (cfs)           *  781.00  * Flow (cfs)            *          *  781.00  *          *
* Top Width (ft)          *   30.29  * Top Width (ft)        *          *   30.29  *          *
* Vel Total (ft/s)        *    9.42  * Avg. Vel. (ft/s)      *          *    9.42  *          *
* Max Chl Dpth (ft)       *    2.98  * Hydr. Depth (ft)      *          *    2.74  *          *
* Conv. Total (cfs)       * 14838.2  * Conv. (cfs)           *          * 14838.2  *          *
* Length Wtd. (ft)        *  100.00  * Wetted Per. (ft)      *          *   34.10  *          *
* Min Ch El (ft)          * 1921.60  * Shear (lb/sq ft)      *          *    0.42  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    3.96  *          *
* Frctn Loss (ft)         *    0.28  * Cum Volume (acre-ft)   *          *    6.29  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    1.34  *          *
*****************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION
```

```
RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1038

INPUT
Description: Sta 16+00  Drake Channel
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
  -17.63 1923.59  -17.63  1918.6    7.74  1918.6    15.75 1923.45

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
  -17.63    .015   -17.63    .015    15.75    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -17.63   15.75              100     100     100          .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)         * 1922.96  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.37  * Wt. n-Val.          *          *    0.015  *          *
* W.S. Elev (ft)         * 1921.59  * Reach Len. (ft)     *  100.00  *  100.00  *  100.00  *
* Crit W.S. (ft)         * 1921.59  * Flow Area (sq ft)   *          *   83.12  *          *
* E.G. Slope (ft/ft)     *0.002744  * Area (sq ft)        *          *   83.12  *          *
* Q Total (cfs)          *  781.00  * Flow (cfs)          *          *  781.00  *          *
* Top Width (ft)         *   30.30  * Top Width (ft)      *          *   30.30  *          *
* Vel Total (ft/s)       *    9.40  * Avg. Vel. (ft/s)    *          *    9.40  *          *
* Max Chl Dpth (ft)      *    2.99  * Hydr. Depth (ft)    *          *    2.74  *          *
* Conv. Total (cfs)      * 14908.2  * Conv. (cfs)         *          * 14908.2  *          *
* Length Wtd. (ft)       *  100.00  * Wetted Per. (ft)    *          *   34.12  *          *
* Min Ch El (ft)         * 1918.60  * Shear (lb/sq ft)    *          *    0.42  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *       *    3.92  *          *
* Frctn Loss (ft)        *    0.28  * Cum Volume (acre-ft)  *       *    6.10  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *       *    1.27  *          *
*****************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1037

INPUT
Description: Sta 15+00 Drake Channel
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -17.2 1920.61   -17.2 1915.53    8.13 1915.53   16.06 1920.39

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -17.2    .015    -17.2    .015    16.06    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -17.2   16.06              100     100     100          .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)         * 1919.89  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.38  * Wt. n-Val.          *          *    0.015  *          *
* W.S. Elev (ft)         * 1918.51  * Reach Len. (ft)     *  100.00  *  100.00  *  100.00  *
* Crit W.S. (ft)         * 1918.51  * Flow Area (sq ft)   *          *   82.76  *          *
* E.G. Slope (ft/ft)     *0.002773  * Area (sq ft)        *          *   82.76  *          *
* Q Total (cfs)          *  781.00  * Flow (cfs)          *          *  781.00  *          *
* Top Width (ft)         *   30.19  * Top Width (ft)      *          *   30.19  *          *
* Vel Total (ft/s)       *    9.44  * Avg. Vel. (ft/s)    *          *    9.44  *          *
* Max Chl Dpth (ft)      *    2.98  * Hydr. Depth (ft)    *          *    2.74  *          *
* Conv. Total (cfs)      * 14831.6  * Conv. (cfs)         *          * 14831.6  *          *
* Length Wtd. (ft)       *  100.00  * Wetted Per. (ft)    *          *   34.02  *          *
* Min Ch El (ft)         * 1915.53  * Shear (lb/sq ft)    *          *    0.42  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *       *    3.97  *          *
* Frctn Loss (ft)        *    0.28  * Cum Volume (acre-ft)  *       *    5.91  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *       *    1.20  *          *
*****************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1036

INPUT
Description: Sta 14+00 Drake Channel
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
  -16.72 1917.65  -16.72  1912.6    8.55  1912.6   16.48 1917.33

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
  -16.72    .015   -16.72    .015    16.48    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -16.72   16.48              100     100     100          .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)         * 1916.96  * Element              *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.38  * Wt. n-Val.          *          *    0.015  *          *
* W.S. Elev (ft)         * 1915.58  * Reach Len. (ft)     *  100.00  *  100.00  *  100.00  *
* Crit W.S. (ft)         * 1915.58  * Flow Area (sq ft)   *          *   82.79  *          *
* E.G. Slope (ft/ft)     *0.002776  * Area (sq ft)        *          *   82.79  *          *
* Q Total (cfs)          *  781.00  * Flow (cfs)          *          *  781.00  *          *
* Top Width (ft)         *   30.27  * Top Width (ft)      *          *   30.27  *          *
* Vel Total (ft/s)       *    9.43  * Avg. Vel. (ft/s)    *          *    9.43  *          *
* Max Chl Dpth (ft)      *    2.98  * Hydr. Depth (ft)    *          *    2.74  *          *
* Conv. Total (cfs)      * 14821.8  * Conv. (cfs)         *          * 14821.8  *          *
* Length Wtd. (ft)       *  100.00  * Wetted Per. (ft)    *          *   34.07  *          *
* Min Ch El (ft)         * 1912.60  * Shear (lb/sq ft)    *          *    0.42  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *       *    3.97  *          *
* Frctn Loss (ft)        *    0.28  * Cum Volume (acre-ft)  *       *    5.72  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *       *    1.13  *          *
*****************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1035

INPUT
Description: Sta 13+00 Drake Channel - C&B plans from survey
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
  -15.71 1914.23  -15.71 1908.15    8.86 1908.15   16.55 1913.17

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
  -15.71    .015   -15.71    .015    16.55    .015
```

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -15.71   16.55             42.69   42.69   42.69        .1          .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1912.61  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.41  * Wt. n-Val.             *          *    0.015  *          *
* W.S. Elev (ft)          * 1911.19  * Reach Len. (ft)       *   42.69  *   42.69  *   42.69  *
* Crit W.S. (ft)          * 1911.19  * Flow Area (sq ft)     *          *   81.89  *          *
* E.G. Slope (ft/ft)      *0.002779  * Area (sq ft)          *          *   81.89  *          *
* Q Total (cfs)           *  781.00  * Flow (cfs)            *          * 781.00  *          *
* Top Width (ft)          *   29.23  * Top Width (ft)        *          *   29.23  *          *
* Vel Total (ft/s)        *    9.54  * Avg. Vel. (ft/s)      *          *    9.54  *          *
* Max Chl Dpth (ft)       *    3.04  * Hydr. Depth (ft)      *          *    2.80  *          *
* Conv. Total (cfs)       * 14815.3  * Conv. (cfs)          *          * 14815.3  *          *
* Length Wtd. (ft)        *   42.69  * Wetted Per. (ft)      *          *   33.18  *          *
* Min Ch El (ft)          * 1908.15  * Shear (lb/sq ft)     *          *    0.43  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    4.08  *          *
* Frctn Loss (ft)         *    0.12  * Cum Volume (acre-ft)  *          *    5.53  *          *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)        *          *    1.06  *          *
*************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1034

INPUT
Description: Sta 12+57.31  - Drake Channel  - C&B plans from survey
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
  -10.78     1911  -10.78 1906.69     9.29 1906.69    17.38     1911

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
  -10.78     .015   -10.78     .015    17.38     .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -10.78   17.38             57.31   57.31   57.31        .1          .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1911.60  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.50  * Wt. n-Val.             *          *    0.015  *          *
* W.S. Elev (ft)          * 1910.10  * Reach Len. (ft)       *   57.31  *   57.31  *   57.31  *
* Crit W.S. (ft)          * 1910.10  * Flow Area (sq ft)     *          *   79.37  *          *
* E.G. Slope (ft/ft)      *0.002785  * Area (sq ft)          *          *   79.37  *          *
* Q Total (cfs)           *  781.00  * Flow (cfs)            *          * 781.00  *          *
* Top Width (ft)          *   26.47  * Top Width (ft)        *          *   26.47  *          *
* Vel Total (ft/s)        *    9.84  * Avg. Vel. (ft/s)      *          *    9.84  *          *
* Max Chl Dpth (ft)       *    3.41  * Hydr. Depth (ft)      *          *    3.00  *          *
* Conv. Total (cfs)       * 14800.1  * Conv. (cfs)          *          * 14800.1  *          *
* Length Wtd. (ft)        *   57.31  * Wetted Per. (ft)      *          *   30.73  *          *
* Min Ch El (ft)          * 1906.69  * Shear (lb/sq ft)     *          *    0.45  *          *
* Alpha                   *    1.06  * Stream Power (lb/ft s) *          *    4.42  *          *
* Frctn Loss (ft)         *    0.16  * Cum Volume (acre-ft)  *          *    5.46  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    1.03  *          *
*************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1033

INPUT
Description: Sta 12+00 Drake Channel - C&B Plans from survey
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
  -10.78 1910.14  -10.78 1905.11     9.29 1905.11    17.38 1909.42

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
  -10.78     .015   -10.78     .015    17.38     .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -10.78   17.38              100     100     100        .1          .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1910.02  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.51  * Wt. n-Val.             *          *    0.015  *          *
* W.S. Elev (ft)          * 1908.52  * Reach Len. (ft)       *  100.00  *  100.00  *  100.00  *
* Crit W.S. (ft)          * 1908.52  * Flow Area (sq ft)     *          *   79.21  *          *
* E.G. Slope (ft/ft)      *0.002802  * Area (sq ft)          *          *   79.21  *          *
* Q Total (cfs)           *  781.00  * Flow (cfs)            *          * 781.00  *          *
* Top Width (ft)          *   26.46  * Top Width (ft)        *          *   26.46  *          *
* Vel Total (ft/s)        *    9.86  * Avg. Vel. (ft/s)      *          *    9.86  *          *
* Max Chl Dpth (ft)       *    3.40  * Hydr. Depth (ft)      *          *    2.99  *          *
* Conv. Total (cfs)       * 14755.1  * Conv. (cfs)          *          * 14755.1  *          *
* Length Wtd. (ft)        *  100.00  * Wetted Per. (ft)      *          *   30.72  *          *
* Min Ch El (ft)          * 1905.11  * Shear (lb/sq ft)     *          *    0.45  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    4.45  *          *
* Frctn Loss (ft)         *    0.28  * Cum Volume (acre-ft)  *          *    5.35  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    1.00  *          *
*************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1032

INPUT
Description: Sta 11+00 Drake Channel - C&B plans from survey
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
  -10.31 1908.12  -10.31 1903.12     9.92 1903.25    17.56 1908.24

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
  -10.31     .015   -10.31     .015    17.56     .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -10.31   17.56              100     100     100        .1          .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1908.17  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.54  * Wt. n-Val.             *          *    0.015  *          *
* W.S. Elev (ft)          * 1906.63  * Reach Len. (ft)       *  100.00  *  100.00  *  100.00  *
* Crit W.S. (ft)          * 1906.63  * Flow Area (sq ft)     *          *   78.35  *          *
* E.G. Slope (ft/ft)      *0.002805  * Area (sq ft)          *          *   78.35  *          *
* Q Total (cfs)           *  781.00  * Flow (cfs)            *          * 781.00  *          *
* Top Width (ft)          *   25.40  * Top Width (ft)        *          *   25.40  *          *
* Vel Total (ft/s)        *    9.97  * Avg. Vel. (ft/s)      *          *    9.97  *          *
* Max Chl Dpth (ft)       *    3.51  * Hydr. Depth (ft)      *          *    3.08  *          *
* Conv. Total (cfs)       * 14747.0  * Conv. (cfs)          *          * 14747.0  *          *
* Length Wtd. (ft)        *  100.00  * Wetted Per. (ft)      *          *   29.91  *          *
* Min Ch El (ft)          * 1903.12  * Shear (lb/sq ft)     *          *    0.46  *          *
```

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* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    4.57  *          *
* Frctn Loss (ft)       *    0.27  * Cum Volume (acre-ft)   *          *    5.17  *          *
* C & E Loss (ft)       *    0.08  * Cum SA (acres)         *          *    0.94  *          *
*********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1031

INPUT
Description: Sta 24+53.03 -Cinnamon Ridge  = Sta 10+00 Drake Channel
Station Elevation Data     num=        5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
  -24.21  1909.4  -15.03  1906.6   -6.77  1901.6   10.92  1901.6   27.24  1906.6

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  -24.21    .015  -24.21    .015   27.24    .015

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.    Expan.
         -24.21   27.24              105.3   105.3   105.3            .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)        * 1906.21  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    1.28  * Wt. n-Val.             *          *    0.015  *          *
* W.S. Elev (ft)        * 1904.93  * Reach Len. (ft)       *  105.30  *  105.30  *  105.30  *
* Crit W.S. (ft)        * 1904.93  * Flow Area (sq ft)     *          *   86.07  *          *
* E.G. Slope (ft/ft)    *0.002574  * Area (sq ft)          *          *   86.07  *          *
* Q Total (cfs)         *  781.00  * Flow (cfs)            *          *  781.00  *          *
* Top Width (ft)        *   34.05  * Top Width (ft)        *          *   34.05  *          *
* Vel Total (ft/s)      *    9.07  * Avg. Vel. (ft/s)      *          *    9.07  *          *
* Max Chl Dpth (ft)     *    3.33  * Hydr. Depth (ft)      *          *    2.53  *          *
* Conv. Total (cfs)     * 15394.5  * Conv. (cfs)           *          * 15394.5  *          *
* Length Wtd. (ft)      *  105.30  * Wetted Per. (ft)      *          *   35.47  *          *
* Min Ch El (ft)        * 1901.60  * Shear (lb/sq ft)      *          *    0.39  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    3.54  *          *
* Frctn Loss (ft)       *    0.13  * Cum Volume (acre-ft)   *          *    4.98  *          *
* C & E Loss (ft)       *    0.21  * Cum SA (acres)         *          *    0.87  *          *
*********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1030

INPUT
Description: Sta 23+48 Drake Channel - Cinnamon Ridge Plans
Station Elevation Data     num=        5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
  -24.21 1907.85  -15.03 1905.26   -6.77 1900.26   10.92 1900.26   27.24 1905.26

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  -24.21    .015  -24.21    .015   27.24    .015

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.    Expan.
         -24.21   27.24              39.39   39.39   39.39            .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)        * 1905.73  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.59  * Wt. n-Val.             *          *    0.015  *          *
* W.S. Elev (ft)        * 1905.14  * Reach Len. (ft)       *   39.39  *   39.39  *   39.39  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)     *          *  144.93  *          *
* E.G. Slope (ft/ft)    *0.000784  * Area (sq ft)          *          *  144.93  *          *
* Q Total (cfs)         *  893.00  * Flow (cfs)            *          *  893.00  *          *
* Top Width (ft)        *   41.69  * Top Width (ft)        *          *   41.69  *          *
* Vel Total (ft/s)      *    6.16  * Avg. Vel. (ft/s)      *          *    6.16  *          *
* Max Chl Dpth (ft)     *    4.88  * Hydr. Depth (ft)      *          *    3.48  *          *
* Conv. Total (cfs)     * 31888.8  * Conv. (cfs)           *          * 31888.8  *          *
* Length Wtd. (ft)      *   39.39  * Wetted Per. (ft)      *          *   43.78  *          *
* Min Ch El (ft)        * 1900.26  * Shear (lb/sq ft)      *          *    0.16  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    1.00  *          *
* Frctn Loss (ft)       *    0.05  * Cum Volume (acre-ft)   *          *    4.70  *          *
* C & E Loss (ft)       *    0.10  * Cum SA (acres)         *          *    0.78  *          *
*********************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1029

INPUT
Description: Sta 23+08.29 Drake Channel - Cinnamon Ridge Plans
Station Elevation Data     num=        5
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*********************************************************************************
  -12.08 1904.42   -3.83 1899.42    6.62 1899.42   17.03  1904.1   28.83 1904.34

Manning's n Values         num=        3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
  -12.08    .015  -12.08    .015   28.83    .015

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.    Expan.
         -12.08   28.83              58.7    58.7    58.7            .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)        * 1905.58  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    1.58  * Wt. n-Val.             *          *    0.015  *          *
* W.S. Elev (ft)        * 1904.00  * Reach Len. (ft)       *   58.70  *   58.70  *   58.70  *
* Crit W.S. (ft)        * 1904.00  * Flow Area (sq ft)     *          *   88.47  *          *
* E.G. Slope (ft/ft)    *0.002504  * Area (sq ft)          *          *   88.47  *          *
* Q Total (cfs)         *  893.00  * Flow (cfs)            *          *  893.00  *          *
* Top Width (ft)        *   28.19  * Top Width (ft)        *          *   28.19  *          *
* Vel Total (ft/s)      *   10.09  * Avg. Vel. (ft/s)      *          *   10.09  *          *
* Max Chl Dpth (ft)     *    4.58  * Hydr. Depth (ft)      *          *    3.14  *          *
* Conv. Total (cfs)     * 17844.9  * Conv. (cfs)           *          * 17844.9  *          *
* Length Wtd. (ft)      *   58.70  * Wetted Per. (ft)      *          *   30.45  *          *
* Min Ch El (ft)        * 1899.42  * Shear (lb/sq ft)      *          *    0.45  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    4.58  *          *
* Frctn Loss (ft)       *    0.15  * Cum Volume (acre-ft)   *          *    4.60  *          *
* C & E Loss (ft)       *    0.05  * Cum SA (acres)         *          *    0.75  *          *
*********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1028
```

```
INPUT
Description: Sta 22+50 Drake Channel - Cinnamon Ridge Plans
Station Elevation Data    num=       5
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************************************
   -12.5 1902.55       -5 1898.55        5 1898.55     17.1 1898.79    23.19 1903.55

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -12.5     .015    -12.5     .015    23.19     .015

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.    Expan.
          -12.5   23.19              67.6    67.7    67.7             .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1903.45  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.43  * Wt. n-Val.             *          *    0.015  *          *
* W.S. Elev (ft)          * 1902.02  * Reach Len. (ft)       *   67.60  *   67.70  *   67.70  *
* Crit W.S. (ft)          * 1902.02  * Flow Area (sq ft)     *          *   93.11  *          *
* E.G. Slope (ft/ft)      *0.002515  * Area (sq ft)          *          *   93.11  *          *
* Q Total (cfs)           *  893.00  * Flow (cfs)            *          *  893.00  *          *
* Top Width (ft)          *   32.73  * Top Width (ft)        *          *   32.73  *          *
* Vel Total (ft/s)        *    9.59  * Avg. Vel. (ft/s)      *          *    9.59  *          *
* Max Chl Dpth (ft)       *    3.47  * Hydr. Depth (ft)      *          *    7.84  *          *
* Conv. Total (cfs)       * 17806.4  * Conv. (cfs)          *          * 17806.4  *          *
* Length Wtd. (ft)        *   67.70  * Wetted Per. (ft)      *          *   34.71  *          *
* Min Ch El (ft)          * 1898.55  * Shear (lb/sq ft)     *          *    0.42  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    4.04  *          *
* Frctn Loss (ft)         *    0.17  * Cum Volume (acre-ft)  *          *    4.47  *          *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)        *          *    0.71  *          *
*************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program selected the water surface that had the least amount of error between computed and
         assumed values.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1027

INPUT
Description: Sta 21+82.30 Drake Channel - Cinnamon Ridge Plans
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -12.5 1901.54       -5 1896.54        5 1896.54     12.5 1901.54

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -12.5     .015    -12.5     .015    12.5     .015

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.    Expan.
          -12.5    12.5              32.3    32.3    32.3             .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1903.15  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.73  * Wt. n-Val.             *          *    0.015  *          *
* W.S. Elev (ft)          * 1901.43  * Reach Len. (ft)       *   32.30  *   32.30  *   32.30  *
* Crit W.S. (ft)          * 1901.43  * Flow Area (sq ft)     *          *   84.65  *          *
* E.G. Slope (ft/ft)      *0.002547  * Area (sq ft)          *          *   84.65  *          *
* Q Total (cfs)           *  893.00  * Flow (cfs)            *          *  893.00  *          *
* Top Width (ft)          *   24.66  * Top Width (ft)        *          *   24.66  *          *
* Vel Total (ft/s)        *   10.55  * Avg. Vel. (ft/s)      *          *   10.55  *          *
* Max Chl Dpth (ft)       *    4.88  * Hydr. Depth (ft)      *          *    3.43  *          *
* Conv. Total (cfs)       * 17695.0  * Conv. (cfs)          *          * 17695.0  *          *
* Length Wtd. (ft)        *   32.30  * Wetted Per. (ft)      *          *   27.61  *          *
* Min Ch El (ft)          * 1896.54  * Shear (lb/sq ft)     *          *    0.49  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    5.14  *          *
* Frctn Loss (ft)         *    0.08  * Cum Volume (acre-ft)  *          *    4.34  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    0.66  *          *
*************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1026

INPUT
Description: Sta 21+50 Drake Channel - Cinnamon Ridge Plans
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -12.5  1900.6       -5  1895.6        5  1895.6     12.5  1900.6

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -12.5     .015    -12.5     .015    12.5     .015

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.    Expan.
          -12.5    12.5               50      50      50             .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1902.21  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.73  * Wt. n-Val.             *          *    0.015  *          *
* W.S. Elev (ft)          * 1900.49  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          * 1900.49  * Flow Area (sq ft)     *          *   84.65  *          *
* E.G. Slope (ft/ft)      *0.002547  * Area (sq ft)          *          *   84.65  *          *
* Q Total (cfs)           *  893.00  * Flow (cfs)            *          *  893.00  *          *
* Top Width (ft)          *   24.66  * Top Width (ft)        *          *   24.66  *          *
* Vel Total (ft/s)        *   10.55  * Avg. Vel. (ft/s)      *          *   10.55  *          *
* Max Chl Dpth (ft)       *    4.88  * Hydr. Depth (ft)      *          *    3.43  *          *
* Conv. Total (cfs)       * 17695.0  * Conv. (cfs)          *          * 17695.0  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   27.61  *          *
* Min Ch El (ft)          * 1895.60  * Shear (lb/sq ft)     *          *    0.49  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    5.14  *          *
* Frctn Loss (ft)         *    0.13  * Cum Volume (acre-ft)  *          *    4.27  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    0.64  *          *
*************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1025

INPUT
Description: Sta 21+00 Drake Channel - Cinnamon Ridge Plans
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -12.5  1898.4       -5  1893.4        5  1893.4     12.5  1898.4

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -12.5     .015    -12.5     .015    12.5     .015

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.    Expan.
          -12.5    12.5               50      50      50             .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1900.01  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.73  * Wt. n-Val.             *          *    0.015  *          *
```

W.S. Elev (ft)	1898.29	Reach Len. (ft)	50.00	50.00	50.00		
Crit W.S. (ft)	1898.29	Flow Area (sq ft)		84.65			
E.G. Slope (ft/ft)	0.002547	Area (sq ft)		84.65			
Q Total (cfs)	893.00	Flow (cfs)		893.00			
Top Width (ft)	24.66	Top Width (ft)		24.66			
Vel Total (ft/s)	10.55	Avg. Vel. (ft/s)		10.55			
Max Chl Dpth (ft)	4.89	Hydr. Depth (ft)		3.43			
Conv. Total (cfs)	17695.0	Conv. (cfs)		17695.0			
Length Wtd. (ft)	50.00	Wetted Per. (ft)		27.61			
Min Ch El (ft)	1893.40	Shear (lb/sq ft)		0.49			
Alpha	1.00	Stream Power (lb/ft s)		5.14			
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)		4.18			
C & E Loss (ft)	0.00	Cum SA (acres)		0.61			

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1024

INPUT
Description: Sta 20+50 Drake Channel - Cinnamon Ridge Plans

Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.5	1897.2	-5	1892.2	5	1892.2	12.5	1897.2

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.5	.015	-12.5	.015	12.5	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Left	Right
-12.5	12.5	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1898.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.73	Wt. n-Val.		0.015	
W.S. Elev (ft)	1897.09	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	1897.09	Flow Area (sq ft)		84.65	
E.G. Slope (ft/ft)	0.002547	Area (sq ft)		84.65	
Q Total (cfs)	893.00	Flow (cfs)		893.00	
Top Width (ft)	24.66	Top Width (ft)		24.66	
Vel Total (ft/s)	10.55	Avg. Vel. (ft/s)		10.55	
Max Chl Dpth (ft)	4.89	Hydr. Depth (ft)		3.43	
Conv. Total (cfs)	17695.0	Conv. (cfs)		17695.0	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		27.61	
Min Ch El (ft)	1892.20	Shear (lb/sq ft)		0.49	
Alpha	1.00	Stream Power (lb/ft s)		5.14	
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)		4.08	
C & E Loss (ft)	0.00	Cum SA (acres)		0.59	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1023

INPUT
Description: Sta 20+00 Drake Channel - Cinnamon Ridge Plans

Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.5	1895.6	-5	1890.6	5	1890.6	12.5	1895.6

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.5	.015	-12.5	.015	12.5	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Left	Right
-12.5	12.5	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1897.21	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.73	Wt. n-Val.		0.015	
W.S. Elev (ft)	1895.49	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	1895.49	Flow Area (sq ft)		84.65	
E.G. Slope (ft/ft)	0.002547	Area (sq ft)		84.65	
Q Total (cfs)	893.00	Flow (cfs)		893.00	
Top Width (ft)	24.66	Top Width (ft)		24.66	
Vel Total (ft/s)	10.55	Avg. Vel. (ft/s)		10.55	
Max Chl Dpth (ft)	4.89	Hydr. Depth (ft)		3.43	
Conv. Total (cfs)	17695.0	Conv. (cfs)		17695.0	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		27.61	
Min Ch El (ft)	1890.60	Shear (lb/sq ft)		0.49	
Alpha	1.00	Stream Power (lb/ft s)		5.14	
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)		3.98	
C & E Loss (ft)	0.00	Cum SA (acres)		0.56	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1022

INPUT
Description: Sta 19+50 Drake Channel - Cinnamon Ridge Plans

Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.5	1894.7	-5	1889.7	5	1889.7	12.5	1894.7

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.5	.015	-12.5	,015	12.5	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Left	Right
-12.5	12.5	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1896.31	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.73	Wt. n-Val.		0.015	
W.S. Elev (ft)	1894.59	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	1894.59	Flow Area (sq ft)		84.65	
E.G. Slope (ft/ft)	0.002547	Area (sq ft)		84.65	
Q Total (cfs)	893.00	Flow (cfs)		893.00	
Top Width (ft)	24.66	Top Width (ft)		24.66	
Vel Total (ft/s)	10.55	Avg. Vel. (ft/s)		10.55	
Max Chl Dpth (ft)	4.89	Hydr. Depth (ft)		3.43	
Conv. Total (cfs)	17695.0	Conv. (cfs)		17695.0	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		27.61	
Min Ch El (ft)	1889.70	Shear (lb/sq ft)		0.49	
Alpha	1.00	Stream Power (lb/ft s)		5.14	
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)		3.89	
C & E Loss (ft)	0.00	Cum SA (acres)		0.53	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there

is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1021

INPUT
Description: Sta 19+00 Drake Channel - Cinnamon Ridge Plans
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.5	1893.8	-5	1888.8	5	1888.8	12.5	1893.8

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.5	.015	-12.5	.015	12.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-12.5	12.5	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1895.41	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.73	Wt. n-Val.		0.015	
W.S. Elev (ft)	1893.69	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	1893.69	Flow Area (sq ft)		84.65	
E.G. Slope (ft/ft)	0.002547	Area (sq ft)		84.65	
Q Total (cfs)	893.00	Flow (cfs)		893.00	
Top Width (ft)	24.66	Top Width (ft)		24.66	
Vel Total (ft/s)	10.55	Avg. Vel. (ft/s)		10.55	
Max Chl Dpth (ft)	4.89	Hydr. Depth (ft)		3.43	
Conv. Total (cfs)	17695.0	Conv. (cfs)		17695.0	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		27.61	
Min Ch El (ft)	1888.80	Shear (lb/sq ft)		0.49	
Alpha	1.00	Stream Power (lb/ft s)		5.14	
Frctn Loss (ft)	0.13	Cum Volume (acre-ft)		3.79	
C & E Loss (ft)	0.00	Cum SA (acres)		0.50	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1020

INPUT
Description: Sta 18+50 Drake Channel - Cinnamon Ridge Plans
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.5	1892.9	-5	1887.9	5	1887.9	12.5	1892.9

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.5	.015	-12.5	.015	12.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-12.5	12.5	58.82	58.82	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1894.51	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.73	Wt. n-Val.		0.015	
W.S. Elev (ft)	1892.79	Reach Len. (ft)	58.82	58.82	58.82
Crit W.S. (ft)	1892.79	Flow Area (sq ft)		84.65	
E.G. Slope (ft/ft)	0.002547	Area (sq ft)		84.65	
Q Total (cfs)	893.00	Flow (cfs)		893.00	
Top Width (ft)	24.66	Top Width (ft)		24.66	
Vel Total (ft/s)	10.55	Avg. Vel. (ft/s)		10.55	
Max Chl Dpth (ft)	4.89	Hydr. Depth (ft)		3.43	
Conv. Total (cfs)	17695.0	Conv. (cfs)		17695.0	
Length Wtd. (ft)	58.82	Wetted Per. (ft)		27.61	
Min Ch El (ft)	1887.90	Shear (lb/sq ft)		0.49	
Alpha	1.00	Stream Power (lb/ft s)		5.14	
Frctn Loss (ft)	0.15	Cum Volume (acre-ft)		3.69	
C & E Loss (ft)	0.00	Cum SA (acres)		0.47	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1019

INPUT
Description: Sta 17+91.18 Drake Channel - Cinnamon Ridge plans = 19+50 of VTN plans
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.5	1891.5	-5	1886.51	5	1886.51	12.5	1891.5

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.5	.015	-12.5	.015	12.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-12.5	12.5	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1893.12	Element	Left OB	Channel	Right OB
Vel Head (ft)	1.73	Wt. n-Val.		0.015	
W.S. Elev (ft)	1891.40	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	1891.39	Flow Area (sq ft)		84.70	
E.G. Slope (ft/ft)	0.002544	Area (sq ft)		84.70	
Q Total (cfs)	893.00	Flow (cfs)		893.00	
Top Width (ft)	24.68	Top Width (ft)		24.68	
Vel Total (ft/s)	10.54	Avg. Vel. (ft/s)		10.54	
Max Chl Dpth (ft)	4.88	Hydr. Depth (ft)		3.43	
Conv. Total (cfs)	17705.3	Conv. (cfs)		17705.3	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		27.64	
Min Ch El (ft)	1886.51	Shear (lb/sq ft)		0.49	
Alpha	1.00	Stream Power (lb/ft s)		5.13	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		3.58	
C & E Loss (ft)	0.00	Cum SA (acres)		0.44	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1018

INPUT
Description: Sta 19+50 Drake Channel - VTN Plans add 2.31'
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.5	1891.5	-5	1886.51	5	1886.51	12.5	1891.5

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.5	.015	-12.5	.015	12.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-12.5	12.5	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1893.12	Element	Left OB	Channel	Right OB

* Vel Head (ft)	* 1.73	* Wt. n-Val.	*	* 0.015	*			
* W.S. Elev (ft)	* 1891.39	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00			
* Crit W.S. (ft)	* 1891.39	* Flow Area (sq ft)	*	* 84.67	*			
* E.G. Slope (ft/ft)	*0.002547	* Area (sq ft)	*	* 84.67	*			
* Q Total (cfs)	* 893.00	* Flow (cfs)	*	* 893.00	*			
* Top Width (ft)	* 24.68	* Top Width (ft)	*	* 24.68	*			
* Vel Total (ft/s)	* 10.55	* Avg. Vel. (ft/s)	*	* 10.55	*			
* Max Chl Dpth (ft)	* 4.88	* Hydr. Depth (ft)	*	* 3.43	*			
* Conv. Total (cfs)	* 17694.1	* Conv. (cfs)	*	* 17694.1	*			
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 27.63	*			
* Min Ch El (ft)	* 1886.51	* Shear (lb/sq ft)	*	* 0.49	*			
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 5.14	*			
* Frctn Loss (ft)	* 0.14	* Cum Volume (acre-ft)	*	* 3.58	*			
* C & E Loss (ft)	* 0.03	* Cum SA (acres)	*	* 0.44	*			

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1017

INPUT
Description: Sta 19+00 Drake Channel - VTN Plans - add 2.31'
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.5	1899.49	-8.75	1885.49	8.75	1885.49	12.5	1899.49

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.5	.015	-12.5	.015	12.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-12.5	12.5	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1891.71	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 2.00	* Wt. n-Val.	*	* 0.015 *	*
* W.S. Elev (ft)	* 1889.72	* Reach Len. (ft)	* 50.00	* 50.00 *	50.00 *
* Crit W.S. (ft)	* 1889.72	* Flow Area (sq ft)	*	* 78.72 *	*
* E.G. Slope (ft/ft)	*0.003033	* Area (sq ft)	*	* 78.72 *	*
* Q Total (cfs)	* 893.00	* Flow (cfs)	*	* 893.00 *	*
* Top Width (ft)	* 19.76	* Top Width (ft)	*	* 19.76 *	*
* Vel Total (ft/s)	* 11.34	* Avg. Vel. (ft/s)	*	* 11.34 *	*
* Max Chl Dpth (ft)	* 4.22	* Hydr. Depth (ft)	*	* 3.98 *	*
* Conv. Total (cfs)	* 16216.2	* Conv. (cfs)	*	* 16216.2 *	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 26.25 *	*
* Min Ch El (ft)	* 1885.49	* Shear (lb/sq ft)	*	* 0.57 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 6.44 *	*
* Frctn Loss (ft)	* 0.15	* Cum Volume (acre-ft)	*	* 3.48 *	*
* C & E Loss (ft)	* 0.09	* Cum SA (acres)	*	* 0.41 *	*

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1016

INPUT
Description: Sta 18+50 Drake Channel - VTN Plans -add 2.31'
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-14.5	1898.45	-14.5	1884.45	10.5	1884.45	10.5	1898.45

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-14.5	.015	-14.5	.015	10.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-14.5	10.5	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1889.56	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 1.71	* Wt. n-Val.	*	* 0.015 *	*
* W.S. Elev (ft)	* 1887.85	* Reach Len. (ft)	* 50.00	* 50.00 *	50.00 *
* Crit W.S. (ft)	* 1887.85	* Flow Area (sq ft)	*	* 85.02 *	*
* E.G. Slope (ft/ft)	*0.003030	* Area (sq ft)	*	* 85.02 *	*
* Q Total (cfs)	* 893.00	* Flow (cfs)	*	* 893.00 *	*
* Top Width (ft)	* 25.00	* Top Width (ft)	*	* 25.00 *	*
* Vel Total (ft/s)	* 10.50	* Avg. Vel. (ft/s)	*	* 10.50 *	*
* Max Chl Dpth (ft)	* 3.40	* Hydr. Depth (ft)	*	* 3.40 *	*
* Conv. Total (cfs)	* 16222.1	* Conv. (cfs)	*	* 16222.1 *	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 31.80 *	*
* Min Ch El (ft)	* 1884.45	* Shear (lb/sq ft)	*	* 0.51 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 5.31 *	*
* Frctn Loss (ft)	* 0.15	* Cum Volume (acre-ft)	*	* 3.39 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 0.39 *	*

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1015

INPUT
Description: Sta 18+00 Drake Channel - VTN Plans - add 2.31'
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-14.5	1897.41	-14.5	1883.41	10.5	1883.41	10.5	1897.41

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-14.5	.015	-14.5	.015	10.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-14.5	10.5	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1888.52	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 1.71	* Wt. n-Val.	*	* 0.015 *	*
* W.S. Elev (ft)	* 1886.81	* Reach Len. (ft)	* 50.00	* 50.00 *	50.00 *
* Crit W.S. (ft)	* 1886.81	* Flow Area (sq ft)	*	* 85.00 *	*
* E.G. Slope (ft/ft)	*0.003032	* Area (sq ft)	*	* 85.00 *	*
* Q Total (cfs)	* 893.00	* Flow (cfs)	*	* 893.00 *	*
* Top Width (ft)	* 25.00	* Top Width (ft)	*	* 25.00 *	*
* Vel Total (ft/s)	* 10.51	* Avg. Vel. (ft/s)	*	* 10.51 *	*
* Max Chl Dpth (ft)	* 3.40	* Hydr. Depth (ft)	*	* 3.40 *	*
* Conv. Total (cfs)	* 16217.7	* Conv. (cfs)	*	* 16217.7 *	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 31.80 *	*
* Min Ch El (ft)	* 1883.41	* Shear (lb/sq ft)	*	* 0.51 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 5.32 *	*
* Frctn Loss (ft)	* 0.15	* Cum Volume (acre-ft)	*	* 3.29 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 0.36 *	*

Warning: The energy equation could not be balanced within the specified number of iterations. The

program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1014

INPUT
Description: Sta 17+50 Drake Channel - VTN Plans -add 2.31'
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-14.5	1893.36	-14.5	1879.36	10.5	1879.36	10.5	1893.36

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-14.5	.015	-14.5	.015	10.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-14.5	10.5	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	1884.47	Element			
Vel Head (ft)	1.71	Wt. n-Val.		0.015	
W.S. Elev (ft)	1882.76	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	1882.76	Flow Area (sq ft)		85.02	
E.G. Slope (ft/ft)	*0.003030	Area (sq ft)		85.02	
Q Total (cfs)	893.00	Flow (cfs)		893.00	
Top Width (ft)	25.00	Top Width (ft)		25.00	
Vel Total (ft/s)	10.50	Avg. Vel. (ft/s)		10.50	
Max Chl Dpth (ft)	3.40	Hydr. Depth (ft)		3.40	
Conv. Total (cfs)	16223.9	Conv. (cfs)		16223.9	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		31.80	
Min Ch El (ft)	1879.36	Shear (lb/sq ft)		0.51	
Alpha	1.00	Stream Power (lb/ft s)		5.31	
Frctn Loss (ft)	0.15	Cum Volume (acre-ft)		3.19	
C & E Loss (ft)	0.00	Cum SA (acres)		0.33	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1013

INPUT
Description: Sta 17+00 Drake Channel - VTN Plans - add 2.31'
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-14.5	1889.31	-14.5	1875.31	10.5	1875.31	10.5	1889.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-14.5	.015	-14.5	.015	10.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-14.5	10.5	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	1880.42	Element			
Vel Head (ft)	1.71	Wt. n-Val.		0.015	
W.S. Elev (ft)	1878.71	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	1878.71	Flow Area (sq ft)		85.02	
E.G. Slope (ft/ft)	*0.003030	Area (sq ft)		85.02	
Q Total (cfs)	893.00	Flow (cfs)		893.00	
Top Width (ft)	25.00	Top Width (ft)		25.00	
Vel Total (ft/s)	10.50	Avg. Vel. (ft/s)		10.50	
Max Chl Dpth (ft)	3.40	Hydr. Depth (ft)		3.40	
Conv. Total (cfs)	16223.0	Conv. (cfs)		16223.0	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		31.80	
Min Ch El (ft)	1875.31	Shear (lb/sq ft)		0.51	
Alpha	1.00	Stream Power (lb/ft s)		5.31	
Frctn Loss (ft)	0.15	Cum Volume (acre-ft)		3.10	
C & E Loss (ft)	0.00	Cum SA (acres)		0.30	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1012

INPUT
Description: Sta 16+50 Drake Channel - VTN Plans - add 2.31 '
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-14.5	1886.04	-14.5	1872.04	10.5	1872.04	10.5	1886.04

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-14.5	.015	-14.5	.015	10.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-14.5	10.5	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	1877.15	Element			
Vel Head (ft)	1.71	Wt. n-Val.		0.015	
W.S. Elev (ft)	1875.44	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	1875.44	Flow Area (sq ft)		85.02	
E.G. Slope (ft/ft)	*0.003030	Area (sq ft)		85.02	
Q Total (cfs)	893.00	Flow (cfs)		893.00	
Top Width (ft)	25.00	Top Width (ft)		25.00	
Vel Total (ft/s)	10.50	Avg. Vel. (ft/s)		10.50	
Max Chl Dpth (ft)	3.40	Hydr. Depth (ft)		3.40	
Conv. Total (cfs)	16222.1	Conv. (cfs)		16222.1	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		31.80	
Min Ch El (ft)	1872.04	Shear (lb/sq ft)		0.51	
Alpha	1.00	Stream Power (lb/ft s)		5.31	
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)		3.00	
C & E Loss (ft)	0.40	Cum SA (acres)		0.27	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1011

```
INPUT
Description: Sta 16+00 Drake Channel - VTN Plans -add 2.31'
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
   -14.5 1881.21   -14.5 1867.21    10.5 1867.21    10.5 1881.21

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -14.5     .015   -14.5     .015    10.5     .015

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -14.5    10.5              52.87   52.87   52.87             .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1874.90  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.37  * Wt. n-Val.              *          *    0.015  *          *
* W.S. Elev (ft)          * 1874.53  * Reach Len. (ft)        *   52.87  *   52.87  *   52.87  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *          *  183.11  *          *
* E.G. Slope (ft/ft)      *0.000315  * Area (sq ft)           *          *  183.11  *          *
* Q Total (cfs)           *  893.00  * Flow (cfs)             *          *  893.00  *          *
* Top Width (ft)          *   25.00  * Top Width (ft)         *          *   25.00  *          *
* Vel Total (ft/s)        *    4.88  * Avg. Vel. (ft/s)       *          *    4.88  *          *
* Max Chl Dpth (ft)       *    7.32  * Hydr. Depth (ft)       *          *    7.32  *          *
* Conv. Total (cfs)       * 50304.8  * Conv. (cfs)           *          * 50304.8  *          *
* Length Wtd. (ft)        *   52.87  * Wetted Per. (ft)       *          *   39.65  *          *
* Min Ch El (ft)          * 1867.21  * Shear (lb/sq ft)      *          *    0.09  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.44  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)   *          *    2.84  *          *
* C & E Loss (ft)         *    0.07  * Cum SA (acres)         *          *    0.24  *          *
*****************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1010

INPUT
Description: Sta 15+47.13 Drake Channel - VTN Plans - add 2.31'
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
   -14.5 1876.93   -14.5 1862.93    10.5 1862.93    10.5 1876.93

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -14.5     .015   -14.5     .015    10.5     .015

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -14.5    10.5              47.13   47.13   47.13             .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1874.83  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.14  * Wt. n-Val.              *          *    0.015  *          *
* W.S. Elev (ft)          * 1874.69  * Reach Len. (ft)        *   47.13  *   47.13  *   47.13  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *          *  293.87  *          *
* E.G. Slope (ft/ft)      *0.000085  * Area (sq ft)           *          *  293.87  *          *
* Q Total (cfs)           *  893.00  * Flow (cfs)             *          *  893.00  *          *
* Top Width (ft)          *   25.00  * Top Width (ft)         *          *   25.00  *          *
* Vel Total (ft/s)        *    3.04  * Avg. Vel. (ft/s)       *          *    3.04  *          *
* Max Chl Dpth (ft)       *   11.75  * Hydr. Depth (ft)       *          *   11.75  *          *
* Conv. Total (cfs)       * 96739.3  * Conv. (cfs)           *          * 96739.3  *          *
* Length Wtd. (ft)        *   47.13  * Wetted Per. (ft)       *          *   48.51  *          *
* Min Ch El (ft)          * 1862.93  * Shear (lb/sq ft)      *          *    0.03  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.10  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *    2.55  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    0.21  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1009

INPUT
Description: Sta 15+00 Drake Channel - VTN Plans -add 2.31 '
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
   -14.5 1876.88   -14.5 1862.88    10.5 1862.88    10.5 1876.88

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -14.5     .015   -14.5     .015    10.5     .015

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -14.5    10.5               50      50      50             .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1874.82  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.14  * Wt. n-Val.              *          *    0.015  *          *
* W.S. Elev (ft)          * 1874.68  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *          *  295.04  *          *
* E.G. Slope (ft/ft)      *0.000084  * Area (sq ft)           *          *  295.04  *          *
* Q Total (cfs)           *  893.00  * Flow (cfs)             *          *  893.00  *          *
* Top Width (ft)          *   25.00  * Top Width (ft)         *          *   25.00  *          *
* Vel Total (ft/s)        *    3.03  * Avg. Vel. (ft/s)       *          *    3.03  *          *
* Max Chl Dpth (ft)       *   11.80  * Hydr. Depth (ft)       *          *   11.80  *          *
* Conv. Total (cfs)       * 97257.8  * Conv. (cfs)           *          * 97257.8  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)       *          *   48.60  *          *
* Min Ch El (ft)          * 1862.88  * Shear (lb/sq ft)      *          *    0.03  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.10  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *    2.24  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    0.19  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1008

INPUT
Description: Sta 14+50 Drake Channel - VTN Plans - add 2.31'
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
   -14.5 1876.83   -14.5 1862.83    10.5 1862.83    10.5 1876.83

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -14.5     .015   -14.5     .015    10.5     .015

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -14.5    10.5               50      50      50             .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1874.82  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.14  * Wt. n-Val.              *          *    0.015  *          *
* W.S. Elev (ft)          * 1874.68  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *          *  296.20  *          *
* E.G. Slope (ft/ft)      *0.000083  * Area (sq ft)           *          *  296.20  *          *
* Q Total (cfs)           *  893.00  * Flow (cfs)             *          *  893.00  *          *
* Top Width (ft)          *   25.00  * Top Width (ft)         *          *   25.00  *          *
* Vel Total (ft/s)        *    3.01  * Avg. Vel. (ft/s)       *          *    3.01  *          *
* Max Chl Dpth (ft)       *   11.85  * Hydr. Depth (ft)       *          *   11.85  *          *
* Conv. Total (cfs)       * 97774.1  * Conv. (cfs)           *          * 97774.1  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)       *          *   48.70  *          *
* Min Ch El (ft)          * 1862.83  * Shear (lb/sq ft)      *          *    0.03  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.10  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *    1.90  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    0.16  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
```

REACH: C-1 to 9000 ft E RS: 1007

INPUT
Description: Sta 14+00 Drake Channel - VTN Plans - add 2.31 '
Sta 14+00
Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-14.5	1876.78	-14.5	1862.78	10.5	1862.78	10.5	1876.78

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-14.5	.015	-14.5	.015	10.5	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-14.5 10.5 39 39 39 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1874.82	Element			
Vel Head (ft)	0.14	Wt. n-Val.		0.015	
W.S. Elev (ft)	1874.68	Reach Len. (ft)	39.00	39.00	39.00
Crit W.S. (ft)		Flow Area (sq ft)		297.37	
E.G. Slope (ft/ft)	0.000083	Area (sq ft)		297.37	
Q Total (cfs)	893.00	Flow (cfs)		893.00	
Top Width (ft)	25.00	Top Width (ft)		25.00	
Vel Total (ft/s)	3.00	Avg. Vel. (ft/s)		3.00	
Max Chl Dpth (ft)	11.89	Hydr. Depth (ft)		11.89	
Conv. Total (cfs)	98289.5	Conv. (cfs)		98289.5	
Length Wtd. (ft)	39.00	Wetted Per. (ft)		48.79	
Min Ch El (ft)	1862.78	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.09	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		1.56	
C & E Loss (ft)	0.00	Cum SA (acres)		0.13	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1006

INPUT
Description: Sta 13+61 Drake Channel - VTN Plans - add 2.31'
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-14.5	1876.74	-14.5	1862.74	10.5	1862.74	10.5	1876.74

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-14.5	.015	-14.5	.015	10.5	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-14.5 10.5 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1874.81	Element			
Vel Head (ft)	0.14	Wt. n-Val.		0.015	
W.S. Elev (ft)	1874.67	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)		Flow Area (sq ft)		298.30	
E.G. Slope (ft/ft)	0.000082	Area (sq ft)		298.30	
Q Total (cfs)	893.00	Flow (cfs)		893.00	
Top Width (ft)	25.00	Top Width (ft)		25.00	
Vel Total (ft/s)	2.99	Avg. Vel. (ft/s)		2.99	
Max Chl Dpth (ft)	11.93	Hydr. Depth (ft)		11.93	
Conv. Total (cfs)	98705.1	Conv. (cfs)		98705.1	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		48.86	
Min Ch El (ft)	1862.74	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.09	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		1.29	
C & E Loss (ft)	0.00	Cum SA (acres)		0.11	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1005

INPUT
Description: Sta 13+61 Drake Channel - VTN Plans - add 2.31'
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-14.5	1876.74	-14.5	1862.74	10.5	1862.74	10.5	1877.24

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-14.5	.015	-14.5	.015	10.5	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-14.5 10.5 12.06 11 9.94 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1874.81	Element			
Vel Head (ft)	0.14	Wt. n-Val.		0.015	
W.S. Elev (ft)	1874.67	Reach Len. (ft)	12.06	11.00	9.94
Crit W.S. (ft)		Flow Area (sq ft)		298.30	
E.G. Slope (ft/ft)	0.000082	Area (sq ft)		298.30	
Q Total (cfs)	893.00	Flow (cfs)		893.00	
Top Width (ft)	25.00	Top Width (ft)		25.00	
Vel Total (ft/s)	2.99	Avg. Vel. (ft/s)		2.99	
Max Chl Dpth (ft)	11.93	Hydr. Depth (ft)		11.93	
Conv. Total (cfs)	98705.1	Conv. (cfs)		98705.1	
Length Wtd. (ft)	11.00	Wetted Per. (ft)		48.86	
Min Ch El (ft)	1862.74	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.09	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		1.29	
C & E Loss (ft)	0.00	Cum SA (acres)		0.11	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1004

INPUT
Description: Sta 13+50 Drake Channel - VTN Plans- add 2.31'
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.5	1876.68	-12.5	1862.68	12.5	1862.68	12.5	1877.18

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.5	.015	-12.5	.015	12.5	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-12.5 12.5 109.44 100 90.56 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

		Element	Left OB	Channel	Right OB
E.G. Elev (ft)	1874.81	Element			
Vel Head (ft)	0.14	Wt. n-Val.		0.015	
W.S. Elev (ft)	1874.67	Reach Len. (ft)	109.44	100.00	90.56
Crit W.S. (ft)		Flow Area (sq ft)		299.80	
E.G. Slope (ft/ft)	0.000081	Area (sq ft)		299.80	
Q Total (cfs)	893.00	Flow (cfs)		893.00	
Top Width (ft)	25.00	Top Width (ft)		25.00	
Vel Total (ft/s)	2.98	Avg. Vel. (ft/s)		2.98	
Max Chl Dpth (ft)	11.99	Hydr. Depth (ft)		11.99	
Conv. Total (cfs)	99371.7	Conv. (cfs)		99371.7	
Length Wtd. (ft)	100.00	Wetted Per. (ft)		48.98	
Min Ch El (ft)	1862.68	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.09	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		1.21	
C & E Loss (ft)	0.00	Cum SA (acres)		0.10	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1003

INPUT
Description: Sta 12+50 Drake Channel - VTN Plan - add 2.31 '
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.5	1876.63	-12.5	1862.63	12.5	1862.63	12.5	1877.13

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.5	.015	-12.5	.015	12.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-12.5	12.5	54.72	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1874.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	.14	Wt. n-Val.		.015	
W.S. Elev (ft)	1874.67	Reach Len. (ft)	54.72	50.00	45.12
Crit W.S. (ft)		Flow Area (sq ft)		306.87	
E.G. Slope (ft/ft)	.000080	Area (sq ft)		300.87	
Q Total (cfs)	893.00	Flow (cfs)		893.00	
Top Width (ft)	25.00	Top Width (ft)		25.00	
Vel Total (ft/s)	2.97	Avg. Vel. (ft/s)		2.97	
Max Chl Dpth (ft)	12.03	Hydr. Depth (ft)		12.03	
Conv. Total (cfs)	99846.4	Conv. (cfs)		99846.4	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		49.07	
Min Ch El (ft)	1862.63	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.09	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		0.52	
C & E Loss (ft)	0.00	Cum SA (acres)		0.04	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1002

INPUT
Description: Sta 12+00 Drake Channel - VTN Plans - add 2.31'
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.5	1876.58	-12.5	1862.58	12.5	1862.58	12.5	1877.08

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.5	.015	-12.5	.015	12.5	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-12.5	12.5	28.1	25.64	23.17	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1874.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	.14	Wt. n-Val.		.015	
W.S. Elev (ft)	1874.66	Reach Len. (ft)	28.10	25.64	23.17
Crit W.S. (ft)		Flow Area (sq ft)		302.04	
E.G. Slope (ft/ft)	.000079	Area (sq ft)		302.04	
Q Total (cfs)	893.00	Flow (cfs)		893.00	
Top Width (ft)	25.00	Top Width (ft)		25.00	
Vel Total (ft/s)	2.96	Avg. Vel. (ft/s)		2.96	
Max Chl Dpth (ft)	12.08	Hydr. Depth (ft)		12.08	
Conv. Total (cfs)	100366.3	Conv. (cfs)		100366.3	
Length Wtd. (ft)	25.64	Wetted Per. (ft)		49.16	
Min Ch El (ft)	1862.58	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.09	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		0.18	
C & E Loss (ft)	0.00	Cum SA (acres)		0.01	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1001

INPUT
Description: Sta 11+74.36 Drake Channel - VTN Plans - add 2.31'
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.5	1876.55	-12.5	1862.55	12.5	1862.55	12.5	1877.05

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.5	.015	-12.5	.015	12.5	.015

Bank Sta: Left	Right	Coeff Contr.	Expan.
-12.5	12.5	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1874.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	.14	Wt. n-Val.		.015	
W.S. Elev (ft)	1874.66	Reach Len. (ft)			
Crit W.S. (ft)	1865.95	Flow Area (sq ft)		302.75	
E.G. Slope (ft/ft)	.000079	Area (sq ft)		302.75	
Q Total (cfs)	893.00	Flow (cfs)		893.00	
Top Width (ft)	25.00	Top Width (ft)		25.00	
Vel Total (ft/s)	2.95	Avg. Vel. (ft/s)		2.95	
Max Chl Dpth (ft)	12.11	Hydr. Depth (ft)		12.11	
Conv. Total (cfs)	100681.4	Conv. (cfs)		100681.4	
Length Wtd. (ft)		Wetted Per. (ft)		49.22	
Min Ch El (ft)	1862.55	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.09	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

SUMMARY OF MANNING'S N VALUES

River:Drake Channel

Reach	River Sta.	n1	n2	n3
C-1 to 9000 ft E	1328	.03	.03	.03
C-1 to 9000 ft E	1327	.03	.03	.03
C-1 to 9000 ft E	1326	.03	.03	.03
C-1 to 9000 ft E	1325	.03	.03	.03
C-1 to 9000 ft E	1324	.03	.03	.03
C-1 to 9000 ft E	1323	.03	.03	.03
C-1 to 9000 ft E	1322	.03	.03	.03
C-1 to 9000 ft E	1321	.04	.04	.04
C-1 to 9000 ft E	1320	.028	.028	.028
C-1 to 9000 ft E	1319	.028	.028	.028
C-1 to 9000 ft E	1318	.028	.028	.028
C-1 to 9000 ft E	1317	.04	.04	.04
C-1 to 9000 ft E	1316	.028	.028	.028
C-1 to 9000 ft E	1315	.028	.028	.028
C-1 to 9000 ft E	1314	.028	.028	.028
C-1 to 9000 ft E	1313	.028	.03	.028
C-1 to 9000 ft E	1312	.03	.03	.03
C-1 to 9000 ft E	1311	.03	.03	.03
C-1 to 9000 ft E	1310	.03	.03	.03
C-1 to 9000 ft E	1309	.03	.03	.03
C-1 to 9000 ft E	1308	.03	.03	.03
C-1 to 9000 ft E	1307	.03	.03	.03
C-1 to 9000 ft E	1306	.03	.03	.03
C-1 to 9000 ft E	1305	.04	.04	.04
C-1 to 9000 ft E	1304	.028	.028	.028
C-1 to 9000 ft E	1303	.028	.028	.028
C-1 to 9000 ft E	1302	.028	.028	.028
C-1 to 9000 ft E	1301	.04	.04	.04
C-1 to 9000 ft E	1300	.028	.028	.028
C-1 to 9000 ft E	1299	.028	.028	.028
C-1 to 9000 ft E	1298	.028	.028	.028
C-1 to 9000 ft E	1297	.028	.03	.028
C-1 to 9000 ft E	1296	.03	.03	.03
C-1 to 9000 ft E	1295	.03	.03	.03
C-1 to 9000 ft E	1294	.03	.03	.03
C-1 to 9000 ft E	1293	.03	.03	.03

C-1 to 9000 ft E	1292	*	.03*	.03*	.03*
C-1 to 9000 ft E	1291	*	.03*	.03*	.03*
C-1 to 9000 ft E	1290	*	.03*	.03*	.03*
C-1 to 9000 ft E	1289	*	.04*	.04*	.04*
C-1 to 9000 ft E	1288	*	.028*	.028*	.028*
C-1 to 9000 ft E	1287	*	.028*	.028*	.028*
C-1 to 9000 ft E	1286	*	.028*	.028*	.028*
C-1 to 9000 ft E	1285	*	.04*	.04*	.04*
C-1 to 9000 ft E	1284	*	.028*	.028*	.028*
C-1 to 9000 ft E	1283	*	.028*	.028*	.028*
C-1 to 9000 ft E	1282	*	.028*	.028*	.028*
C-1 to 9000 ft E	1281	*	.028*	.03*	.028*
C-1 to 9000 ft E	1280	*	.03*	.03*	.03*
C-1 to 9000 ft E	1279	*	.03*	.03*	.03*
C-1 to 9000 ft E	1278	*	.03*	.03*	.03*
C-1 to 9000 ft E	1277	*	.03*	.03*	.03*
C-1 to 9000 ft E	1276	*	.03*	.03*	.03*
C-1 to 9000 ft E	1275	*	.03*	.03*	.03*
C-1 to 9000 ft E	1274	*	.03*	.03*	.03*
C-1 to 9000 ft E	1273	*	.04*	.04*	.04*
C-1 to 9000 ft E	1272	*	.028*	.028*	.028*
C-1 to 9000 ft E	1271	*	.028*	.028*	.028*
C-1 to 9000 ft E	1270	*	.028*	.028*	.028*
C-1 to 9000 ft E	1269	*	.04*	.04*	.04*
C-1 to 9000 ft E	1268	*	.028*	.028*	.028*
C-1 to 9000 ft E	1267	*	.028*	.028*	.028*
C-1 to 9000 ft E	1266	*	.028*	.028*	.028*
C-1 to 9000 ft E	1265	*	.028*	.03*	.028*
C-1 to 9000 ft E	1264	*	.03*	.03*	.03*
C-1 to 9000 ft E	1263	*	.03*	.03*	.03*
C-1 to 9000 ft E	1262	*	.03*	.03*	.03*
C-1 to 9000 ft E	1261	*	.03*	.03*	.03*
C-1 to 9000 ft E	1260	*	.03*	.03*	.03*
C-1 to 9000 ft E	1259	*	.03*	.03*	.03*
C-1 to 9000 ft E	1258	*	.03*	.03*	.03*
C-1 to 9000 ft E	1257	*	.04*	.04*	.04*
C-1 to 9000 ft E	1256	*	.028*	.028*	.028*
C-1 to 9000 ft E	1255	*	.028*	.028*	.028*
C-1 to 9000 ft E	1254	*	.028*	.028*	.028*
C-1 to 9000 ft E	1253	*	.04*	.04*	.04*
C-1 to 9000 ft E	1252	*	.028*	.028*	.028*
C-1 to 9000 ft E	1251	*	.028*	.028*	.028*
C-1 to 9000 ft E	1250	*	.028*	.028*	.028*
C-1 to 9000 ft E	1249	*	.028*	.03*	.028*
C-1 to 9000 ft E	1248	*	.03*	.03*	.03*
C-1 to 9000 ft E	1247	*	.03*	.03*	.03*
C-1 to 9000 ft E	1246	*	.03*	.03*	.03*
C-1 to 9000 ft E	1245	*	.03*	.03*	.03*
C-1 to 9000 ft E	1244	*	.03*	.03*	.03*
C-1 to 9000 ft E	1243	*	.03*	.03*	.03*
C-1 to 9000 ft E	1242	*	.03*	.03*	.03*
C-1 to 9000 ft E	1241	*	.03*	.03*	.03*
C-1 to 9000 ft E	1240	*	.04*	.04*	.04*
C-1 to 9000 ft E	1239	*	.028*	.028*	.028*
C-1 to 9000 ft E	1238	*	.028*	.028*	.028*
C-1 to 9000 ft E	1237	*	.028*	.028*	.028*
C-1 to 9000 ft E	1236	*	.04*	.04*	.04*
C-1 to 9000 ft E	1235	*	.028*	.028*	.028*
C-1 to 9000 ft E	1234	*	.028*	.028*	.028*
C-1 to 9000 ft E	1233	*	.028*	.028*	.028*
C-1 to 9000 ft E	1232	*	.028*	.03*	.028*
C-1 to 9000 ft E	1231	*	.03*	.03*	.03*
C-1 to 9000 ft E	1230	*	.03*	.03*	.03*
C-1 to 9000 ft E	1229	*	.03*	.03*	.03*
C-1 to 9000 ft E	1228	*	.03*	.03*	.03*
C-1 to 9000 ft E	1227	*	.03*	.03*	.03*
C-1 to 9000 ft E	1226	*	.03*	.03*	.03*
C-1 to 9000 ft E	1225	*	.03*	.03*	.03*
C-1 to 9000 ft E	1224	*	.04*	.04*	.04*
C-1 to 9000 ft E	1223	*	.028*	.028*	.028*
C-1 to 9000 ft E	1222	*	.028*	.028*	.028*
C-1 to 9000 ft E	1221	*	.028*	.028*	.028*
C-1 to 9000 ft E	1220	*	.04*	.04*	.04*
C-1 to 9000 ft E	1219	*	.028*	.028*	.028*
C-1 to 9000 ft E	1218	*	.028*	.028*	.028*
C-1 to 9000 ft E	1217	*	.028*	.028*	.028*
C-1 to 9000 ft E	1216	*	.028*	.03*	.028*
C-1 to 9000 ft E	1215	*	.03*	.03*	.03*
C-1 to 9000 ft E	1214	*	.03*	.03*	.03*
C-1 to 9000 ft E	1212	*	.03*	.03*	.03*
C-1 to 9000 ft E	1211	*	.03*	.03*	.03*
C-1 to 9000 ft E	1210	*	.03*	.03*	.03*
C-1 to 9000 ft E	1209	*	.03*	.03*	.03*
C-1 to 9000 ft E	1208	*	.03*	.03*	.03*
C-1 to 9000 ft E	1207	*	.04*	.04*	.04*
C-1 to 9000 ft E	1206	*	.028*	.028*	.028*
C-1 to 9000 ft E	1205	*	.028*	.028*	.028*
C-1 to 9000 ft E	1204	*	.028*	.028*	.028*
C-1 to 9000 ft E	1203	*	.04*	.04*	.04*
C-1 to 9000 ft E	1202	*	.028*	.028*	.028*
C-1 to 9000 ft E	1201	*	.028*	.028*	.028*
C-1 to 9000 ft E	1200	*	.03*	.03*	.03*
C-1 to 9000 ft E	1199	*	.028*	.03*	.028*
C-1 to 9000 ft E	1198	*	.03*	.03*	.03*
C-1 to 9000 ft E	1197	*	.03*	.03*	.03*
C-1 to 9000 ft E	1196	*	.03*	.03*	.03*
C-1 to 9000 ft E	1195	*	.03*	.03*	.03*
C-1 to 9000 ft E	1194	*	.03*	.03*	.03*
C-1 to 9000 ft E	1193	*	.03*	.03*	.03*
C-1 to 9000 ft E	1192	*	.03*	.03*	.03*
C-1 to 9000 ft E	1191	*	.03*	.03*	.03*
C-1 to 9000 ft E	1190	*	.04*	.04*	.04*
C-1 to 9000 ft E	1189	*	.028*	.028*	.028*
C-1 to 9000 ft E	1188	*	.028*	.028*	.028*
C-1 to 9000 ft E	1187	*	.028*	.028*	.028*
C-1 to 9000 ft E	1186	*	.04*	.04*	.04*
C-1 to 9000 ft E	1185	*	.028*	.028*	.028*
C-1 to 9000 ft E	1184	*	.028*	.028*	.028*
C-1 to 9000 ft E	1183	*	.028*	.028*	.028*
C-1 to 9000 ft E	1182	*	.028*	.03*	.028*
C-1 to 9000 ft E	1181	*	.03*	.03*	.03*
C-1 to 9000 ft E	1180	*	.03*	.03*	.03*
C-1 to 9000 ft E	1179	*	.03*	.03*	.03*
C-1 to 9000 ft E	1178	*	.03*	.03*	.03*
C-1 to 9000 ft E	1177	*	.03*	.03*	.03*
C-1 to 9000 ft E	1176	*	.03*	.03*	.03*
C-1 to 9000 ft E	1175	*	.03*	.03*	.03*
C-1 to 9000 ft E	1174	*	.03*	.03*	.03*
C-1 to 9000 ft E	1173	*	.04*	.04*	.04*
C-1 to 9000 ft E	1172	*	.028*	.028*	.028*
C-1 to 9000 ft E	1171	*	.028*	.028*	.028*
C-1 to 9000 ft E	1170	*	.028*	.028*	.028*
C-1 to 9000 ft E	1169	*	.04*	.04*	.04*
C-1 to 9000 ft E	1168	*	.028*	.028*	.028*
C-1 to 9000 ft E	1167	*	.028*	.028*	.028*
C-1 to 9000 ft E	1166	*	.028*	.028*	.028*
C-1 to 9000 ft E	1165	*	.028*	.03*	.028*
C-1 to 9000 ft E	1164	*	.03*	.03*	.03*
C-1 to 9000 ft E	1163	*	.03*	.03*	.03*
C-1 to 9000 ft E	1162	*	.03*	.03*	.03*
C-1 to 9000 ft E	1161	*	.03*	.03*	.03*
C-1 to 9000 ft E	1160	*	.03*	.03*	.03*
C-1 to 9000 ft E	1159	*	.03*	.03*	.03*
C-1 to 9000 ft E	1158	*	.04*	.04*	.04*
C-1 to 9000 ft E	1157	*	.028*	.028*	.028*
C-1 to 9000 ft E	1156	*	.028*	.028*	.028*
C-1 to 9000 ft E	1155	*	.028*	.028*	.028*
C-1 to 9000 ft E	1154	*	.04*	.04*	.04*
C-1 to 9000 ft E	1153	*	.028*	.028*	.028*
C-1 to 9000 ft E	1152	*	.028*	.028*	.028*
C-1 to 9000 ft E	1151	*	.028*	.028*	.028*
C-1 to 9000 ft E	1150	*	.028*	.03*	.028*
C-1 to 9000 ft E	1149	*	.03*	.03*	.03*
C-1 to 9000 ft E	1148	*	.03*	.03*	.03*
C-1 to 9000 ft E	1147	*	.03*	.03*	.03*
C-1 to 9000 ft E	1146	*	.03*	.03*	.03*
C-1 to 9000 ft E	1145	*	.03*	.03*	.03*
C-1 to 9000 ft E	1144	*	.03*	.03*	.03*
C-1 to 9000 ft E	1143	*	.04*	.04*	.04*
C-1 to 9000 ft E	1142	*	.028*	.028*	.028*
C-1 to 9000 ft E	1141	*	.028*	.028*	.028*
C-1 to 9000 ft E	1140	*	.028*	.028*	.028*
C-1 to 9000 ft E	1139	*	.04*	.04*	.04*
C-1 to 9000 ft E	1138	*	.028*	.028*	.028*
C-1 to 9000 ft E	1137	*	.028*	.028*	.028*
C-1 to 9000 ft E	1136	*	.028*	.028*	.028*
C-1 to 9000 ft E	1135	*	.028*	.03*	.028*
C-1 to 9000 ft E	1134	*	.03*	.03*	.03*
C-1 to 9000 ft E	1133	*	.03*	.03*	.03*
C-1 to 9000 ft E	1132	*	.03*	.03*	.03*
C-1 to 9000 ft E	1131	*	.03*	.03*	.03*

C-1 to 9000 ft E	1130	*	.03*	.03*	.03*
C-1 to 9000 ft E	1129	*	.03*	.03*	.03*
C-1 to 9000 ft E	1128	*	.04*	.04*	.04*
C-1 to 9000 ft E	1127	*	.028*	.028*	.028*
C-1 to 9000 ft E	1126	*	.028*	.028*	.028*
C-1 to 9000 ft E	1125	*	.028*	.028*	.028*
C-1 to 9000 ft E	1124	*	.04*	.04*	.04*
C-1 to 9000 ft E	1123	*	.028*	.028*	.028*
C-1 to 9000 ft E	1122	*	.028*	.028*	.028*
C-1 to 9000 ft E	1121	*	.03*	.03*	.03*
C-1 to 9000 ft E	1120	*	.028*	.03*	.028*
C-1 to 9000 ft E	1119	*	.03*	.03*	.03*
C-1 to 9000 ft E	1118	*	.03*	.03*	.03*
C-1 to 9000 ft E	1117	*	.03*	.03*	.03*
C-1 to 9000 ft E	1116	*	.03*	.03*	.03*
C-1 to 9000 ft E	1115	*	.03*	.03*	.03*
C-1 to 9000 ft E	1114	*	.03*	.03*	.03*
C-1 to 9000 ft E	1113	*	.03*	.03*	.03*
C-1 to 9000 ft E	1112	*	.03*	.03*	.03*
C-1 to 9000 ft E	1111	*	.04*	.04*	.04*
C-1 to 9000 ft E	1110	*	.028*	.028*	.028*
C-1 to 9000 ft E	1109	*	.028*	.028*	.028*
C-1 to 9000 ft E	1108	*	.028*	.028*	.028*
C-1 to 9000 ft E	1107	*	.04*	.04*	.04*
C-1 to 9000 ft E	1106	*	.028*	.028*	.028*
C-1 to 9000 ft E	1105	*	.028*	.028*	.028*
C-1 to 9000 ft E	1104	*	.028*	.028*	.028*
C-1 to 9000 ft E	1103	*	.028*	.03*	.028*
C-1 to 9000 ft E	1102	*	.03*	.03*	.03*
C-1 to 9000 ft E	1101	*	.03*	.03*	.03*
C-1 to 9000 ft E	1100	*	.03*	.03*	.03*
C-1 to 9000 ft E	1099	*	.03*	.03*	.03*
C-1 to 9000 ft E	1098	*	.03*	.03*	.03*
C-1 to 9000 ft E	1097	*	.03*	.03*	.03*
C-1 to 9000 ft E	1096	*	.04*	.04*	.04*
C-1 to 9000 ft E	1095	*	.028*	.028*	.028*
C-1 to 9000 ft E	1094	*	.028*	.028*	.028*
C-1 to 9000 ft E	1093	*	.028*	.028*	.028*
C-1 to 9000 ft E	1092	*	.04*	.04*	.04*
C-1 to 9000 ft E	1091	*	.028*	.028*	.028*
C-1 to 9000 ft E	1090	*	.028*	.028*	.028*
C-1 to 9000 ft E	1089	*	.028*	.028*	.028*
C-1 to 9000 ft E	1088	*	.028*	.03*	.028*
C-1 to 9000 ft E	1087	*	.03*	.03*	.03*
C-1 to 9000 ft E	1086	*	.03*	.03*	.03*
C-1 to 9000 ft E	1085	*	.03*	.03*	.03*
C-1 to 9000 ft E	1084	*	.03*	.03*	.03*
C-1 to 9000 ft E	1083	*	.03*	.03*	.03*
C-1 to 9000 ft E	1082	*	.03*	.03*	.03*
C-1 to 9000 ft E	1081	*	.04*	.04*	.04*
C-1 to 9000 ft E	1080	*	.028*	.028*	.028*
C-1 to 9000 ft E	1079	*	.028*	.028*	.028*
C-1 to 9000 ft E	1078	*	.028*	.028*	.028*
C-1 to 9000 ft E	1077	*	.04*	.04*	.04*
C-1 to 9000 ft E	1076	*	.028*	.028*	.028*
C-1 to 9000 ft E	1075	*	.028*	.028*	.028*
C-1 to 9000 ft E	1074	*	.028*	.028*	.028*
C-1 to 9000 ft E	1073	*	.028*	.03*	.028*
C-1 to 9000 ft E	1072	*	.03*	.03*	.03*
C-1 to 9000 ft E	1071	*	.03*	.03*	.03*
C-1 to 9000 ft E	1070	*	.03*	.03*	.03*
C-1 to 9000 ft E	1069	*	.03*	.03*	.03*
C-1 to 9000 ft E	1068	*	.03*	.03*	.03*
C-1 to 9000 ft E	1067	*	.03*	.03*	.03*
C-1 to 9000 ft E	1066	*	.04*	.04*	.04*
C-1 to 9000 ft E	1065	*	.028*	.028*	.028*
C-1 to 9000 ft E	1064	*	.028*	.028*	.028*
C-1 to 9000 ft E	1063	*	.028*	.028*	.028*
C-1 to 9000 ft E	1062	*	.04*	.04*	.04*
C-1 to 9000 ft E	1061	*	.028*	.028*	.028*
C-1 to 9000 ft E	1060	*	.028*	.028*	.028*
C-1 to 9000 ft E	1059	*	.028*	.028*	.028*
C-1 to 9000 ft E	1058	*	.028*	.028*	.028*
C-1 to 9000 ft E	1057	*	.028*	.03*	.028*
C-1 to 9000 ft E	1056	*	.03*	.03*	.03*
C-1 to 9000 ft E	1055	*	.03*	.03*	.03*
C-1 to 9000 ft E	1054	*	.03*	.03*	.03*
C-1 to 9000 ft E	1053	*	.03*	.03*	.03*
C-1 to 9000 ft E	1052	*	.028*	.028*	.028*
C-1 to 9000 ft E	1051	*	.028*	.028*	.028*
C-1 to 9000 ft E	1050	*	.028*	.028*	.028*
C-1 to 9000 ft E	1049	*	.03*	.03*	.03*
C-1 to 9000 ft E	1048	*	.03*	.03*	.03*
C-1 to 9000 ft E	1047	*	.015*	.015*	.015*
C-1 to 9000 ft E	1046.5	*Culvert	*	*	*
C-1 to 9000 ft E	1046	*	.03*	.03*	.03*
C-1 to 9000 ft E	1045	*	.03*	.03*	.03*
C-1 to 9000 ft E	1044	*	.03*	.03*	.03*
C-1 to 9000 ft E	1043	*	.028*	.03*	.03*
C-1 to 9000 ft E	1042	*	.015*	.015*	.015*
C-1 to 9000 ft E	1041	*	.015*	.015*	.015*
C-1 to 9000 ft E	1040	*	.015*	.015*	.015*
C-1 to 9000 ft E	1039	*	.015*	.015*	.015*
C-1 to 9000 ft E	1038	*	.015*	.015*	.015*
C-1 to 9000 ft E	1037	*	.015*	.015*	.015*
C-1 to 9000 ft E	1036	*	.015*	.015*	.015*
C-1 to 9000 ft E	1035	*	.015*	.015*	.015*
C-1 to 9000 ft E	1034	*	.015*	.015*	.015*
C-1 to 9000 ft E	1033	*	.015*	.015*	.015*
C-1 to 9000 ft E	1032	*	.015*	.015*	.015*
C-1 to 9000 ft E	1031	*	.015*	.015*	.015*
C-1 to 9000 ft E	1030	*	.015*	.015*	.015*
C-1 to 9000 ft E	1029	*	.015*	.015*	.015*
C-1 to 9000 ft E	1028	*	.015*	.015*	.015*
C-1 to 9000 ft E	1027	*	.015*	.015*	.015*
C-1 to 9000 ft E	1026	*	.015*	.015*	.015*
C-1 to 9000 ft E	1025	*	.015*	.015*	.015*
C-1 to 9000 ft E	1024	*	.015*	.015*	.015*
C-1 to 9000 ft E	1023	*	.015*	.015*	.015*
C-1 to 9000 ft E	1022	*	.015*	.015*	.015*
C-1 to 9000 ft E	1021	*	.015*	.015*	.015*
C-1 to 9000 ft E	1020	*	.015*	.015*	.015*
C-1 to 9000 ft E	1019	*	.015*	.015*	.015*
C-1 to 9000 ft E	1018	*	.015*	.015*	.015*
C-1 to 9000 ft E	1017	*	.015*	.015*	.015*
C-1 to 9000 ft E	1016	*	.015*	.015*	.015*
C-1 to 9000 ft E	1015	*	.015*	.015*	.015*
C-1 to 9000 ft E	1014	*	.015*	.015*	.015*
C-1 to 9000 ft E	1013	*	.015*	.015*	.015*
C-1 to 9000 ft E	1012	*	.015*	.015*	.015*
C-1 to 9000 ft E	1011	*	.015*	.015*	.015*
C-1 to 9000 ft E	1010	*	.015*	.015*	.015*
C-1 to 9000 ft E	1009	*	.015*	.015*	.015*
C-1 to 9000 ft E	1008	*	.015*	.015*	.015*
C-1 to 9000 ft E	1007	*	.015*	.015*	.015*
C-1 to 9000 ft E	1006	*	.015*	.015*	.015*
C-1 to 9000 ft E	1005	*	.015*	.015*	.015*
C-1 to 9000 ft E	1004	*	.015*	.015*	.015*
C-1 to 9000 ft E	1003	*	.015*	.015*	.015*
C-1 to 9000 ft E	1002	*	.015*	.015*	.015*
C-1 to 9000 ft E	1001	*	.015*	.015*	.015*

SUMMARY OF REACH LENGTHS

River: Drake Channel

Reach	River Sta.	Left	Channel	Right
C-1 to 9000 ft E	1328	50*	50*	50*
C-1 to 9000 ft E	1327	50*	50*	50*
C-1 to 9000 ft E	1326	50*	50*	50*
C-1 to 9000 ft E	1325	50*	50*	50*
C-1 to 9000 ft E	1324	50*	50*	50*
C-1 to 9000 ft E	1323	50*	50*	50*
C-1 to 9000 ft E	1322	13*	13*	13*
C-1 to 9000 ft E	1321	6*	6*	6*
C-1 to 9000 ft E	1320	.1*	.1*	.1*
C-1 to 9000 ft E	1319	6*	6*	6*
C-1 to 9000 ft E	1318	.1*	.1*	.1*
C-1 to 9000 ft E	1317	19*	19*	19*
C-1 to 9000 ft E	1316	6*	6*	6*
C-1 to 9000 ft E	1315	.1*	.1*	.1*
C-1 to 9000 ft E	1314	24*	24*	24*
C-1 to 9000 ft E	1313	12*	12*	12*
C-1 to 9000 ft E	1312	14*	14*	14*
C-1 to 9000 ft E	1311	50*	50*	50*
C-1 to 9000 ft E	1310	50*	50*	50*
C-1 to 9000 ft E	1309	50*	50*	50*

C-1 to 9000 ft E	1308	*	50*	50*	50*
C-1 to 9000 ft E	1307	*	50*	50*	50*
C-1 to 9000 ft E	1306	*	13*	13*	13*
C-1 to 9000 ft E	1305	*	6*	6*	6*
C-1 to 9000 ft E	1304	*	.1*	.1*	.1*
C-1 to 9000 ft E	1303	*	6*	6*	6*
C-1 to 9000 ft E	1302	*	.1*	.1*	.1*
C-1 to 9000 ft E	1301	*	19*	19*	19*
C-1 to 9000 ft E	1300	*	6*	6*	6*
C-1 to 9000 ft E	1299	*	.1*	.1*	.1*
C-1 to 9000 ft E	1298	*	24*	24*	24*
C-1 to 9000 ft E	1297	*	12*	12*	12*
C-1 to 9000 ft E	1296	*	14*	14*	14*
C-1 to 9000 ft E	1295	*	50*	50*	50*
C-1 to 9000 ft E	1294	*	50*	50*	50*
C-1 to 9000 ft E	1293	*	50*	50*	50*
C-1 to 9000 ft E	1292	*	50*	50*	50*
C-1 to 9000 ft E	1291	*	50*	50*	50*
C-1 to 9000 ft E	1290	*	13*	13*	13*
C-1 to 9000 ft E	1289	*	6*	6*	6*
C-1 to 9000 ft E	1288	*	.1*	.1*	.1*
C-1 to 9000 ft E	1287	*	6*	6*	6*
C-1 to 9000 ft E	1286	*	.1*	.1*	.1*
C-1 to 9000 ft E	1285	*	19*	19*	19*
C-1 to 9000 ft E	1284	*	6*	6*	6*
C-1 to 9000 ft E	1283	*	.1*	.1*	.1*
C-1 to 9000 ft E	1282	*	24*	24*	24*
C-1 to 9000 ft E	1281	*	12*	12*	12*
C-1 to 9000 ft E	1280	*	14*	14*	14*
C-1 to 9000 ft E	1279	*	50*	50*	50*
C-1 to 9000 ft E	1278	*	50*	50*	50*
C-1 to 9000 ft E	1277	*	50*	50*	50*
C-1 to 9000 ft E	1276	*	50*	50*	50*
C-1 to 9000 ft E	1275	*	50*	50*	50*
C-1 to 9000 ft E	1274	*	13*	13*	13*
C-1 to 9000 ft E	1273	*	6*	6*	6*
C-1 to 9000 ft E	1272	*	.1*	.1*	.1*
C-1 to 9000 ft E	1271	*	6*	6*	6*
C-1 to 9000 ft E	1270	*	.1*	.1*	.1*
C-1 to 9000 ft E	1269	*	19*	19*	19*
C-1 to 9000 ft E	1268	*	6*	6*	6*
C-1 to 9000 ft E	1267	*	.1*	.1*	.1*
C-1 to 9000 ft E	1266	*	24*	24*	24*
C-1 to 9000 ft E	1265	*	12*	12*	12*
C-1 to 9000 ft E	1264	*	14*	14*	14*
C-1 to 9000 ft E	1263	*	50*	50*	50*
C-1 to 9000 ft E	1262	*	50*	50*	50*
C-1 to 9000 ft E	1261	*	50*	50*	50*
C-1 to 9000 ft E	1260	*	50*	50*	50*
C-1 to 9000 ft E	1259	*	50*	50*	50*
C-1 to 9000 ft E	1258	*	13*	13*	13*
C-1 to 9000 ft E	1257	*	6*	6*	6*
C-1 to 9000 ft E	1256	*	.1*	.1*	.1*
C-1 to 9000 ft E	1255	*	6*	6*	6*
C-1 to 9000 ft E	1254	*	.1*	.1*	.1*
C-1 to 9000 ft E	1253	*	19*	19*	19*
C-1 to 9000 ft E	1252	*	6*	6*	6*
C-1 to 9000 ft E	1251	*	.1*	.1*	.1*
C-1 to 9000 ft E	1250	*	24*	24*	24*
C-1 to 9000 ft E	1249	*	12*	12*	12*
C-1 to 9000 ft E	1248	*	14*	14*	14*
C-1 to 9000 ft E	1247	*	50*	50*	50*
C-1 to 9000 ft E	1246	*	50*	50*	50*
C-1 to 9000 ft E	1245	*	50*	50*	50*
C-1 to 9000 ft E	1244	*	50*	50*	50*
C-1 to 9000 ft E	1243	*	50*	50*	50*
C-1 to 9000 ft E	1242	*	50*	50*	50*
C-1 to 9000 ft E	1241	*	13*	13*	13*
C-1 to 9000 ft E	1240	*	6*	6*	6*
C-1 to 9000 ft E	1239	*	.1*	.1*	.1*
C-1 to 9000 ft E	1238	*	6*	6*	6*
C-1 to 9000 ft E	1237	*	.1*	.1*	.1*
C-1 to 9000 ft E	1236	*	19*	19*	19*
C-1 to 9000 ft E	1235	*	6*	6*	6*
C-1 to 9000 ft E	1234	*	.1*	.1*	.1*
C-1 to 9000 ft E	1233	*	24*	24*	24*
C-1 to 9000 ft E	1232	*	12*	12*	12*
C-1 to 9000 ft E	1231	*	14*	14*	14*
C-1 to 9000 ft E	1230	*	50*	50*	50*
C-1 to 9000 ft E	1229	*	50*	50*	50*
C-1 to 9000 ft E	1228	*	50*	50*	50*
C-1 to 9000 ft E	1227	*	50*	50*	50*
C-1 to 9000 ft E	1226	*	50*	50*	50*
C-1 to 9000 ft E	1225	*	13*	13*	13*
C-1 to 9000 ft E	1224	*	6*	6*	6*
C-1 to 9000 ft E	1223	*	.1*	.1*	.1*
C-1 to 9000 ft E	1222	*	6*	6*	6*
C-1 to 9000 ft E	1221	*	.1*	.1*	.1*
C-1 to 9000 ft E	1220	*	19*	19*	19*
C-1 to 9000 ft E	1219	*	6*	6*	6*
C-1 to 9000 ft E	1218	*	.1*	.1*	.1*
C-1 to 9000 ft E	1217	*	24*	24*	24*
C-1 to 9000 ft E	1216	*	12*	12*	12*
C-1 to 9000 ft E	1215	*	14*	14*	14*
C-1 to 9000 ft E	1214	*	50*	50*	50*
C-1 to 9000 ft E	1212	*	50*	50*	50*
C-1 to 9000 ft E	1211	*	50*	50*	50*
C-1 to 9000 ft E	1210	*	50*	50*	50*
C-1 to 9000 ft E	1209	*	50*	50*	50*
C-1 to 9000 ft E	1208	*	13*	13*	13*
C-1 to 9000 ft E	1207	*	6*	6*	6*
C-1 to 9000 ft E	1206	*	.1*	.1*	.1*
C-1 to 9000 ft E	1205	*	6*	6*	6*
C-1 to 9000 ft E	1204	*	.1*	.1*	.1*
C-1 to 9000 ft E	1203	*	19*	19*	19*
C-1 to 9000 ft E	1202	*	6*	6*	6*
C-1 to 9000 ft E	1201	*	.1*	.1*	.1*
C-1 to 9000 ft E	1200	*	24*	24*	24*
C-1 to 9000 ft E	1199	*	12*	12*	12*
C-1 to 9000 ft E	1198	*	14*	14*	14*
C-1 to 9000 ft E	1197	*	50*	50*	50*
C-1 to 9000 ft E	1196	*	50*	50*	50*
C-1 to 9000 ft E	1195	*	50*	50*	50*
C-1 to 9000 ft E	1194	*	50*	50*	50*
C-1 to 9000 ft E	1193	*	50*	50*	50*
C-1 to 9000 ft E	1192	*	50*	50*	50*
C-1 to 9000 ft E	1191	*	13*	13*	13*
C-1 to 9000 ft E	1190	*	6*	6*	6*
C-1 to 9000 ft E	1189	*	.1*	.1*	.1*
C-1 to 9000 ft E	1188	*	6*	6*	6*
C-1 to 9000 ft E	1187	*	.1*	.1*	.1*
C-1 to 9000 ft E	1186	*	19*	19*	19*
C-1 to 9000 ft E	1185	*	6*	6*	6*
C-1 to 9000 ft E	1184	*	.1*	.1*	.1*
C-1 to 9000 ft E	1183	*	24*	24*	24*
C-1 to 9000 ft E	1182	*	12*	12*	12*
C-1 to 9000 ft E	1181	*	14*	14*	14*
C-1 to 9000 ft E	1180	*	50*	50*	50*
C-1 to 9000 ft E	1179	*	50*	50*	50*
C-1 to 9000 ft E	1178	*	50*	50*	50*
C-1 to 9000 ft E	1177	*	50*	50*	50*
C-1 to 9000 ft E	1176	*	50*	50*	50*
C-1 to 9000 ft E	1175	*	50*	50*	50*
C-1 to 9000 ft E	1174	*	13*	13*	13*
C-1 to 9000 ft E	1173	*	6*	6*	6*
C-1 to 9000 ft E	1172	*	.1*	.1*	.1*
C-1 to 9000 ft E	1171	*	6*	6*	6*
C-1 to 9000 ft E	1170	*	.1*	.1*	.1*
C-1 to 9000 ft E	1169	*	19*	19*	19*
C-1 to 9000 ft E	1168	*	6*	6*	6*
C-1 to 9000 ft E	1167	*	.1*	.1*	.1*
C-1 to 9000 ft E	1166	*	24*	24*	24*
C-1 to 9000 ft E	1165	*	12*	12*	12*
C-1 to 9000 ft E	1164	*	14*	14*	14*
C-1 to 9000 ft E	1163	*	50*	50*	50*
C-1 to 9000 ft E	1162	*	50*	50*	50*
C-1 to 9000 ft E	1161	*	50*	50*	50*
C-1 to 9000 ft E	1160	*	50*	50*	50*
C-1 to 9000 ft E	1159	*	13*	13*	13*
C-1 to 9000 ft E	1158	*	6*	6*	6*
C-1 to 9000 ft E	1157	*	.1*	.1*	.1*
C-1 to 9000 ft E	1156	*	6*	6*	6*
C-1 to 9000 ft E	1155	*	.1*	.1*	.1*
C-1 to 9000 ft E	1154	*	19*	19*	19*
C-1 to 9000 ft E	1153	*	6*	6*	6*
C-1 to 9000 ft E	1152	*	.1*	.1*	.1*
C-1 to 9000 ft E	1151	*	24*	24*	24*
C-1 to 9000 ft E	1150	*	12*	12*	12*
C-1 to 9000 ft E	1149	*	14*	14*	14*
C-1 to 9000 ft E	1148	*	50*	50*	50*
C-1 to 9000 ft E	1147	*	50*	50*	50*

C-1 to 9000 ft E	1146		50	50	50
C-1 to 9000 ft E	1145		50	50	50
C-1 to 9000 ft E	1144		13	13	13
C-1 to 9000 ft E	1143		6	6	6
C-1 to 9000 ft E	1142		.1	.1	.1
C-1 to 9000 ft E	1141		6	6	6
C-1 to 9000 ft E	1140		.1	.1	.1
C-1 to 9000 ft E	1139		19	19	19
C-1 to 9000 ft E	1138		6	6	6
C-1 to 9000 ft E	1137		.1	.1	.1
C-1 to 9000 ft E	1136		24	24	24
C-1 to 9000 ft E	1135		12	12	12
C-1 to 9000 ft E	1134		14	14	14
C-1 to 9000 ft E	1133		50	50	50
C-1 to 9000 ft E	1132		50	50	50
C-1 to 9000 ft E	1131		50	50	50
C-1 to 9000 ft E	1130		50	50	50
C-1 to 9000 ft E	1129		13	13	13
C-1 to 9000 ft E	1128		6	6	6
C-1 to 9000 ft E	1127		.1	.1	.1
C-1 to 9000 ft E	1126		6	6	6
C-1 to 9000 ft E	1125		.1	.1	.1
C-1 to 9000 ft E	1124		19	19	19
C-1 to 9000 ft E	1123		6	6	6
C-1 to 9000 ft E	1122		.1	.1	.1
C-1 to 9000 ft E	1121		24	24	24
C-1 to 9000 ft E	1120		12	12	12
C-1 to 9000 ft E	1119		14	14	14
C-1 to 9000 ft E	1118		50	50	50
C-1 to 9000 ft E	1117		50	50	50
C-1 to 9000 ft E	1116		50	50	50
C-1 to 9000 ft E	1115		50	50	50
C-1 to 9000 ft E	1114		50	50	50
C-1 to 9000 ft E	1113		50	50	50
C-1 to 9000 ft E	1112		13	13	13
C-1 to 9000 ft E	1111		6	6	6
C-1 to 9000 ft E	1110		.1	.1	.1
C-1 to 9000 ft E	1109		6	6	6
C-1 to 9000 ft E	1108		.1	.1	.1
C-1 to 9000 ft E	1107		19	19	19
C-1 to 9000 ft E	1106		6	6	6
C-1 to 9000 ft E	1105		.1	.1	.1
C-1 to 9000 ft E	1104		24	24	24
C-1 to 9000 ft E	1103		12	12	12
C-1 to 9000 ft E	1102		14	14	14
C-1 to 9000 ft E	1101		50	50	50
C-1 to 9000 ft E	1100		50	50	50
C-1 to 9000 ft E	1099		50	50	50
C-1 to 9000 ft E	1098		50	50	50
C-1 to 9000 ft E	1097		13	13	13
C-1 to 9000 ft E	1096		6	6	6
C-1 to 9000 ft E	1095		.1	.1	.1
C-1 to 9000 ft E	1094		6	6	6
C-1 to 9000 ft E	1093		.1	.1	.1
C-1 to 9000 ft E	1092		19	19	19
C-1 to 9000 ft E	1091		6	6	6
C-1 to 9000 ft E	1090		.1	.1	.1
C-1 to 9000 ft E	1089		24	24	24
C-1 to 9000 ft E	1088		12	12	12
C-1 to 9000 ft E	1087		14	14	14
C-1 to 9000 ft E	1086		50	50	50
C-1 to 9000 ft E	1085		50	50	50
C-1 to 9000 ft E	1084		50	50	50
C-1 to 9000 ft E	1083		50	50	50
C-1 to 9000 ft E	1082		13	13	13
C-1 to 9000 ft E	1081		6	6	6
C-1 to 9000 ft E	1080		.1	.1	.1
C-1 to 9000 ft E	1079		6	6	6
C-1 to 9000 ft E	1078		.1	.1	.1
C-1 to 9000 ft E	1077		19	19	19
C-1 to 9000 ft E	1076		6	6	6
C-1 to 9000 ft E	1075		.1	.1	.1
C-1 to 9000 ft E	1074		24	24	24
C-1 to 9000 ft E	1073		12	12	12
C-1 to 9000 ft E	1072		14	14	14
C-1 to 9000 ft E	1071		50	50	50
C-1 to 9000 ft E	1070		50	50	50
C-1 to 9000 ft E	1069		50	50	50
C-1 to 9000 ft E	1068		50	50	50
C-1 to 9000 ft E	1067		13	13	13
C-1 to 9000 ft E	1066		6	6	6
C-1 to 9000 ft E	1065		.1	.1	.1
C-1 to 9000 ft E	1064		6	6	6
C-1 to 9000 ft E	1063		.1	.1	.1
C-1 to 9000 ft E	1062		19	19	19
C-1 to 9000 ft E	1061		6	6	6
C-1 to 9000 ft E	1060		.1	.1	.1
C-1 to 9000 ft E	1059		24	24	24
C-1 to 9000 ft E	1058		12	12	12
C-1 to 9000 ft E	1057		14	14	14
C-1 to 9000 ft E	1056		50	50	50
C-1 to 9000 ft E	1055		50	50	50
C-1 to 9000 ft E	1054		50	50	50
C-1 to 9000 ft E	1053		67	67	67
C-1 to 9000 ft E	1052		.1	.1	.1
C-1 to 9000 ft E	1051		6	6	6
C-1 to 9000 ft E	1050		.1	.1	.1
C-1 to 9000 ft E	1049		27	27	27
C-1 to 9000 ft E	1048		43	43	43
C-1 to 9000 ft E	1047		92	92	92
C-1 to 9000 ft E	1046.5	Culvert			
C-1 to 9000 ft E	1046		62.18	62.18	62.18
C-1 to 9000 ft E	1045		70	70	70
C-1 to 9000 ft E	1044		69.6	69.6	69.6
C-1 to 9000 ft E	1043		101.21	101.21	101.21
C-1 to 9000 ft E	1042		79.19	79.19	79.19
C-1 to 9000 ft E	1041		100	100	100
C-1 to 9000 ft E	1040		100	100	100
C-1 to 9000 ft E	1039		100	100	100
C-1 to 9000 ft E	1038		100	100	100
C-1 to 9000 ft E	1037		100	100	100
C-1 to 9000 ft E	1036		100	100	100
C-1 to 9000 ft E	1035		42.69	42.69	42.69
C-1 to 9000 ft E	1034		57.31	57.31	57.31
C-1 to 9000 ft E	1033		100	100	100
C-1 to 9000 ft E	1032		100	100	100
C-1 to 9000 ft E	1031		105.3	105.3	105.3
C-1 to 9000 ft E	1030		39.39	39.39	39.39
C-1 to 9000 ft E	1029		58.7	58.7	58.7
C-1 to 9000 ft E	1028		67.6	67.7	67.7
C-1 to 9000 ft E	1027		32.3	32.3	32.3
C-1 to 9000 ft E	1026		50	50	50
C-1 to 9000 ft E	1025		50	50	50
C-1 to 9000 ft E	1024		50	50	50
C-1 to 9000 ft E	1023		50	50	50
C-1 to 9000 ft E	1022		50	50	50
C-1 to 9000 ft E	1021		50	50	50
C-1 to 9000 ft E	1020		58.82	58.82	58.82
C-1 to 9000 ft E	1019		.1	.1	.1
C-1 to 9000 ft E	1018		50	50	50
C-1 to 9000 ft E	1017		50	50	50
C-1 to 9000 ft E	1016		50	50	50
C-1 to 9000 ft E	1015		50	50	50
C-1 to 9000 ft E	1014		50	50	50
C-1 to 9000 ft E	1013		50	50	50
C-1 to 9000 ft E	1012		50	50	50
C-1 to 9000 ft E	1011		52.87	52.87	52.87
C-1 to 9000 ft E	1010		47.13	47.13	47.13
C-1 to 9000 ft E	1009		50	50	50
C-1 to 9000 ft E	1008		50	50	50
C-1 to 9000 ft E	1007		39	39	39
C-1 to 9000 ft E	1006		.1	.1	.1
C-1 to 9000 ft E	1005		12.06	11	9.94
C-1 to 9000 ft E	1004		109.44	100	90.56
C-1 to 9000 ft E	1003		54.72	50	45.12
C-1 to 9000 ft E	1002		28.1	25.64	23.17
C-1 to 9000 ft E	1001				

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Drake Channel

Reach	River Sta.	Contr.	Expan.
C-1 to 9000 ft E	1328	.1	.3
C-1 to 9000 ft E	1327	.1	.3
C-1 to 9000 ft E	1326	.1	.3
C-1 to 9000 ft E	1325	.1	.3

C-1 to 9000 ft E 1324 * .1* .3*
C-1 to 9000 ft E 1323 * .1* .3*
C-1 to 9000 ft E 1322 * .1* .3*
C-1 to 9000 ft E 1321 * .1* .3*
C-1 to 9000 ft E 1320 * .1* .3*
C-1 to 9000 ft E 1319 * .1* .3*
C-1 to 9000 ft E 1318 * .1* .3*
C-1 to 9000 ft E 1317 * .1* .3*
C-1 to 9000 ft E 1316 * .1* .3*
C-1 to 9000 ft E 1315 * .1* .3*
C-1 to 9000 ft E 1314 * .1* .3*
C-1 to 9000 ft E 1313 * .1* .3*
C-1 to 9000 ft E 1312 * .1* .3*
C-1 to 9000 ft E 1311 * .1* .3*
C-1 to 9000 ft E 1310 * .1* .3*
C-1 to 9000 ft E 1309 * .1* .3*
C-1 to 9000 ft E 1308 * .1* .3*
C-1 to 9000 ft E 1307 * .1* .3*
C-1 to 9000 ft E 1306 * .1* .3*
C-1 to 9000 ft E 1305 * .1* .3*
C-1 to 9000 ft E 1304 * .1* .3*
C-1 to 9000 ft E 1303 * .1* .3*
C-1 to 9000 ft E 1302 * .1* .3*
C-1 to 9000 ft E 1301 * .1* .3*
C-1 to 9000 ft E 1300 * .1* .3*
C-1 to 9000 ft E 1299 * .1* .3*
C-1 to 9000 ft E 1298 * .1* .3*
C-1 to 9000 ft E 1297 * .1* .3*
C-1 to 9000 ft E 1296 * .1* .3*
C-1 to 9000 ft E 1295 * .1* .3*
C-1 to 9000 ft E 1294 * .1* .3*
C-1 to 9000 ft E 1293 * .1* .3*
C-1 to 9000 ft E 1292 * .1* .3*
C-1 to 9000 ft E 1291 * .1* .3*
C-1 to 9000 ft E 1290 * .1* .3*
C-1 to 9000 ft E 1289 * .1* .3*
C-1 to 9000 ft E 1288 * .1* .3*
C-1 to 9000 ft E 1287 * .1* .3*
C-1 to 9000 ft E 1286 * .1* .3*
C-1 to 9000 ft E 1285 * .1* .3*
C-1 to 9000 ft E 1284 * .1* .3*
C-1 to 9000 ft E 1283 * .1* .3*
C-1 to 9000 ft E 1282 * .1* .3*
C-1 to 9000 ft E 1281 * .1* .3*
C-1 to 9000 ft E 1280 * .1* .3*
C-1 to 9000 ft E 1279 * .1* .3*
C-1 to 9000 ft E 1278 * .1* .3*
C-1 to 9000 ft E 1277 * .1* .3*
C-1 to 9000 ft E 1276 * .1* .3*
C-1 to 9000 ft E 1275 * .1* .3*
C-1 to 9000 ft E 1274 * .1* .3*
C-1 to 9000 ft E 1273 * .1* .3*
C-1 to 9000 ft E 1272 * .1* .3*
C-1 to 9000 ft E 1271 * .1* .3*
C-1 to 9000 ft E 1270 * .1* .3*
C-1 to 9000 ft E 1269 * .1* .3*
C-1 to 9000 ft E 1268 * .1* .3*
C-1 to 9000 ft E 1267 * .1* .3*
C-1 to 9000 ft E 1266 * .1* .3*
C-1 to 9000 ft E 1265 * .1* .3*
C-1 to 9000 ft E 1264 * .1* .3*
C-1 to 9000 ft E 1263 * .1* .3*
C-1 to 9000 ft E 1262 * .1* .3*
C-1 to 9000 ft E 1261 * .1* .3*
C-1 to 9000 ft E 1260 * .1* .3*
C-1 to 9000 ft E 1259 * .1* .3*
C-1 to 9000 ft E 1258 * .1* .3*
C-1 to 9000 ft E 1257 * .1* .3*
C-1 to 9000 ft E 1256 * .1* .3*
C-1 to 9000 ft E 1255 * .1* .3*
C-1 to 9000 ft E 1254 * .1* .3*
C-1 to 9000 ft E 1253 * .1* .3*
C-1 to 9000 ft E 1252 * .1* .3*
C-1 to 9000 ft E 1251 * .1* .3*
C-1 to 9000 ft E 1250 * .1* .3*
C-1 to 9000 ft E 1249 * .1* .3*
C-1 to 9000 ft E 1248 * .1* .3*
C-1 to 9000 ft E 1247 * .1* .3*
C-1 to 9000 ft E 1246 * .1* .3*
C-1 to 9000 ft E 1245 * .1* .3*
C-1 to 9000 ft E 1244 * .1* .3*
C-1 to 9000 ft E 1243 * .1* .3*
C-1 to 9000 ft E 1242 * .1* .3*
C-1 to 9000 ft E 1241 * .1* .3*
C-1 to 9000 ft E 1240 * .1* .3*
C-1 to 9000 ft E 1239 * .1* .3*
C-1 to 9000 ft E 1238 * .1* .3*
C-1 to 9000 ft E 1237 * .1* .3*
C-1 to 9000 ft E 1236 * .1* .3*
C-1 to 9000 ft E 1235 * .1* .3*
C-1 to 9000 ft E 1234 * .1* .3*
C-1 to 9000 ft E 1233 * .1* .3*
C-1 to 9000 ft E 1232 * .1* .3*
C-1 to 9000 ft E 1231 * .1* .3*
C-1 to 9000 ft E 1230 * .1* .3*
C-1 to 9000 ft E 1229 * .1* .3*
C-1 to 9000 ft E 1228 * .1* .3*
C-1 to 9000 ft E 1227 * .1* .3*
C-1 to 9000 ft E 1226 * .1* .3*
C-1 to 9000 ft E 1225 * .1* .3*
C-1 to 9000 ft E 1224 * .1* .3*
C-1 to 9000 ft E 1223 * .1* .3*
C-1 to 9000 ft E 1222 * .1* .3*
C-1 to 9000 ft E 1221 * .1* .3*
C-1 to 9000 ft E 1220 * .1* .3*
C-1 to 9000 ft E 1219 * .1* .3*
C-1 to 9000 ft E 1218 * .1* .3*
C-1 to 9000 ft E 1217 * .1* .3*
C-1 to 9000 ft E 1216 * .1* .3*
C-1 to 9000 ft E 1215 * .1* .3*
C-1 to 9000 ft E 1214 * .1* .3*
C-1 to 9000 ft E 1212 * .1* .3*
C-1 to 9000 ft E 1211 * .1* .3*
C-1 to 9000 ft E 1210 * .1* .3*
C-1 to 9000 ft E 1209 * .1* .3*
C-1 to 9000 ft E 1208 * .1* .3*
C-1 to 9000 ft E 1207 * .1* .3*
C-1 to 9000 ft E 1206 * .1* .3*
C-1 to 9000 ft E 1205 * .1* .3*
C-1 to 9000 ft E 1204 * .1* .3*
C-1 to 9000 ft E 1203 * .1* .3*
C-1 to 9000 ft E 1202 * .1* .3*
C-1 to 9000 ft E 1201 * .1* .3*
C-1 to 9000 ft E 1200 * .1* .3*
C-1 to 9000 ft E 1199 * .1* .3*
C-1 to 9000 ft E 1198 * .1* .3*
C-1 to 9000 ft E 1197 * .1* .3*
C-1 to 9000 ft E 1196 * .1* .3*
C-1 to 9000 ft E 1195 * .1* .3*
C-1 to 9000 ft E 1194 * .1* .3*
C-1 to 9000 ft E 1193 * .1* .3*
C-1 to 9000 ft E 1192 * .1* .3*
C-1 to 9000 ft E 1191 * .1* .3*
C-1 to 9000 ft E 1190 * .1* .3*
C-1 to 9000 ft E 1189 * .1* .3*
C-1 to 9000 ft E 1188 * .1* .3*
C-1 to 9000 ft E 1187 * .1* .3*
C-1 to 9000 ft E 1186 * .1* .3*
C-1 to 9000 ft E 1185 * .1* .3*
C-1 to 9000 ft E 1184 * .1* .3*
C-1 to 9000 ft E 1183 * .1* .3*
C-1 to 9000 ft E 1182 * .1* .3*
C-1 to 9000 ft E 1181 * .1* .3*
C-1 to 9000 ft E 1180 * .1* .3*
C-1 to 9000 ft E 1179 * .1* .3*
C-1 to 9000 ft E 1178 * .1* .3*
C-1 to 9000 ft E 1177 * .1* .3*
C-1 to 9000 ft E 1176 * .1* .3*
C-1 to 9000 ft E 1175 * .1* .3*
C-1 to 9000 ft E 1174 * .1* .3*
C-1 to 9000 ft E 1173 * .1* .3*
C-1 to 9000 ft E 1172 * .1* .3*
C-1 to 9000 ft E 1171 * .1* .3*
C-1 to 9000 ft E 1170 * .1* .3*
C-1 to 9000 ft E 1169 * .1* .3*
C-1 to 9000 ft E 1168 * .1* .3*
C-1 to 9000 ft E 1167 * .1* .3*
C-1 to 9000 ft E 1166 * .1* .3*
C-1 to 9000 ft E 1165 * .1* .3*
C-1 to 9000 ft E 1164 * .1* .3*
C-1 to 9000 ft E 1163 * .1* .3*

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*C-1 to 9000 ft E*    1162    *       .1*       .3*
*C-1 to 9000 ft E*    1161    *       .1*       .3*
*C-1 to 9000 ft E*    1160    *       .1*       .3*
*C-1 to 9000 ft E*    1159    *       .1*       .3*
*C-1 to 9000 ft E*    1158    *       .1*       .3*
*C-1 to 9000 ft E*    1157    *       .1*       .3*
*C-1 to 9000 ft E*    1156    *       .1*       .3*
*C-1 to 9000 ft E*    1155    *       .1*       .3*
*C-1 to 9000 ft E*    1154    *       .1*       .3*
*C-1 to 9000 ft E*    1153    *       .1*       .3*
*C-1 to 9000 ft E*    1152    *       .1*       .3*
*C-1 to 9000 ft E*    1151    *       .1*       .3*
*C-1 to 9000 ft E*    1150    *       .1*       .3*
*C-1 to 9000 ft E*    1149    *       .1*       .3*
*C-1 to 9000 ft E*    1148    *       .1*       .3*
*C-1 to 9000 ft E*    1147    *       .1*       .3*
*C-1 to 9000 ft E*    1146    *       .1*       .3*
*C-1 to 9000 ft E*    1145    *       .1*       .3*
*C-1 to 9000 ft E*    1144    *       .1*       .3*
*C-1 to 9000 ft E*    1143    *       .1*       .3*
*C-1 to 9000 ft E*    1142    *       .1*       .3*
*C-1 to 9000 ft E*    1141    *       .1*       .3*
*C-1 to 9000 ft E*    1140    *       .1*       .3*
*C-1 to 9000 ft E*    1139    *       .1*       .3*
*C-1 to 9000 ft E*    1138    *       .1*       .3*
*C-1 to 9000 ft E*    1137    *       .1*       .3*
*C-1 to 9000 ft E*    1136    *       .1*       .3*
*C-1 to 9000 ft E*    1135    *       .1*       .3*
*C-1 to 9000 ft E*    1134    *       .1*       .3*
*C-1 to 9000 ft E*    1133    *       .1*       .3*
*C-1 to 9000 ft E*    1132    *       .1*       .3*
*C-1 to 9000 ft E*    1131    *       .1*       .3*
*C-1 to 9000 ft E*    1130    *       .1*       .3*
*C-1 to 9000 ft E*    1129    *       .1*       .3*
*C-1 to 9000 ft E*    1128    *       .1*       .3*
*C-1 to 9000 ft E*    1127    *       .1*       .3*
*C-1 to 9000 ft E*    1126    *       .1*       .3*
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*C-1 to 9000 ft E*    1124    *       .1*       .3*
*C-1 to 9000 ft E*    1123    *       .1*       .3*
*C-1 to 9000 ft E*    1122    *       .1*       .3*
*C-1 to 9000 ft E*    1121    *       .1*       .3*
*C-1 to 9000 ft E*    1120    *       .1*       .3*
*C-1 to 9000 ft E*    1119    *       .1*       .3*
*C-1 to 9000 ft E*    1118    *       .1*       .3*
*C-1 to 9000 ft E*    1117    *       .1*       .3*
*C-1 to 9000 ft E*    1116    *       .1*       .3*
*C-1 to 9000 ft E*    1115    *       .1*       .3*
*C-1 to 9000 ft E*    1114    *       .1*       .3*
*C-1 to 9000 ft E*    1113    *       .1*       .3*
*C-1 to 9000 ft E*    1112    *       .1*       .3*
*C-1 to 9000 ft E*    1111    *       .1*       .3*
*C-1 to 9000 ft E*    1110    *       .1*       .3*
*C-1 to 9000 ft E*    1109    *       .1*       .3*
*C-1 to 9000 ft E*    1108    *       .1*       .3*
*C-1 to 9000 ft E*    1107    *       .1*       .3*
*C-1 to 9000 ft E*    1106    *       .1*       .3*
*C-1 to 9000 ft E*    1105    *       .1*       .3*
*C-1 to 9000 ft E*    1104    *       .1*       .3*
*C-1 to 9000 ft E*    1103    *       .1*       .3*
*C-1 to 9000 ft E*    1102    *       .1*       .3*
*C-1 to 9000 ft E*    1101    *       .1*       .3*
*C-1 to 9000 ft E*    1100    *       .1*       .3*
*C-1 to 9000 ft E*    1099    *       .1*       .3*
*C-1 to 9000 ft E*    1098    *       .1*       .3*
*C-1 to 9000 ft E*    1097    *       .1*       .3*
*C-1 to 9000 ft E*    1096    *       .1*       .3*
*C-1 to 9000 ft E*    1095    *       .1*       .3*
*C-1 to 9000 ft E*    1094    *       .1*       .3*
*C-1 to 9000 ft E*    1093    *       .1*       .3*
*C-1 to 9000 ft E*    1092    *       .1*       .3*
*C-1 to 9000 ft E*    1091    *       .1*       .3*
*C-1 to 9000 ft E*    1090    *       .1*       .3*
*C-1 to 9000 ft E*    1089    *       .1*       .3*
*C-1 to 9000 ft E*    1088    *       .1*       .3*
*C-1 to 9000 ft E*    1087    *       .1*       .3*
*C-1 to 9000 ft E*    1086    *       .1*       .3*
*C-1 to 9000 ft E*    1085    *       .1*       .3*
*C-1 to 9000 ft E*    1084    *       .1*       .3*
*C-1 to 9000 ft E*    1083    *       .1*       .3*
*C-1 to 9000 ft E*    1082    *       .1*       .3*
*C-1 to 9000 ft E*    1081    *       .1*       .3*
*C-1 to 9000 ft E*    1080    *       .1*       .3*
*C-1 to 9000 ft E*    1079    *       .1*       .3*
*C-1 to 9000 ft E*    1078    *       .1*       .3*
*C-1 to 9000 ft E*    1077    *       .1*       .3*
*C-1 to 9000 ft E*    1076    *       .1*       .3*
*C-1 to 9000 ft E*    1075    *       .1*       .3*
*C-1 to 9000 ft E*    1074    *       .1*       .3*
*C-1 to 9000 ft E*    1073    *       .1*       .3*
*C-1 to 9000 ft E*    1072    *       .1*       .3*
*C-1 to 9000 ft E*    1071    *       .1*       .3*
*C-1 to 9000 ft E*    1070    *       .1*       .3*
*C-1 to 9000 ft E*    1069    *       .1*       .3*
*C-1 to 9000 ft E*    1068    *       .1*       .3*
*C-1 to 9000 ft E*    1067    *       .1*       .3*
*C-1 to 9000 ft E*    1066    *       .1*       .3*
*C-1 to 9000 ft E*    1065    *       .1*       .3*
*C-1 to 9000 ft E*    1064    *       .1*       .3*
*C-1 to 9000 ft E*    1063    *       .1*       .3*
*C-1 to 9000 ft E*    1062    *       .1*       .3*
*C-1 to 9000 ft E*    1061    *       .1*       .3*
*C-1 to 9000 ft E*    1060    *       .1*       .3*
*C-1 to 9000 ft E*    1059    *       .1*       .3*
*C-1 to 9000 ft E*    1058    *       .1*       .3*
*C-1 to 9000 ft E*    1057    *       .1*       .3*
*C-1 to 9000 ft E*    1056    *       .1*       .3*
*C-1 to 9000 ft E*    1055    *       .1*       .3*
*C-1 to 9000 ft E*    1054    *       .1*       .3*
*C-1 to 9000 ft E*    1053    *       .1*       .3*
*C-1 to 9000 ft E*    1052    *       .1*       .3*
*C-1 to 9000 ft E*    1051    *       .1*       .3*
*C-1 to 9000 ft E*    1050    *       .1*       .3*
*C-1 to 9000 ft E*    1049    *       .1*       .3*
*C-1 to 9000 ft E*    1048    *       .1*       .3*
*C-1 to 9000 ft E*    1047    *       .1*       .3*
*C-1 to 9000 ft E*    1046.5  *Culvert  *        *
*C-1 to 9000 ft E*    1046    *       .1*       .3*
*C-1 to 9000 ft E*    1045    *       .1*       .3*
*C-1 to 9000 ft E*    1044    *       .1*       .3*
*C-1 to 9000 ft E*    1043    *       .1*       .3*
*C-1 to 9000 ft E*    1042    *       .1*       .3*
*C-1 to 9000 ft E*    1041    *       .1*       .3*
*C-1 to 9000 ft E*    1040    *       .1*       .3*
*C-1 to 9000 ft E*    1039    *       .1*       .3*
*C-1 to 9000 ft E*    1038    *       .1*       .3*
*C-1 to 9000 ft E*    1037    *       .1*       .3*
*C-1 to 9000 ft E*    1036    *       .1*       .3*
*C-1 to 9000 ft E*    1035    *       .1*       .3*
*C-1 to 9000 ft E*    1034    *       .1*       .3*
*C-1 to 9000 ft E*    1033    *       .1*       .3*
*C-1 to 9000 ft E*    1032    *       .1*       .3*
*C-1 to 9000 ft E*    1031    *       .1*       .3*
*C-1 to 9000 ft E*    1030    *       .1*       .3*
*C-1 to 9000 ft E*    1029    *       .1*       .3*
*C-1 to 9000 ft E*    1028    *       .1*       .3*
*C-1 to 9000 ft E*    1027    *       .1*       .3*
*C-1 to 9000 ft E*    1026    *       .1*       .3*
*C-1 to 9000 ft E*    1025    *       .1*       .3*
*C-1 to 9000 ft E*    1024    *       .1*       .3*
*C-1 to 9000 ft E*    1023    *       .1*       .3*
*C-1 to 9000 ft E*    1022    *       .1*       .3*
*C-1 to 9000 ft E*    1021    *       .1*       .3*
*C-1 to 9000 ft E*    1020    *       .1*       .3*
*C-1 to 9000 ft E*    1019    *       .1*       .3*
*C-1 to 9000 ft E*    1018    *       .1*       .3*
*C-1 to 9000 ft E*    1017    *       .1*       .3*
*C-1 to 9000 ft E*    1016    *       .1*       .3*
*C-1 to 9000 ft E*    1015    *       .1*       .3*
*C-1 to 9000 ft E*    1014    *       .1*       .3*
*C-1 to 9000 ft E*    1013    *       .1*       .3*
*C-1 to 9000 ft E*    1012    *       .1*       .3*
*C-1 to 9000 ft E*    1011    *       .1*       .3*
*C-1 to 9000 ft E*    1010    *       .1*       .3*
*C-1 to 9000 ft E*    1009    *       .1*       .3*
*C-1 to 9000 ft E*    1008    *       .1*       .3*
*C-1 to 9000 ft E*    1007    *       .1*       .3*
*C-1 to 9000 ft E*    1006    *       .1*       .3*
*C-1 to 9000 ft E*    1005    *       .1*       .3*
*C-1 to 9000 ft E*    1004    *       .1*       .3*
*C-1 to 9000 ft E*    1003    *       .1*       .3*
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*C-1 to 9000 ft E*    1002    *       .1*       .3*
*C-1 to 9000 ft E*    1001    *       .1*       .3*
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Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
C-1 to 9000 ft E	1328	PF 1	1.10	2114.81	2117.23		2117.23	0.000000	0.03	34.09	18.16	0.00
C-1 to 9000 ft E	1327	PF 1	1.10	2114.71	2117.23		2117.23	0.000000	0.02	53.06	26.09	0.00
C-1 to 9000 ft E	1326	PF 1	1.10	2114.61	2117.23		2117.23	0.000000	0.02	68.79	31.49	0.00
C-1 to 9000 ft E	1325	PF 1	1.10	2114.51	2117.23		2117.23	0.000000	0.01	91.01	38.89	0.00
C-1 to 9000 ft E	1324	PF 1	1.10	2114.41	2117.23		2117.23	0.000000	0.01	111.85	45.29	0.00
C-1 to 9000 ft E	1323	PF 1	1.10	2114.31	2117.23		2117.23	0.000000	0.01	133.92	51.69	0.00
C-1 to 9000 ft E	1322	PF 1	1.10	2114.21	2117.23		2117.23	0.000000	0.01	151.20	56.09	0.00
C-1 to 9000 ft E	1321	PF 1	1.10	2114.18	2117.23		2117.23	0.000000	0.01	171.37	62.31	0.00
C-1 to 9000 ft E	1320	PF 1	1.10	2114.17	2117.23		2117.23	0.000000	0.01	171.96	62.34	0.00
C-1 to 9000 ft E	1319	PF 1	1.10	2117.17	2117.23		2117.23	0.002134	0.37	2.97	50.42	0.27
C-1 to 9000 ft E	1318	PF 1	1.10	2117.16	2117.18	2117.18	2117.20	0.045018	0.93	1.19	50.17	1.06
C-1 to 9000 ft E	1317	PF 1	1.10	2114.16	2114.23		2114.23	0.002883	0.33	3.35	50.27	0.22
C-1 to 9000 ft E	1316	PF 1	1.10	2114.12	2114.18		2114.18	0.002198	0.37	2.94	50.23	0.27
C-1 to 9000 ft E	1315	PF 1	1.10	2114.11	2114.14	2114.14	2114.15	0.032479	0.84	1.31	50.10	0.92
C-1 to 9000 ft E	1314	PF 1	1.10	2104.11	2106.53		2106.53	0.000000	0.03	35.94	19.69	0.00
C-1 to 9000 ft E	1313	PF 1	1.10	2104.06	2106.53		2106.53	0.000000	0.02	49.33	24.92	0.00
C-1 to 9000 ft E	1312	PF 1	1.10	2104.04	2106.53		2106.53	0.000000	0.02	49.82	24.99	0.00
C-1 to 9000 ft E	1311	PF 1	1.10	2104.01	2106.53		2106.53	0.000000	0.02	50.54	25.09	0.00
C-1 to 9000 ft E	1310	PF 1	1.10	2103.91	2106.53		2106.53	0.000000	0.01	87.27	38.57	0.00
C-1 to 9000 ft E	1309	PF 1	1.10	2103.81	2106.53		2106.53	0.000000	0.01	91.02	38.88	0.00
C-1 to 9000 ft E	1308	PF 1	1.10	2103.71	2106.53		2106.53	0.000000	0.01	137.26	54.29	0.00
C-1 to 9000 ft E	1307	PF 1	1.10	2103.61	2106.53		2106.53	0.000000	0.01	131.02	50.69	0.00
C-1 to 9000 ft E	1306	PF 1	1.10	2103.51	2106.53		2106.53	0.000000	0.01	154.24	57.09	0.00
C-1 to 9000 ft E	1305	PF 1	1.10	2103.48	2106.53		2106.53	0.000000	0.01	171.38	62.32	0.00
C-1 to 9000 ft E	1304	PF 1	1.10	2103.47	2106.53		2106.53	0.000000	0.01	171.97	62.34	0.00
C-1 to 9000 ft E	1303	PF 1	1.10	2106.47	2106.53		2106.53	0.002076	0.37	2.99	50.45	0.27
C-1 to 9000 ft E	1302	PF 1	1.10	2106.46	2106.49	2106.49	2106.50	0.039340	0.89	1.24	50.19	1.00
C-1 to 9000 ft E	1301	PF 1	1.10	2103.46	2103.53		2103.53	0.002919	0.33	3.34	50.27	0.23
C-1 to 9000 ft E	1300	PF 1	1.10	2103.42	2103.48		2103.48	0.002198	0.37	2.94	50.23	0.27
C-1 to 9000 ft E	1299	PF 1	1.10	2103.41	2103.44	2103.44	2103.45	0.032479	0.84	1.31	50.10	0.92
C-1 to 9000 ft E	1298	PF 1	1.10	2093.41	2095.83		2095.83	0.000000	0.03	35.92	19.68	0.00
C-1 to 9000 ft E	1297	PF 1	1.10	2093.36	2095.83		2095.83	0.000000	0.03	36.87	19.85	0.00
C-1 to 9000 ft E	1296	PF 1	1.10	2093.34	2095.83		2095.83	0.000000	0.03	37.25	19.92	0.00
C-1 to 9000 ft E	1295	PF 1	1.10	2093.31	2095.83		2095.83	0.000000	0.03	37.83	20.02	0.00
C-1 to 9000 ft E	1294	PF 1	1.10	2093.21	2095.83		2095.83	0.000000	0.02	71.38	32.48	0.00
C-1 to 9000 ft E	1293	PF 1	1.10	2093.11	2095.83		2095.83	0.000000	0.01	90.97	38.88	0.00
C-1 to 9000 ft E	1292	PF 1	1.10	2093.01	2095.83		2095.83	0.000000	0.01	111.80	45.28	0.00
C-1 to 9000 ft E	1291	PF 1	1.10	2092.91	2095.83		2095.83	0.000000	0.01	130.95	50.68	0.00
C-1 to 9000 ft E	1290	PF 1	1.10	2092.81	2095.83		2095.83	0.000000	0.01	154.16	57.08	0.00
C-1 to 9000 ft E	1289	PF 1	1.10	2092.77	2095.83		2095.83	0.000000	0.01	171.91	62.35	0.00
C-1 to 9000 ft E	1288	PF 1	1.10	2092.77	2095.83		2095.83	0.000000	0.01	171.91	62.35	0.00
C-1 to 9000 ft E	1287	PF 1	1.10	2095.77	2095.83		2095.83	0.002288	0.38	2.90	50.41	0.28
C-1 to 9000 ft E	1286	PF 1	1.10	2095.76	2095.80	2095.80	2095.80	0.011004	0.61	1.81	50.25	0.56
C-1 to 9000 ft E	1285	PF 1	1.10	2092.76	2092.83		2092.83	0.002814	0.33	3.38	50.27	0.22
C-1 to 9000 ft E	1284	PF 1	1.10	2092.72	2092.78		2092.78	0.002461	0.39	2.84	50.23	0.29
C-1 to 9000 ft E	1283	PF 1	1.10	2092.71	2092.74	2092.74	2092.75	0.016971	0.69	1.59	50.13	0.69
C-1 to 9000 ft E	1282	PF 1	1.10	2082.71	2085.13		2085.13	0.000000	0.03	35.94	19.69	0.00
C-1 to 9000 ft E	1281	PF 1	1.10	2082.66	2085.13		2085.13	0.000000	0.03	36.90	19.86	0.00
C-1 to 9000 ft E	1280	PF 1	1.10	2082.64	2085.13		2085.13	0.000000	0.03	37.28	19.93	0.00
C-1 to 9000 ft E	1279	PF 1	1.10	2082.52	2085.13		2085.13	0.000000	0.02	52.74	25.39	0.00
C-1 to 9000 ft E	1278	PF 1	1.10	2082.44	2085.13		2085.13	0.000000	0.01	76.33	33.71	0.00
C-1 to 9000 ft E	1277	PF 1	1.10	2082.35	2085.13		2085.13	0.000000	0.01	93.28	39.07	0.00
C-1 to 9000 ft E	1276	PF 1	1.10	2082.27	2085.13		2085.13	0.000000	0.01	113.61	45.41	0.00
C-1 to 9000 ft E	1275	PF 1	1.10	2082.18	2085.13		2085.13	0.000000	0.01	132.49	50.77	0.00
C-1 to 9000 ft E	1274	PF 1	1.10	2082.09	2085.13		2085.13	0.000000	0.01	155.33	57.14	0.00
C-1 to 9000 ft E	1273	PF 1	1.10	2082.08	2085.13		2085.13	0.000000	0.01	171.46	62.38	0.00
C-1 to 9000 ft E	1272	PF 1	1.10	2082.07	2085.13		2085.13	0.000000	0.01	172.06	62.40	0.00
C-1 to 9000 ft E	1271	PF 1	1.10	2085.07	2085.13		2085.13	0.002134	0.37	2.97	50.43	0.27
C-1 to 9000 ft E	1270	PF 1	1.10	2085.06	2085.09	2085.09	2085.10	0.034564	0.86	1.28	50.18	0.94
C-1 to 9000 ft E	1269	PF 1	1.10	2082.06	2082.12		2082.12	0.004303	0.37	2.97	50.24	0.27
C-1 to 9000 ft E	1268	PF 1	1.10	2082.01	2082.07		2082.08	0.001749	0.35	3.15	50.25	0.25
C-1 to 9000 ft E	1267	PF 1	1.10	2082.01	2082.04	2082.04	2082.05	0.030534	0.83	1.33	50.11	0.89
C-1 to 9000 ft E	1266	PF 1	1.10	2072.01	2074.43		2074.43	0.000000	0.03	35.94	19.69	0.00
C-1 to 9000 ft E	1265	PF 1	1.10	2071.96	2074.43		2074.43	0.000000	0.02	51.80	25.92	0.00
C-1 to 9000 ft E	1264	PF 1	1.10	2071.94	2074.43		2074.43	0.000000	0.02	52.30	25.98	0.00
C-1 to 9000 ft E	1263	PF 1	1.10	2071.91	2074.43		2074.43	0.000000	0.02	53.06	26.09	0.00
C-1 to 9000 ft E	1262	PF 1	1.10	2071.81	2074.43		2074.43	0.000000	0.02	71.41	32.49	0.00
C-1 to 9000 ft E	1261	PF 1	1.10	2071.71	2074.43		2074.43	0.000000	0.01	93.73	39.89	0.00
C-1 to 9000 ft E	1260	PF 1	1.10	2071.61	2074.43		2074.43	0.000000	0.01	111.84	45.29	0.00
C-1 to 9000 ft E	1259	PF 1	1.10	2071.51	2074.43		2074.43	0.000000	0.01	131.00	50.69	0.00
C-1 to 9000 ft E	1258	PF 1	1.10	2071.41	2074.43		2074.43	0.000000	0.01	154.23	57.09	0.00
C-1 to 9000 ft E	1257	PF 1	1.10	2071.38	2074.43		2074.43	0.000000	0.01	168.46	60.41	0.00
C-1 to 9000 ft E	1256	PF 1	1.10	2071.37	2074.43		2074.43	0.000000	0.01	171.95	62.34	0.00
C-1 to 9000 ft E	1255	PF 1	1.10	2074.37	2074.43		2074.43	0.002164	0.37	2.95	50.43	0.27
C-1 to 9000 ft E	1254	PF 1	1.10	2074.36	2074.39	2074.39	2074.40	0.033488	0.85	1.30	50.19	0.93
C-1 to 9000 ft E	1253	PF 1	1.10	2071.37	2072.73		2072.73	0.000000	0.02	71.61	55.47	0.00
C-1 to 9000 ft E	1252	PF 1	1.10	2071.41	2072.73		2072.73	0.000000	0.02	69.43	55.34	0.00
C-1 to 9000 ft E	1251	PF 1	255.00	2071.31	2072.23	2072.23	2072.67	0.012168	5.37	47.50	53.66	1.01
C-1 to 9000 ft E	1250	PF 1	255.00	2061.31	2064.95		2065.21	0.001821	4.05	62.93	24.56	0.45
C-1 to 9000 ft E	1249	PF 1	255.00	2061.26	2065.00		2065.14	0.001023	3.03	84.09	30.00	0.32
C-1 to 9000 ft E	1248	PF 1	255.00	2061.24	2064.99		2065.13	0.001016	3.03	84.30	30.01	0.32
C-1 to 9000 ft E	1247	PF 1	255.00	2061.21	2064.97		2065.11	0.001000	3.01	84.76	30.05	0.32
C-1 to 9000 ft E	1246	PF 1	255.00	2061.11	2064.99		2065.06	0.000476	2.21	115.26	37.50	0.22
C-1 to 9000 ft E	1245	PF 1	255.00	2061.01	2064.98		2065.04	0.000350	1.95	130.61	40.86	0.19
C-1 to 9000 ft E	1244	PF 1	255.00	2060.91	2064.97		2065.02	0.000233	1.65	154.95	46.26	0.16
C-1 to 9000 ft E	1243	PF 1	255.00	2060.81	2064.97		2065.00	0.000162	1.41	180.31	51.65	0.13
C-1 to 9000 ft E	1242	PF 1	255.00	2060.71	2064.97		2064.99	0.000111	1.21	211.03	58.04	0.11
C-1 to 9000 ft E	1241	PF 1	255.00	2060.61	2064.97		2064.99	0.000087	1.09	234.17	62.44	0.10
C-1 to 9000 ft E	1240	PF 1	255.00	2060.58	2064.97		2064.99	0.000151	1.08	235.82	62.49	0.10
C-1 to 9000 ft E	1239	PF 1	255.00	2060.56	2064.97		2064.99	0.000050	0.98	259.76	67.81	0.09
C-1 to 9000 ft E	1238	PF 1	255.00	2063.56	2064.70		2064.96	0.005704	4.13	61.80	58.87	0.71
C-1 to 9000 ft E	1237	PF 1	255.00	2063.56	2064.47	2064.47	2064.90	0.012234	5.25	48.54	57.08	1.00
C-1 to 9000 ft E	1236	PF 1	255.00	2060.56	2061.86		2062.08	0.007692	3.73	68.39	55.25	0.59
C-1 to 9000 ft E	1235	PF 1	255.00	2060.52	2061.65	2061.44	2061.94	0.006062	4.32	58.96	54.53	0.73
C-1 to 9000 ft E	1234	PF 1	255.00	2060.51	2061.43	2061.43	2061.87	0.012188	5.37	47.48	53.67	1.01
C-1 to 9000 ft E	1233	PF 1	255.00	2050.51	2054.23		2054.47	0.001674	3.93	64.88	24.88	0.43
C-1 to 9000 ft E	1232	PF 1	255.00	2050.46	2054.27		2054.41	0.000949	2.95	86.39	30.31	0.31
C-1 to 9000 ft E	1231	PF 1	255.00	2050.44	2054.26		2054.40	0.000941	2.94	86.62	30.32	0.31
C-1 to 9000 ft E	1230	PF 1	255.00	2050.41	2054.25		2054.38	0.000926	2.93	87.11	30.36	0.30
C-1 to 9000 ft E	1229	PF 1	255.00	2050.31	2054.26		2054.33	0.000443	2.16	118.19	37.81	0.22
C-1 to 9000 ft E	1228	PF 1	255.00	2050.21	2054.26		2054.31	0.000266	1.74	146.34	44.21	0.17
C-1 to 9000 ft E	1227	PF 1	255.00	2050.11	2054.26		2054.30	0.000172	1.45	175.66	50.61	0.14
C-1 to 9000 ft E	1226	PF 1	255.00	2050.01	2054.26		2054.29	0.000123	1.26	201.92	56.00	0.12
C-1 to 9000 ft E	1225	PF 1	255.00	2049.91	2054.26		2054.28	0.000087	1.09	233.66	62.40	0.10
C-1 to 9000 ft E	1224	PF 1	255.00	2049.87	2054.26		2054.28	0.000151	1.08	235.82	62.47	0.10
C-1 to 9000 ft E	1223	PF 1	255.00	2049.86	2054.26		2054.28	0.000060	0.98	259.31	67.86	0.09
C-1 to 9000 ft E	1222	PF 1	255.00	2052.86	2053.99		2054.25	0.005706	4.09	62.35	60.24	0.71
C-1 to 9000 ft E	1221	PF 1	255.00	2052.86	2053.76	2053.76	2054.19	0.012365	5.23	48.73	58.16	1.01
C-1 to 9000 ft E	1220	PF 1	255.00	2049.86	2051.27		2051.45	0.005800	3.41	74.72	55.74	0.52
C-1 to 9000 ft E	1219	PF 1	255.00	2049.91	2050.83	2050.83	2051.27	0.012200	5.37	47.49	53.75	1.01
C-1 to 9000 ft E	1218	PF 1	255.00	2049.81	2050.73	2050.73	2051.17	0.012078	5.35	47.62	53.69	1.00
C-1 to 9000 ft E	1217	PF 1	255.00	2039.81	2043.62		2043.84	0.001530	3.80	67.03	25.22	0.41
C-1 to 9000 ft E	1216	PF 1	255.00	2039.76	2043.66		2043.78	0.000875	2.87	88.93	30.64	0.30
C-1 to 9000 ft E	1215	PF 1	255.00	2039.74	2043.65		2043.77	0.000867	2.86	89.19	30.66	0.30
C-1 to 9000 ft E	1214	PF 1	255.00	2039.71	2043.64		2043.76	0.000853	2.84	89.71	30.70	0.29
C-1 to 9000 ft E	1212	PF 1	255.00	2039.61	2043.60		2043.72	0.000807	2.79	91.39	30.84	0.29
C-1 to 9000 ft E	1211	PF 1	255.00	2039.51	2043.45		2043.66	0.001559	3.65	69.81	25.46	0.39
C-1 to 9000 ft E	1210	PF 1	255.00	2039.41	2043.55		2043.58	0.000173	1.45	175.39	50.72	0.14
C-1 to 9000 ft E	1209	PF 1	255.00	2039.31	2043.55		2043.57	0.000119	1.24	205.12	56.77	0.12
C-1 to 9000 ft E	1208	PF 1	255.00	2039.21	2043.55		2043.57	0.000088	1.10	232.85	62.35	0.10
C-1 to 9000 ft E	1207	PF 1	255.00	2039.18	2043.55		2043.57	0.000153	1.09	234.48	62.40	0.10
C-1 to 9000 ft E	1206	PF 1	255.00	2039.17	2043.55		2043.56	0.000059	0.96	265.63	71.32	0.09
C-1 to 9000 ft E	1205	PF 1	255.00	2042.17	2043.28		2043.54	0.006076	4.12	61.90	62.04	0.73
C-1 to 9000 ft E	1204	PF 1	255.00	2042.16	2043.06	2043.06	2043.47	0.012365	5.18	49.25	59.74	1.00
C-1 to 9000 ft E	1203	PF 1	255.00	2039.16	2040.46		2040.67	0.007687	3.70	68.88	56.30	0.59
C-1 to 9000 ft E	1202	PF 1	255.00	2039.12	2040.25	2040.04	2040.53	0.006077	4.30	59.28	55.43	0.73
C-1 to 9000 ft E	1201	PF 1	255.00	2039.11	2040.03	2040.03	2040.47	0.012145	5.34	47.77	54.41	1.00
C-1 to 9000 ft E	1200	PF 1	255.00	2029.11	2032.73		2032.87	0.001062	3.07	83.16	30.01	0.32
C-1 to 9000 ft E	1199	PF 1	255.00	2029.06	2032.69		2032.84	0.001142	3.15	80.86	29.57	0.34
C-1 to 9000 ft E	1198	PF 1	255.00	2029.04	2032.68		2032.83	0.001136	3.15	81.01	29.57	0.34
C-1 to 9000 ft E	1197	PF 1	255.00	2029.01	2032.66		2032.81	0.001116	3.13	81.41	29.60	0.33
C-1 to 9000 ft E	1196	PF 1	255.00	2028.91	2032.67		2032.75	0.000576	2.38	107.10	36.03	0.24
C-1 to 9000 ft E	1195	PF 1	255.00	2028.81	2032.66		2032.72	0.000362	1.96	129.89	41.41	0.20
C-1 to 9000 ft E	1194	PF 1	255.00	2028.71	2032.66		2032.70	0.000257	1.70	149.65	45.70	0.17
C-1 to 9000 ft E	1193	PF 1	255.00	2028.61	2032.66		2032.69	0.000179	1.46	174.37	51.19	0.15
C-1 to 9000 ft E	1192	PF 1	255.00	2028.51	2032.65		2032.68	0.000128	1.27	200.13	56.58	0.12
C-1 to 9000 ft E	1191	PF 1	255.00	2028.41	2032.65		2032.67	0.000095	1.12	227.38	62.18	0.10
C-1 to 9000 ft E	1190	PF 1	255.00	2028.38	2032.65		2032.67	0.000165	1.11	229.03	62.23	0.10
C-1 to 9000 ft E	1189	PF 1	255.00	2028.37	2032.66		2032.67	0.000060	0.95	268.08	74.46	0.09
C-1 to 9000 ft E	1188	PF 1	255.00	2031.37	2032.41		2032.65	0.005974	3.89	65.53	70.70	0.71
C-1 to 9000 ft E	1187	PF 1	255.00	2031.36	2032.20	2032.20	2032.58	0.012788	4.96	51.43	68.34	1.01
C-1 to 9000 ft E	1186	PF 1	255.00	2028.36	2029.65		2029.86	0.007799	3.69	69.14	57.57	0.59
C-1 to 9000 ft E	1185	PF 1	255.00	2028.31	2029.45	2029.22	2029.72	0.005702	4.19	60.90	56.64	0.71
C-1 to 9000 ft E	1184	PF 1	255.00	2028.31	2029.22	2029.22	2029.66	0.012167	5.31	48.03	55.31	1.00
C-1 to 9000 ft E	1183	PF 1	255.00	2018.31	2021.97		2022.10	0.000786	2.86	89.15	31.74	0.30
C-1 to 9000 ft E	1182	PF 1	255.00	2018.25	2021.99		2022.07	0.000499	2.23	114.25	38.12	0.23
C-1 to 9000 ft E	1181	PF 1	255.00	2018.23	2021.98		2022.06	0.000492	2.22	114.75	38.16	0.23
C-1 to 9000 ft E	1180	PF 1	255.00	2018.21	2021.98		2022.05	0.000486	2.21	115.23	38.19	0.22
C-1 to 9000 ft E	1179	PF 1	255.00	2018.11	2021.96		2022.03	0.000453	2.16	118.02	38.38	0.22
C-1 to 9000 ft E	1178	PF 1	255.00	2018.01	2021.96		2022.00	0.000274	1.75	145.55	44.78	0.17
C-1 to 9000 ft E	1177	PF 1	255.00	2017.91	2021.96		2021.99	0.000170	1.43	178.38	52.18	0.14
C-1 to 9000 ft E	1176	PF 1	255.00	2017.81	2021.96		2021.98	0.000112	1.20	212.63	59.58	0.11

* C-1 to 9000 ft E * 1175	* PF 1	* 255.00 *	2017.71 *	2021.95 *		*	2021.97 *	0.000084 *	1.06 *	239.74 *	64.98 *	0.10 *
* C-1 to 9000 ft E * 1174	* PF 1	* 255.00 *	2017.61 *	2021.95 *		*	2021.97 *	0.000067 *	0.97 *	263.52 *	69.25 *	0.09 *
* C-1 to 9000 ft E * 1173	* PF 1	* 255.00 *	2017.61 *	2021.95 *		*	2021.97 *	0.000119 *	0.97 *	263.44 *	69.25 *	0.09 *
* C-1 to 9000 ft E * 1172	* PF 1	* 255.00 *	2017.57 *	2021.95 *		*	2021.97 *	0.000060 *	0.98 *	259.63 *	68.45 *	0.09 *
* C-1 to 9000 ft E * 1171	* PF 1	* 255.00 *	2020.57 *	2021.68 *	2021.47 *		2021.94 *	0.006024 *	4.11 *	61.99 *	61.91 *	0.72 *
* C-1 to 9000 ft E * 1170	* PF 1	* 255.00 *	2020.56 *	2021.46 *	2021.46 *		2021.88 *	0.012388 *	5.19 *	49.17 *	59.59 *	1.01 *
* C-1 to 9000 ft E * 1169	* PF 1	* 255.00 *	2017.57 *	2019.24 *		*	2019.37 *	0.003281 *	2.85 *	89.54 *	57.08 *	0.40 *
* C-1 to 9000 ft E * 1168	* PF 1	* 255.00 *	2017.52 *	2019.20 *		*	2019.33 *	0.001618 *	2.88 *	88.68 *	55.75 *	0.40 *
* C-1 to 9000 ft E * 1167	* PF 1	* 371.00 *	2017.51 *	2018.69 *	2018.69 *		2019.26 *	0.011266 *	6.07 *	61.15 *	54.02 *	1.00 *
* C-1 to 9000 ft E * 1166	* PF 1	* 371.00 *	2008.31 *	2012.45 *		*	2012.83 *	0.002517 *	4.90 *	75.74 *	26.57 *	0.51 *
* C-1 to 9000 ft E * 1165	* PF 1	* 371.00 *	2008.26 *	2012.55 *		*	2012.73 *	0.000156 *	0.37 *	110.01 *	34.25 *	0.33 *
* C-1 to 9000 ft E * 1164	* PF 1	* 371.00 *	2008.24 *	2012.54 *		*	2012.72 *	0.001050 *	3.37 *	110.21 *	34.25 *	0.33 *
* C-1 to 9000 ft E * 1163	* PF 1	* 371.00 *	2008.21 *	2012.53 *		*	2012.70 *	0.001036 *	3.35 *	110.67 *	34.27 *	0.33 *
* C-1 to 9000 ft E * 1162	* PF 1	* 371.00 *	2008.11 *	2012.54 *		*	2012.64 *	0.000533 *	2.55 *	145.68 *	41.73 *	0.24 *
* C-1 to 9000 ft E * 1161	* PF 1	* 371.00 *	2008.01 *	2012.55 *		*	2012.61 *	0.000383 *	2.09 *	177.17 *	48.14 *	0.19 *
* C-1 to 9000 ft E * 1160	* PF 1	* 371.00 *	2007.91 *	2012.55 *		*	2012.59 *	0.000212 *	1.73 *	214.56 *	55.55 *	0.16 *
* C-1 to 9000 ft E * 1159	* PF 1	* 371.00 *	2007.81 *	2012.55 *		*	2012.58 *	0.000143 *	1.46 *	253.33 *	62.95 *	0.13 *
* C-1 to 9000 ft E * 1158	* PF 1	* 371.00 *	2008.61 *	2012.53 *		*	2012.58 *	0.000480 *	1.79 *	206.94 *	61.69 *	0.17 *
* C-1 to 9000 ft E * 1157	* PF 1	* 371.00 *	2007.77 *	2012.54 *		*	2012.57 *	0.000101 *	1.36 *	272.98 *	64.46 *	0.12 *
* C-1 to 9000 ft E * 1156	* PF 1	* 371.00 *	2010.77 *	2012.17 *	2011.93 *		2012.54 *	0.006024 *	4.86 *	76.39 *	59.25 *	0.75 *
* C-1 to 9000 ft E * 1155	* PF 1	* 371.00 *	2010.76 *	2011.92 *	2011.92 *		2012.47 *	0.011362 *	5.94 *	62.43 *	57.64 *	1.01 *
* C-1 to 9000 ft E * 1154	* PF 1	* 371.00 *	2007.76 *	2009.36 *		*	2009.66 *	0.008299 *	4.43 *	83.67 *	54.83 *	0.63 *
* C-1 to 9000 ft E * 1153	* PF 1	* 371.00 *	2007.71 *	2009.15 *	2008.89 *		2009.52 *	0.005730 *	4.92 *	75.40 *	54.84 *	0.74 *
* C-1 to 9000 ft E * 1152	* PF 1	* 371.00 *	2007.71 *	2008.89 *	2008.89 *		2009.46 *	0.011760 *	6.07 *	61.11 *	53.95 *	1.01 *
* C-1 to 9000 ft E * 1151	* PF 1	* 371.00 *	1998.51 *	2002.65 *		*	2003.03 *	0.002312 *	4.89 *	75.80 *	26.58 *	0.51 *
* C-1 to 9000 ft E * 1150	* PF 1	* 371.00 *	1998.46 *	2002.73 *		*	2002.96 *	0.001316 *	3.69 *	100.52 *	32.13 *	0.37 *
* C-1 to 9000 ft E * 1149	* PF 1	* 371.00 *	1998.44 *	2002.71 *		*	2002.92 *	0.001312 *	3.69 *	100.60 *	32.12 *	0.37 *
* C-1 to 9000 ft E * 1148	* PF 1	* 371.00 *	1998.41 *	2002.69 *		*	2002.90 *	0.001298 *	3.68 *	100.92 *	32.13 *	0.37 *
* C-1 to 9000 ft E * 1147	* PF 1	* 371.00 *	1998.31 *	2002.74 *		*	2002.83 *	0.000500 *	2.48 *	149.77 *	42.70 *	0.23 *
* C-1 to 9000 ft E * 1146	* PF 1	* 371.00 *	1998.21 *	2002.73 *		*	2002.80 *	0.000336 *	2.10 *	176.61 *	48.09 *	0.19 *
* C-1 to 9000 ft E * 1145	* PF 1	* 371.00 *	1998.11 *	2002.73 *		*	2002.78 *	0.000237 *	1.81 *	204.45 *	53.48 *	0.16 *
* C-1 to 9000 ft E * 1144	* PF 1	* 371.00 *	1998.01 *	2002.74 *		*	2002.77 *	0.000138 *	1.44 *	257.31 *	68.90 *	0.13 *
* C-1 to 9000 ft E * 1143	* PF 1	* 371.00 *	1997.98 *	2002.73 *		*	2002.77 *	0.000241 *	1.43 *	258.87 *	63.92 *	0.13 *
* C-1 to 9000 ft E * 1142	* PF 1	* 371.00 *	1997.97 *	2002.74 *		*	2002.76 *	0.000102 *	1.36 *	273.10 *	64.63 *	0.12 *
* C-1 to 9000 ft E * 1141	* PF 1	* 371.00 *	2000.97 *	2002.37 *	2002.13 *		2002.73 *	0.006036 *	4.84 *	76.61 *	59.78 *	0.75 *
* C-1 to 9000 ft E * 1140	* PF 1	* 371.00 *	2000.96 *	2002.12 *	2002.12 *		2002.66 *	0.011304 *	5.92 *	62.72 *	58.10 *	1.00 *
* C-1 to 9000 ft E * 1139	* PF 1	* 371.00 *	1997.97 *	1999.56 *		*	1999.87 *	0.008404 *	4.45 *	83.38 *	54.88 *	0.64 *
* C-1 to 9000 ft E * 1138	* PF 1	* 371.00 *	1997.92 *	1999.34 *	1999.10 *		1999.72 *	0.006058 *	5.01 *	74.10 *	54.75 *	0.76 *
* C-1 to 9000 ft E * 1137	* PF 1	* 371.00 *	1997.91 *	1999.09 *	1999.09 *		1999.66 *	0.011166 *	6.06 *	61.27 *	53.95 *	1.00 *
* C-1 to 9000 ft E * 1136	* PF 1	* 371.00 *	1988.71 *	1992.77 *		*	1993.17 *	0.002505 *	5.04 *	73.61 *	26.25 *	0.53 *
* C-1 to 9000 ft E * 1135	* PF 1	* 371.00 *	1988.66 *	1992.87 *		*	1993.07 *	0.001253 *	3.60 *	102.96 *	32.97 *	0.36 *
* C-1 to 9000 ft E * 1134	* PF 1	* 371.00 *	1988.64 *	1992.85 *		*	1993.05 *	0.001248 *	3.60 *	103.07 *	32.96 *	0.36 *
* C-1 to 9000 ft E * 1133	* PF 1	* 371.00 *	1988.61 *	1992.83 *		*	1993.03 *	0.001235 *	3.59 *	103.42 *	32.97 *	0.36 *
* C-1 to 9000 ft E * 1132	* PF 1	* 371.00 *	1988.51 *	1992.89 *		*	1992.96 *	0.000370 *	2.16 *	172.03 *	48.51 *	0.20 *
* C-1 to 9000 ft E * 1131	* PF 1	* 371.00 *	1988.41 *	1992.88 *		*	1992.95 *	0.000347 *	2.11 *	175.70 *	48.68 *	0.20 *
* C-1 to 9000 ft E * 1130	* PF 1	* 371.00 *	1988.31 *	1992.87 *		*	1992.93 *	0.000246 *	1.83 *	202.32 *	53.66 *	0.17 *
* C-1 to 9000 ft E * 1129	* PF 1	* 371.00 *	1988.21 *	1992.88 *		*	1992.91 *	0.000144 *	1.46 *	254.90 *	64.21 *	0.13 *
* C-1 to 9000 ft E * 1128	* PF 1	* 371.00 *	1988.17 *	1992.88 *		*	1992.91 *	0.000194 *	1.27 *	292.61 *	74.71 *	0.11 *
* C-1 to 9000 ft E * 1127	* PF 1	* 371.00 *	1988.16 *	1992.88 *		*	1992.91 *	0.000095 *	1.27 *	293.18 *	74.71 *	0.11 *
* C-1 to 9000 ft E * 1126	* PF 1	* 371.00 *	1991.16 *	1992.55 *	1992.30 *		1992.88 *	0.005760 *	4.56 *	81.36 *	67.32 *	0.73 *
* C-1 to 9000 ft E * 1125	* PF 1	* 371.00 *	1991.16 *	1992.30 *	1992.30 *		1992.81 *	0.011523 *	5.73 *	64.78 *	64.09 *	1.00 *
* C-1 to 9000 ft E * 1124	* PF 1	* 371.00 *	1988.16 *	1989.78 *		*	1990.06 *	0.007757 *	4.26 *	87.16 *	58.15 *	0.61 *
* C-1 to 9000 ft E * 1123	* PF 1	* 371.00 *	1988.16 *	1989.46 *	1989.33 *		1989.90 *	0.007981 *	5.33 *	69.64 *	58.08 *	0.86 *
* C-1 to 9000 ft E * 1122	* PF 1	* 371.00 *	1988.11 *	1989.28 *	1989.28 *		1989.83 *	0.011319 *	5.96 *	62.29 *	57.15 *	1.01 *
* C-1 to 9000 ft E * 1121	* PF 1	* 371.00 *	1978.11 *	1982.17 *		*	1982.31 *	0.000803 *	2.97 *	124.72 *	38.44 *	0.29 *
* C-1 to 9000 ft E * 1120	* PF 1	* 371.00 *	1978.06 *	1982.16 *		*	1982.29 *	0.000759 *	2.90 *	128.15 *	39.57 *	0.28 *
* C-1 to 9000 ft E * 1119	* PF 1	* 371.00 *	1978.04 *	1982.15 *		*	1982.28 *	0.000752 *	2.89 *	128.56 *	39.59 *	0.28 *
* C-1 to 9000 ft E * 1118	* PF 1	* 371.00 *	1978.01 *	1982.14 *		*	1982.27 *	0.000739 *	2.87 *	129.30 *	39.64 *	0.28 *
* C-1 to 9000 ft E * 1117	* PF 1	* 371.00 *	1977.91 *	1982.11 *		*	1982.23 *	0.000699 *	2.82 *	131.71 *	39.78 *	0.27 *
* C-1 to 9000 ft E * 1116	* PF 1	* 371.00 *	1977.81 *	1982.10 *		*	1982.19 *	0.000458 *	2.36 *	157.08 *	45.17 *	0.22 *
* C-1 to 9000 ft E * 1115	* PF 1	* 371.00 *	1977.71 *	1982.11 *		*	1982.16 *	0.000283 *	1.93 *	192.51 *	52.58 *	0.18 *
* C-1 to 9000 ft E * 1114	* PF 1	* 371.00 *	1977.61 *	1982.11 *		*	1982.15 *	0.000196 *	1.65 *	224.70 *	58.98 *	0.15 *
* C-1 to 9000 ft E * 1113	* PF 1	* 371.00 *	1977.51 *	1982.11 *		*	1982.14 *	0.000135 *	1.41 *	262.78 *	66.38 *	0.13 *
* C-1 to 9000 ft E * 1112	* PF 1	* 371.00 *	1977.41 *	1982.10 *		*	1982.13 *	0.000119 *	1.35 *	274.91 *	67.22 *	0.12 *
* C-1 to 9000 ft E * 1111	* PF 1	* 371.00 *	1977.37 *	1982.10 *		*	1982.13 *	0.000231 *	1.36 *	273.77 *	70.86 *	0.12 *
* C-1 to 9000 ft E * 1110	* PF 1	* 371.00 *	1977.37 *	1982.10 *		*	1982.13 *	0.000113 *	1.36 *	273.70 *	70.85 *	0.12 *
* C-1 to 9000 ft E * 1109	* PF 1	* 371.00 *	1980.37 *	1981.77 *		*	1982.10 *	0.005738 *	4.61 *	80.47 *	65.25 *	0.73 *
* C-1 to 9000 ft E * 1108	* PF 1	* 371.00 *	1980.37 *	1981.51 *	1981.51 *		1982.03 *	0.011526 *	5.78 *	64.15 *	62.51 *	1.01 *
* C-1 to 9000 ft E * 1107	* PF 1	* 371.00 *	1977.37 *	1978.96 *		*	1979.27 *	0.008443 *	4.45 *	83.43 *	55.11 *	0.64 *
* C-1 to 9000 ft E * 1106	* PF 1	* 371.00 *	1977.31 *	1978.75 *	1978.49 *		1979.13 *	0.005791 *	4.94 *	75.08 *	54.56 *	0.74 *
* C-1 to 9000 ft E * 1105	* PF 1	* 371.00 *	1977.31 *	1978.49 *	1978.49 *		1979.06 *	0.011214 *	6.07 *	61.14 *	53.74 *	1.00 *
* C-1 to 9000 ft E * 1104	* PF 1	* 516.00 *	1968.11 *	1972.51 *		*	1973.11 *	0.003522 *	6.24 *	82.72 *	27.60 *	0.63 *
* C-1 to 9000 ft E * 1103	* PF 1	* 516.00 *	1967.96 *	1972.79 *		*	1972.95 *	0.000752 *	3.17 *	162.80 *	43.41 *	0.29 *
* C-1 to 9000 ft E * 1102	* PF 1	* 516.00 *	1967.94 *	1972.78 *		*	1972.94 *	0.000746 *	3.16 *	163.21 *	43.42 *	0.29 *
* C-1 to 9000 ft E * 1101	* PF 1	* 516.00 *	1967.91 *	1972.77 *		*	1972.93 *	0.000736 *	3.15 *	163.96 *	43.45 *	0.29 *
* C-1 to 9000 ft E * 1100	* PF 1	* 516.00 *	1967.91 *	1972.73 *		*	1972.89 *	0.000759 *	3.18 *	162.18 *	43.28 *	0.29 *
* C-1 to 9000 ft E * 1099	* PF 1	* 516.00 *	1967.81 *	1972.74 *		*	1972.84 *	0.000479 *	2.63 *	196.31 *	49.70 *	0.23 *
* C-1 to 9000 ft E * 1098	* PF 1	* 516.00 *	1967.71 *	1972.74 *		*	1972.82 *	0.000323 *	2.23 *	231.55 *	56.11 *	0.19 *
* C-1 to 9000 ft E * 1097	* PF 1	* 516.00 *	1967.61 *	1972.74 *		*	1972.80 *	0.000209 *	1.85 *	278.45 *	64.53 *	0.16 *
* C-1 to 9000 ft E * 1096	* PF 1	* 516.00 *	1967.59 *	1972.74 *		*	1972.79 *	0.000312 *	1.75 *	295.21 *	64.59 *	0.14 *
* C-1 to 9000 ft E * 1095	* PF 1	* 516.00 *	1967.58 *	1972.74 *		*	1972.79 *	0.000152 *	1.74 *	295.71 *	64.59 *	0.14 *
* C-1 to 9000 ft E * 1094	* PF 1	* 516.00 *	1970.58 *	1972.26 *	1972.02 *		1972.75 *	0.006318 *	5.59 *	92.35 *	59.96 *	0.79 *
* C-1 to 9000 ft E * 1093	* PF 1	* 516.00 *	1970.56 *	1972.00 *	1972.00 *		1972.68 *	0.010610 *	6.60 *	78.23 *	58.48 *	1.01 *
* C-1 to 9000 ft E * 1092	* PF 1	* 516.00 *	1967.56 *	1970.75 *		*	1970.89 *	0.001582 *	2.97 *	173.89 *	58.99 *	0.30 *
* C-1 to 9000 ft E * 1091	* PF 1	* 516.00 *	1967.51 *	1970.73 *		*	1970.87 *	0.000674 *	2.93 *	176.16 *	59.27 *	0.30 *
* C-1 to 9000 ft E * 1090	* PF 1	* 516.00 *	1967.51 *	1969.86 *	1969.86 *		1970.78 *	0.009758 *	7.67 *	67.27 *	37.15 *	1.00 *
* C-1 to 9000 ft E * 1089	* PF 1	* 516.00 *	1958.31 *	1962.77 *		*	1963.35 *	0.003351 *	6.12 *	84.25 *	27.82 *	0.62 *
* C-1 to 9000 ft E * 1088	* PF 1	* 516.00 *	1958.26 *	1962.95 *		*	1963.20 *	0.001341 *	4.01 *	128.54 *	36.83 *	0.38 *
* C-1 to 9000 ft E * 1087	* PF 1	* 516.00 *	1958.24 *	1962.93 *		*	1963.18 *	0.001338 *	4.01 *	128.62 *	36.82 *	0.38 *
* C-1 to 9000 ft E * 1086	* PF 1	* 516.00 *	1958.21 *	1962.92 *		*	1963.16 *	0.001326 *	4.00 *	128.97 *	36.82 *	0.38 *
* C-1 to 9000 ft E * 1085	* PF 1	* 516.00 *	1958.11 *	1962.92 *		*	1963.09 *	0.000822 *	3.29 *	156.90 *	42.24 *	0.30 *
* C-1 to 9000 ft E * 1084	* PF 1	* 516.00 *	1958.01 *	1962.93 *		*	1963.04 *	0.000483 *	2.64 *	195.61 *	49.50 *	0.23 *
* C-1 to 9000 ft E * 1083	* PF 1	* 516.00 *	1957.91 *	1962.94 *		*	1963.01 *	0.000301 *	2.16 *	239.07 *	57.61 *	0.19 *
* C-1 to 9000 ft E * 1082	* PF 1	* 516.00 *	1957.81 *	1962.93 *		*	1962.99 *	0.000251 *	2.01 *	257.25 *	60.48 *	0.17 *
* C-1 to 9000 ft E * 1081	* PF 1	* 516.00 *	1957.77 *	1962.94 *		*	1962.98 *	0.000293 *	1.68 *	306.60 *	68.61 *	0.14 *
* C-1 to 9000 ft E * 1080	* PF 1	* 516.00 *	1957.76 *	1962.94 *		*	1962.98 *	0.000143 *	1.68 *	307.15 *	68.62 *	0.14 *
* C-1 to 9000 ft E * 1079	* PF 1	* 516.00 *	1960.76 *	1962.49 *	1962.20 *		1962.94 *	0.005716 *	5.40 *	95.47 *	60.50 *	0.76 *
* C-1 to 9000 ft E * 1078	* PF 1	* 516.00 *	1960.76 *	1962.20 *	1962.20 *		1962.87 *	0.010589 *	6.58 *	78.38 *	58.76 *	1.00 *
* C-1 to 9000 ft E * 1077	* PF 1	* 516.00 *	1957.76 *	1959.69 *		*	1960.08 *	0.008393 *	5.00 *	103.19 *	56.94 *	0.65 *
* C-1 to 9000 ft E * 1076	* PF 1	* 516.00 *	1957.71 *	1959.46 *	1959.17 *		1959.94 *	0.005726 *	5.55 *	92.93 *	56.25 *	0.76 *
* C-1 to 9000 ft E * 1075	* PF 1	* 516.00 *	1957.71 *	1959.17 *	1959.17 *		1959.87 *	0.010494 *	6.71 *	76.84 *	55.22 *	1.00 *
* C-1 to 9000 ft E * 1074	* PF 1	* 516.00 *	1948.51 *	1952.99 *		*	1953.56 *	0.003275 *	6.07 *	84.95 *	27.92 *	0.61 *
* C-1 to 9000 ft E * 1073	* PF 1	* 516.00 *	1948.46 *	1953.13 *		*	1953.43 *	0.001633 *	4.35 *	118.52 *	34.74 *	0.42 *
* C-1 to 9000 ft E * 1072	* PF 1	* 516.00 *	1948.44 *	1953.11 *		*	1953.41 *	0.001634 *	4.36 *	118.47 *	34.72 *	0.42 *
* C-1 to 9000 ft E * 1071	* PF 1	* 516.00 *	1948.41 *	1953.09 *		*	1953.38 *	0.001626 *	4.35 *	118.64 *	34.71 *	0.41 *
* C-1 to 9000 ft E * 1070	* PF 1	* 516.00 *	1948.31 *	1953.14 *		*	1953.29 *	0.000704 *	3.08 *	167.40 *	44.32 *	0.28 *
* C-1 to 9000 ft E * 1069	* PF 1	* 516.00 *	1948.21 *	1953.14 *		*	1953.25 *	0.000478 *	2.63 *	196.48 *	49.72 *	0.23 *
* C-1 to 9000 ft E * 1068	* PF 1	* 516.00 *	1948.11 *	1953.14 *		*	1953.22 *	0.000326 *	2.22 *	232.93 *	57.59 *	0.19 *
* C-1 to 9000 ft E * 1067	* PF 1	* 516.00 *	1948.01 *	1953.15 *		*	1953.20 *	0.000200 *	1.82 *	283.89 *	65.54 *	0.15 *
* C-1 to 9000 ft E * 1066	* PF 1	* 516.00 *	1947.97 *	1953.15 *		*	1953.19 *	0.000280 *	1.63 *	316.72 *	72.28 *	0.14 *
* C-1 to 9000 ft E * 1065	* PF 1	* 516.00 *	1947.97 *	1953.15 *		*	1953.19 *	0.000137 *	1.63 *	316.63 *	72.27 *	0.14 *
* C-1 to 9000 ft E * 1064	* PF 1	* 516.00 *	1950.97 *	1952.70 *	1952.41 *		1953.15 *	0.005721 *	5.40 *	95.57 *	60.71 *	0.76 *
* C-1 to 9000 ft E * 1063	* PF 1	* 516.00 *	1950.97 *	1952.41 *	1952.41 *		1953.08 *	0.010569 *	6.57 *	78.52 *	58.94 *	1.00 *
* C-1 to 9000 ft E * 1062	* PF 1	* 516.00 *	1947.96 *	1949.89 *		*	1950.27 *	0.008330 *	4.95 *	104.27 *	58.27 *	0.65 *
* C-1 to 9000 ft E * 1061	* PF 1	* 516.00 *	1947.91 *	1949.66 *	1949.37 *		1950.13 *	0.005693 *	5.51 *	93.73 *	57.34 *	0.76 *
* C-1 to 9000 ft E * 1060	* PF 1	* 516.00 *	1947.91 *	1949.37 *	1949.37 *		1950.06 *	0.010532 *	6.69 *	77.12 *	56.05 *	1.00 *
* C-1 to 9000 ft E * 1059	* PF 1	* 516.00 *	1938.71 *	1944.49 *		*	1944.74 *	0.001083 *	4.00 *	128.98 *	34.60 *	0.37 *
* C-1 to 9000 ft E * 1058	* PF 1	* 516.00 *	1938.66 *	1944.51 *		*	1944.71 *	0.000794 *	3.57 *	144.61 *	36.46 *	0.32 *
* C-1 to 9000 ft E * 1057	* PF 1	* 516.00 *	1938.64 *	1944.50 *		*	1944.70 *	0.000905 *	3.56 *	144.90 *	36.47 *	0.31 *
* C-1 to 9000 ft E * 1056	* PF 1	* 516.00 *	1938.61 *	1944.50 *		*	1944.68 *	0.000836 *	3.42 *	150.88 *	38.26 *	0.30 *
* C-1 to 9000 ft E * 1055	* PF 1	* 516.00 *	1938.51 *	1944.49 *		*	1944.63 *	0.000577 *	2.98 *	173.29 *	40.93 *	0.26 *
* C-1 to 9000 ft E * 1054	* PF 1	* 516.00 *	1938.41 *	1944.50 *		*	1944.59 *	0.000365 *	2.47 *	208.71 *	46.54 *	0.21 *
* C-1 to 9000 ft E * 1053	* PF 1	* 516.00 *	1938.32 *	1944.48 *		*	1944.58 *	0.000355 *	2.52 *	205.02 *	42.58 *	0.20 *
* C-1 to 9000 ft E * 1052	* PF 1	* 516.00 *	1938.19 *	1944.46 *		*	1944.55 *	0.000279 *	2.41 *	214.19 *	44.29 *	0.19 *
* C-1 to 9000 ft E * 1051	* PF 1	* 516.00 *	1941.19 *	1943.80 *	1943.45 *		1944.49 *	0.005782 *	6.67 *	77.34 *	35.23 *	0.79 *
* C-1 to 9000 ft E * 1050	* PF 1	* 516.00 *	1941.19 *	1943.45 *	1943.45 *		1944.42 *	0.009547 *	7.90 *	65.32 *	33.73 *	1.00 *
* C-1 to 9000 ft E * 1049	* PF 1	* 516.00 *	1938.19 *	1942.85 *		*	1943.04 *	0.000941 *	3.51 *	146.80 *	39.06 *	0.32 *
* C-1 to 9000 ft E * 1048	* PF 1	* 516.00 *	1938.13 *	1942.89 *		*	1942.99 *	0.000512 *	2.64 *	195.76 *	52.32 *	0.24 *
* C-1 to 9000 ft E * 1047	* PF 1	* 516.00 *	1938.10 *	1942.67 *	1940.40 *		1942.96 *	0.000254 *	4.35 *	118.76 *	57.28 *	0.36 *
* C-1 to 9000 ft E * 1046.5	*	* culvert *	*	*	*		*	*	*	*	*	*
* C-1 to 9000 ft E * 1046	* PF 1	* 516.00 *	1937.20 *	1940.34 *	1939.52 *		1940.96 *	0.004717 *	6.32 *	81.69 *	26.00 *	0.63 *
* C-1 to 9000 ft E * 1045	* PF 1	* 781.00 *	1936.00 *	1938.92 *	1938.92 *		1940.39 *	0.011972 *	9.73 *	80.24 *	27.50 *	1.00 *
* C-1 to 9000 ft E * 1044	* PF 1	* 781.00 *	1935.00 *	1937.11 *	1937.11 *		1938.16 *	0.011547 *	8.24 *	94.79 *	45.00 *	1.00 *
* C-1 to 9000 ft E * 1043	* PF 1	* 781.00 *	1933.65 *	1935.93 *	1935.93 *		1937.07 *	0.011547 *	8.57 *	91.09 *	40.00 *	1.00 *
* C-1 to 9000 ft E * 1042	* PF 1	* 781.00 *	1928.76 *	1931.70 *	1931.70 *		1933.16 *	0.002755 *	9.48 *	82.38 *	29.48 *	1.00 *
* C-1 to 9000 ft E * 1041	* PF 1	* 781.00 *	1926.60 *	1929.60 *	1929.60 *		1931.00 *	0.002769 *	9.50 *	82.25 *	29.48 *	1.00 *
* C-1 to 9000 ft E * 1040	* PF 1	* 781.00 *	1923.60 *	1926.59 *	1926.59 *		1928.00 *	0.002789 *	9.52 *	82.06 *	29.47 *	1.01 *
* C-1 to 9000 ft E * 1039	* PF 1	* 781.00 *	1921.60 *	1924.58 *	1924.58 *		1925.96 *	0.002770 *	9.47 *	82.86 *	30.29 *	1.00 *
* C-1 to 9000 ft E * 1038	* PF 1	* 781.00 *	1918.60 *	1921.59 *	1921.59 *		1922.96 *	0.002744 *	9.40 *	83.12 *	30.30 *	1.00 *
* C-1 to 9000 ft E * 1037	* PF 1	* 781.00 *	1915.53 *	1918.51 *	1918.51 *		1919.89 *	0.002773 *	9.44 *	82.76 *	30.19 *	1.00 *
* C-1 to 9000 ft E * 1036	* PF 1	* 781.00 *	1912.60 *	1915.58 *	1915.58 *		1916.96 *	0.002776 *	9.43 *	82.79 *	30.27 *	1.01 *
* C-1 to 9000 ft E * 1035	* PF 1	* 781.00 *	1908.15 *	1911.19 *	1911.19 *		1912.61 *	0.002779 *	9.54 *	81.89 *	29.23 *	1.00 *
* C-1 to 9000 ft E * 1034	* PF 1	* 781.00 *	1906.69 *	1910.10 *	1910.10 *		1911.60 *	0.002785 *	9.84 *	79.37 *	26.47 *	1.00 *
* C-1 to 9000 ft E * 1033	* PF 1	* 781.00 *	1905.11 *	1908.52 *	1908.52 *		1910.02 *	0.002802 *	9.86 *	79.21 *	26.46 *	1.00 *
* C-1 to 9000 ft E * 1032	* PF 1	* 781.00 *	1903.12 *	1906.63 *	1906.63 *		1908.17 *	0.002805 *	9.97 *	78.35 *	25.40 *	1.00 *
* C-1 to 9000 ft E * 1031	* PF 1	* 781.00 *	1901.60 *	1904.93 *	1904.93 *		1906.21 *	0.002574 *	9.07 *	86.07 *	34.05 *	1.01 *
* C-1 to 9000 ft E * 1030	* PF 1	* 893.00 *	1900.26 *	1903.14 *		*	1905.73 *	0.000784 *	6.16 *	144.93 *	41.69 *	0.58 *
* C-1 to 9000 ft E * 1029	* PF 1	* 893.00 *	1899.42 *	1904.00 *	1904.00 *		1905.58 *	0.002504 *	10.09 *	88.47 *	28.19 *	1.00 *
* C-1 to 9000 ft E * 1028	* PF 1	* 893.00 *	1898.55 *	1902.02 *	1902.02 *		1903.45 *	0.002515 *	9.59 *	93.11 *	32.73 *	1.00 *
* C-1 to 9000 ft E * 1027	* PF 1	* 893.00 *	1896.54 *	1901.43 *	1901.43 *		1903.15 *	0.002547 *	10.55 *	84.65 *	24.66 *	1.00 *
* C-1 to 9000 ft E * 1026	* PF 1	* 893.00 *	1895.60 *	1900.49 *	1900.49 *		1902.21 *	0.002547 *	10.55 *	84.65 *	24.66 *	1.00 *
* C-1 to 9000 ft E * 1025	* PF 1	* 893.00 *	1893.40 *	1898.29 *	1898.29 *		1900.01 *	0.002547 *	10.55 *	84.65 *	24.66 *	1.00 *
* C-1 to 9000 ft E * 1024	* PF 1	* 893.00 *	1892.20 *	1897.09 *	1897.09 *		1898.81 *	0.002547 *	10.55 *	84.65 *	24.66 *	1.00 *
* C-1 to 9000 ft E * 1023	* PF 1	* 893.00 *	1890.60 *	1895.49 *	1895.49 *		1897.21 *	0.002547 *	10.55 *	84.65 *	24.66 *	1.00 *
* C-1 to 9000 ft E * 1022	* PF 1	* 893.00 *	1889.70 *	1894.59 *	1894.59 *		1896.31 *	0.002547 *	10.55 *	84.65 *	24.66 *	1.00 *
* C-1 to 9000 ft E * 1021	* PF 1	* 893.00 *	1888.80 *	1893.69 *	1893.69 *		1895.41 *	0.002547 *	10.55 *	84.65 *	24.66 *	1.00 *
* C-1 to 9000 ft E * 1020	* PF 1	* 893.00 *	1887.90 *	1892.79 *	1892.79 *		1894.51 *	0.002547 *	10.55 *	84.65 *	24.66 *	1.00 *
* C-1 to 9000 ft E * 1019	* PF 1	* 893.00 *	1886.51 *	1891.40 *	1891.39 *		1893.12

Reach	River Sta	Profile	E.G. Elev (ft)	W.S. Elev (ft)	Vel Head (ft)	Frctn Loss (ft)	C & E Loss (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Top Width (ft)
C-1 to 9000 ft E	1328	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		18.16
C-1 to 9000 ft E	1327	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		26.09
C-1 to 9000 ft E	1326	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		31.49
C-1 to 9000 ft E	1325	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		38.89
C-1 to 9000 ft E	1324	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		45.29
C-1 to 9000 ft E	1323	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		51.09
C-1 to 9000 ft E	1322	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		56.09
C-1 to 9000 ft E	1321	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		62.32
C-1 to 9000 ft E	1320	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		62.34
C-1 to 9000 ft E	1319	PF 1	2117.23	2117.23	0.00	0.03	0.00		1.10		50.42
C-1 to 9000 ft E	1318	PF 1	2117.20	2117.18	0.01	0.00	0.00		1.10		50.17
C-1 to 9000 ft E	1317	PF 1	2114.23	2114.23	0.00	0.05	0.00		1.10		50.27
C-1 to 9000 ft E	1316	PF 1	2114.18	2114.18	0.00	0.03	0.00		1.10		50.23
C-1 to 9000 ft E	1315	PF 1	2114.15	2114.14	0.01	0.00	0.00		1.10		50.10
C-1 to 9000 ft E	1314	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		19.69
C-1 to 9000 ft E	1313	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		24.92
C-1 to 9000 ft E	1312	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		24.99
C-1 to 9000 ft E	1311	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		25.09
C-1 to 9000 ft E	1310	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		38.57
C-1 to 9000 ft E	1309	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		38.89
C-1 to 9000 ft E	1308	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		54.29
C-1 to 9000 ft E	1307	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		50.69
C-1 to 9000 ft E	1306	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		57.09
C-1 to 9000 ft E	1305	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		62.32
C-1 to 9000 ft E	1304	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		62.34
C-1 to 9000 ft E	1303	PF 1	2106.53	2106.53	0.00	0.03	0.00		1.10		50.45
C-1 to 9000 ft E	1302	PF 1	2106.50	2106.49	0.01	0.00	0.00		1.10		50.19
C-1 to 9000 ft E	1301	PF 1	2103.53	2103.53	0.00	0.05	0.00		1.10		50.27
C-1 to 9000 ft E	1300	PF 1	2103.48	2103.48	0.00	0.03	0.00		1.10		50.23
C-1 to 9000 ft E	1299	PF 1	2103.45	2103.44	0.01	0.00	0.00		1.10		50.10
C-1 to 9000 ft E	1298	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		19.68
C-1 to 9000 ft E	1297	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		19.85
C-1 to 9000 ft E	1296	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		19.92
C-1 to 9000 ft E	1295	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		20.02
C-1 to 9000 ft E	1294	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		32.48
C-1 to 9000 ft E	1293	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		38.88
C-1 to 9000 ft E	1292	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		45.28
C-1 to 9000 ft E	1291	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		50.68
C-1 to 9000 ft E	1290	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		57.08
C-1 to 9000 ft E	1289	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		62.35
C-1 to 9000 ft E	1288	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		62.35
C-1 to 9000 ft E	1287	PF 1	2095.83	2095.83	0.00	0.03	0.00		1.10		50.41
C-1 to 9000 ft E	1286	PF 1	2095.80	2095.80	0.01	0.00	0.00		1.10		50.25
C-1 to 9000 ft E	1285	PF 1	2092.83	2092.83	0.00	0.05	0.00		1.10		50.27
C-1 to 9000 ft E	1284	PF 1	2092.78	2092.78	0.00	0.03	0.00		1.10		50.23
C-1 to 9000 ft E	1283	PF 1	2092.75	2092.74	0.01	0.00	0.00		1.10		50.13
C-1 to 9000 ft E	1282	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		19.69
C-1 to 9000 ft E	1281	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		19.86
C-1 to 9000 ft E	1280	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		19.93
C-1 to 9000 ft E	1279	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		25.39
C-1 to 9000 ft E	1278	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		33.71
C-1 to 9000 ft E	1277	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		39.07
C-1 to 9000 ft E	1276	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		45.41
C-1 to 9000 ft E	1275	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		50.77
C-1 to 9000 ft E	1274	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		57.14
C-1 to 9000 ft E	1273	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		62.38
C-1 to 9000 ft E	1272	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		62.40
C-1 to 9000 ft E	1271	PF 1	2085.13	2085.13	0.00	0.03	0.00		1.10		50.43
C-1 to 9000 ft E	1270	PF 1	2085.10	2085.09	0.01	0.00	0.00		1.10		50.18
C-1 to 9000 ft E	1269	PF 1	2082.12	2082.12	0.00	0.05	0.00		1.10		50.24
C-1 to 9000 ft E	1268	PF 1	2082.08	2082.07	0.00	0.03	0.00		1.10		50.25
C-1 to 9000 ft E	1267	PF 1	2082.05	2082.04	0.01	0.00	0.00		1.10		50.11
C-1 to 9000 ft E	1266	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		19.69
C-1 to 9000 ft E	1265	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		25.92
C-1 to 9000 ft E	1264	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		25.98
C-1 to 9000 ft E	1263	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		26.09
C-1 to 9000 ft E	1262	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		32.49
C-1 to 9000 ft E	1261	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		39.89
C-1 to 9000 ft E	1260	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		45.29
C-1 to 9000 ft E	1259	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		50.69
C-1 to 9000 ft E	1258	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		57.09
C-1 to 9000 ft E	1257	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		60.41
C-1 to 9000 ft E	1256	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		62.34
C-1 to 9000 ft E	1255	PF 1	2074.43	2074.43	0.00	0.03	0.00		1.10		50.43
C-1 to 9000 ft E	1254	PF 1	2074.40	2074.39	0.01	0.00	0.00		1.10		50.19
C-1 to 9000 ft E	1253	PF 1	2072.73	2072.73	0.00	0.00	0.00		1.10		55.47
C-1 to 9000 ft E	1252	PF 1	2072.73	2072.73	0.00	0.01	0.04		1.10		55.34
C-1 to 9000 ft E	1251	PF 1	2072.67	2072.23	0.45	0.00	0.06		255.00		53.66
C-1 to 9000 ft E	1250	PF 1	2065.21	2064.95	0.25	0.03	0.03		255.00		24.56
C-1 to 9000 ft E	1249	PF 1	2065.14	2065.00	0.14	0.01	0.00		255.00		30.00
C-1 to 9000 ft E	1248	PF 1	2065.13	2064.99	0.14	0.01	0.00		255.00		30.01
C-1 to 9000 ft E	1247	PF 1	2065.11	2064.97	0.14	0.03	0.02		255.00		30.05
C-1 to 9000 ft E	1246	PF 1	2065.06	2064.99	0.08	0.02	0.01		255.00		37.50
C-1 to 9000 ft E	1245	PF 1	2065.04	2064.98	0.06	0.01	0.01		255.00		40.86
C-1 to 9000 ft E	1244	PF 1	2065.02	2064.97	0.04	0.01	0.00		255.00		46.26
C-1 to 9000 ft E	1243	PF 1	2065.00	2064.97	0.03	0.01	0.00		255.00		51.65
C-1 to 9000 ft E	1242	PF 1	2064.99	2064.97	0.02	0.00	0.00		255.00		58.04
C-1 to 9000 ft E	1241	PF 1	2064.99	2064.97	0.02	0.00	0.00		255.00		62.44
C-1 to 9000 ft E	1240	PF 1	2064.99	2064.97	0.02	0.00	0.00		255.00		62.49
C-1 to 9000 ft E	1239	PF 1	2064.99	2064.97	0.01	0.00	0.02		255.00		67.81
C-1 to 9000 ft E	1238	PF 1	2064.96	2064.70	0.26	0.05	0.02		255.00		58.87
C-1 to 9000 ft E	1237	PF 1	2064.90	2064.47	0.43	0.00	0.06		255.00		57.08
C-1 to 9000 ft E	1236	PF 1	2062.08	2061.86	0.22	0.13	0.01		255.00		55.25
C-1 to 9000 ft E	1235	PF 1	2061.94	2061.65	0.29	0.05	0.02		255.00		54.53
C-1 to 9000 ft E	1234	PF 1	2061.87	2061.43	0.45	0.00	0.06		255.00		53.67
C-1 to 9000 ft E	1233	PF 1	2054.47	2054.23	0.24	0.03	0.03		255.00		24.88
C-1 to 9000 ft E	1232	PF 1	2054.41	2054.27	0.14	0.01	0.00		255.00		30.31
C-1 to 9000 ft E	1231	PF 1	2054.40	2054.26	0.13	0.01	0.00		255.00		30.32
C-1 to 9000 ft E	1230	PF 1	2054.38	2054.25	0.13	0.03	0.02		255.00		30.36
C-1 to 9000 ft E	1229	PF 1	2054.33	2054.26	0.07	0.02	0.01		255.00		37.81
C-1 to 9000 ft E	1228	PF 1	2054.31	2054.26	0.05	0.01	0.00		255.00		44.21
C-1 to 9000 ft E	1227	PF 1	2054.30	2054.26	0.03	0.01	0.00		255.00		50.61
C-1 to 9000 ft E	1226	PF 1	2054.29	2054.26	0.02	0.01	0.00		255.00		56.00
C-1 to 9000 ft E	1225	PF 1	2054.28	2054.26	0.02	0.00	0.00		255.00		62.40
C-1 to 9000 ft E	1224	PF 1	2054.28	2054.26	0.02	0.00	0.00		255.00		62.47
C-1 to 9000 ft E	1223	PF 1	2054.28	2054.26	0.02	0.00	0.02		255.00		67.86
C-1 to 9000 ft E	1222	PF 1	2054.25	2053.99	0.26	0.05	0.02		255.00		60.24
C-1 to 9000 ft E	1221	PF 1	2054.19	2053.76	0.43	0.00	0.07		255.00		58.16
C-1 to 9000 ft E	1220	PF 1	2051.45	2051.27	0.18	0.15	0.03		255.00		55.74
C-1 to 9000 ft E	1219	PF 1	2051.27	2050.83	0.45	0.07	0.00		255.00		53.75
C-1 to 9000 ft E	1218	PF 1	2051.17	2050.73	0.45	0.00	0.07		255.00		53.69
C-1 to 9000 ft E	1217	PF 1	2043.84	2043.62	0.22	0.03	0.03		255.00		25.22
C-1 to 9000 ft E	1216	PF 1	2043.78	2043.66	0.13	0.01	0.00		255.00		30.64
C-1 to 9000 ft E	1215	PF 1	2043.77	2043.65	0.13	0.01	0.00		255.00		30.66
C-1 to 9000 ft E	1214	PF 1	2043.76	2043.64	0.13	0.04	0.00		255.00		30.70
C-1 to 9000 ft E	1212	PF 1	2043.72	2043.60	0.12	0.05	0.01		255.00		30.84
C-1 to 9000 ft E	1211	PF 1	2043.66	2043.45	0.21	0.02	0.05		255.00		25.46
C-1 to 9000 ft E	1210	PF 1	2043.58	2043.55	0.03	0.01	0.00		255.00		50.72
C-1 to 9000 ft E	1209	PF 1	2043.57	2043.55	0.02	0.01	0.00		255.00		56.77
C-1 to 9000 ft E	1208	PF 1	2043.57	2043.55	0.02	0.00	0.00		255.00		62.35
C-1 to 9000 ft E	1207	PF 1	2043.57	2043.55	0.02	0.00	0.00		255.00		62.40
C-1 to 9000 ft E	1206	PF 1	2043.56	2043.55	0.01	0.00	0.02		255.00		71.32
C-1 to 9000 ft E	1205	PF 1	2043.54	2043.28	0.26	0.05	0.02		255.00		62.04
C-1 to 9000 ft E	1204	PF 1	2043.47	2043.06	0.42	0.00	0.06		255.00		59.74
C-1 to 9000 ft E	1203	PF 1	2040.67	2040.46	0.21	0.13	0.01		255.00		56.30
C-1 to 9000 ft E	1202	PF 1	2040.53	2040.25	0.29	0.05	0.02		255.00		55.43
C-1 to 9000 ft E	1201	PF 1	2040.47	2040.03	0.44	0.00	0.09		255.00		54.41
C-1 to 9000 ft E	1200	PF 1	2032.87	2032.73	0.15	0.03	0.00		255.00		30.00
C-1 to 9000 ft E	1199	PF 1	2032.84	2032.69	0.15	0.01	0.00		255.00		29.57
C-1 to 9000 ft E	1198	PF 1	2032.83	2032.68	0.15	0.02	0.00		255.00		29.57
C-1 to 9000 ft E	1197	PF 1	2032.81	2032.66	0.15	0.04	0.02		255.00		29.60
C-1 to 9000 ft E	1196	PF 1	2032.75	2032.67	0.09	0.02	0.01		255.00		36.03
C-1 to 9000 ft E	1195	PF 1	2032.72	2032.66	0.06	0.02	0.00		255.00		41.41
C-1 to 9000 ft E	1194	PF 1	2032.70	2032.66	0.05	0.01	0.00		255.00		45.79
C-1 to 9000 ft E	1193	PF 1	2032.69	2032.66	0.03	0.01	0.00		255.00		51.19
C-1 to 9000 ft E	1192	PF 1	2032.68	2032.65	0.03	0.01	0.00		255.00		56.58
C-1 to 9000 ft E	1191	PF 1	2032.67	2032.65	0.02	0.00	0.00		255.00		62.18
C-1 to 9000 ft E	1190	PF 1	2032.67	2032.65	0.02	0.00	0.00		255.00		62.23
C-1 to 9000 ft E	1189	PF 1	2032.67	2032.66	0.01	0.00	0.02		255.00		74.46

Reach	River Sta	Profile	E.G. Elev (ft)	W.S. Elev (ft)	Vel Head (ft)	Frctn Loss (ft)	C & E Loss (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Top Width (ft)
C-1 to 9000 ft E	1015	PF 1	893.00	1883.41	1886.81	1886.81	1888.52	0.003032	10.51	85.00	25.00	1.00
C-1 to 9000 ft E	1014	PF 1	893.00	1879.36	1882.76	1882.76	1884.47	0.003030	10.50	85.02	25.00	1.00
C-1 to 9000 ft E	1013	PF 1	893.00	1875.31	1878.71	1878.71	1880.42	0.003030	10.50	85.02	25.00	1.00
C-1 to 9000 ft E	1012	PF 1	893.00	1872.04	1875.44	1875.44	1877.15	0.003030	10.50	85.02	25.00	1.00
C-1 to 9000 ft E	1011	PF 1	893.00	1867.21	1874.53		1874.90	0.000315	4.88	183.11	25.00	0.32
C-1 to 9000 ft E	1010	PF 1	893.00	1862.93	1874.69		1874.83	0.000085	3.04	293.87	25.00	0.16
C-1 to 9000 ft E	1009	PF 1	893.00	1862.88	1874.68		1874.82	0.000084	3.03	295.04	25.00	0.16
C-1 to 9000 ft E	1008	PF 1	893.00	1862.83	1874.68		1874.82	0.000083	3.01	296.20	25.00	0.15
C-1 to 9000 ft E	1007	PF 1	893.00	1862.78	1874.68		1874.82	0.000083	3.00	297.37	25.00	0.15
C-1 to 9000 ft E	1006	PF 1	893.00	1862.74	1874.67		1874.81	0.000082	2.99	298.30	25.00	0.15
C-1 to 9000 ft E	1005	PF 1	893.00	1862.74	1874.67		1874.81	0.000082	2.99	298.30	25.00	0.15
C-1 to 9000 ft E	1004	PF 1	893.00	1862.68	1874.67		1874.81	0.000081	2.98	299.80	25.00	0.15
C-1 to 9000 ft E	1003	PF 1	893.00	1862.63	1874.67		1874.80	0.000080	2.97	300.87	25.00	0.15
C-1 to 9000 ft E	1002	PF 1	893.00	1862.58	1874.66		1874.80	0.000079	2.96	302.04	25.00	0.15
C-1 to 9000 ft E	1001	PF 1	893.00	1862.55	1874.66	1865.95	1874.80	0.000079	2.95	302.75	25.00	0.15

C-1 to 9000 ft E	1188	PF 1	2032.65	2032.41	0.24	0.05	0.01		255.00		70.70
C-1 to 9000 ft E	1187	PF 1	2032.58	2032.20	0.38	0.00	0.05		255.00		68.34
C-1 to 9000 ft E	1186	PF 1	2029.86	2029.65	0.21	0.13	0.01		255.00		57.57
C-1 to 9000 ft E	1185	PF 1	2029.72	2029.45	0.27	0.05	0.02		255.00		56.64
C-1 to 9000 ft E	1184	PF 1	2029.66	2029.22	0.44	0.00	0.09		255.00		55.31
C-1 to 9000 ft E	1183	PF 1	2022.10	2021.97	0.13	0.01	0.01		255.00		31.74
C-1 to 9000 ft E	1182	PF 1	2022.07	2021.99	0.08	0.01	0.00		255.00		38.12
C-1 to 9000 ft E	1181	PF 1	2022.06	2021.98	0.08	0.01	0.00		255.00		38.16
C-1 to 9000 ft E	1180	PF 1	2022.05	2021.98	0.08	0.02	0.00		255.00		38.19
C-1 to 9000 ft E	1179	PF 1	2022.03	2021.96	0.07	0.02	0.01		255.00		38.38
C-1 to 9000 ft E	1178	PF 1	2022.00	2021.96	0.05	0.01	0.00		255.00		44.78
C-1 to 9000 ft E	1177	PF 1	2021.99	2021.96	0.03	0.01	0.00		255.00		52.18
C-1 to 9000 ft E	1176	PF 1	2021.98	2021.96	0.02	0.00	0.00		255.00		59.58
C-1 to 9000 ft E	1175	PF 1	2021.97	2021.95	0.02	0.00	0.00		255.00		64.98
C-1 to 9000 ft E	1174	PF 1	2021.97	2021.95	0.01	0.00	0.00		255.00		69.25
C-1 to 9000 ft E	1173	PF 1	2021.97	2021.95	0.01	0.00	0.00		255.00		69.25
C-1 to 9000 ft E	1172	PF 1	2021.97	2021.95	0.01	0.00	0.02		255.00		68.45
C-1 to 9000 ft E	1171	PF 1	2021.94	2021.68	0.26	0.05	0.02		255.00		61.91
C-1 to 9000 ft E	1170	PF 1	2021.88	2021.46	0.42	0.00	0.09		255.00		59.59
C-1 to 9000 ft E	1169	PF 1	2019.37	2019.24	0.13	0.04	0.06		255.00		57.08
C-1 to 9000 ft E	1168	PF 1	2019.33	2019.20	0.13	0.02	0.04		255.00		55.75
C-1 to 9000 ft E	1167	PF 1	2019.26	2018.69	0.57	0.00	0.06		371.00		54.02
C-1 to 9000 ft E	1166	PF 1	2012.83	2012.45	0.37	0.04	0.06		371.00		26.57
C-1 to 9000 ft E	1165	PF 1	2012.73	2012.55	0.18	0.01	0.00		371.00		34.25
C-1 to 9000 ft E	1164	PF 1	2012.72	2012.54	0.18	0.01	0.00		371.00		34.25
C-1 to 9000 ft E	1163	PF 1	2012.70	2012.53	0.17	0.04	0.02		371.00		34.27
C-1 to 9000 ft E	1162	PF 1	2012.64	2012.54	0.10	0.02	0.01		371.00		41.73
C-1 to 9000 ft E	1161	PF 1	2012.61	2012.55	0.07	0.01	0.01		371.00		48.14
C-1 to 9000 ft E	1160	PF 1	2012.59	2012.55	0.05	0.01	0.00		371.00		55.55
C-1 to 9000 ft E	1159	PF 1	2012.58	2012.55	0.03	0.00	0.00		371.00		62.95
C-1 to 9000 ft E	1158	PF 1	2012.58	2012.53	0.05	0.00	0.01		371.00		61.69
C-1 to 9000 ft E	1157	PF 1	2012.57	2012.54	0.03	0.00	0.03		371.00		64.46
C-1 to 9000 ft E	1156	PF 1	2012.54	2012.17	0.37	0.05	0.02		371.00		59.25
C-1 to 9000 ft E	1155	PF 1	2012.47	2011.92	0.55	0.00	0.07		371.00		57.64
C-1 to 9000 ft E	1154	PF 1	2009.66	2009.36	0.31	0.13	0.01		371.00		54.83
C-1 to 9000 ft E	1153	PF 1	2009.52	2009.15	0.38	0.05	0.02		371.00		54.84
C-1 to 9000 ft E	1152	PF 1	2009.46	2008.89	0.57	0.00	0.06		371.00		53.95
C-1 to 9000 ft E	1151	PF 1	2003.03	2002.65	0.37	0.04	0.05		371.00		26.58
C-1 to 9000 ft E	1150	PF 1	2002.94	2002.73	0.21	0.02	0.00		371.00		32.13
C-1 to 9000 ft E	1149	PF 1	2002.92	2002.71	0.21	0.02	0.00		371.00		32.12
C-1 to 9000 ft E	1148	PF 1	2002.90	2002.69	0.21	0.04	0.03		371.00		32.13
C-1 to 9000 ft E	1147	PF 1	2002.83	2002.74	0.10	0.02	0.01		371.00		42.70
C-1 to 9000 ft E	1146	PF 1	2002.80	2002.73	0.07	0.01	0.01		371.00		48.09
C-1 to 9000 ft E	1145	PF 1	2002.78	2002.73	0.05	0.01	0.01		371.00		53.48
C-1 to 9000 ft E	1144	PF 1	2002.77	2002.74	0.03	0.00	0.01		371.00		63.90
C-1 to 9000 ft E	1143	PF 1	2002.77	2002.73	0.03	0.00	0.00		371.00		63.92
C-1 to 9000 ft E	1142	PF 1	2002.76	2002.74	0.03	0.00	0.03		371.00		64.63
C-1 to 9000 ft E	1141	PF 1	2002.73	2002.37	0.36	0.05	0.02		371.00		59.78
C-1 to 9000 ft E	1140	PF 1	2002.66	2002.12	0.54	0.00	0.07		371.00		58.10
C-1 to 9000 ft E	1139	PF 1	1999.87	1999.56	0.31	0.13	0.01		371.00		54.88
C-1 to 9000 ft E	1138	PF 1	1999.72	1999.34	0.39	0.05	0.02		371.00		54.75
C-1 to 9000 ft E	1137	PF 1	1999.66	1999.09	0.57	0.00	0.05		371.00		53.95
C-1 to 9000 ft E	1136	PF 1	1993.17	1992.77	0.39	0.04	0.06		371.00		26.25
C-1 to 9000 ft E	1135	PF 1	1993.07	1992.87	0.20	0.02	0.00		371.00		32.97
C-1 to 9000 ft E	1134	PF 1	1993.05	1992.85	0.20	0.02	0.00		371.00		32.96
C-1 to 9000 ft E	1133	PF 1	1993.03	1992.83	0.20	0.03	0.04		371.00		32.97
C-1 to 9000 ft E	1132	PF 1	1992.96	1992.89	0.07	0.02	0.00		371.00		48.51
C-1 to 9000 ft E	1131	PF 1	1992.95	1992.88	0.07	0.01	0.01		371.00		48.68
C-1 to 9000 ft E	1130	PF 1	1992.93	1992.87	0.05	0.01	0.01		371.00		53.66
C-1 to 9000 ft E	1129	PF 1	1992.91	1992.88	0.03	0.00	0.00		371.00		64.21
C-1 to 9000 ft E	1128	PF 1	1992.91	1992.88	0.02	0.00	0.00		371.00		74.71
C-1 to 9000 ft E	1127	PF 1	1992.91	1992.88	0.02	0.00	0.03		371.00		74.71
C-1 to 9000 ft E	1126	PF 1	1992.88	1992.55	0.32	0.05	0.02		371.00		67.32
C-1 to 9000 ft E	1125	PF 1	1992.81	1992.30	0.51	0.00	0.07		371.00		64.09
C-1 to 9000 ft E	1124	PF 1	1990.06	1989.78	0.28	0.15	0.02		371.00		58.15
C-1 to 9000 ft E	1123	PF 1	1989.90	1989.46	0.44	0.06	0.01		371.00		58.08
C-1 to 9000 ft E	1122	PF 1	1989.83	1989.28	0.55	0.00	0.12		371.00		57.15
C-1 to 9000 ft E	1121	PF 1	1982.31	1982.17	0.14	0.02	0.00		371.00		38.44
C-1 to 9000 ft E	1120	PF 1	1982.29	1982.16	0.13	0.01	0.00		371.00		39.57
C-1 to 9000 ft E	1119	PF 1	1982.28	1982.15	0.13	0.01	0.00		371.00		39.59
C-1 to 9000 ft E	1118	PF 1	1982.27	1982.14	0.13	0.04	0.00		371.00		39.64
C-1 to 9000 ft E	1117	PF 1	1982.23	1982.11	0.12	0.03	0.01		371.00		39.78
C-1 to 9000 ft E	1116	PF 1	1982.19	1982.10	0.09	0.02	0.01		371.00		45.17
C-1 to 9000 ft E	1115	PF 1	1982.16	1982.11	0.06	0.01	0.00		371.00		52.58
C-1 to 9000 ft E	1114	PF 1	1982.15	1982.11	0.04	0.01	0.00		371.00		58.98
C-1 to 9000 ft E	1113	PF 1	1982.14	1982.11	0.03	0.01	0.00		371.00		66.38
C-1 to 9000 ft E	1112	PF 1	1982.13	1982.10	0.03	0.00	0.00		371.00		67.22
C-1 to 9000 ft E	1111	PF 1	1982.13	1982.10	0.03	0.00	0.00		371.00		70.86
C-1 to 9000 ft E	1110	PF 1	1982.13	1982.10	0.03	0.00	0.03		371.00		70.85
C-1 to 9000 ft E	1109	PF 1	1982.10	1981.77	0.33	0.05	0.02		371.00		65.25
C-1 to 9000 ft E	1108	PF 1	1982.03	1981.51	0.52	0.00	0.06		371.00		62.51
C-1 to 9000 ft E	1107	PF 1	1979.27	1978.96	0.31	0.13	0.01		371.00		55.11
C-1 to 9000 ft E	1106	PF 1	1979.13	1978.75	0.38	0.05	0.02		371.00		54.56
C-1 to 9000 ft E	1105	PF 1	1979.06	1978.49	0.57	0.00	0.00		371.00		53.74
C-1 to 9000 ft E	1104	PF 1	1973.11	1972.51	0.60	0.03	0.13		516.00		27.60
C-1 to 9000 ft E	1103	PF 1	1972.95	1972.79	0.16	0.01	0.00		516.00		43.41
C-1 to 9000 ft E	1102	PF 1	1972.94	1972.78	0.16	0.01	0.00		516.00		43.42
C-1 to 9000 ft E	1101	PF 1	1972.93	1972.77	0.15	0.04	0.00		516.00		43.45
C-1 to 9000 ft E	1100	PF 1	1972.89	1972.73	0.16	0.03	0.01		516.00		43.28
C-1 to 9000 ft E	1099	PF 1	1972.84	1972.74	0.11	0.02	0.01		516.00		49.70
C-1 to 9000 ft E	1098	PF 1	1972.82	1972.74	0.08	0.01	0.01		516.00		56.11
C-1 to 9000 ft E	1097	PF 1	1972.80	1972.74	0.05	0.00	0.00		516.00		64.53
C-1 to 9000 ft E	1096	PF 1	1972.79	1972.74	0.05	0.00	0.00		516.00		64.59
C-1 to 9000 ft E	1095	PF 1	1972.79	1972.74	0.05	0.00	0.04		516.00		64.59
C-1 to 9000 ft E	1094	PF 1	1972.75	1972.26	0.48	0.05	0.02		516.00		59.96
C-1 to 9000 ft E	1093	PF 1	1972.68	1972.00	0.68	0.00	0.16		516.00		58.48
C-1 to 9000 ft E	1092	PF 1	1970.89	1970.75	0.14	0.02	0.00		516.00		58.99
C-1 to 9000 ft E	1091	PF 1	1970.87	1970.73	0.13	0.01	0.08		516.00		59.27
C-1 to 9000 ft E	1090	PF 1	1970.78	1969.86	0.91	0.00	0.10		516.00		37.15
C-1 to 9000 ft E	1089	PF 1	1963.35	1962.77	0.58	0.05	0.10		516.00		27.82
C-1 to 9000 ft E	1088	PF 1	1963.20	1962.95	0.25	0.02	0.00		516.00		36.83
C-1 to 9000 ft E	1087	PF 1	1963.18	1962.93	0.25	0.02	0.00		516.00		36.82
C-1 to 9000 ft E	1086	PF 1	1963.16	1962.92	0.25	0.05	0.02		516.00		36.82
C-1 to 9000 ft E	1085	PF 1	1963.09	1962.92	0.17	0.03	0.02		516.00		42.24
C-1 to 9000 ft E	1084	PF 1	1963.04	1962.93	0.11	0.02	0.01		516.00		49.50
C-1 to 9000 ft E	1083	PF 1	1963.01	1962.94	0.07	0.01	0.00		516.00		57.61
C-1 to 9000 ft E	1082	PF 1	1962.99	1962.93	0.06	0.00	0.01		516.00		60.48
C-1 to 9000 ft E	1081	PF 1	1962.98	1962.94	0.04	0.00	0.00		516.00		68.61
C-1 to 9000 ft E	1080	PF 1	1962.98	1962.94	0.04	0.00	0.04		516.00		68.62
C-1 to 9000 ft E	1079	PF 1	1962.94	1962.49	0.45	0.05	0.02		516.00		60.50
C-1 to 9000 ft E	1078	PF 1	1962.87	1962.20	0.67	0.00	0.09		516.00		58.76
C-1 to 9000 ft E	1077	PF 1	1960.08	1959.69	0.39	0.13	0.01		516.00		56.94
C-1 to 9000 ft E	1076	PF 1	1959.94	1959.46	0.48	0.05	0.02		516.00		56.25
C-1 to 9000 ft E	1075	PF 1	1959.87	1959.17	0.70	0.00	0.04		516.00		55.22
C-1 to 9000 ft E	1074	PF 1	1953.56	1952.99	0.57	0.05	0.08		516.00		27.92
C-1 to 9000 ft E	1073	PF 1	1953.43	1953.13	0.29	0.02	0.00		516.00		34.74
C-1 to 9000 ft E	1072	PF 1	1953.41	1953.11	0.29	0.02	0.00		516.00		34.72
C-1 to 9000 ft E	1071	PF 1	1953.38	1953.09	0.29	0.05	0.04		516.00		34.71
C-1 to 9000 ft E	1070	PF 1	1953.29	1953.14	0.15	0.03	0.01		516.00		44.32
C-1 to 9000 ft E	1069	PF 1	1953.25	1953.14	0.11	0.02	0.01		516.00		49.72
C-1 to 9000 ft E	1068	PF 1	1953.22	1953.14	0.08	0.01	0.01		516.00		57.59
C-1 to 9000 ft E	1067	PF 1	1953.20	1953.15	0.05	0.00	0.00		516.00		65.54
C-1 to 9000 ft E	1066	PF 1	1953.19	1953.15	0.04	0.00	0.00		516.00		72.28
C-1 to 9000 ft E	1065	PF 1	1953.19	1953.15	0.04	0.00	0.04		516.00		72.27
C-1 to 9000 ft E	1064	PF 1	1953.15	1952.70	0.45	0.05	0.02		516.00		60.71
C-1 to 9000 ft E	1063	PF 1	1953.08	1952.41	0.67	0.00	0.09		516.00		58.94
C-1 to 9000 ft E	1062	PF 1	1950.27	1949.89	0.38	0.13	0.01		516.00		58.27
C-1 to 9000 ft E	1061	PF 1	1950.13	1949.66	0.47	0.05	0.02		516.00		57.34
C-1 to 9000 ft E	1060	PF 1	1950.06	1949.37	0.69	0.00	0.13		516.00		56.05
C-1 to 9000 ft E	1059	PF 1	1944.74	1944.49	0.25	0.02	0.02		516.00		34.60
C-1 to 9000 ft E	1058	PF 1	1944.71	1944.51	0.20	0.01	0.00		516.00		36.46
C-1 to 9000 ft E	1057	PF 1	1944.70	1944.50	0.20	0.01	0.00		516.00		36.47
C-1 to 9000 ft E	1056	PF 1	1944.68	1944.50	0.18	0.03	0.01		516.00		38.26
C-1 to 9000 ft E	1055	PF 1	1944.63	1944.48	0.14	0.02	0.01		516.00		40.93
C-1 to 9000 ft E	1054	PF 1	1944.60	1944.50	0.09	0.02	0.00		516.00		46.54
C-1 to 9000 ft E	1053	PF 1	1944.58	1944.48	0.10	0.02	0.00		516.00		42.58
C-1 to 9000 ft E	1052	PF 1	1944.55	1944.46	0.09	0.00	0.06		516.00		44.29
C-1 to 9000 ft E	1051	PF 1	1944.49	1943.80	0.69	0.04	0.03		516.00		35.23
C-1 to 9000 ft E	1050	PF 1	1944.42	1943.45	0.97	0.00	0.23		516.00		33.73
C-1 to 9000 ft E	1049	PF 1	1944.04	1942.85	0.19	0.02	0.03		516.00		39.06
C-1 to 9000 ft E	1048	PF 1	1942.99	1942.89	0.11	0.02	0.02		516.00		52.32
C-1 to 9000 ft E	1047	PF 1	1942.96	1942.67	0.29				516.00		57.28
C-1 to 9000 ft E	1046.5		culvert								
C-1 to 9000 ft E	1046	PF 1	1940.96	1940.34	0.62	0.49	0.09		516.00		26.00
C-1 to 9000 ft E	1045	PF 1	1940.39	1938.92	1.47	0.82	0.13		781.00		27.50
C-1 to 9000 ft E	1044	PF 1	1938.16	1937.11	1.05	0.80	0.01		781.00		45.00
C-1 to 9000 ft E	1043	PF 1	1937.07	1935.93	1.14	0.50	0.03		781.00		40.00
C-1 to 9000 ft E	1042	PF 1	1933.10	1931.70	1.40	0.22	0.00		781.00		29.48
C-1 to 9000 ft E	1041	PF 1	1931.00	1929.60	1.40	0.28	0.00		781.00		29.48
C-1 to 9000 ft E	1040	PF 1	1928.00	1926.59	1.41	0.28	0.01		781.00		29.47
C-1 to 9000 ft E	1039	PF 1	1925.96	1924.58	1.38	0.28	0.00		781.00		30.29
C-1 to 9000 ft E	1038	PF 1	1922.96	1921.59	1.37	0.28	0.00		781.00		30.30
C-1 to 9000 ft E	1037	PF 1	1919.89	1918.51	1.38	0.28	0.00		781.00		30.19
C-1 to 9000 ft E	1036	PF 1	1916.96	1915.58	1.38	0.28	0.00		781.00		30.27
C-1 to 9000 ft E	1035	PF 1	1912.61	1911.19	1.41	0.12	0.01		781.00		29.23
C-1 to 9000 ft E	1034	PF 1	1911.60	1910.10	1.50	0.16	0.00		781.00		26.47
C-1 to 9000 ft E	1033	PF 1	1910.02	1908.52	1.51	0.28	0.00		781.00		26.46
C-1 to 9000 ft E	1032	PF 1	1908.17	1906.63	1.54	0.27	0.08		781.00		25.40
C-1 to 9000 ft E	1031	PF 1	1906.21	1904.93	1.28	0.13	0.21		781.00		34.05
C-1 to 9000 ft E	1030	PF 1	1905.73	1905.14	0.59	0.05	0.10		893.00		41.69
C-1 to 9000 ft E	1029	PF 1	1905.58	1904.00	1.58	0.15	0.05		893.00		28.19

C-1 to 9000 ft E	PF 1		1903.45	1902.02	1.43	0.17	0.03		893.00	32.73
C-1 to 9000 ft E	PF 1		1903.15	1901.43	1.73	0.08	0.00		893.00	24.66
C-1 to 9000 ft E	PF 1		1902.21	1900.49	1.73	0.13	0.00		893.00	24.66
C-1 to 9000 ft E	PF 1		1900.01	1898.29	1.73	0.13	0.00		893.00	24.66
C-1 to 9000 ft E	PF 1		1898.81	1897.09	1.73	0.13	0.00		893.00	24.66
C-1 to 9000 ft E	PF 1		1897.21	1895.49	1.73	0.13	0.00		893.00	24.66
C-1 to 9000 ft E	PF 1		1896.31	1894.59	1.73	0.13	0.00		893.00	24.66
C-1 to 9000 ft E	PF 1		1895.41	1893.69	1.73	0.13	0.00		893.00	24.66
C-1 to 9000 ft E	PF 1		1894.51	1892.79	1.73	0.15	0.00		893.00	24.66
C-1 to 9000 ft E	PF 1		1893.12	1891.40	1.73	0.00	0.00		893.00	24.68
C-1 to 9000 ft E	PF 1		1893.12	1891.39	1.73	0.14	0.03		893.00	24.68
C-1 to 9000 ft E	PF 1		1891.71	1889.72	2.00	0.15	0.09		893.00	19.76
C-1 to 9000 ft E	PF 1		1889.56	1887.85	1.71	0.15	0.00		893.00	25.00
C-1 to 9000 ft E	PF 1		1888.52	1886.81	1.71	0.15	0.00		893.00	25.00
C-1 to 9000 ft E	PF 1		1884.47	1882.76	1.71	0.15	0.00		893.00	25.00
C-1 to 9000 ft E	PF 1		1880.42	1878.71	1.71	0.15	0.00		893.00	25.00
C-1 to 9000 ft E	PF 1		1877.15	1875.44	1.71	0.04	0.40		893.00	25.00
C-1 to 9000 ft E	PF 1		1874.90	1874.53	0.37	0.01	0.07		893.00	25.00
C-1 to 9000 ft E	PF 1		1874.83	1874.69	0.14	0.00	0.00		893.00	25.00
C-1 to 9000 ft E	PF 1		1874.82	1874.68	0.14	0.00	0.00		893.00	25.00
C-1 to 9000 ft E	PF 1		1874.82	1874.68	0.14	0.00	0.00		893.00	25.00
C-1 to 9000 ft E	PF 1		1874.82	1874.68	0.14	0.00	0.00		893.00	25.00
C-1 to 9000 ft E	PF 1		1874.81	1874.67	0.14	0.00	0.00		893.00	25.00
C-1 to 9000 ft E	PF 1		1874.81	1874.67	0.14	0.00	0.00		893.00	25.00
C-1 to 9000 ft E	PF 1		1874.81	1874.67	0.14	0.01	0.00		893.00	25.00
C-1 to 9000 ft E	PF 1		1874.80	1874.67	0.14	0.00	0.00		893.00	25.00
C-1 to 9000 ft E	PF 1		1874.80	1874.66	0.14	0.00	0.00		893.00	25.00
C-1 to 9000 ft E	PF 1		1874.80	1874.66	0.14				893.00	25.00

ERRORS WARNINGS AND NOTES
Errors Warnings and Notes for Plan : Plan 06

River: Drake Channel Reach: C-1 to 9000 ft E RS: 1328 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1321 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1320 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1319 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1318 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1316 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1315 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1311 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1309 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1305 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1304 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1303 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1302 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1300 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1299 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1295 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1288 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1287 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1286 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1284 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1283 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1280 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1279 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1273 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1272 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1271 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1270 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1269 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1268 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1267 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1266 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1257 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1256 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1255 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1254 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1252 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1251 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1247 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1240 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1239 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1238 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1237 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1235 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1234 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1230 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1224 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1223 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1222 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1221 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1220 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1219 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1218 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1211 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1207 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1206 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1205 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1204 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1202 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1201 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The

program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1190 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1189 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1188 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1187 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1185 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1184 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1172 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1171 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1170 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1168 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1167 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1166 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1159 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1158 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1157 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1155 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1153 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1152 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1148 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1143 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1142 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1140 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1137 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1133 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1128 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1127 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1126 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1125 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1122 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1110 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1109 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1108 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1105 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1104 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1096 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1095 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1093 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1092 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1091 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1090 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1089 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1081 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1080 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1078 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1075 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1071 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1065 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1063 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1060 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1052 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1050 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1047 Profile: PF 1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1046.5 Profile: PF 1 Culv: Culvert #1
Note: The flow in the culvert is entirely supercritical.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1045 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1045 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1044 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1043 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1042 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1041 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate

the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1040 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1039 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1038 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1037 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1036 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1035 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1034 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1033 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1032 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1031 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1030 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1029 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1028 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1027 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1026 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1025 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1024 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1023 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1022 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1021 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1020 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1018 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth

for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1017 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1016 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1015 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1014 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1013 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1012 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1011 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

MIXED FLOW REGIME - CROSS SECTIONS 1001 - 1046.5

HEC-RAS Plan: Plan 06 River: Drake Channel Reach: C-1 to 9000 ft E Profile: PF 1

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
C-1 to 9000 ft E	1328	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		18.16
C-1 to 9000 ft E	1327	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		26.09
C-1 to 9000 ft E	1326	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		31.49
C-1 to 9000 ft E	1325	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		38.89
C-1 to 9000 ft E	1324	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		45.29
C-1 to 9000 ft E	1323	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		51.69
C-1 to 9000 ft E	1322	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		56.09
C-1 to 9000 ft E	1321	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		62.32
C-1 to 9000 ft E	1320	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		62.34
C-1 to 9000 ft E	1319	PF 1	2117.23	2117.23	0.00	0.03	0.00		1.10		50.42
C-1 to 9000 ft E	1318	PF 1	2117.20	2117.18	0.01	0.00	0.00		1.10		50.17
C-1 to 9000 ft E	1317	PF 1	2114.23	2114.23	0.00	0.05	0.00		1.10		50.27
C-1 to 9000 ft E	1316	PF 1	2114.18	2114.18	0.00	0.03	0.00		1.10		50.23
C-1 to 9000 ft E	1315	PF 1	2114.15	2114.14	0.01	0.00	0.00		1.10		50.10
C-1 to 9000 ft E	1314	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		19.69
C-1 to 9000 ft E	1313	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		24.92
C-1 to 9000 ft E	1312	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		24.99
C-1 to 9000 ft E	1311	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		25.09
C-1 to 9000 ft E	1310	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		38.57
C-1 to 9000 ft E	1309	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		38.89
C-1 to 9000 ft E	1308	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		54.29
C-1 to 9000 ft E	1307	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		50.69
C-1 to 9000 ft E	1306	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		57.09
C-1 to 9000 ft E	1305	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		62.32
C-1 to 9000 ft E	1304	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		62.34
C-1 to 9000 ft E	1303	PF 1	2106.53	2106.53	0.00	0.03	0.00		1.10		50.45
C-1 to 9000 ft E	1302	PF 1	2106.50	2106.49	0.01	0.00	0.00		1.10		50.19
C-1 to 9000 ft E	1301	PF 1	2103.53	2103.53	0.00	0.05	0.00		1.10		50.27
C-1 to 9000 ft E	1300	PF 1	2103.48	2103.48	0.00	0.03	0.00		1.10		50.23
C-1 to 9000 ft E	1299	PF 1	2103.45	2103.44	0.01	0.00	0.00		1.10		50.10
C-1 to 9000 ft E	1298	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		19.68
C-1 to 9000 ft E	1297	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		19.85
C-1 to 9000 ft E	1296	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		19.92
C-1 to 9000 ft E	1295	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		20.02
C-1 to 9000 ft E	1294	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		32.48
C-1 to 9000 ft E	1293	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		38.88
C-1 to 9000 ft E	1292	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		45.28
C-1 to 9000 ft E	1291	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		50.68
C-1 to 9000 ft E	1290	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		57.08
C-1 to 9000 ft E	1289	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		62.35
C-1 to 9000 ft E	1288	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		62.35
C-1 to 9000 ft E	1287	PF 1	2095.83	2095.83	0.00	0.03	0.00		1.10		50.41
C-1 to 9000 ft E	1286	PF 1	2095.80	2095.80	0.01	0.00	0.00		1.10		50.25
C-1 to 9000 ft E	1285	PF 1	2092.83	2092.83	0.00	0.05	0.00		1.10		50.27
C-1 to 9000 ft E	1284	PF 1	2092.78	2092.78	0.00	0.03	0.00		1.10		50.23
C-1 to 9000 ft E	1283	PF 1	2092.75	2092.74	0.01	0.00	0.00		1.10		50.13
C-1 to 9000 ft E	1282	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		19.69
C-1 to 9000 ft E	1281	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		19.86
C-1 to 9000 ft E	1280	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		19.93
C-1 to 9000 ft E	1279	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		25.39
C-1 to 9000 ft E	1278	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		33.71

HEC-RAS Plan: Plan 06 River: Drake Channel Reach: C-1 to 9000 ft E Profile: PF 1 (Continued)

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
C-1 to 9000 ft E	1277	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		39.07
C-1 to 9000 ft E	1276	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		45.41
C-1 to 9000 ft E	1275	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		50.77
C-1 to 9000 ft E	1274	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		57.14
C-1 to 9000 ft E	1273	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		62.38
C-1 to 9000 ft E	1272	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		62.40
C-1 to 9000 ft E	1271	PF 1	2085.13	2085.13	0.00	0.03	0.00		1.10		50.43
C-1 to 9000 ft E	1270	PF 1	2085.10	2085.09	0.01	0.00	0.00		1.10		50.18
C-1 to 9000 ft E	1269	PF 1	2082.12	2082.12	0.00	0.05	0.00		1.10		50.24
C-1 to 9000 ft E	1268	PF 1	2082.08	2082.07	0.00	0.03	0.00		1.10		50.25
C-1 to 9000 ft E	1267	PF 1	2082.05	2082.04	0.01	0.00	0.00		1.10		50.11
C-1 to 9000 ft E	1266	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		19.69
C-1 to 9000 ft E	1265	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		25.92
C-1 to 9000 ft E	1264	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		25.98
C-1 to 9000 ft E	1263	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		26.09
C-1 to 9000 ft E	1262	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		32.49
C-1 to 9000 ft E	1261	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		39.89
C-1 to 9000 ft E	1260	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		45.29
C-1 to 9000 ft E	1259	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		50.69
C-1 to 9000 ft E	1258	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		57.09
C-1 to 9000 ft E	1257	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		60.41
C-1 to 9000 ft E	1256	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		62.34
C-1 to 9000 ft E	1255	PF 1	2074.43	2074.43	0.00	0.03	0.00		1.10		50.43
C-1 to 9000 ft E	1254	PF 1	2074.40	2074.39	0.01	0.00	0.00		1.10		50.19
C-1 to 9000 ft E	1253	PF 1	2072.73	2072.73	0.00	0.00	0.00		1.10		55.47
C-1 to 9000 ft E	1252	PF 1	2072.73	2072.73	0.00	0.01	0.04		1.10		55.34
C-1 to 9000 ft E	1251	PF 1	2072.67	2072.23	0.45	0.00	0.06		255.00		53.66
C-1 to 9000 ft E	1250	PF 1	2071.84	2062.18	9.66	0.00	0.91		255.00		13.48
C-1 to 9000 ft E	1249	PF 1	2065.14	2065.00	0.14	0.01	0.00		255.00		30.00
C-1 to 9000 ft E	1248	PF 1	2065.13	2064.99	0.14	0.01	0.00		255.00		30.01
C-1 to 9000 ft E	1247	PF 1	2065.11	2064.97	0.14	0.03	0.02		255.00		30.05
C-1 to 9000 ft E	1246	PF 1	2065.06	2064.99	0.08	0.02	0.01		255.00		37.50
C-1 to 9000 ft E	1245	PF 1	2065.04	2064.98	0.06	0.01	0.01		255.00		40.86
C-1 to 9000 ft E	1244	PF 1	2065.02	2064.97	0.04	0.01	0.00		255.00		46.26
C-1 to 9000 ft E	1243	PF 1	2065.00	2064.97	0.03	0.01	0.00		255.00		51.65
C-1 to 9000 ft E	1242	PF 1	2064.99	2064.97	0.02	0.00	0.00		255.00		58.04
C-1 to 9000 ft E	1241	PF 1	2064.99	2064.97	0.02	0.00	0.00		255.00		62.44
C-1 to 9000 ft E	1240	PF 1	2064.99	2064.97	0.02	0.00	0.00		255.00		62.49
C-1 to 9000 ft E	1239	PF 1	2064.99	2064.97	0.01	0.00	0.02		255.00		67.81
C-1 to 9000 ft E	1238	PF 1	2064.96	2064.70	0.26	0.05	0.02		255.00		58.87
C-1 to 9000 ft E	1237	PF 1	2064.90	2064.47	0.43	0.00	0.06		255.00		57.08
C-1 to 9000 ft E	1236	PF 1	2064.57	2060.89	3.68	0.00	0.33		255.00		51.32
C-1 to 9000 ft E	1235	PF 1	2062.02	2061.21	0.81	1.69	0.86		255.00		52.75
C-1 to 9000 ft E	1234	PF 1	2061.87	2061.43	0.45	0.00	0.06		255.00		53.67
C-1 to 9000 ft E	1233	PF 1	2061.04	2051.38	9.66	0.00	0.91		255.00		13.48
C-1 to 9000 ft E	1232	PF 1	2054.41	2054.27	0.14	0.01	0.00		255.00		30.31
C-1 to 9000 ft E	1231	PF 1	2054.40	2054.26	0.13	0.01	0.00		255.00		30.32
C-1 to 9000 ft E	1230	PF 1	2054.38	2054.25	0.13	0.03	0.02		255.00		30.36
C-1 to 9000 ft E	1229	PF 1	2054.33	2054.26	0.07	0.02	0.01		255.00		37.81
C-1 to 9000 ft E	1228	PF 1	2054.31	2054.26	0.05	0.01	0.00		255.00		44.21
C-1 to 9000 ft E	1227	PF 1	2054.30	2054.26	0.03	0.01	0.00		255.00		50.61

HEC-RAS Plan: Plan 06 River: Drake Channel Reach: C-1 to 9000 ft E Profile: PF 1 (Continued)

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
C-1 to 9000 ft E	1226	PF 1	2054.29	2054.26	0.02	0.01	0.00		255.00		56.00
C-1 to 9000 ft E	1225	PF 1	2054.28	2054.26	0.02	0.00	0.00		255.00		62.40
C-1 to 9000 ft E	1224	PF 1	2054.28	2054.26	0.02	0.00	0.00		255.00		62.47
C-1 to 9000 ft E	1223	PF 1	2054.28	2054.26	0.02	0.00	0.02		255.00		67.86
C-1 to 9000 ft E	1222	PF 1	2054.25	2053.99	0.26	0.05	0.02		255.00		60.24
C-1 to 9000 ft E	1221	PF 1	2054.19	2053.76	0.43	0.00	0.07		255.00		58.16
C-1 to 9000 ft E	1220	PF 1	2053.86	2050.19	3.67	0.00	0.32		255.00		51.33
C-1 to 9000 ft E	1219	PF 1	2051.39	2050.61	0.78	1.60	0.87		255.00		52.86
C-1 to 9000 ft E	1218	PF 1	2051.19	2050.64	0.56	0.13	0.07		255.00		53.32
C-1 to 9000 ft E	1217	PF 1	2050.28	2040.68	9.60	0.00	0.90		255.00		13.49
C-1 to 9000 ft E	1216	PF 1	2043.78	2043.66	0.13	0.01	0.00		255.00		30.64
C-1 to 9000 ft E	1215	PF 1	2043.77	2043.65	0.13	0.01	0.00		255.00		30.66
C-1 to 9000 ft E	1214	PF 1	2043.76	2043.64	0.13	0.04	0.00		255.00		30.70
C-1 to 9000 ft E	1212	PF 1	2043.72	2043.60	0.12	0.05	0.01		255.00		30.84
C-1 to 9000 ft E	1211	PF 1	2043.66	2043.45	0.21	0.02	0.05		255.00		25.46
C-1 to 9000 ft E	1210	PF 1	2043.58	2043.55	0.03	0.01	0.00		255.00		50.72
C-1 to 9000 ft E	1209	PF 1	2043.57	2043.55	0.02	0.01	0.00		255.00		56.77
C-1 to 9000 ft E	1208	PF 1	2043.57	2043.55	0.02	0.00	0.00		255.00		62.35
C-1 to 9000 ft E	1207	PF 1	2043.57	2043.55	0.02	0.00	0.00		255.00		62.40
C-1 to 9000 ft E	1206	PF 1	2043.56	2043.55	0.01	0.00	0.02		255.00		71.32
C-1 to 9000 ft E	1205	PF 1	2043.54	2043.28	0.26	0.05	0.02		255.00		62.04
C-1 to 9000 ft E	1204	PF 1	2043.47	2043.06	0.42	0.00	0.06		255.00		59.74
C-1 to 9000 ft E	1203	PF 1	2043.15	2039.49	3.66	0.00	0.32		255.00		51.59
C-1 to 9000 ft E	1202	PF 1	2040.61	2039.81	0.80	1.68	0.86		255.00		53.31
C-1 to 9000 ft E	1201	PF 1	2040.47	2040.03	0.44	0.00	0.09		255.00		54.41
C-1 to 9000 ft E	1200	PF 1	2039.53	2029.70	9.83	0.00	0.94		255.00		18.29
C-1 to 9000 ft E	1199	PF 1	2032.84	2032.69	0.15	0.01	0.00		255.00		29.57
C-1 to 9000 ft E	1198	PF 1	2032.83	2032.68	0.15	0.02	0.00		255.00		29.57
C-1 to 9000 ft E	1197	PF 1	2032.81	2032.66	0.15	0.04	0.02		255.00		29.60
C-1 to 9000 ft E	1196	PF 1	2032.75	2032.67	0.09	0.02	0.01		255.00		36.03
C-1 to 9000 ft E	1195	PF 1	2032.72	2032.66	0.06	0.02	0.00		255.00		41.41
C-1 to 9000 ft E	1194	PF 1	2032.70	2032.66	0.05	0.01	0.00		255.00		45.79
C-1 to 9000 ft E	1193	PF 1	2032.69	2032.66	0.03	0.01	0.00		255.00		51.19
C-1 to 9000 ft E	1192	PF 1	2032.68	2032.65	0.03	0.01	0.00		255.00		56.58
C-1 to 9000 ft E	1191	PF 1	2032.67	2032.65	0.02	0.00	0.00		255.00		62.18
C-1 to 9000 ft E	1190	PF 1	2032.67	2032.65	0.02	0.00	0.00		255.00		62.23
C-1 to 9000 ft E	1189	PF 1	2032.67	2032.66	0.01	0.00	0.02		255.00		74.46
C-1 to 9000 ft E	1188	PF 1	2032.65	2032.41	0.24	0.05	0.01		255.00		70.70
C-1 to 9000 ft E	1187	PF 1	2032.58	2032.20	0.38	0.00	0.05		255.00		68.34
C-1 to 9000 ft E	1186	PF 1	2032.26	2028.69	3.57	0.00	0.32		255.00		51.94
C-1 to 9000 ft E	1185	PF 1	2029.79	2029.00	0.79	1.64	0.83		255.00		54.01
C-1 to 9000 ft E	1184	PF 1	2029.66	2029.22	0.44	0.00	0.09		255.00		55.31
C-1 to 9000 ft E	1183	PF 1	2028.71	2018.87	9.85	0.00	0.94		255.00		19.25
C-1 to 9000 ft E	1182	PF 1	2022.07	2021.99	0.08	0.01	0.00		255.00		38.12
C-1 to 9000 ft E	1181	PF 1	2022.06	2021.98	0.08	0.01	0.00		255.00		38.16
C-1 to 9000 ft E	1180	PF 1	2022.05	2021.98	0.08	0.02	0.00		255.00		38.19
C-1 to 9000 ft E	1179	PF 1	2022.03	2021.96	0.07	0.02	0.01		255.00		38.38
C-1 to 9000 ft E	1178	PF 1	2022.00	2021.96	0.05	0.01	0.00		255.00		44.78
C-1 to 9000 ft E	1177	PF 1	2021.99	2021.96	0.03	0.01	0.00		255.00		52.18
C-1 to 9000 ft E	1176	PF 1	2021.98	2021.96	0.02	0.00	0.00		255.00		59.58
C-1 to 9000 ft E	1175	PF 1	2021.97	2021.95	0.02	0.00	0.00		255.00		64.98

HEC-RAS Plan: Plan 06 River: Drake Channel Reach: C-1 to 9000 ft E Profile: PF 1 (Continued)

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
C-1 to 9000 ft E	1174	PF 1	2021.97	2021.95	0.01	0.00	0.00		255.00		69.25
C-1 to 9000 ft E	1173	PF 1	2021.97	2021.95	0.01	0.00	0.00		255.00		69.25
C-1 to 9000 ft E	1172	PF 1	2021.97	2021.95	0.01	0.00	0.02		255.00		68.45
C-1 to 9000 ft E	1171	PF 1	2021.94	2021.68	0.26	0.05	0.02		255.00		61.91
C-1 to 9000 ft E	1170	PF 1	2021.88	2021.46	0.42	0.00	0.09		255.00		59.59
C-1 to 9000 ft E	1169	PF 1	2021.55	2017.90	3.65	0.00	0.32		255.00		51.39
C-1 to 9000 ft E	1168	PF 1	2019.33	2019.20	0.13	0.02	0.04		255.00		55.75
C-1 to 9000 ft E	1167	PF 1	2019.26	2018.69	0.57	0.00	0.06		371.00		54.02
C-1 to 9000 ft E	1166	PF 1	2018.42	2009.55	8.87	0.00	0.83		371.00		14.97
C-1 to 9000 ft E	1165	PF 1	2012.73	2012.55	0.18	0.01	0.00		371.00		34.25
C-1 to 9000 ft E	1164	PF 1	2012.72	2012.54	0.18	0.01	0.00		371.00		34.25
C-1 to 9000 ft E	1163	PF 1	2012.70	2012.53	0.17	0.04	0.02		371.00		34.27
C-1 to 9000 ft E	1162	PF 1	2012.64	2012.54	0.10	0.02	0.01		371.00		41.73
C-1 to 9000 ft E	1161	PF 1	2012.61	2012.55	0.07	0.01	0.01		371.00		48.14
C-1 to 9000 ft E	1160	PF 1	2012.59	2012.55	0.05	0.01	0.00		371.00		55.55
C-1 to 9000 ft E	1159	PF 1	2012.58	2012.55	0.03	0.00	0.00		371.00		62.95
C-1 to 9000 ft E	1158	PF 1	2012.58	2012.53	0.05	0.00	0.01		371.00		61.69
C-1 to 9000 ft E	1157	PF 1	2012.57	2012.54	0.03	0.00	0.03		371.00		64.46
C-1 to 9000 ft E	1156	PF 1	2012.54	2012.17	0.37	0.05	0.02		371.00		59.25
C-1 to 9000 ft E	1155	PF 1	2012.47	2011.92	0.55	0.00	0.07		371.00		57.64
C-1 to 9000 ft E	1154	PF 1	2012.13	2008.22	3.91	0.00	0.34		371.00		51.40
C-1 to 9000 ft E	1153	PF 1	2009.68	2008.56	1.12	1.62	0.84		371.00		52.86
C-1 to 9000 ft E	1152	PF 1	2009.46	2008.89	0.57	0.00	0.06		371.00		53.95
C-1 to 9000 ft E	1151	PF 1	2008.62	1999.75	8.87	0.00	0.83		371.00		14.97
C-1 to 9000 ft E	1150	PF 1	2002.94	2002.73	0.21	0.02	0.00		371.00		32.13
C-1 to 9000 ft E	1149	PF 1	2002.92	2002.71	0.21	0.02	0.00		371.00		32.12
C-1 to 9000 ft E	1148	PF 1	2002.90	2002.69	0.21	0.04	0.03		371.00		32.13
C-1 to 9000 ft E	1147	PF 1	2002.83	2002.74	0.10	0.02	0.01		371.00		42.70
C-1 to 9000 ft E	1146	PF 1	2002.80	2002.73	0.07	0.01	0.01		371.00		48.09
C-1 to 9000 ft E	1145	PF 1	2002.78	2002.73	0.05	0.01	0.01		371.00		53.48
C-1 to 9000 ft E	1144	PF 1	2002.77	2002.74	0.03	0.00	0.00		371.00		63.90
C-1 to 9000 ft E	1143	PF 1	2002.77	2002.73	0.03	0.00	0.00		371.00		63.92
C-1 to 9000 ft E	1142	PF 1	2002.76	2002.74	0.03	0.00	0.03		371.00		64.63
C-1 to 9000 ft E	1141	PF 1	2002.73	2002.37	0.36	0.05	0.02		371.00		59.78
C-1 to 9000 ft E	1140	PF 1	2002.66	2002.12	0.54	0.00	0.07		371.00		58.10
C-1 to 9000 ft E	1139	PF 1	2002.33	1998.43	3.90	0.00	0.34		371.00		51.42
C-1 to 9000 ft E	1138	PF 1	1999.89	1998.77	1.11	1.61	0.83		371.00		52.86
C-1 to 9000 ft E	1137	PF 1	1999.66	1999.09	0.57	0.00	0.05		371.00		53.95
C-1 to 9000 ft E	1136	PF 1	1998.82	1989.95	8.87	0.00	0.83		371.00		14.97
C-1 to 9000 ft E	1135	PF 1	1993.07	1992.87	0.20	0.02	0.00		371.00		32.97
C-1 to 9000 ft E	1134	PF 1	1993.05	1992.85	0.20	0.02	0.00		371.00		32.96
C-1 to 9000 ft E	1133	PF 1	1993.03	1992.83	0.20	0.03	0.04		371.00		32.97
C-1 to 9000 ft E	1132	PF 1	1992.96	1992.89	0.07	0.02	0.00		371.00		48.51
C-1 to 9000 ft E	1131	PF 1	1992.95	1992.88	0.07	0.01	0.01		371.00		48.68
C-1 to 9000 ft E	1130	PF 1	1992.93	1992.87	0.05	0.01	0.01		371.00		53.66
C-1 to 9000 ft E	1129	PF 1	1992.91	1992.88	0.03	0.00	0.00		371.00		64.21
C-1 to 9000 ft E	1128	PF 1	1992.91	1992.88	0.02	0.00	0.00		371.00		74.71
C-1 to 9000 ft E	1127	PF 1	1992.91	1992.88	0.02	0.00	0.03		371.00		74.71
C-1 to 9000 ft E	1126	PF 1	1992.88	1992.55	0.32	0.05	0.02		371.00		67.32
C-1 to 9000 ft E	1125	PF 1	1992.81	1992.30	0.51	0.00	0.07		371.00		64.09
C-1 to 9000 ft E	1124	PF 1	1992.47	1988.62	3.85	0.00	0.33		371.00		51.98

HEC-RAS Plan: Plan 06 River: Drake Channel Reach: C-1 to 9000 ft E Profile: PF 1 (Continued)

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
C-1 to 9000 ft E	1123	PF 1	1990.08	1989.02	1.06	1.56	0.84		371.00		55.19
C-1 to 9000 ft E	1122	PF 1	1989.83	1989.24	0.59	0.11	0.15		371.00		56.88
C-1 to 9000 ft E	1121	PF 1	1988.87	1978.71	10.16	0.00	0.96		371.00		25.28
C-1 to 9000 ft E	1120	PF 1	1982.29	1982.16	0.13	0.01	0.00		371.00		39.57
C-1 to 9000 ft E	1119	PF 1	1982.28	1982.15	0.13	0.01	0.00		371.00		39.59
C-1 to 9000 ft E	1118	PF 1	1982.27	1982.14	0.13	0.04	0.00		371.00		39.64
C-1 to 9000 ft E	1117	PF 1	1982.23	1982.11	0.12	0.03	0.01		371.00		39.78
C-1 to 9000 ft E	1116	PF 1	1982.19	1982.10	0.09	0.02	0.01		371.00		45.17
C-1 to 9000 ft E	1115	PF 1	1982.16	1982.11	0.06	0.01	0.00		371.00		52.58
C-1 to 9000 ft E	1114	PF 1	1982.15	1982.11	0.04	0.01	0.00		371.00		58.98
C-1 to 9000 ft E	1113	PF 1	1982.14	1982.11	0.03	0.01	0.00		371.00		66.38
C-1 to 9000 ft E	1112	PF 1	1982.13	1982.10	0.03	0.00	0.00		371.00		67.22
C-1 to 9000 ft E	1111	PF 1	1982.13	1982.10	0.03	0.00	0.00		371.00		70.86
C-1 to 9000 ft E	1110	PF 1	1982.13	1982.10	0.03	0.00	0.03		371.00		70.85
C-1 to 9000 ft E	1109	PF 1	1982.10	1981.77	0.33	0.05	0.02		371.00		65.25
C-1 to 9000 ft E	1108	PF 1	1982.03	1981.51	0.52	0.00	0.06		371.00		62.51
C-1 to 9000 ft E	1107	PF 1	1981.69	1977.83	3.86	0.00	0.33		371.00		51.49
C-1 to 9000 ft E	1106	PF 1	1979.28	1978.16	1.11	1.59	0.82		371.00		52.71
C-1 to 9000 ft E	1105	PF 1	1979.06	1978.49	0.57	0.00	0.00		371.00		53.74
C-1 to 9000 ft E	1104	PF 1	1978.27	1969.77	8.50	0.00	0.79		516.00		16.63
C-1 to 9000 ft E	1103	PF 1	1972.95	1972.79	0.16	0.01	0.00		516.00		43.41
C-1 to 9000 ft E	1102	PF 1	1972.94	1972.78	0.16	0.01	0.00		516.00		43.42
C-1 to 9000 ft E	1101	PF 1	1972.93	1972.77	0.15	0.04	0.00		516.00		43.45
C-1 to 9000 ft E	1100	PF 1	1972.89	1972.73	0.16	0.03	0.01		516.00		43.28
C-1 to 9000 ft E	1099	PF 1	1972.84	1972.74	0.11	0.02	0.01		516.00		49.70
C-1 to 9000 ft E	1098	PF 1	1972.82	1972.74	0.08	0.01	0.01		516.00		56.11
C-1 to 9000 ft E	1097	PF 1	1972.80	1972.74	0.05	0.00	0.00		516.00		64.53
C-1 to 9000 ft E	1096	PF 1	1972.79	1972.74	0.05	0.00	0.00		516.00		64.59
C-1 to 9000 ft E	1095	PF 1	1972.79	1972.74	0.05	0.00	0.04		516.00		64.59
C-1 to 9000 ft E	1094	PF 1	1972.75	1972.26	0.48	0.05	0.02		516.00		59.96
C-1 to 9000 ft E	1093	PF 1	1972.68	1972.00	0.68	0.00	0.16		516.00		58.48
C-1 to 9000 ft E	1092	PF 1	1970.89	1970.75	0.14	0.02	0.00		516.00		58.99
C-1 to 9000 ft E	1091	PF 1	1970.87	1970.73	0.13	0.01	0.08		516.00		59.27
C-1 to 9000 ft E	1090	PF 1	1970.78	1969.86	0.91	0.00	0.10		516.00		37.15
C-1 to 9000 ft E	1089	PF 1	1969.87	1959.86	10.01	0.00	0.91		516.00		16.21
C-1 to 9000 ft E	1088	PF 1	1963.20	1962.95	0.25	0.02	0.00		516.00		36.83
C-1 to 9000 ft E	1087	PF 1	1963.18	1962.93	0.25	0.02	0.00		516.00		36.82
C-1 to 9000 ft E	1086	PF 1	1963.16	1962.92	0.25	0.05	0.02		516.00		36.82
C-1 to 9000 ft E	1085	PF 1	1963.09	1962.92	0.17	0.03	0.02		516.00		42.24
C-1 to 9000 ft E	1084	PF 1	1963.04	1962.93	0.11	0.02	0.01		516.00		49.50
C-1 to 9000 ft E	1083	PF 1	1963.01	1962.94	0.07	0.01	0.00		516.00		57.61
C-1 to 9000 ft E	1082	PF 1	1962.99	1962.93	0.06	0.00	0.01		516.00		60.48
C-1 to 9000 ft E	1081	PF 1	1962.98	1962.94	0.04	0.00	0.00		516.00		68.61
C-1 to 9000 ft E	1080	PF 1	1962.98	1962.94	0.04	0.00	0.04		516.00		68.62
C-1 to 9000 ft E	1079	PF 1	1962.94	1962.49	0.45	0.05	0.02		516.00		60.50
C-1 to 9000 ft E	1078	PF 1	1962.87	1962.20	0.67	0.00	0.09		516.00		58.76
C-1 to 9000 ft E	1077	PF 1	1962.52	1958.38	4.14	0.00	0.35		516.00		52.22
C-1 to 9000 ft E	1076	PF 1	1960.19	1958.74	1.45	1.52	0.81		516.00		53.68
C-1 to 9000 ft E	1075	PF 1	1959.88	1959.11	0.77	0.10	0.22		516.00		54.99
C-1 to 9000 ft E	1074	PF 1	1959.06	1950.14	8.92	0.00	0.82		516.00		16.50
C-1 to 9000 ft E	1073	PF 1	1953.43	1953.13	0.29	0.02	0.00		516.00		34.74

HEC-RAS Plan: Plan 06 River: Drake Channel Reach: C-1 to 9000 ft E Profile: PF 1 (Continued)

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
C-1 to 9000 ft E	1072	PF 1	1953.41	1953.11	0.29	0.02	0.00		516.00		34.72
C-1 to 9000 ft E	1071	PF 1	1953.38	1953.09	0.29	0.05	0.04		516.00		34.71
C-1 to 9000 ft E	1070	PF 1	1953.29	1953.14	0.15	0.03	0.01		516.00		44.32
C-1 to 9000 ft E	1069	PF 1	1953.25	1953.14	0.11	0.02	0.01		516.00		49.72
C-1 to 9000 ft E	1068	PF 1	1953.22	1953.14	0.08	0.01	0.01		516.00		57.59
C-1 to 9000 ft E	1067	PF 1	1953.20	1953.15	0.05	0.00	0.00		516.00		65.54
C-1 to 9000 ft E	1066	PF 1	1953.19	1953.15	0.04	0.00	0.00		516.00		72.28
C-1 to 9000 ft E	1065	PF 1	1953.19	1953.15	0.04	0.00	0.04		516.00		72.27
C-1 to 9000 ft E	1064	PF 1	1953.15	1952.70	0.45	0.05	0.02		516.00		60.71
C-1 to 9000 ft E	1063	PF 1	1953.08	1952.41	0.67	0.00	0.09		516.00		58.94
C-1 to 9000 ft E	1062	PF 1	1952.73	1948.58	4.15	0.00	0.35		516.00		52.64
C-1 to 9000 ft E	1061	PF 1	1950.38	1948.94	1.44	1.54	0.81		516.00		54.32
C-1 to 9000 ft E	1060	PF 1	1950.07	1949.30	0.76	0.10	0.22		516.00		55.78
C-1 to 9000 ft E	1059	PF 1	1949.24	1940.31	8.93	0.00	0.82		516.00		16.82
C-1 to 9000 ft E	1058	PF 1	1944.71	1944.51	0.20	0.01	0.00		516.00		36.46
C-1 to 9000 ft E	1057	PF 1	1944.70	1944.50	0.20	0.01	0.00		516.00		36.47
C-1 to 9000 ft E	1056	PF 1	1944.68	1944.50	0.18	0.03	0.01		516.00		38.26
C-1 to 9000 ft E	1055	PF 1	1944.63	1944.49	0.14	0.02	0.01		516.00		40.93
C-1 to 9000 ft E	1054	PF 1	1944.60	1944.50	0.09	0.02	0.00		516.00		46.54
C-1 to 9000 ft E	1053	PF 1	1944.58	1944.48	0.10	0.02	0.00		516.00		42.58
C-1 to 9000 ft E	1052	PF 1	1944.55	1944.46	0.09	0.00	0.06		516.00		44.29
C-1 to 9000 ft E	1051	PF 1	1944.49	1943.80	0.69	0.04	0.03		516.00		35.23
C-1 to 9000 ft E	1050	PF 1	1944.42	1943.45	0.97	0.00	0.23		516.00		33.73
C-1 to 9000 ft E	1049	PF 1	1943.04	1942.85	0.19	0.02	0.03		516.00		39.06
C-1 to 9000 ft E	1048	PF 1	1942.99	1942.89	0.11	0.02	0.02		516.00		52.32
C-1 to 9000 ft E	1047	PF 1	1942.96	1942.67	0.29				516.00		57.28
C-1 to 9000 ft E	1046.5		Culvert								
C-1 to 9000 ft E	1046	PF 1	1940.96	1940.34	0.62	0.49	0.09		516.00		26.00
C-1 to 9000 ft E	1045	PF 1	1940.39	1938.92	1.47	0.82	0.13		781.00		27.50
C-1 to 9000 ft E	1044	PF 1	1938.83	1936.38	2.45	1.46	0.10		781.00		45.00
C-1 to 9000 ft E	1043	PF 1	1937.07	1935.93	1.14	0.50	0.03		781.00		40.00
C-1 to 9000 ft E	1042	PF 1	1935.22	1930.37	4.86	1.47	0.37		781.00		27.65
C-1 to 9000 ft E	1041	PF 1	1933.55	1928.19	5.37	1.62	0.05		781.00		27.54
C-1 to 9000 ft E	1040	PF 1	1931.09	1925.11	5.98	2.41	0.06		781.00		27.43
C-1 to 9000 ft E	1039	PF 1	1928.48	1923.19	5.30	2.40	0.20		781.00		27.99
C-1 to 9000 ft E	1038	PF 1	1926.02	1920.10	5.92	2.40	0.06		781.00		27.85
C-1 to 9000 ft E	1037	PF 1	1923.25	1917.00	6.26	2.73	0.03		781.00		27.72
C-1 to 9000 ft E	1036	PF 1	1920.38	1914.06	6.31	2.87	0.01		781.00		27.72
C-1 to 9000 ft E	1035	PF 1	1917.02	1909.54	7.48	3.24	0.12		781.00		26.70
C-1 to 9000 ft E	1034	PF 1	1915.54	1908.37	7.17	1.39	0.09		781.00		23.22
C-1 to 9000 ft E	1033	PF 1	1913.86	1906.80	7.06	1.65	0.03		781.00		23.25
C-1 to 9000 ft E	1032	PF 1	1911.07	1905.02	6.05	2.49	0.30		781.00		22.94
C-1 to 9000 ft E	1031	PF 1	1908.76	1903.50	5.26	2.08	0.24		781.00		27.02
C-1 to 9000 ft E	1030	PF 1	1906.83	1902.57	4.26	1.63	0.30		893.00		29.03
C-1 to 9000 ft E	1029	PF 1	1906.14	1903.04	3.10	0.34	0.35		893.00		24.48
C-1 to 9000 ft E	1028	PF 1	1905.42	1900.64	4.79	0.55	0.17		893.00		28.37
C-1 to 9000 ft E	1027	PF 1	1904.54	1899.98	4.57	0.81	0.07		893.00		20.31
C-1 to 9000 ft E	1026	PF 1	1904.13	1898.86	5.27	0.35	0.07		893.00		19.77
C-1 to 9000 ft E	1025	PF 1	1903.25	1896.34	6.91	0.71	0.16		893.00		18.81
C-1 to 9000 ft E	1024	PF 1	1902.32	1895.09	7.24	0.90	0.03		893.00		18.66
C-1 to 9000 ft E	1023	PF 1	1901.28	1893.39	7.89	0.98	0.06		893.00		18.38

HEC-RAS Plan: Plan 06 River: Drake Channel Reach: C-1 to 9000 ft E Profile: PF 1 (Continued)

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
C-1 to 9000 ft E	1022	PF 1	1900.19	1892.52	7.66	1.02	0.07		893.00		18.47
C-1 to 9000 ft E	1021	PF 1	1899.15	1891.65	7.50	0.99	0.05		893.00		18.54
C-1 to 9000 ft E	1020	PF 1	1898.15	1890.76	7.39	0.96	0.03		893.00		18.59
C-1 to 9000 ft E	1019	PF 1	1896.98	1889.34	7.64	1.15	0.03		893.00		18.49
C-1 to 9000 ft E	1018	PF 1	1896.98	1889.34	7.64	0.00	0.00		893.00		18.49
C-1 to 9000 ft E	1017	PF 1	1895.81	1887.64	8.17	1.11	0.05		893.00		18.65
C-1 to 9000 ft E	1016	PF 1	1894.31	1885.99	8.32	1.48	0.02		893.00		25.00
C-1 to 9000 ft E	1015	PF 1	1892.41	1885.05	7.35	1.62	0.29		893.00		25.00
C-1 to 9000 ft E	1014	PF 1	1890.39	1880.80	9.59	1.80	0.22		893.00		25.00
C-1 to 9000 ft E	1013	PF 1	1887.73	1876.65	11.08	2.51	0.15		893.00		25.00
C-1 to 9000 ft E	1012	PF 1	1884.79	1873.36	11.44	2.90	0.04		893.00		25.00
C-1 to 9000 ft E	1011	PF 1	1881.37	1868.45	12.93	3.27	0.15		893.00		25.00
C-1 to 9000 ft E	1010	PF 1	1874.83	1874.69	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1009	PF 1	1874.82	1874.68	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1008	PF 1	1874.82	1874.68	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1007	PF 1	1874.82	1874.68	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1006	PF 1	1874.81	1874.67	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1005	PF 1	1874.81	1874.67	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1004	PF 1	1874.81	1874.67	0.14	0.01	0.00		893.00		25.00
C-1 to 9000 ft E	1003	PF 1	1874.80	1874.67	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1002	PF 1	1874.80	1874.66	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1001	PF 1	1874.80	1874.66	0.14				893.00		25.00

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
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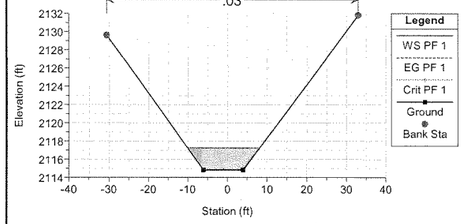

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
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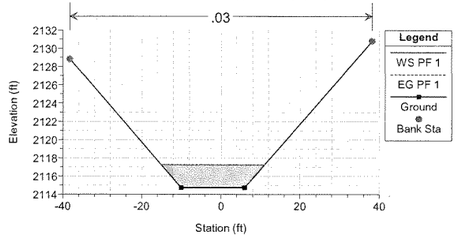

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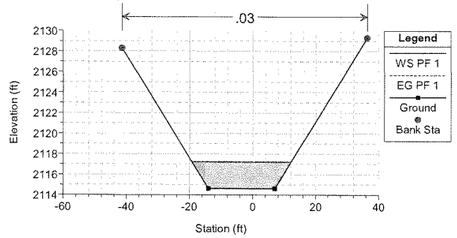

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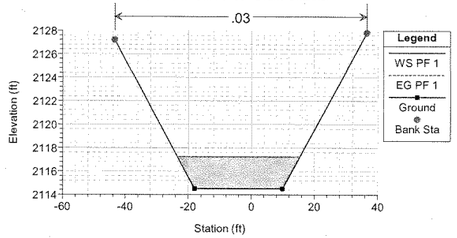

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
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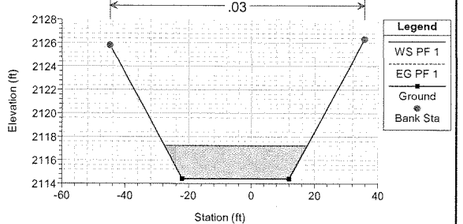

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
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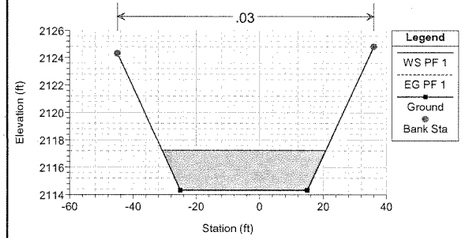
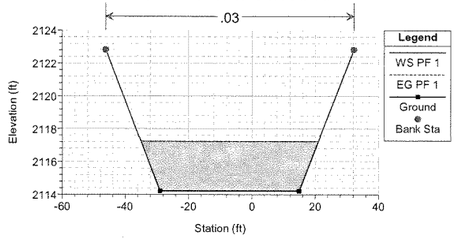


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1322 Sta 69+00 - Drake Channel



C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
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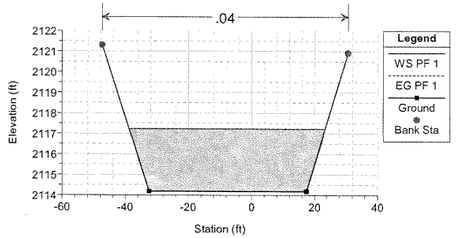
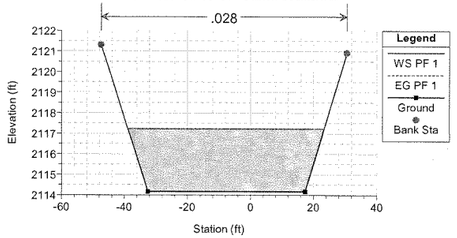
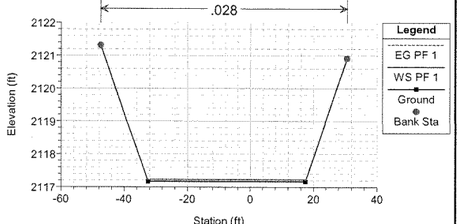


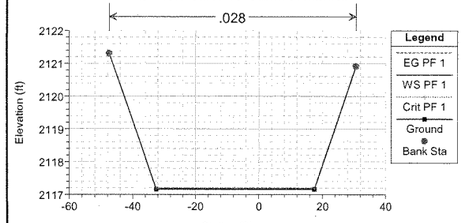
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1320 Sta 68+81 - Gabion Counterweir



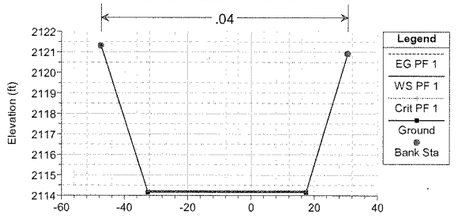
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1319 Sta 68+81 - Gabion Counterweir



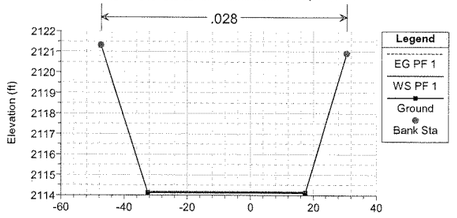
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1318 Sta 68+75 -Gabion Counterweir



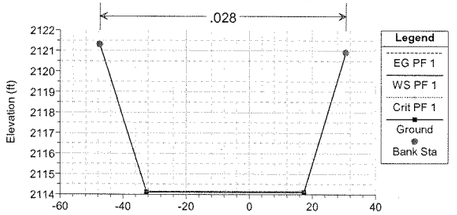
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1317 Sta 68 + 75 Drake Channel



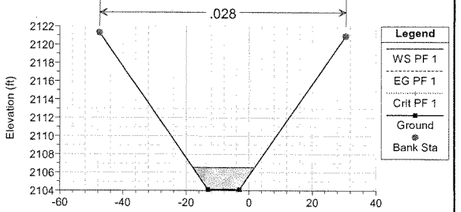
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1316 Sta 68+56 - Inline Gabion Drop Sructure



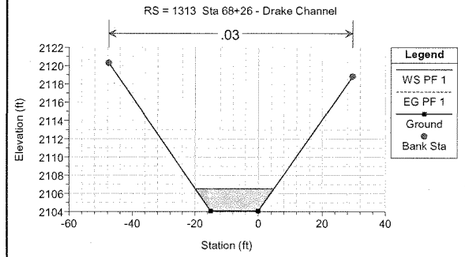
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1315 Sta 68+50 - Inline Gabion Drop Structure



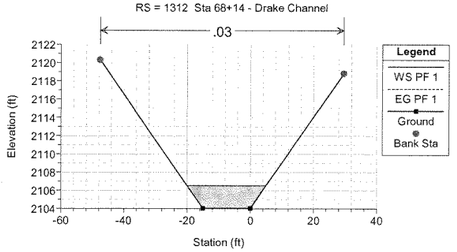
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1314 Sta 68+50 - Drake Channel



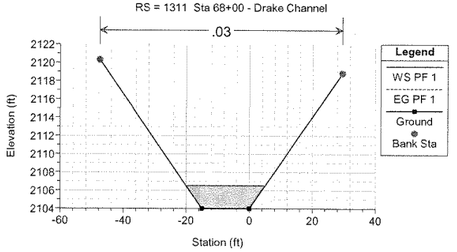
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1313 Sta 68+26 - Drake Channel



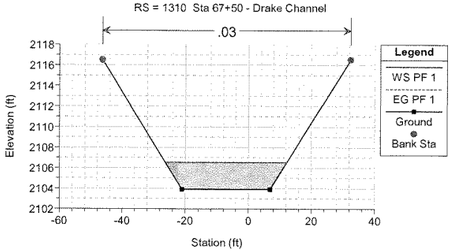
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1312 Sta 68+14 - Drake Channel



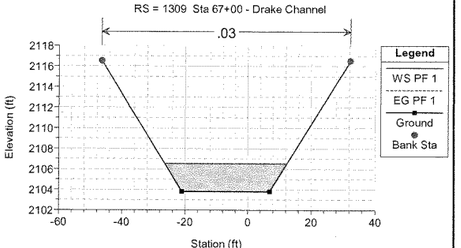
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1311 Sta 68+00 - Drake Channel



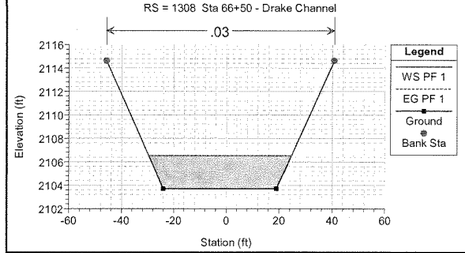
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1310 Sta 67+50 - Drake Channel



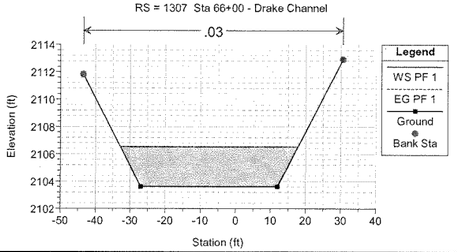
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1309 Sta 67+00 - Drake Channel



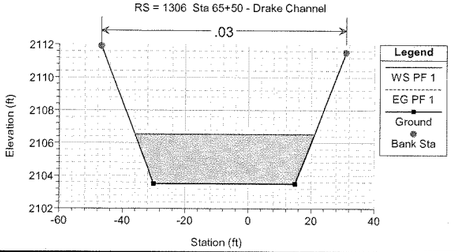
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1308 Sta 66+50 - Drake Channel



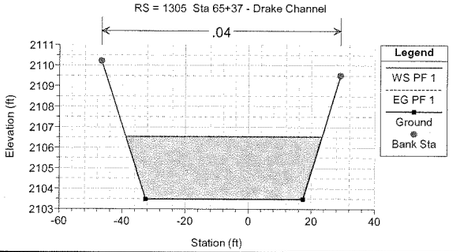
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1307 Sta 66+00 - Drake Channel



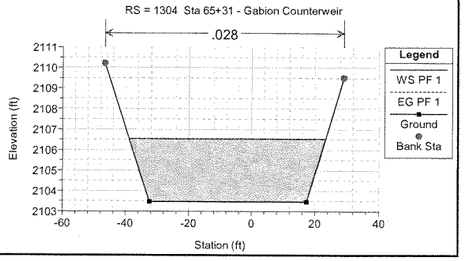
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1306 Sta 65+50 - Drake Channel



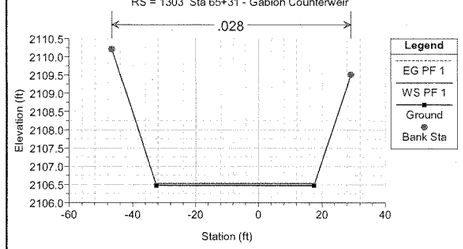
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1305 Sta 65+37 - Drake Channel



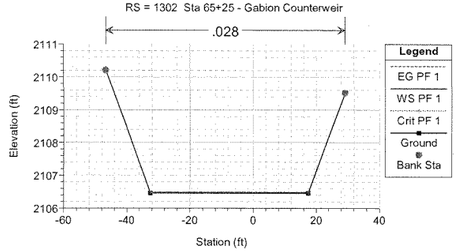
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1304 Sta 65+31 - Gabion Counterweir



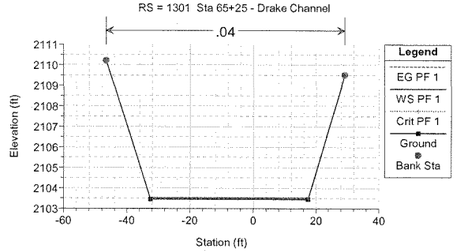
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1303 Sta 65+31 - Gabion Counterweir



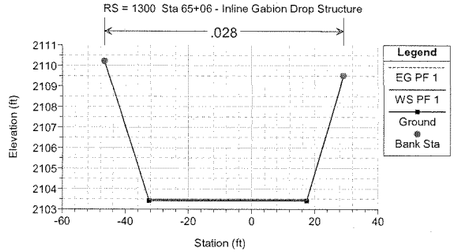
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1302 Sta 65+25 - Gabion Counterweir



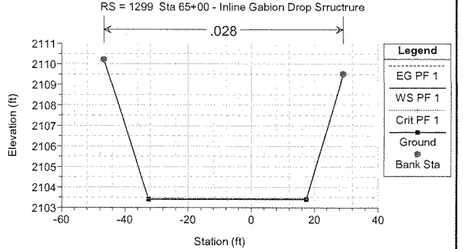
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1301 Sta 65+25 - Drake Channel



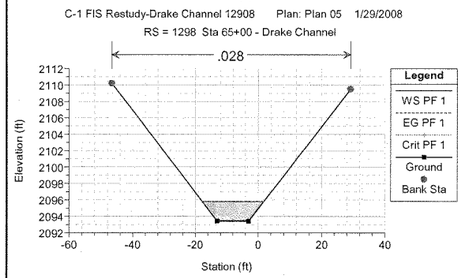
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1300 Sta 65+06 - Inline Gabion Drop Structure



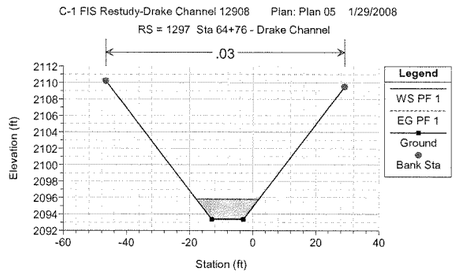
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1299 Sta 65+00 - Inline Gabion Drop Srructrure



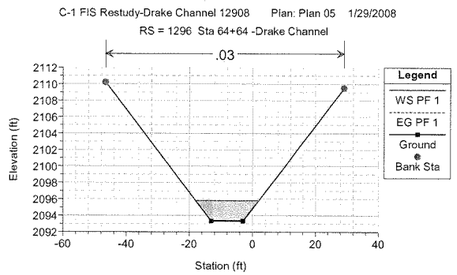
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1298 Sta 65+00 - Drake Channel



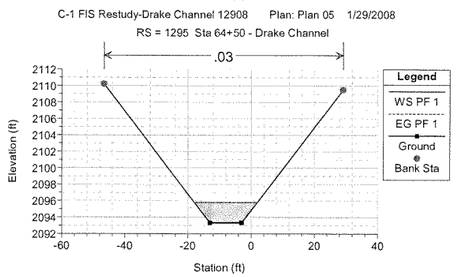
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1297 Sta 64+76 - Drake Channel



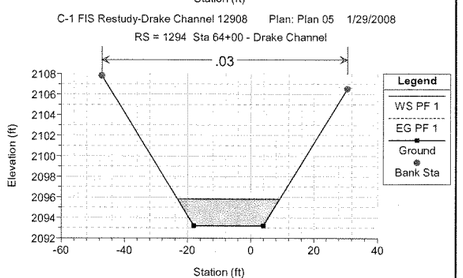
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1296 Sta 64+64 -Drake Channel



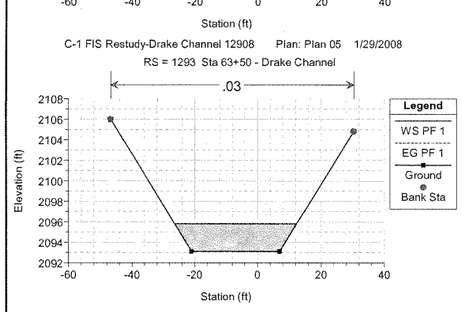
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1295 Sta 64+50 - Drake Channel



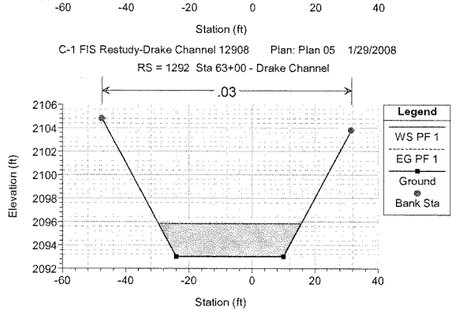
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1294 Sta 64+00 - Drake Channel



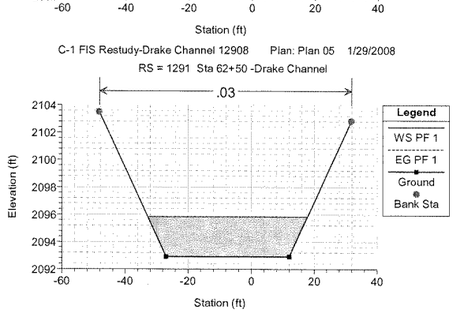
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1293 Sta 63+50 - Drake Channel



C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1292 Sta 63+00 - Drake Channel



C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1291 Sta 62+50 -Drake Channel



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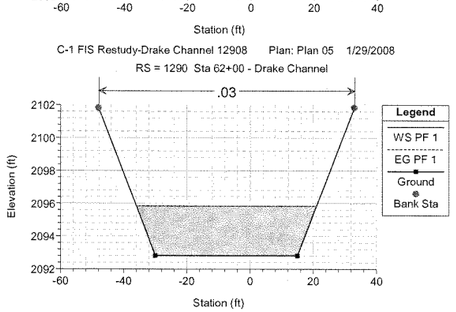
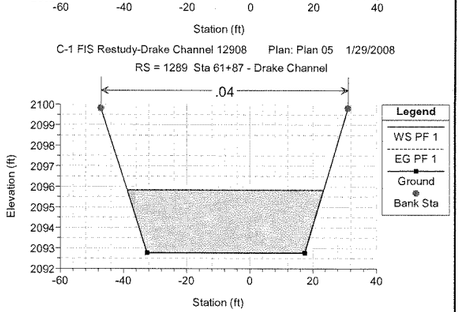
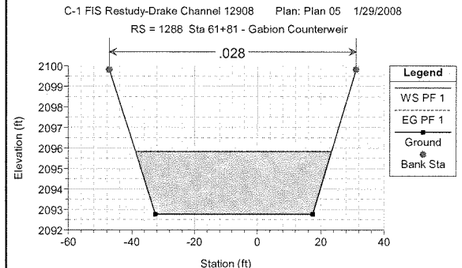
RS = 1290 Sta 62+00 - Drake Channel



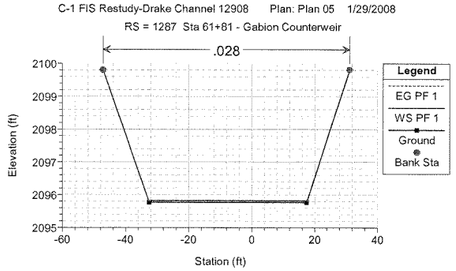
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1289 Sta 61+87 - Drake Channel



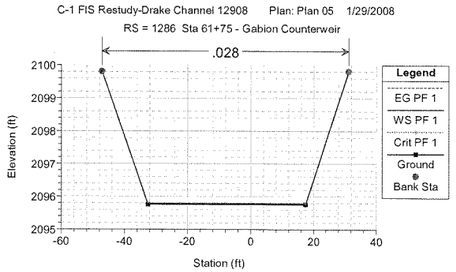
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1288 Sta 61+81 - Gabion Counterweir



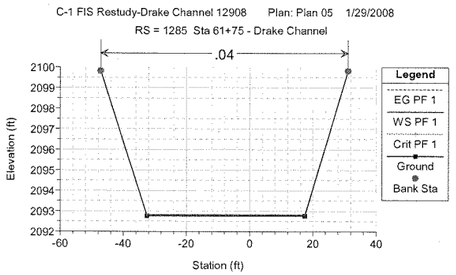
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1287 Sta 61+81 - Gabion Counterweir



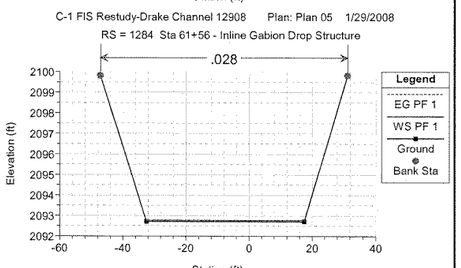
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1286 Sta 61+75 - Gabion Counterweir



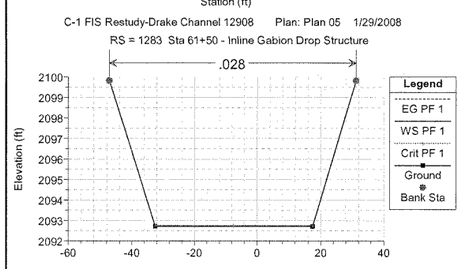
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1285 Sta 61+75 - Drake Channel



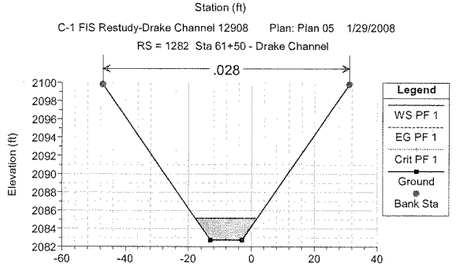
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1284 Sta 61+56 - Inline Gabion Drop Structure



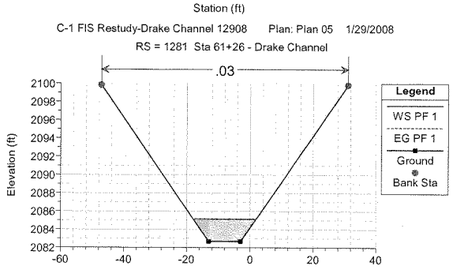
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1283 Sta 61+50 - Inline Gabion Drop Structure



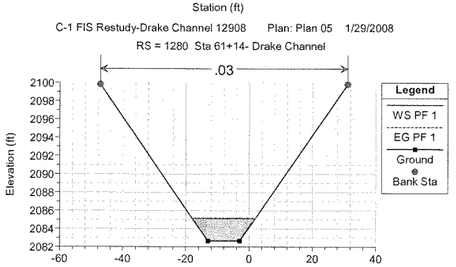
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1282 Sta 61+50 - Drake Channel



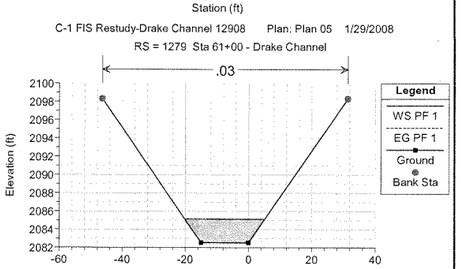
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1281 Sta 61+26 - Drake Channel



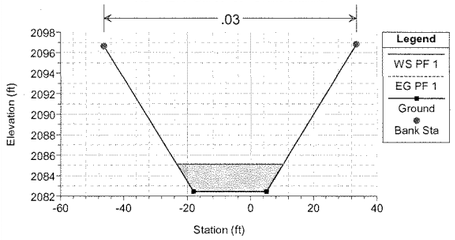
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1280 Sta 61+14- Drake Channel



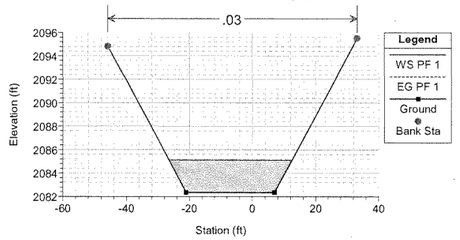
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1279 Sta 61+00 - Drake Channel



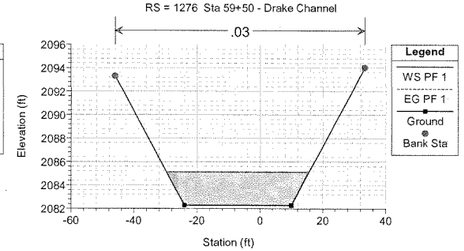
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1278 Sta 60+50 - Drake Channel



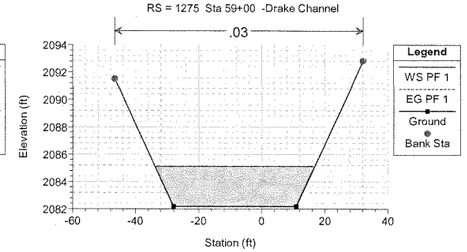
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1277 Sta 60+00 - Drake Channel



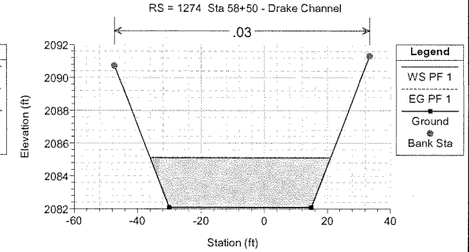
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1276 Sta 59+50 - Drake Channel



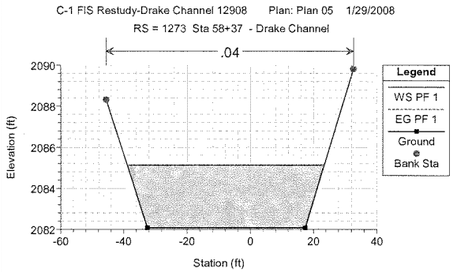
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1275 Sta 59+00 -Drake Channel



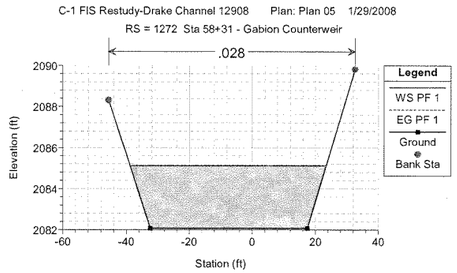
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1274 Sta 58+50 - Drake Channel



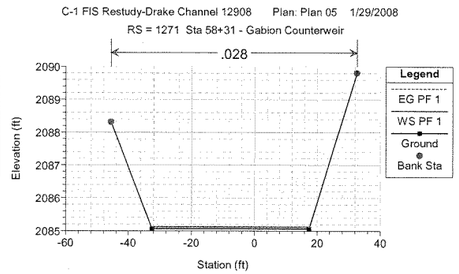
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1273 Sta 58+37 - Drake Channel



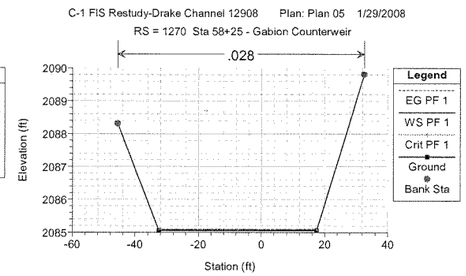
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1272 Sta 58+31 - Gabion Counterweir



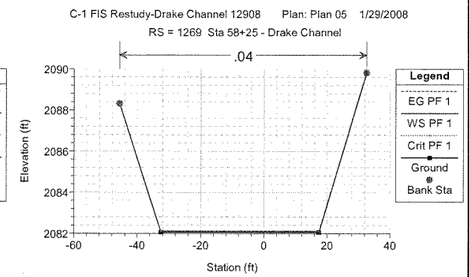
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1271 Sta 58+31 - Gabion Counterweir



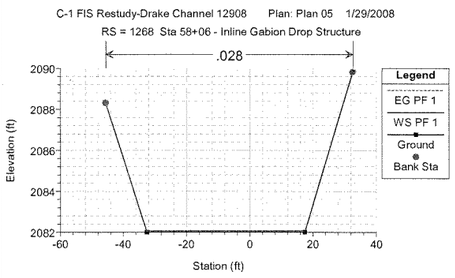
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1270 Sta 58+25 - Gabion Counterweir



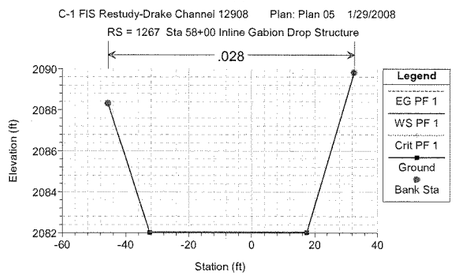
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1269 Sta 58+25 - Drake Channel



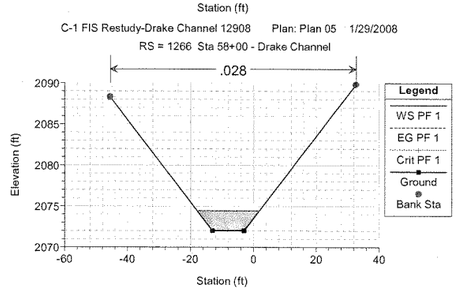
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1268 Sta 58+06 - Inline Gabion Drop Structure



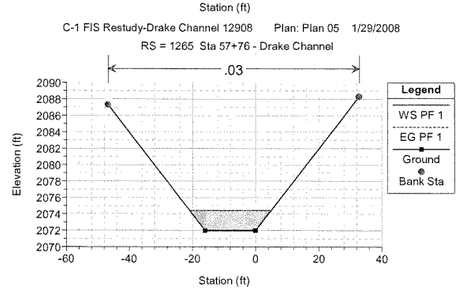
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1267 Sta 58+00 Inline Gabion Drop Structure



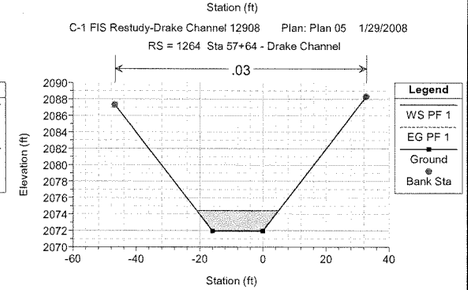
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1266 Sta 58+00 - Drake Channel



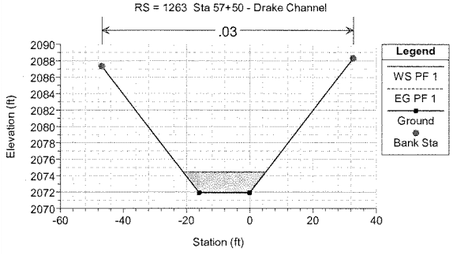
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1265 Sta 57+76 - Drake Channel



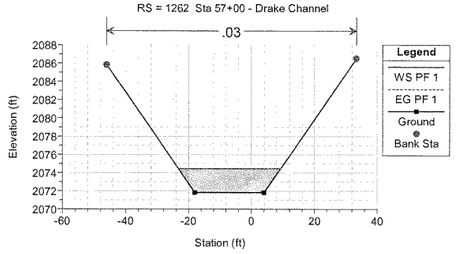
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1264 Sta 57+64 - Drake Channel



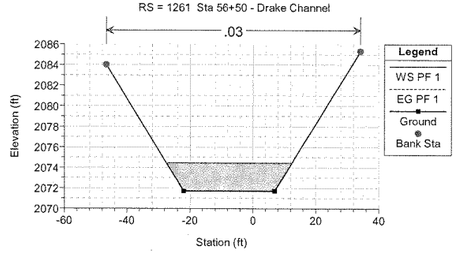
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1263 Sta 57+50 - Drake Channel



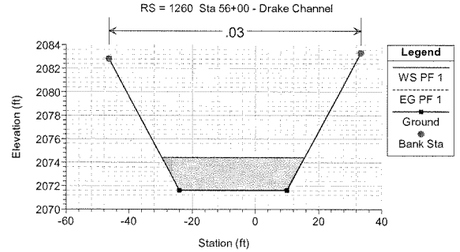
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1262 Sta 57+00 - Drake Channel



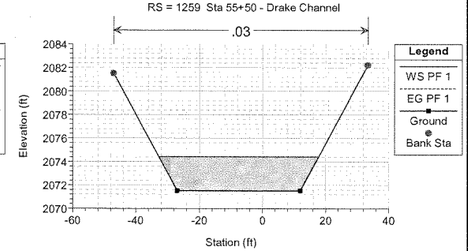
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1261 Sta 56+50 - Drake Channel



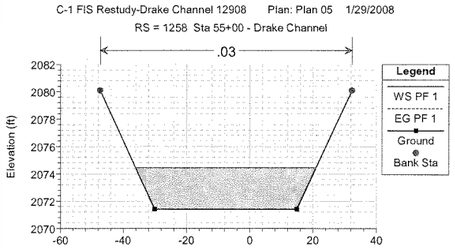
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1260 Sta 56+00 - Drake Channel



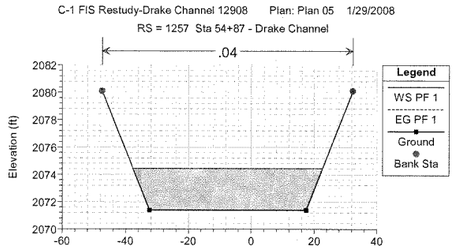
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1259 Sta 55+50 - Drake Channel



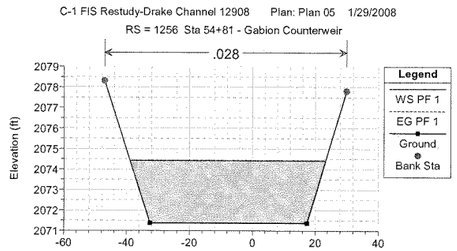
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1258 Sta 55+00 - Drake Channel



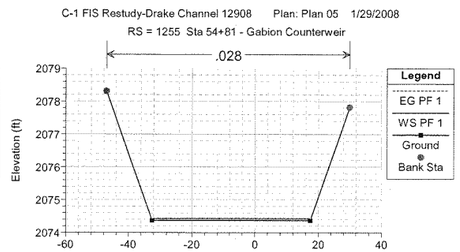
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1257 Sta 54+87 - Drake Channel



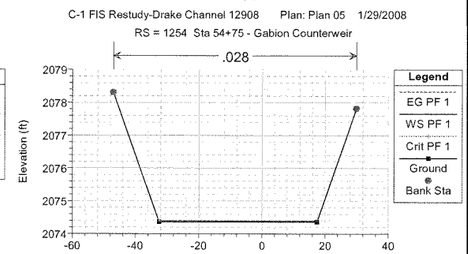
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1256 Sta 54+81 - Gabion Counterweir



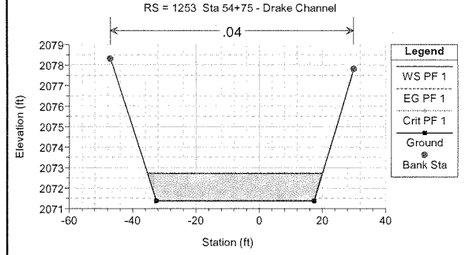
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1255 Sta 54+81 - Gabion Counterweir



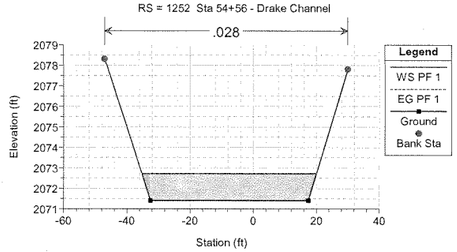
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1254 Sta 54+75 - Gabion Counterweir



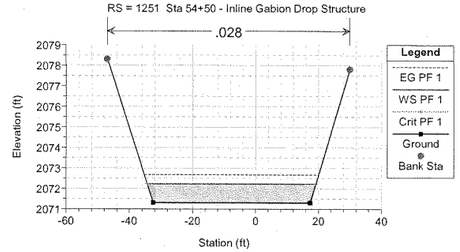
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1253 Sta 54+75 - Drake Channel



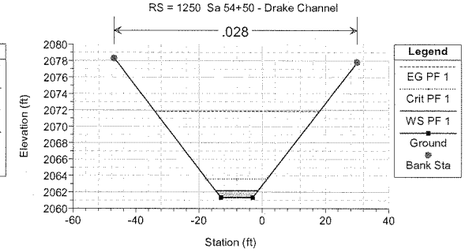
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1252 Sta 54+56 - Drake Channel



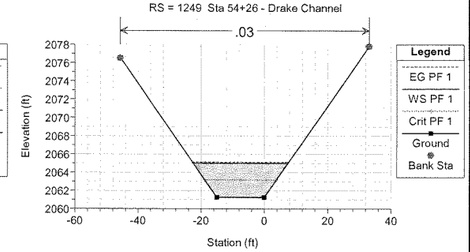
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1251 Sta 54+50 - Inline Gabion Drop Structure



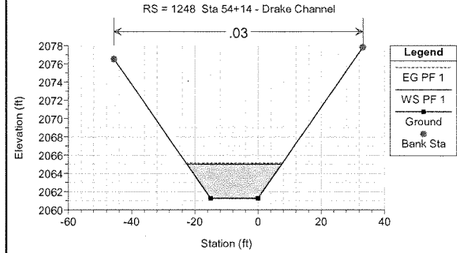
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1250 Sa 54+50 - Drake Channel



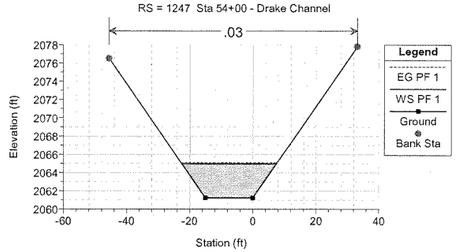
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1249 Sta 54+26 - Drake Channel



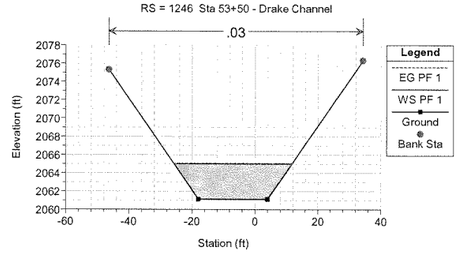
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1248 Sta 54+14 - Drake Channel



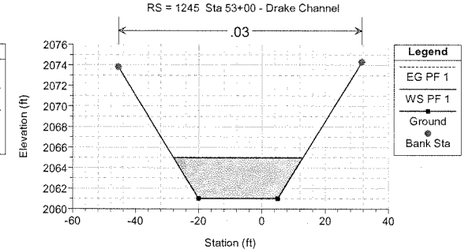
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1247 Sta 54+00 - Drake Channel



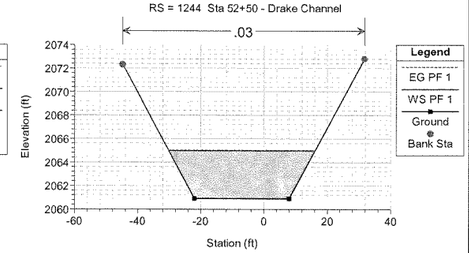
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1246 Sta 53+50 - Drake Channel



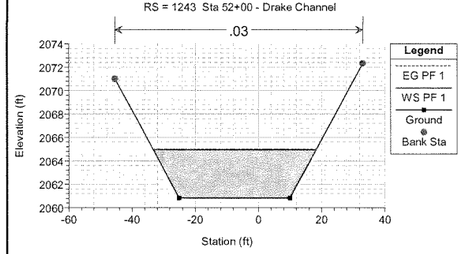
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1245 Sta 53+00 - Drake Channel



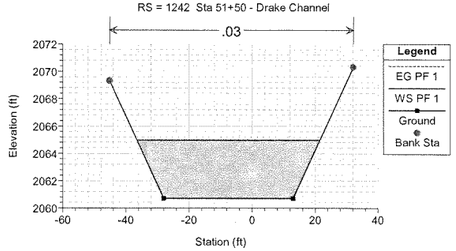
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1244 Sta 52+50 - Drake Channel



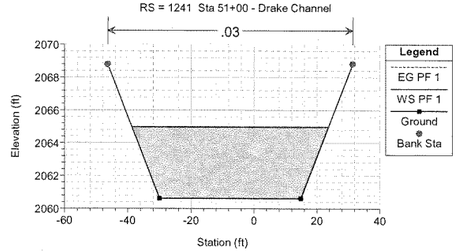
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1243 Sta 52+00 - Drake Channel



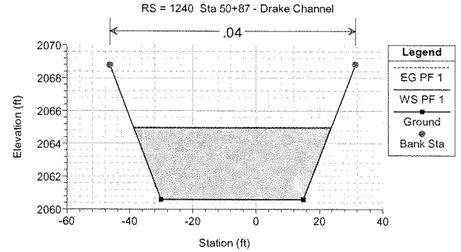
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1242 Sta 51+50 - Drake Channel



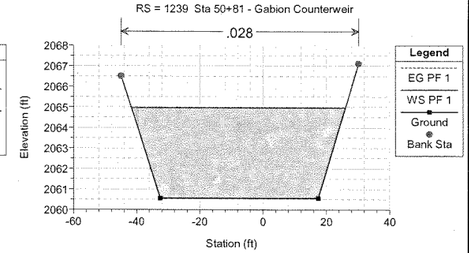
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1241 Sta 51+00 - Drake Channel



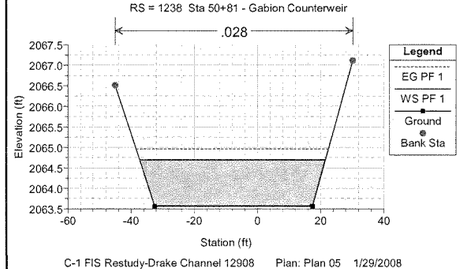
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1240 Sta 50+87 - Drake Channel



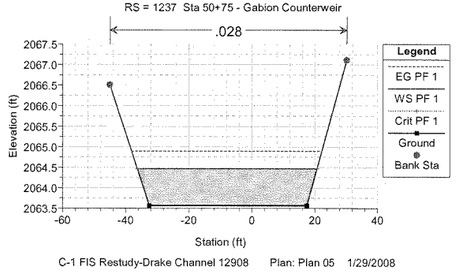
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1239 Sta 50+81 - Gabion Counterweir



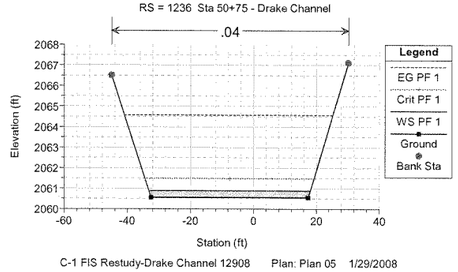
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1238 Sta 50+81 - Gabion Counterweir



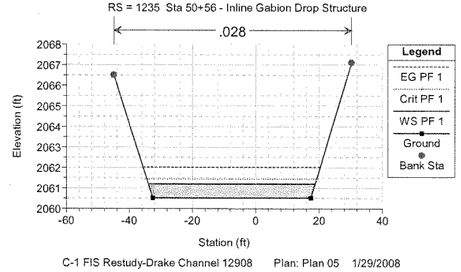
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1237 Sta 50+75 - Gabion Counterweir



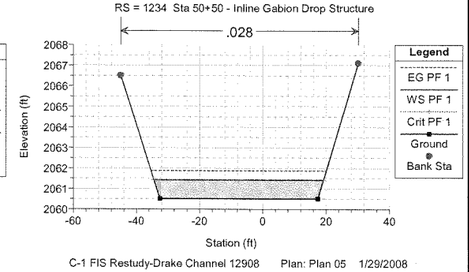
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1236 Sta 50+75 - Drake Channel



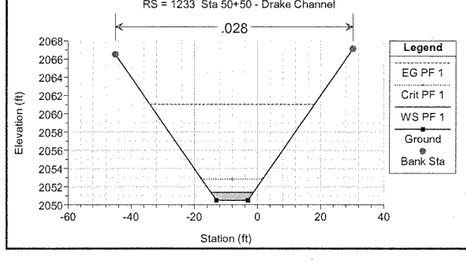
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1235 Sta 50+56 - Inline Gabion Drop Structure



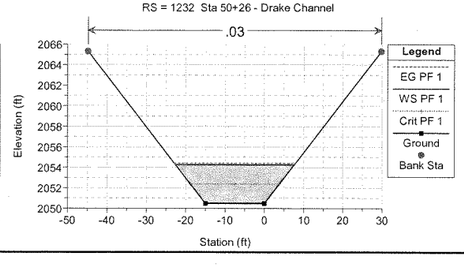
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1234 Sta 50+50 - Inline Gabion Drop Structure



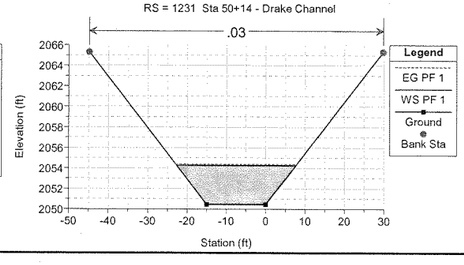
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1233 Sta 50+50 - Drake Channel



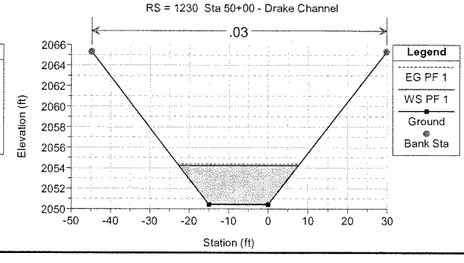
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1232 Sta 50+26 - Drake Channel



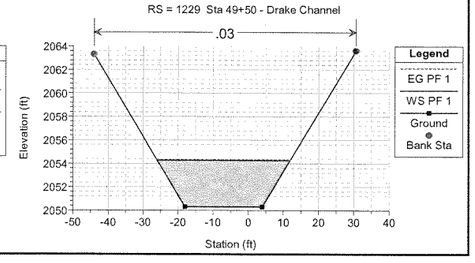
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1231 Sta 50+14 - Drake Channel



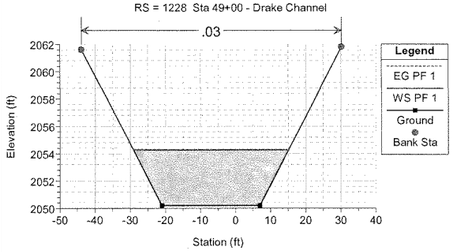
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1230 Sta 50+00 - Drake Channel



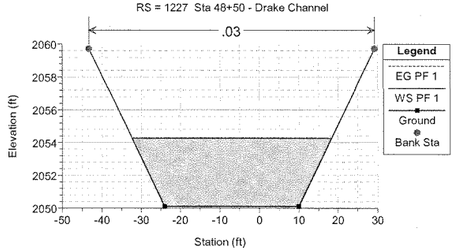
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1229 Sta 49+50 - Drake Channel



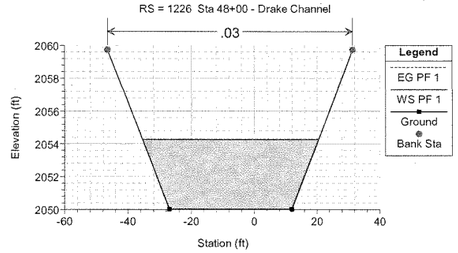
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1228 Sta 49+00 - Drake Channel



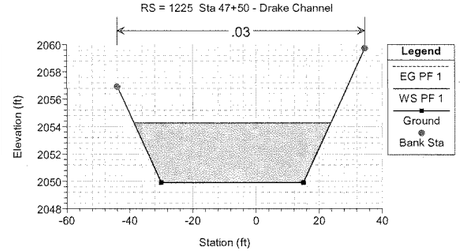
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1227 Sta 48+50 - Drake Channel



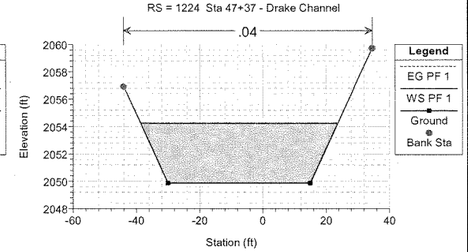
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1226 Sta 48+00 - Drake Channel



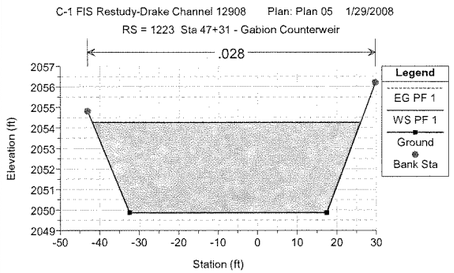
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1225 Sta 47+50 - Drake Channel



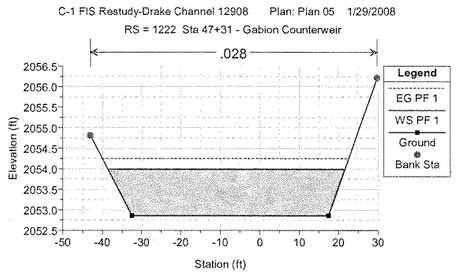
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1224 Sta 47+37 - Drake Channel



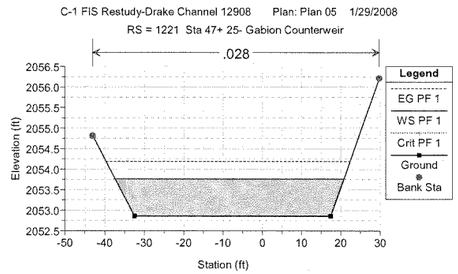
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1223 Sta 47+31 - Gabion Counterweir



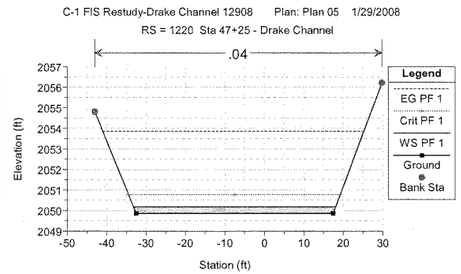
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1222 Sta 47+31 - Gabion Counterweir



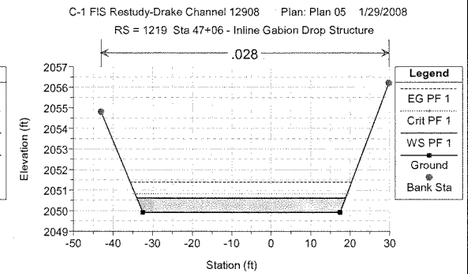
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1221 Sta 47+ 25- Gabion Counterweir



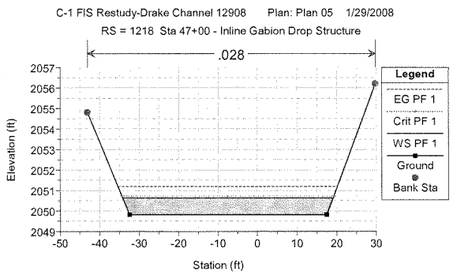
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1220 Sta 47+25 - Drake Channel



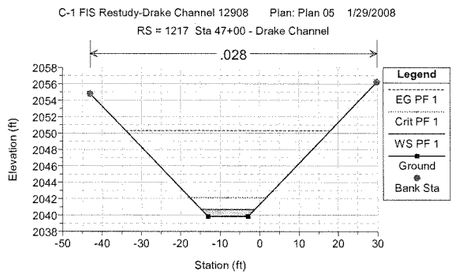
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1219 Sta 47+06 - Inline Gabion Drop Structure



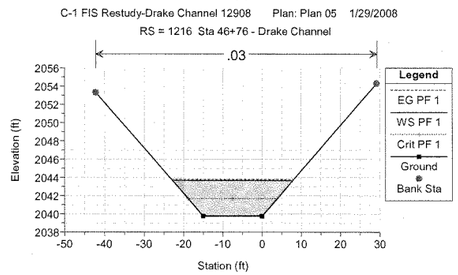
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1218 Sta 47+00 - Inline Gabion Drop Structure



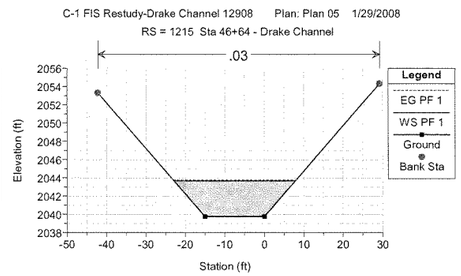
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1217 Sta 47+00 - Drake Channel



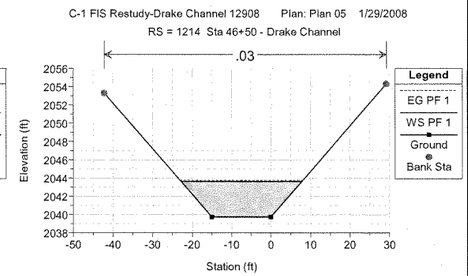
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1216 Sta 46+76 - Drake Channel



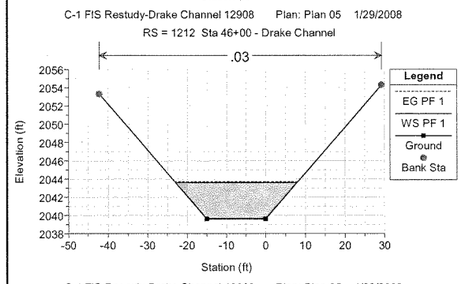
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1215 Sta 46+64 - Drake Channel



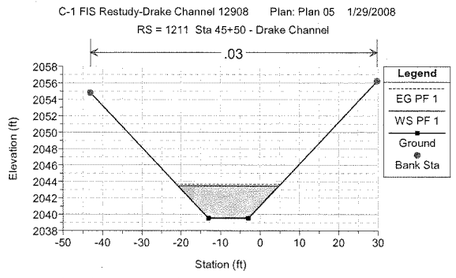
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1214 Sta 46+50 - Drake Channel



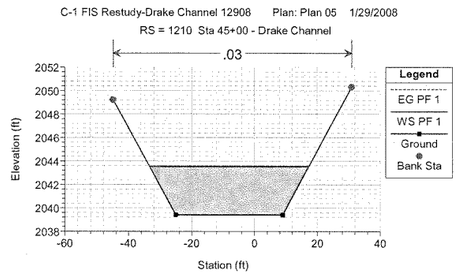
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1212 Sta 46+00 - Drake Channel



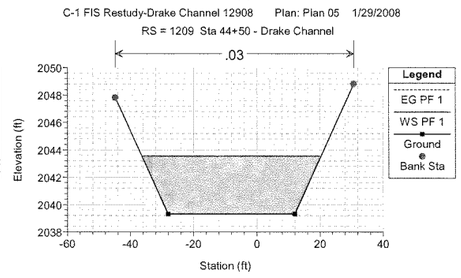
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1211 Sta 45+50 - Drake Channel



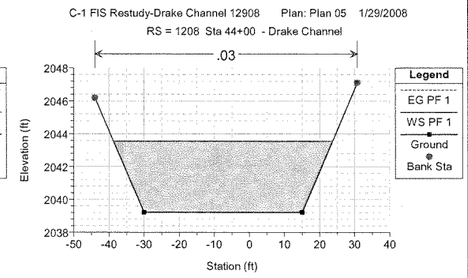
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1210 Sta 45+00 - Drake Channel



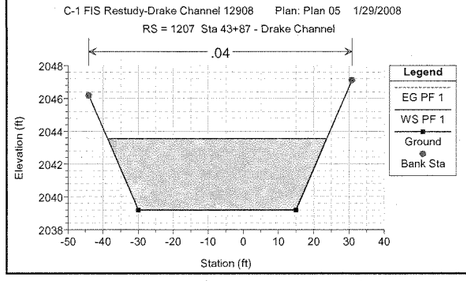
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1209 Sta 44+50 - Drake Channel



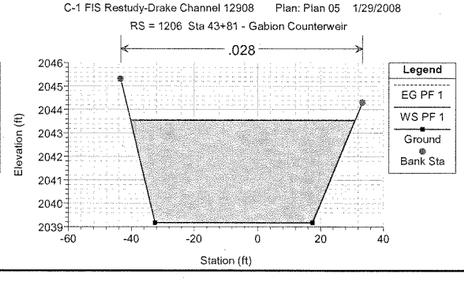
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1208 Sta 44+00 - Drake Channel



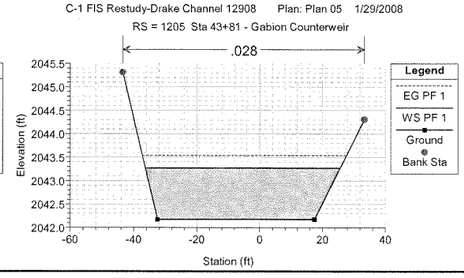
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1207 Sta 43+87 - Drake Channel



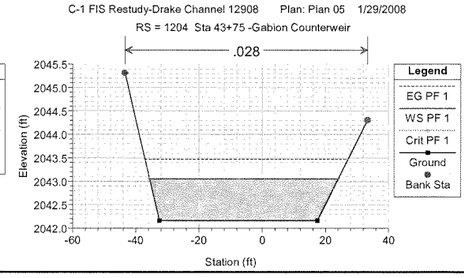
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1206 Sta 43+81 - Gabion Counterweir



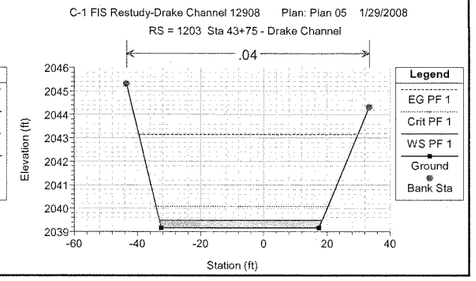
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1205 Sta 43+81 - Gabion Counterweir



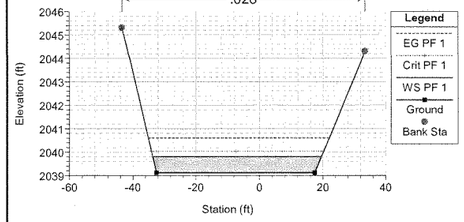
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1204 Sta 43+75 -Gabion Counterweir



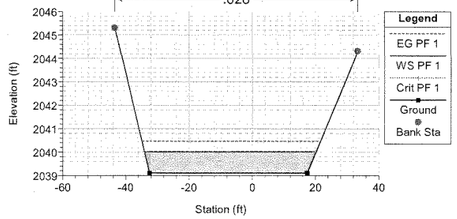
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1203 Sta 43+75 - Drake Channel



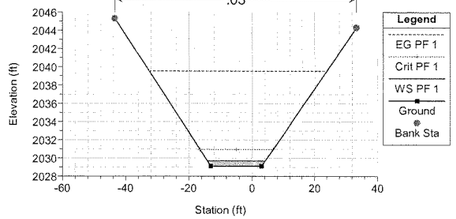
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1202 Sta 43+56 - Inline Gabion Drop Structure



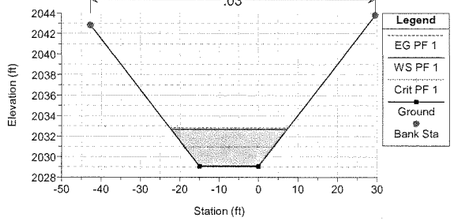
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1201 Sta 43+50 Inline Gabion Drop Structure



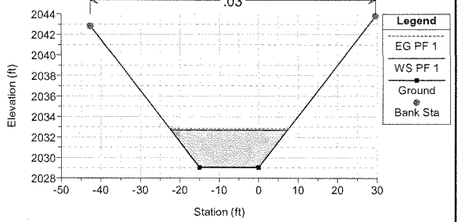
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1200 Sta 43+50 - Drake Channel



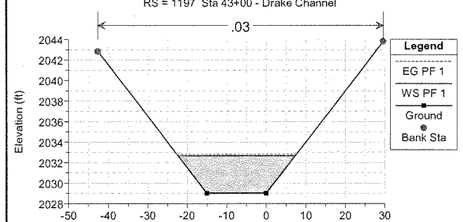
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1199 Sta 43+26 - Drake Channel



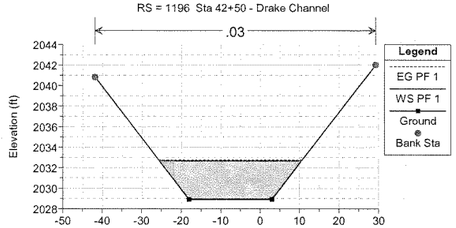
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1198 Sta 43+14 - Drake Channel



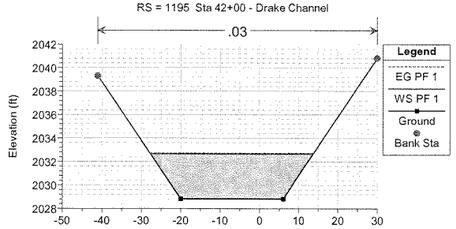
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1197 Sta 43+00 - Drake Channel



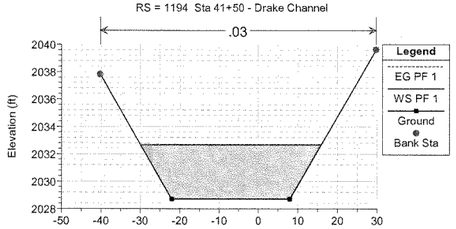
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1196 Sta 42+50 - Drake Channel



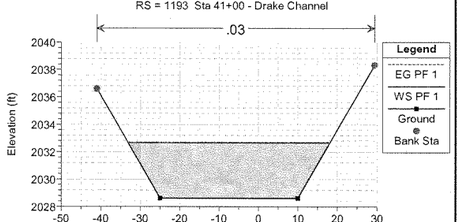
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1195 Sta 42+00 - Drake Channel



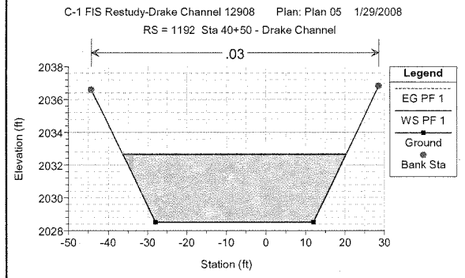
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1194 Sta 41+50 - Drake Channel



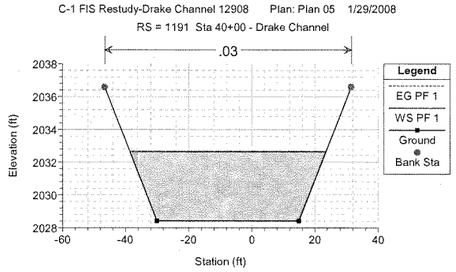
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1193 Sta 41+00 - Drake Channel



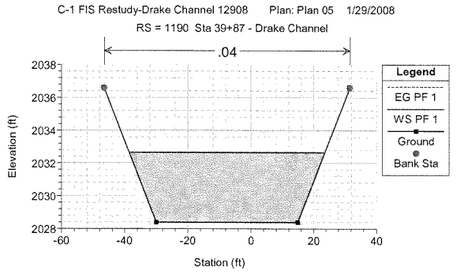
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1192 Sta 40+50 - Drake Channel



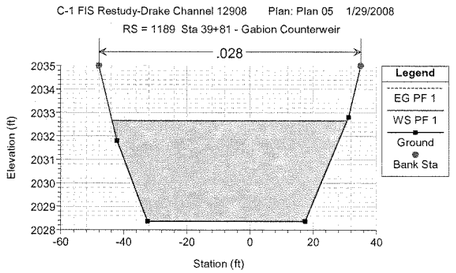
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1191 Sta 40+00 - Drake Channel



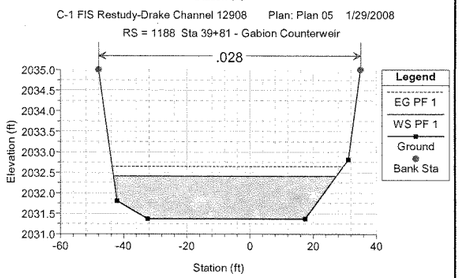
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1190 Sta 39+87 - Drake Channel



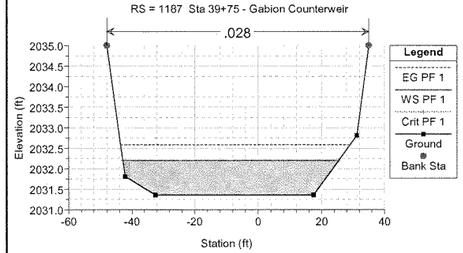
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1189 Sta 39+81 - Gabion Counterweir



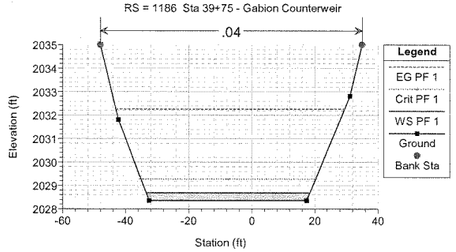
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1188 Sta 39+81 - Gabion Counterweir



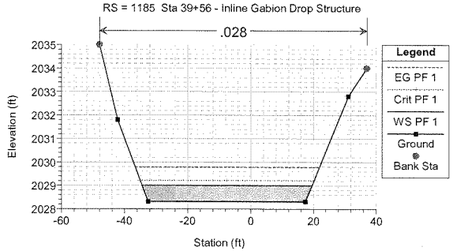
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1187 Sta 39+75 - Gabion Counterweir



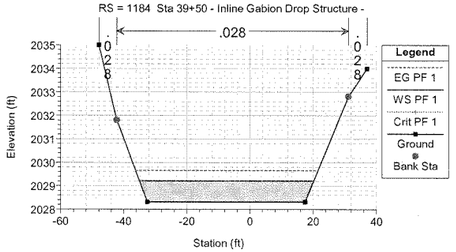
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1186 Sta 39+75 - Gabion Counterweir



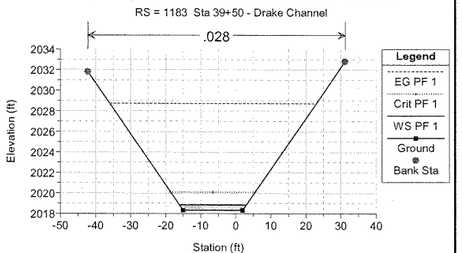
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1185 Sta 39+56 - Inline Gabion Drop Structure



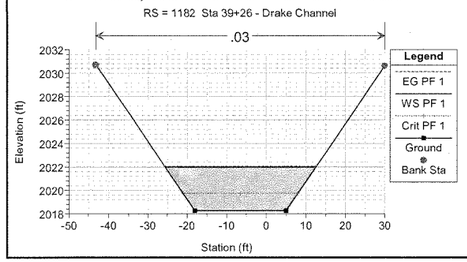
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1184 Sta 39+50 - Inline Gabion Drop Structure -



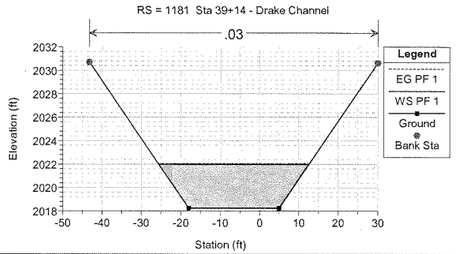
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1183 Sta 39+50 - Drake Channel



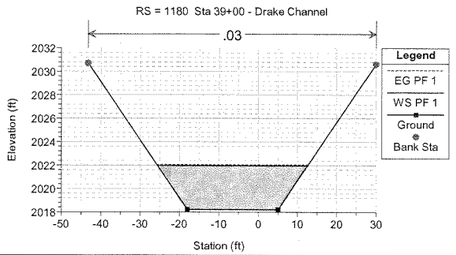
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1182 Sta 39+26 - Drake Channel



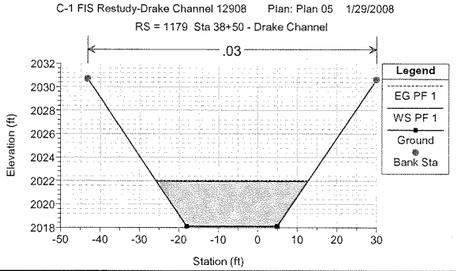
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1181 Sta 39+14 - Drake Channel



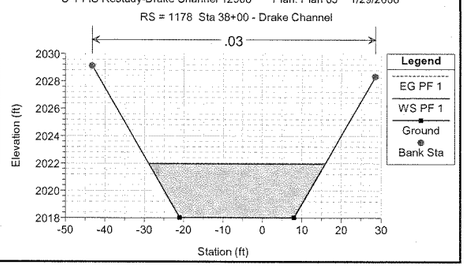
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1180 Sta 39+00 - Drake Channel



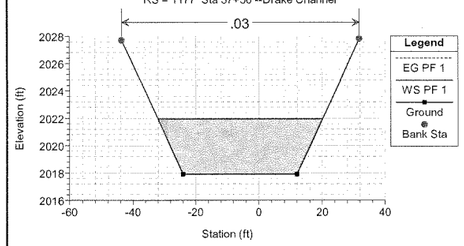
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1179 Sta 38+50 - Drake Channel



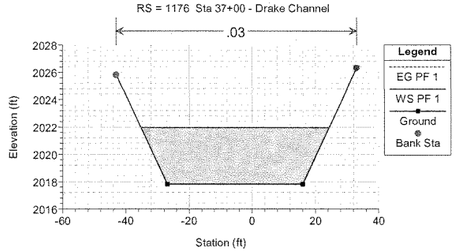
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1178 Sta 38+00 - Drake Channel



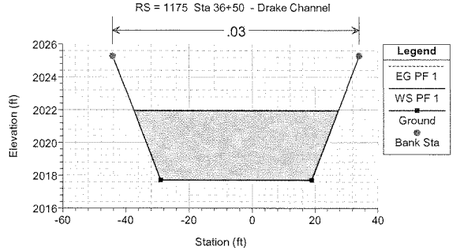
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1177 Sta 37+50 --Drake Channel



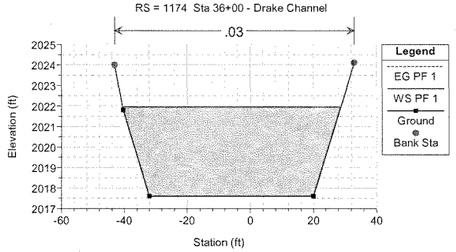
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1176 Sta 37+00 - Drake Channel



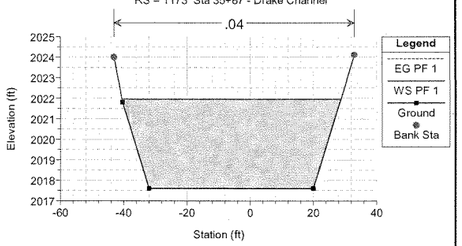
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1175 Sta 36+50 - Drake Channel



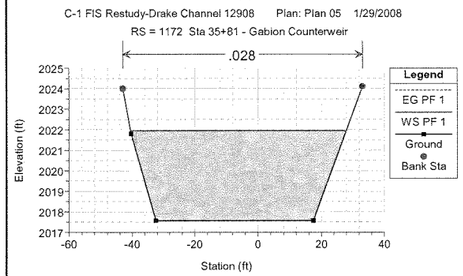
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1174 Sta 36+00 - Drake Channel



C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1173 Sta 35+87 - Drake Channel



C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1172 Sta 35+81 - Gabion Counterweir



C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
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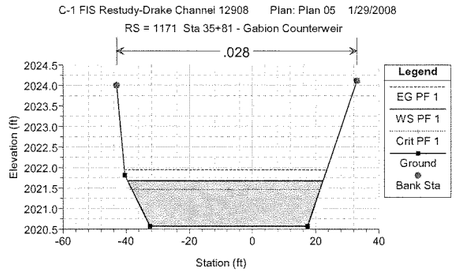
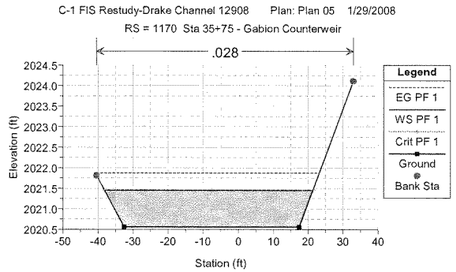
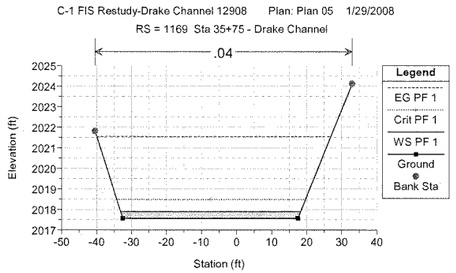


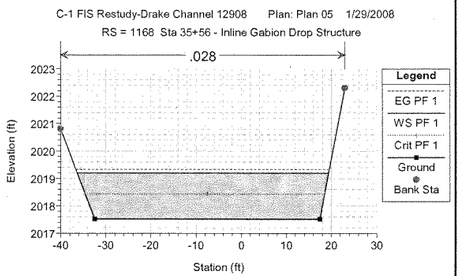
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1170 Sta 35+75 - Gabion Counterweir



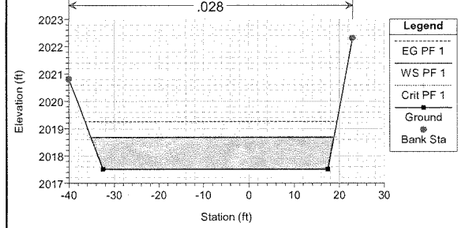
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1169 Sta 35+75 - Drake Channel



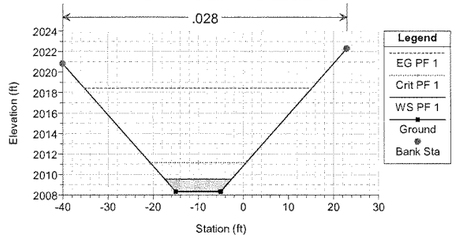
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1168 Sta 35+56 - Inline Gabion Drop Structure



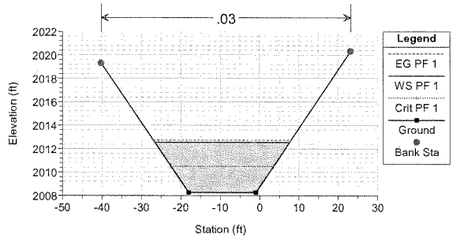
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1167 Sta 35+50 - Inline Gabion Drop Structure



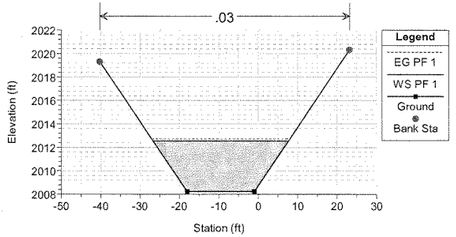
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1166 Sta 35+ 50 - Drake Channel



C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1165 Sta 35+26 - Drake Channel



C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1164 Sta 35+14 - Drake Channel



C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
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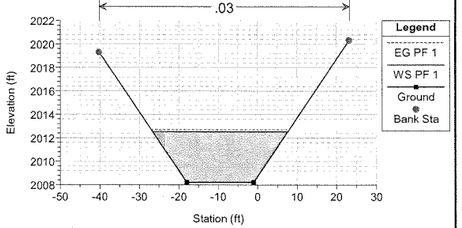
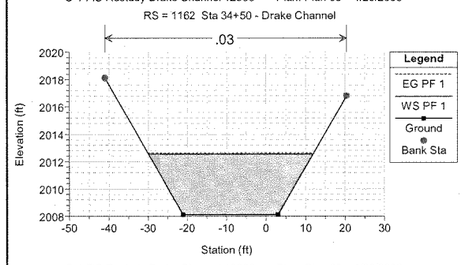
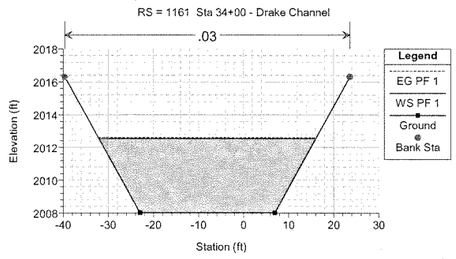


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1162 Sta 34+50 - Drake Channel



C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1161 Sta 34+00 - Drake Channel



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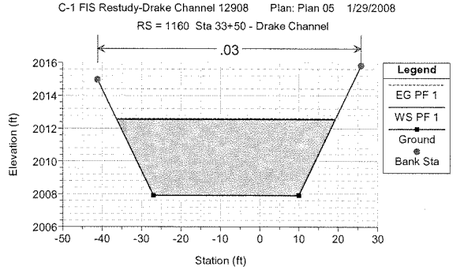
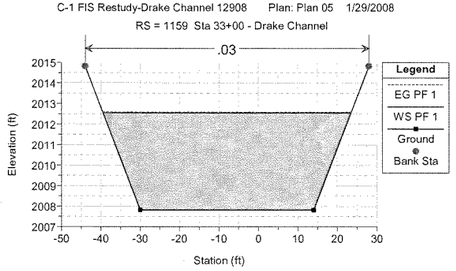
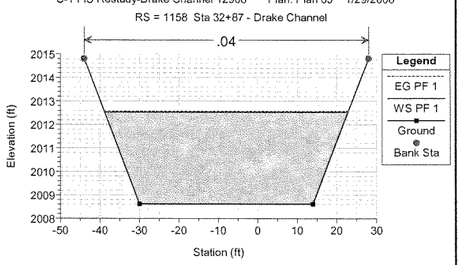


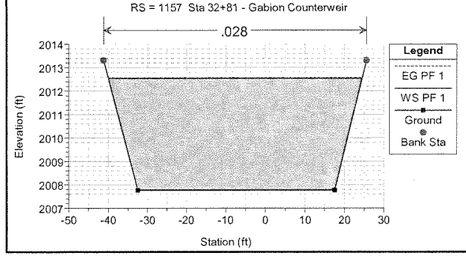
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1159 Sta 33+00 - Drake Channel



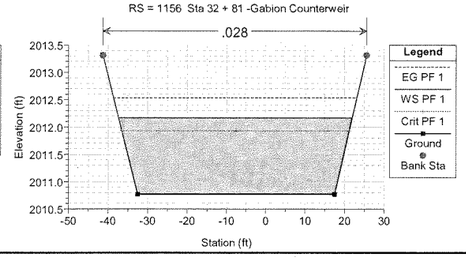
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1158 Sta 32+87 - Drake Channel



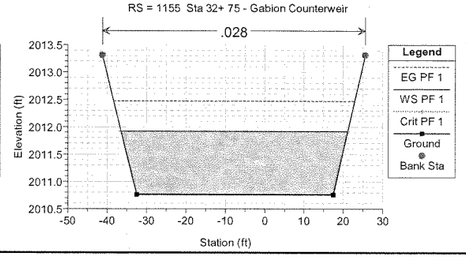
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1157 Sta 32+81 - Gabion Counterweir



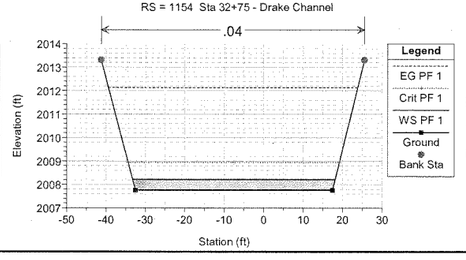
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1156 Sta 32 + 81 -Gabion Counterweir



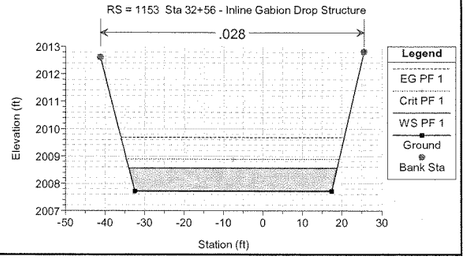
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1155 Sta 32+ 75 - Gabion Counterweir



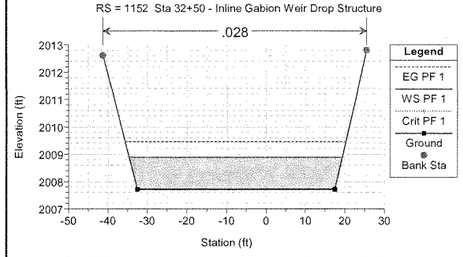
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1154 Sta 32+75 - Drake Channel



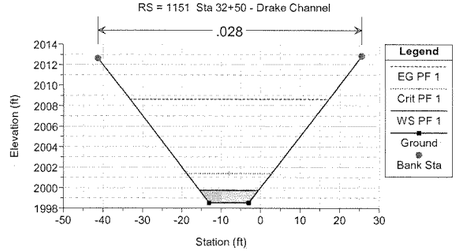
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1153 Sta 32+56 - Inline Gabion Drop Structure



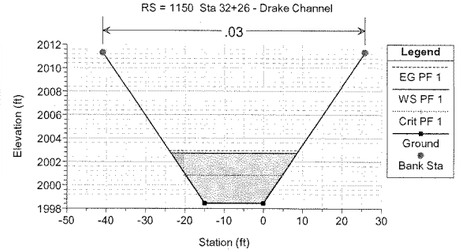
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1152 Sta 32+50 - Inline Gabion Weir Drop Structure



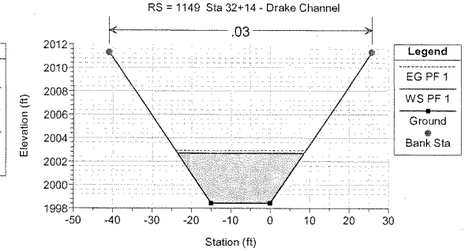
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1151 Sta 32+50 - Drake Channel



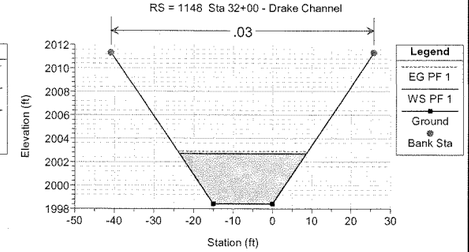
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1150 Sta 32+26 - Drake Channel



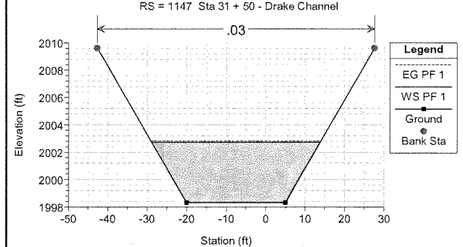
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1149 Sta 32+14 - Drake Channel



C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1148 Sta 32+00 - Drake Channel



C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1147 Sta 31 + 50 - Drake Channel



C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
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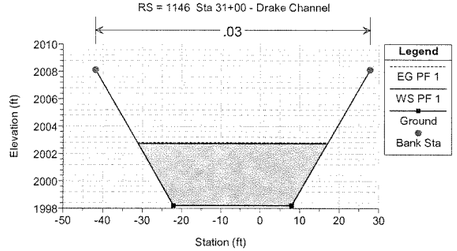

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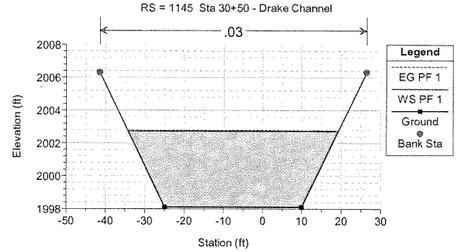
RS = 1145 Sta 30+50 - Drake Channel



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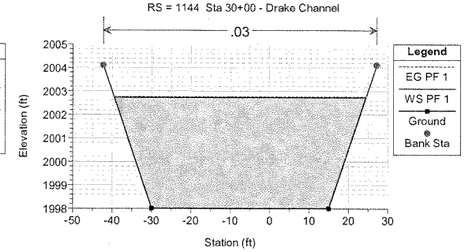
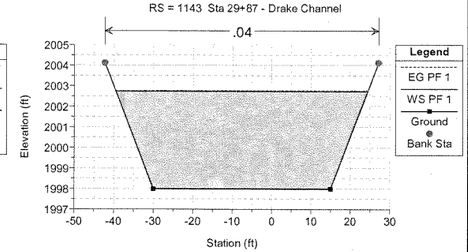
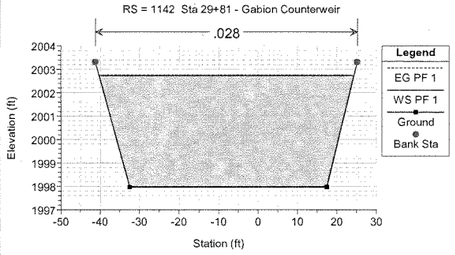


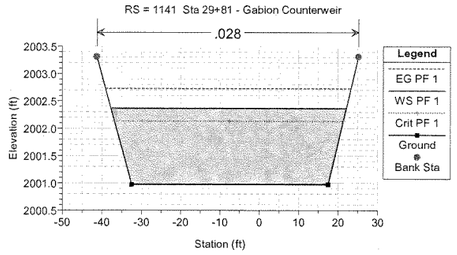
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1143 Sta 29+87 - Drake Channel



C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1142 Sta 29+81 - Gabion Counterweir



C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1141 Sta 29+81 - Gabion Counterweir



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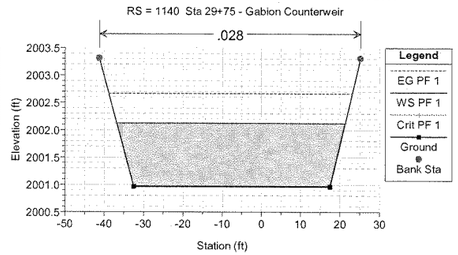

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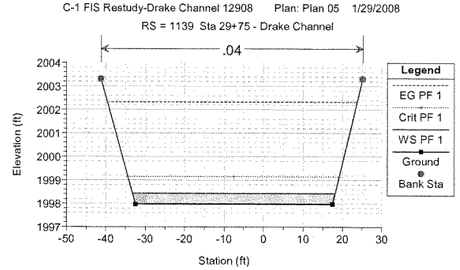
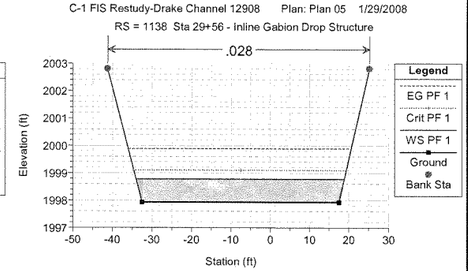
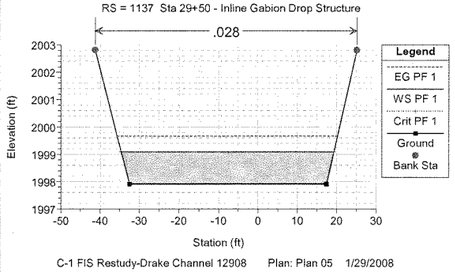
RS = 1139 Sta 29+75 - Drake Channel



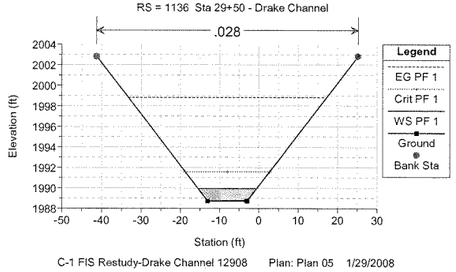
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1138 Sta 29+56 - Inline Gabion Drop Structure



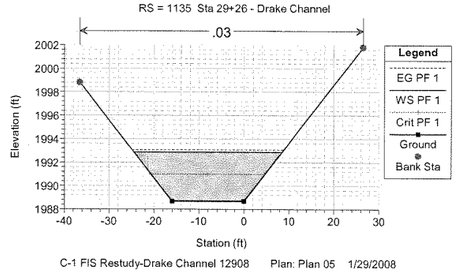
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1137 Sta 29+50 - Inline Gabion Drop Structure



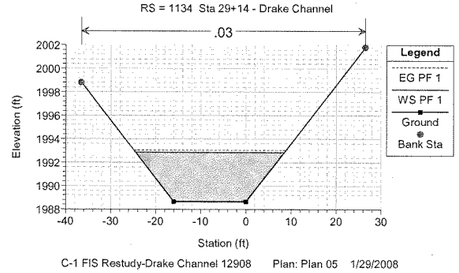
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1136 Sta 29+50 - Drake Channel



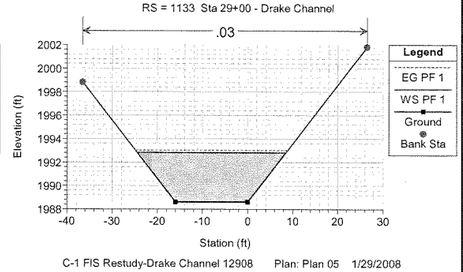
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1135 Sta 29+26 - Drake Channel



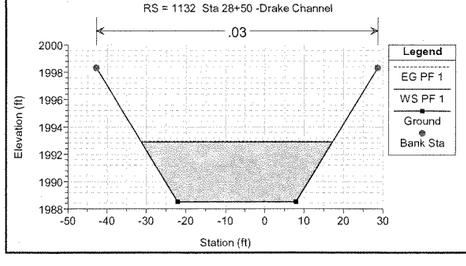
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1134 Sta 29+14 - Drake Channel



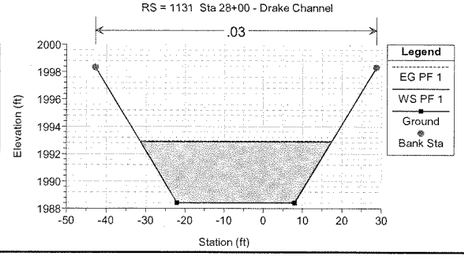
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1133 Sta 29+00 - Drake Channel



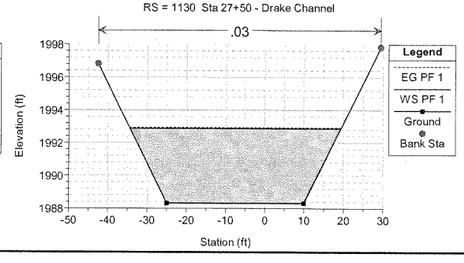
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1132 Sta 28+50 -Drake Channel



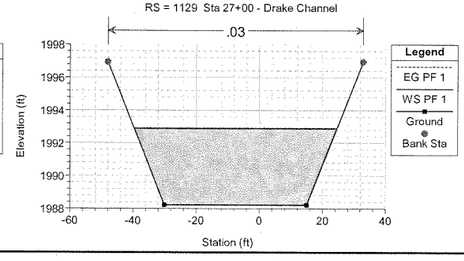
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1131 Sta 28+00 - Drake Channel



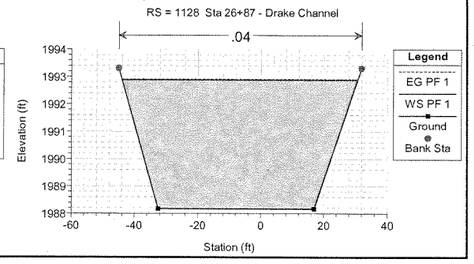
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1130 Sta 27+50 - Drake Channel



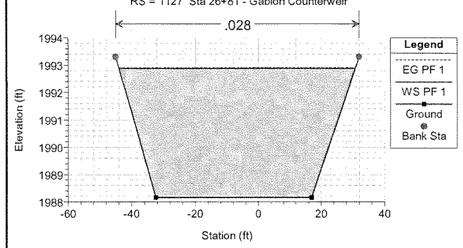
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1129 Sta 27+00 - Drake Channel



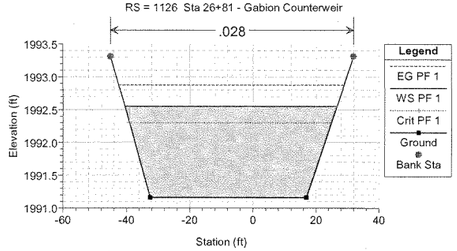
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1128 Sta 26+87 - Drake Channel



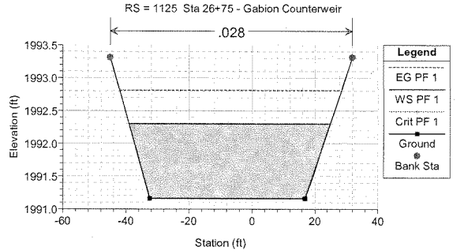
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1127 Sta 26+81 - Gabion Counterweir



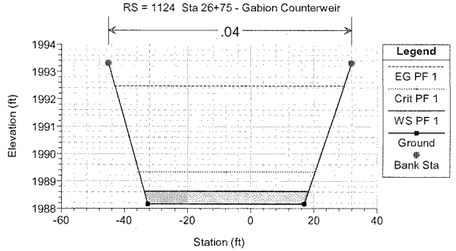
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1126 Sta 26+81 - Gabion Counterweir



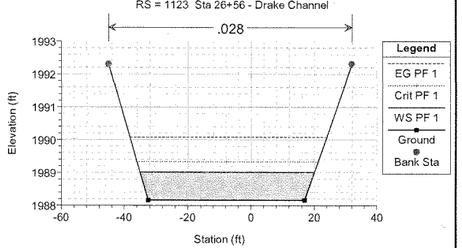
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1125 Sta 26+75 - Gabion Counterweir



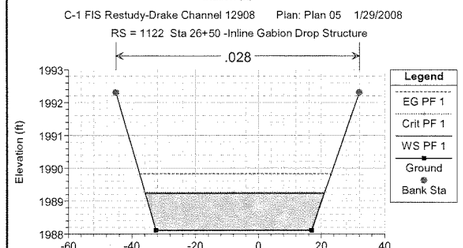
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1124 Sta 26+75 - Gabion Counterweir



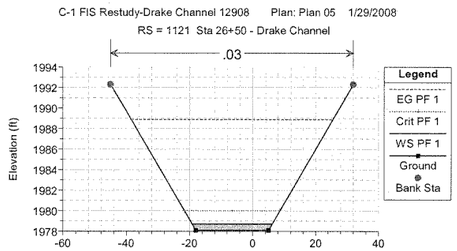
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1123 Sta 26+56 - Drake Channel



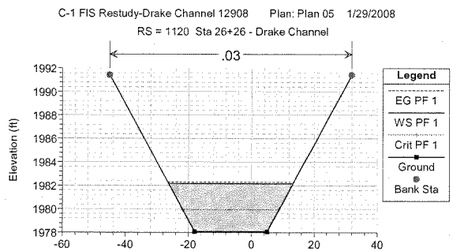
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1122 Sta 26+50 -Inline Gabion Drop Structure



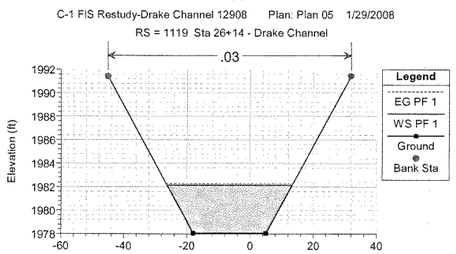
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1121 Sta 26+50 - Drake Channel



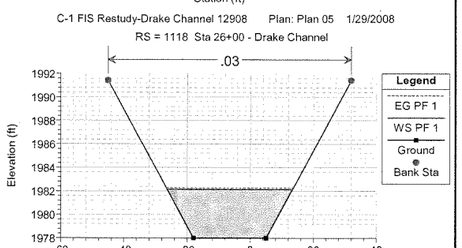
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1120 Sta 26+26 - Drake Channel



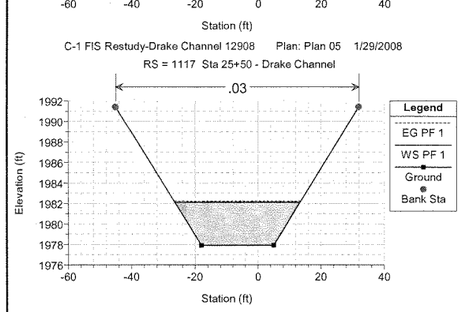
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1119 Sta 26+14 - Drake Channel



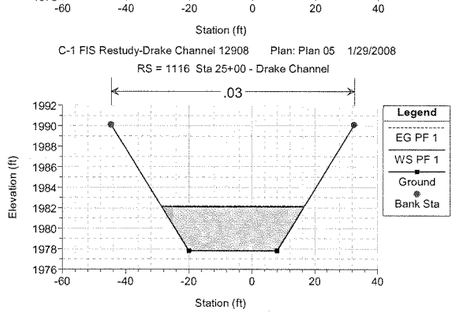
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1118 Sta 26+00 - Drake Channel



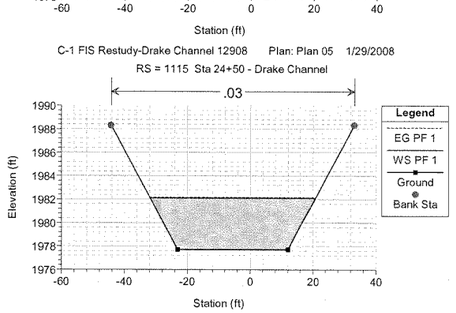
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1117 Sta 25+50 - Drake Channel



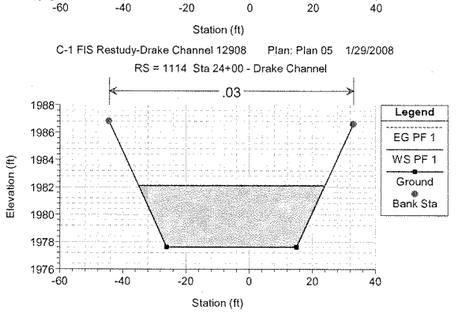
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1116 Sta 25+00 - Drake Channel



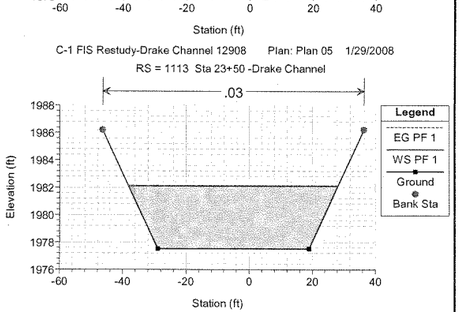
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1115 Sta 24+50 - Drake Channel



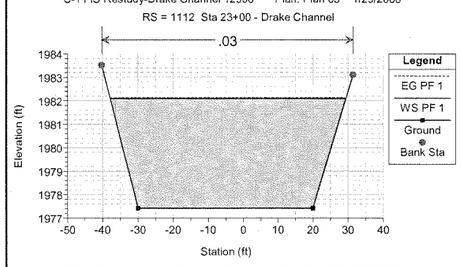
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1114 Sta 24+00 - Drake Channel



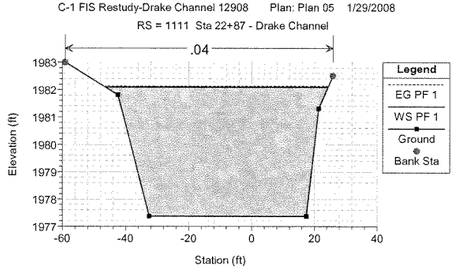
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1113 Sta 23+50 -Drake Channel



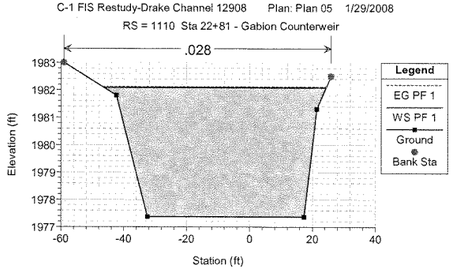
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1112 Sta 23+00 - Drake Channel



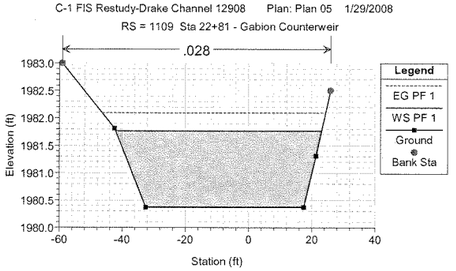
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1111 Sta 22+87 - Drake Channel



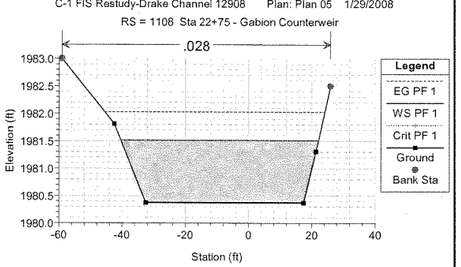
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1110 Sta 22+81 - Gabion Counterweir



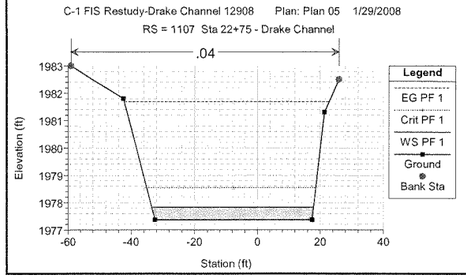
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1109 Sta 22+81 - Gabion Counterweir



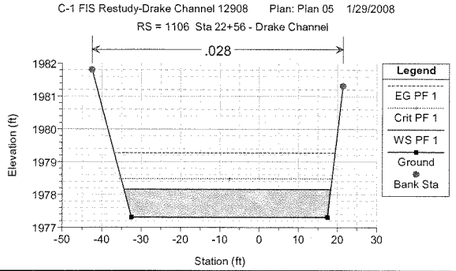
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1108 Sta 22+75 - Gabion Counterweir



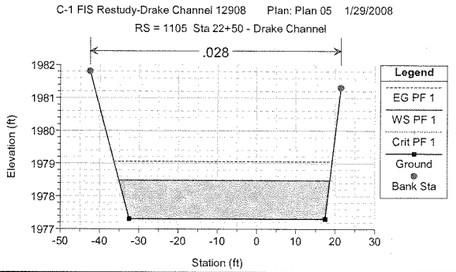
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1107 Sta 22+75 - Drake Channel



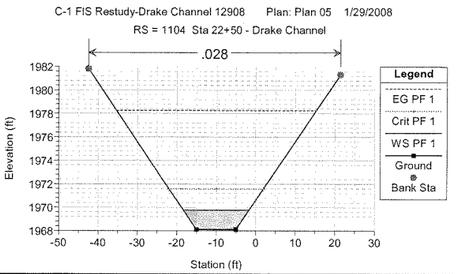
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1106 Sta 22+56 - Drake Channel



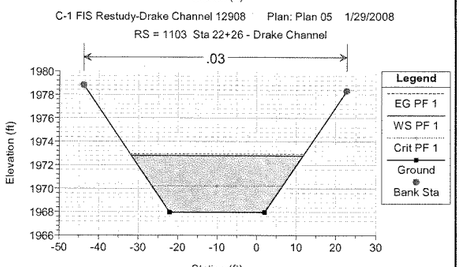
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1105 Sta 22+50 - Drake Channel

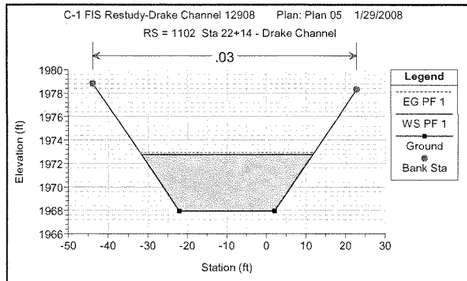


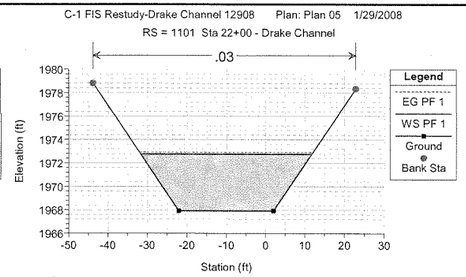
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1104 Sta 22+50 - Drake Channel

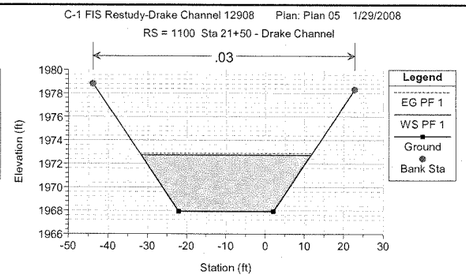


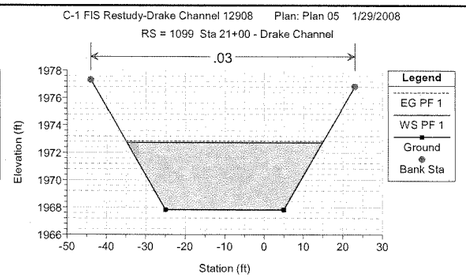
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1103 Sta 22+26 - Drake Channel

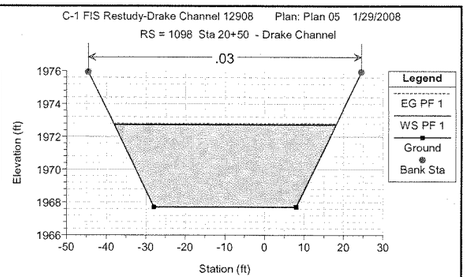


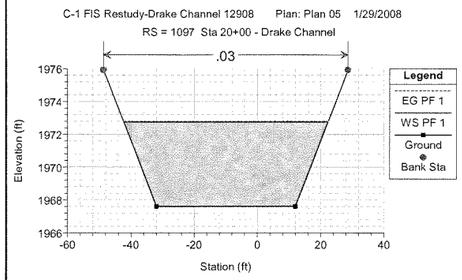

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1102 Sta 22+14 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

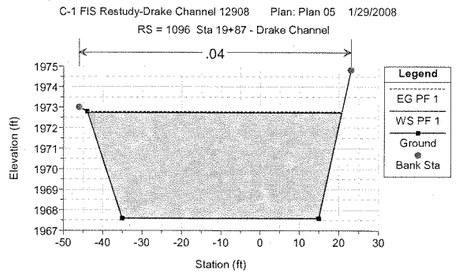

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1101 Sta 22+00 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

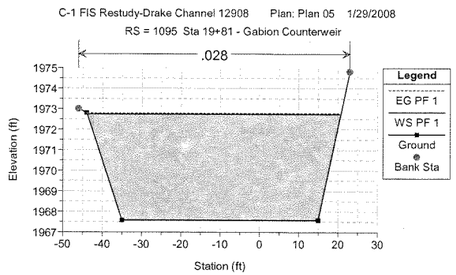

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1100 Sta 21+50 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

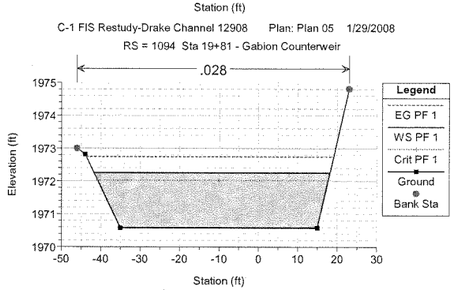

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1099 Sta 21+00 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

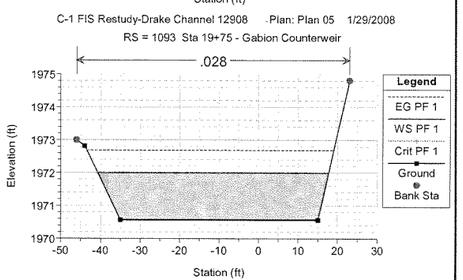

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1098 Sta 20+50 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

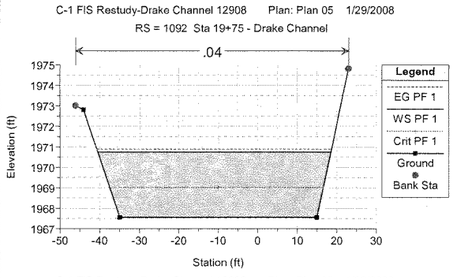

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1097 Sta 20+00 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

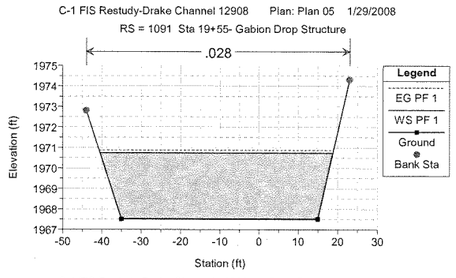

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1096 Sta 19+87 - Drake Channel
.04
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

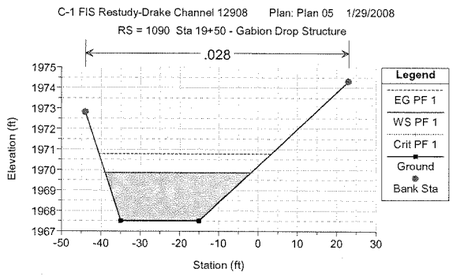

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1095 Sta 19+81 - Gabion Counterweir
.028
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

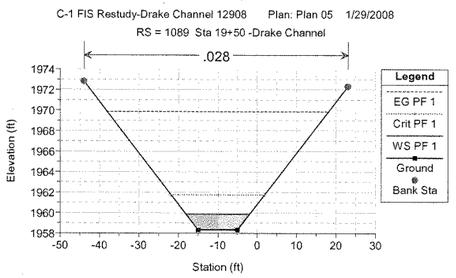

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1094 Sta 19+81 - Gabion Counterweir
.028
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

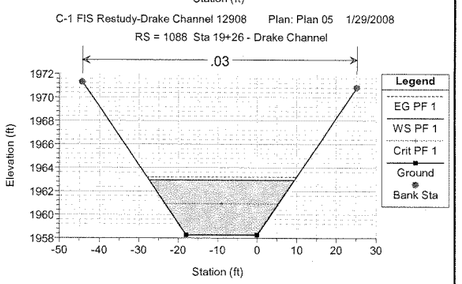

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1093 Sta 19+75 - Gabion Counterweir
.028
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

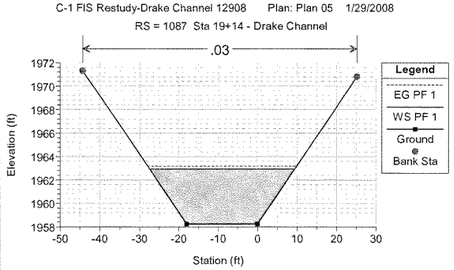

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1092 Sta 19+75 - Drake Channel
.04
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

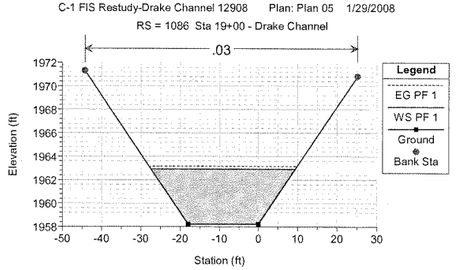

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1091 Sta 19+55- Gabion Drop Structure
.028
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

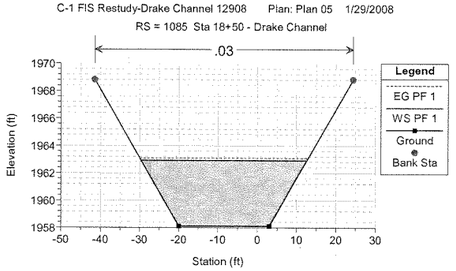

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1090 Sta 19+50 - Gabion Drop Structure
.028
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

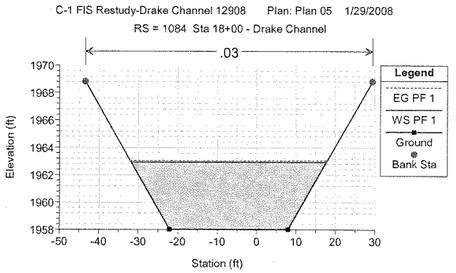

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1089 Sta 19+50 -Drake Channel
.028
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

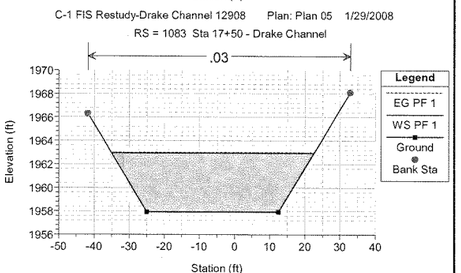

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1088 Sta 19+26 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

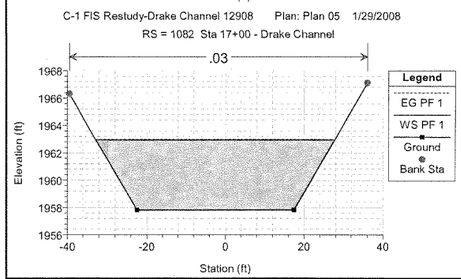

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1087 Sta 19+14 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

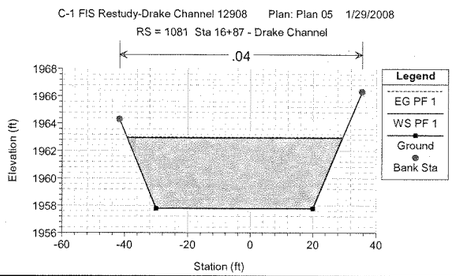

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1086 Sta 19+00 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

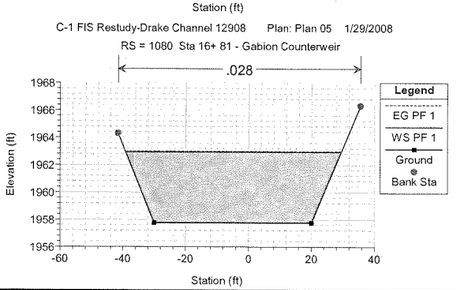

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1085 Sta 18+50 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

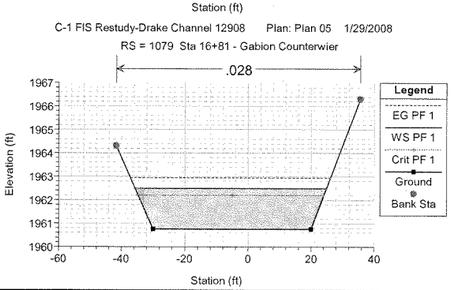

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1084 Sta 18+00 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

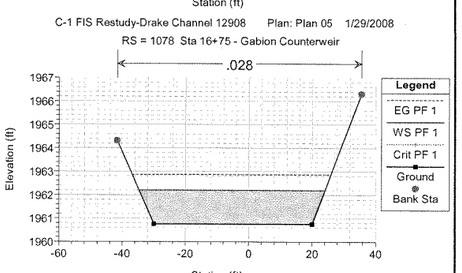

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1083 Sta 17+50 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1082 Sta 17+00 - Drake Channel
.03
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

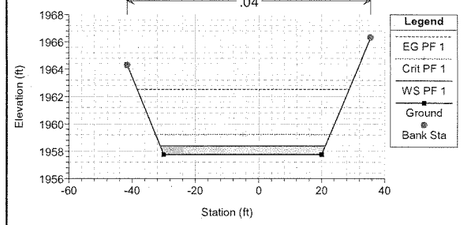

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1081 Sta 16+87 - Drake Channel
.04
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1080 Sta 16+ 81 - Gabion Counterweir
.028
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

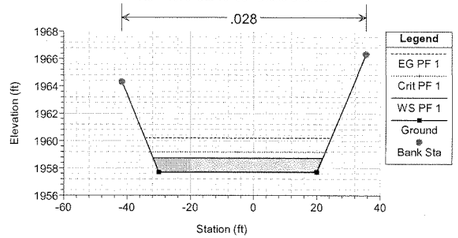

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1079 Sta 16+81 - Gabion Counterwier
.028
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1078 Sta 16+75 - Gabion Counterweir
.028
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

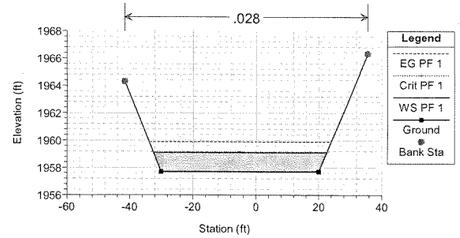
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1077 Sta 16+75 - Drake Channel



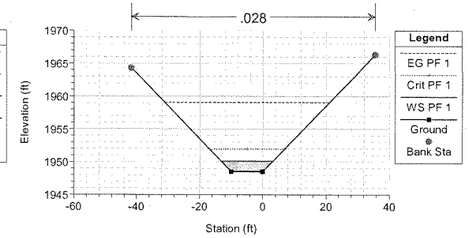
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1076 Sta 16+56 - Drake Channel



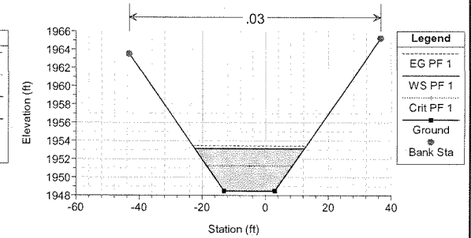
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1075 Sta 16+50 - Drake Channel



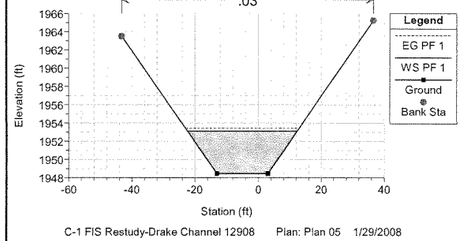
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1074 Sta 16+50 - Drake Channel



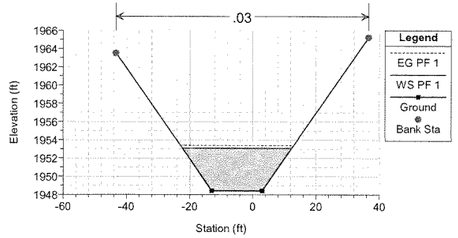
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1073 Sta 16+26 - Drake Channel



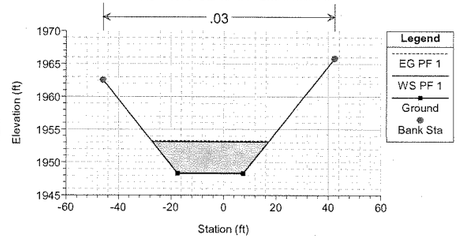
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1072 Sta 16+14 - Drake Channel



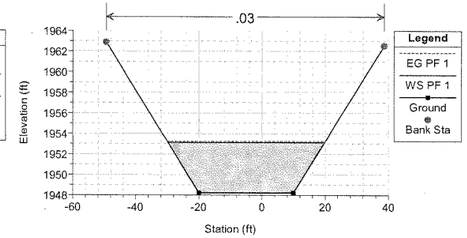
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1071 Sta 16+00 - Drake Channel



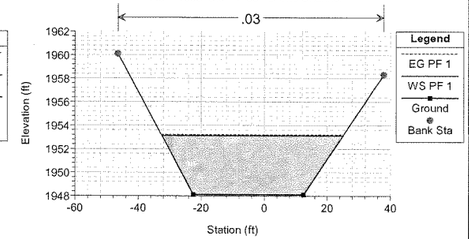
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1070 Sta 15+50 - Drake Channel



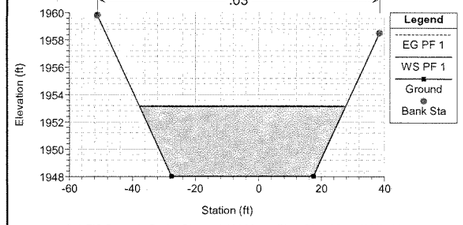
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1069 Sta 15+00 -Drake Channel



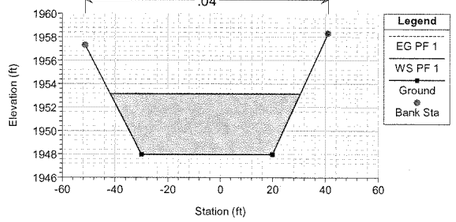
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1068 Sta 14+50 - Drake Channel



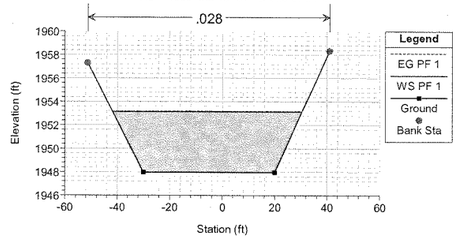
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1067 Sta 14+00 - Drake Channel



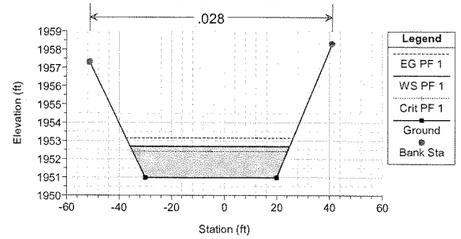
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1066 Sta 13+87 - Drake Channel



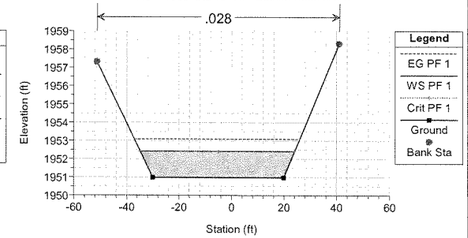
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1065 Sta 13+81 - Drake Channel



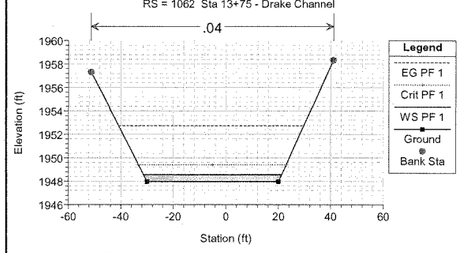
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1064 Sta 13+ 81 - Drake Channel



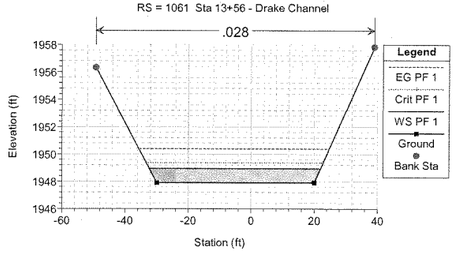
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1063 Sta 13+75 - Gabion Counterwier



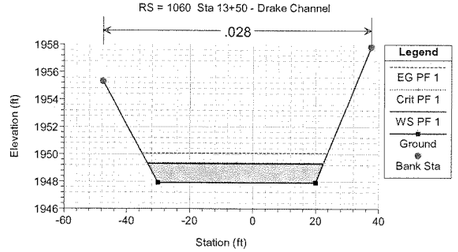
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1062 Sta 13+75 - Drake Channel



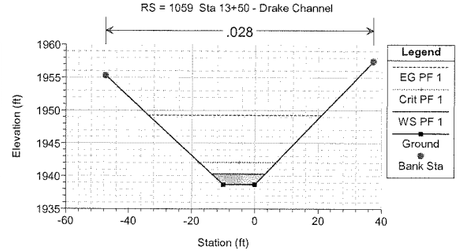
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1061 Sta 13+56 - Drake Channel



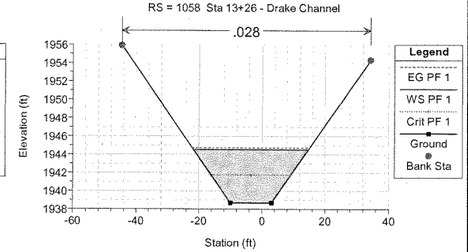
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1060 Sta 13+50 - Drake Channel



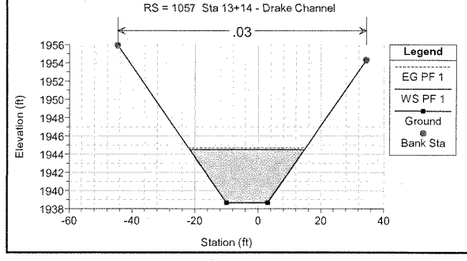
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1059 Sta 13+50 - Drake Channel



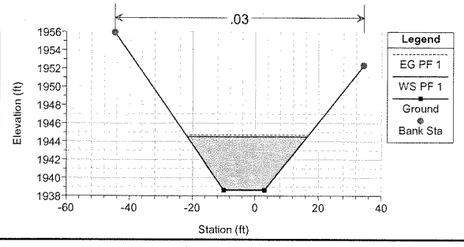
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1058 Sta 13+26 - Drake Channel



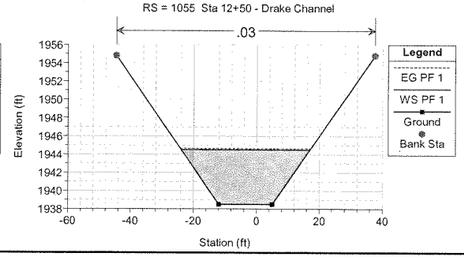
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1057 Sta 13+14 - Drake Channel



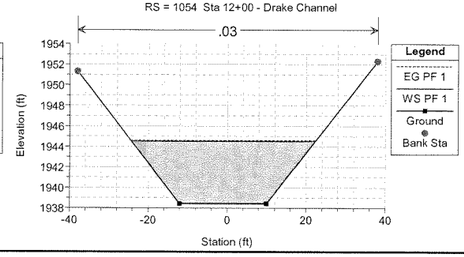
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1056 Sta 13+00 - Drake Channel



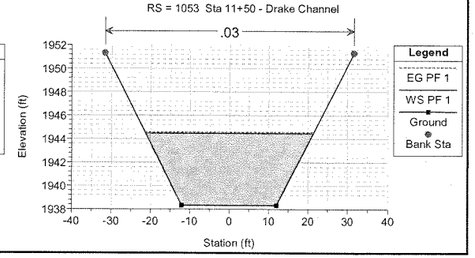
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1055 Sta 12+50 - Drake Channel



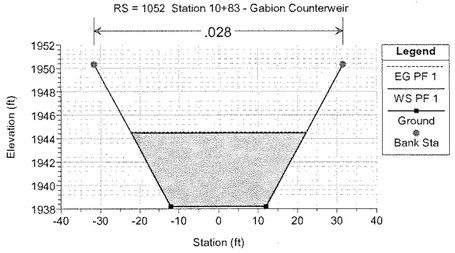
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1054 Sta 12+00 - Drake Channel



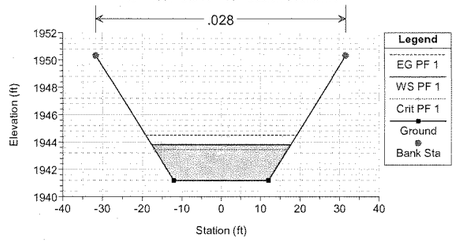
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1053 Sta 11+50 - Drake Channel



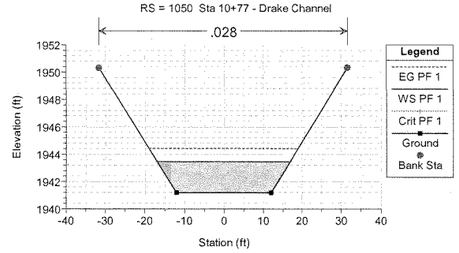
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1052 Station 10+83 - Gabion Counterweir



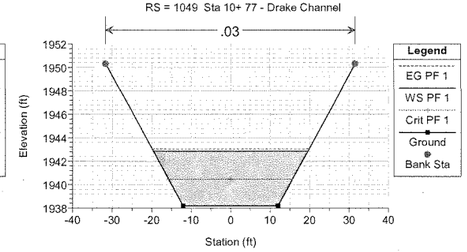
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1051 Sta 10 + 83 - Gabion Counterweir



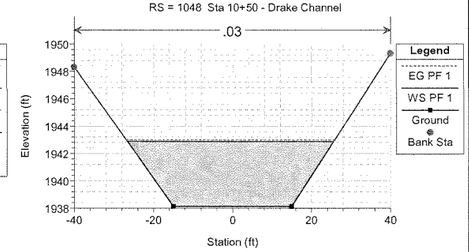
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1050 Sta 10+77 - Drake Channel



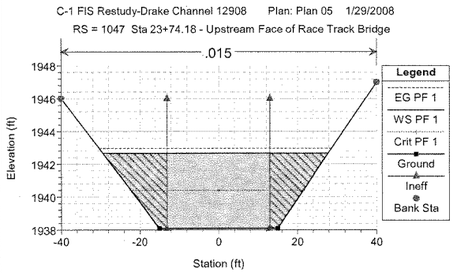
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1049 Sta 10+ 77 - Drake Channel



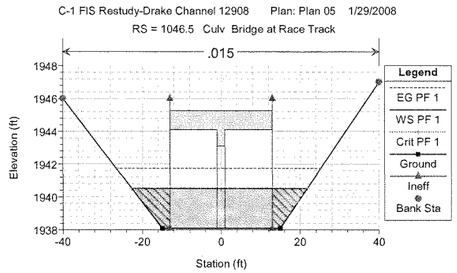
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1048 Sta 10+50 - Drake Channel



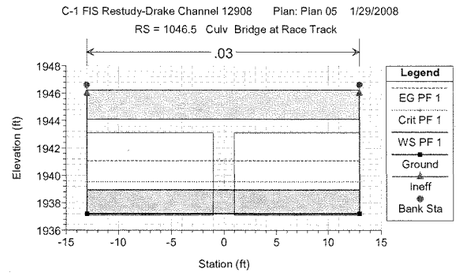
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1047 Sta 23+74.18 - Upstream Face of Race Track Bridge



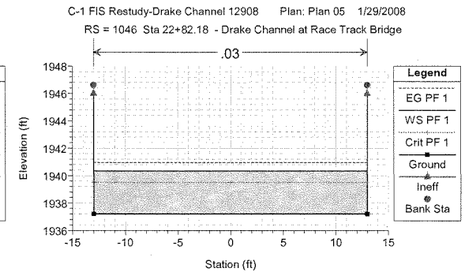
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1046.5 Culv Bridge at Race Track



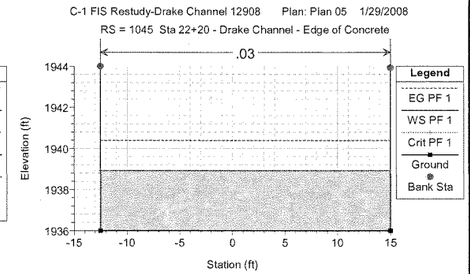
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1046.5 Culv Bridge at Race Track



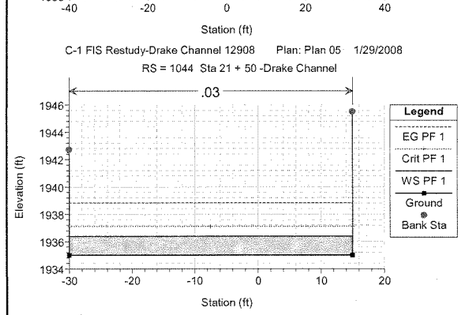
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1046 Sta 22+82.18 - Drake Channel at Race Track Bridge



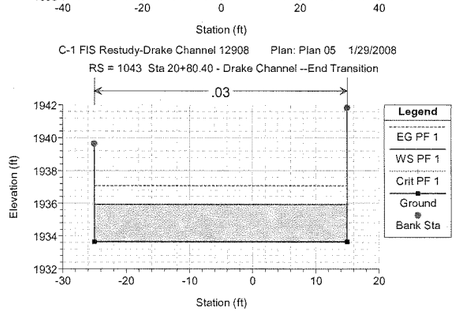
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1045 Sta 22+20 - Drake Channel - Edge of Concrete



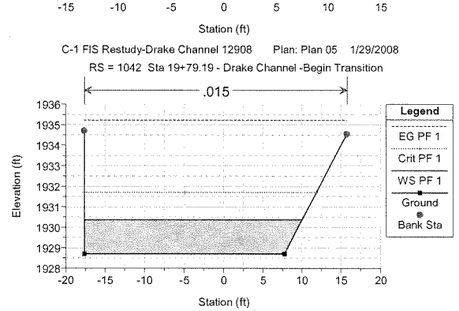
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1044 Sta 21 + 50 -Drake Channel



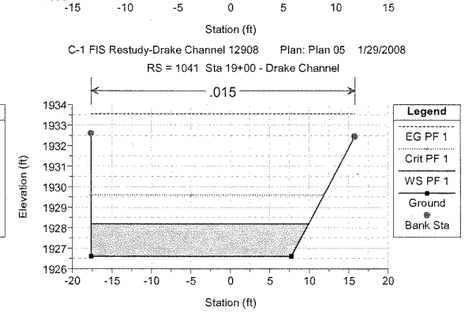
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1043 Sta 20+80.40 - Drake Channel --End Transition



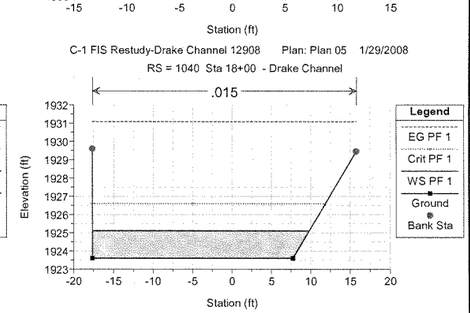
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1042 Sta 19+79.19 - Drake Channel -Begin Transition



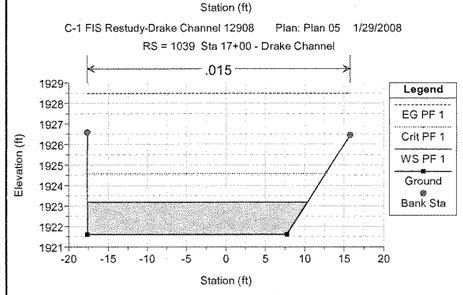
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1041 Sta 19+00 - Drake Channel



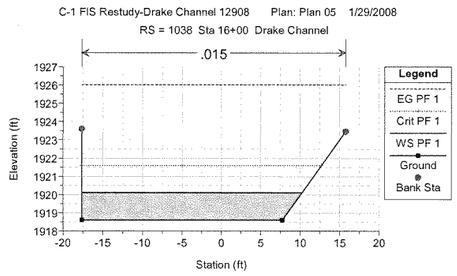
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1040 Sta 18+00 - Drake Channel



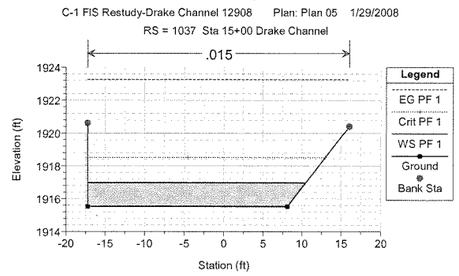
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1039 Sta 17+00 - Drake Channel



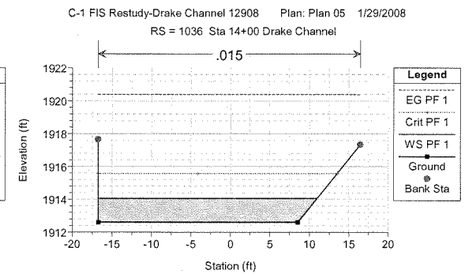
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1038 Sta 16+00 Drake Channel



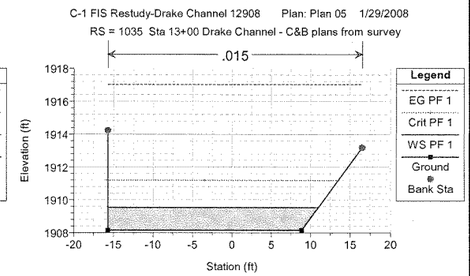
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1037 Sta 15+00 Drake Channel



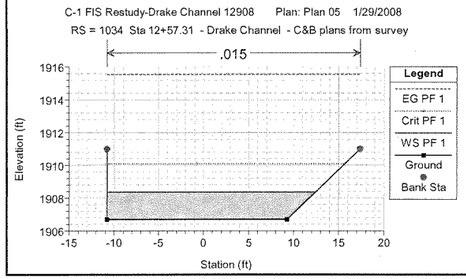
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1036 Sta 14+00 Drake Channel



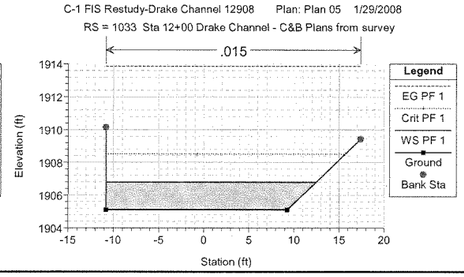
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1035 Sta 13+00 Drake Channel - C&B plans from survey



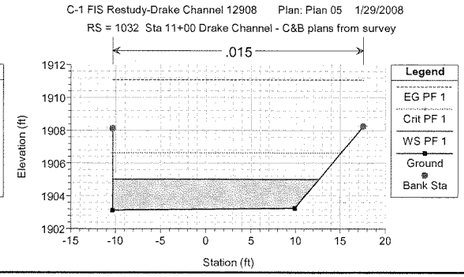
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1034 Sta 12+57.31 - Drake Channel - C&B plans from survey



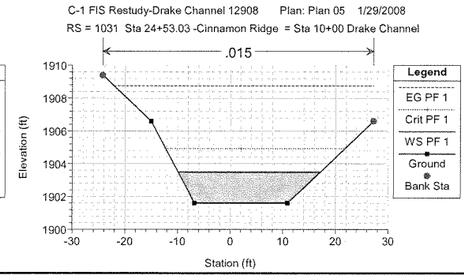
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1033 Sta 12+00 Drake Channel - C&B Plans from survey



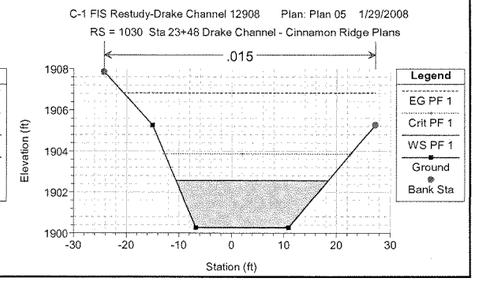
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1032 Sta 11+00 Drake Channel - C&B plans from survey

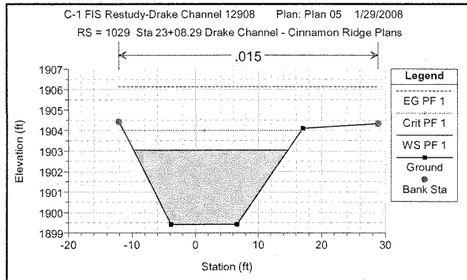


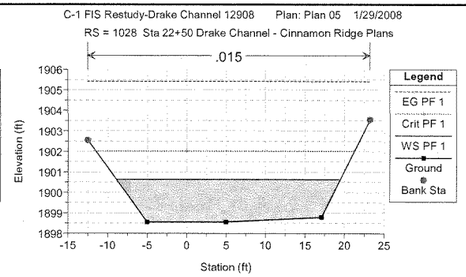
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1031 Sta 24+53.03 -Cinnamon Ridge = Sta 10+00 Drake Channel

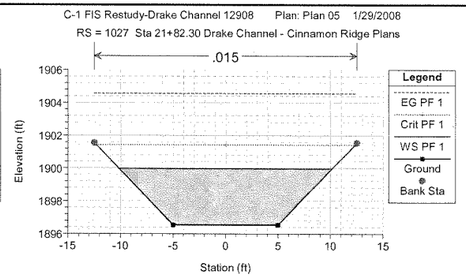


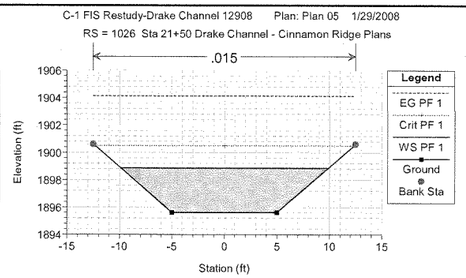
C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1030 Sta 23+48 Drake Channel - Cinnamon Ridge Plans

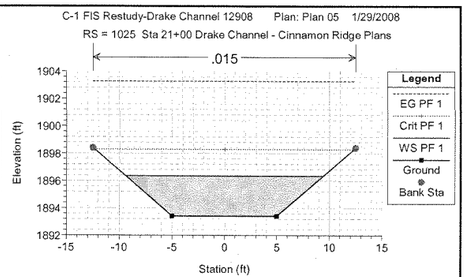


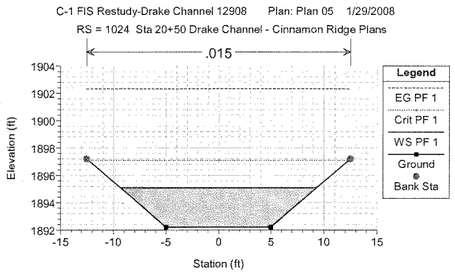

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1029 Sta 23+08.29 Drake Channel - Cinnamon Ridge Plans
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

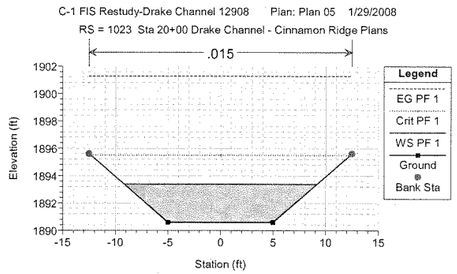

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1028 Sta 22+50 Drake Channel - Cinnamon Ridge Plans
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

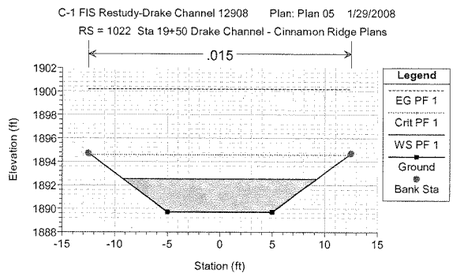

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1027 Sta 21+82.30 Drake Channel - Cinnamon Ridge Plans
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

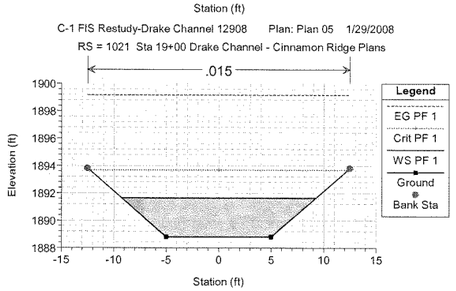

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1026 Sta 21+50 Drake Channel - Cinnamon Ridge Plans
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

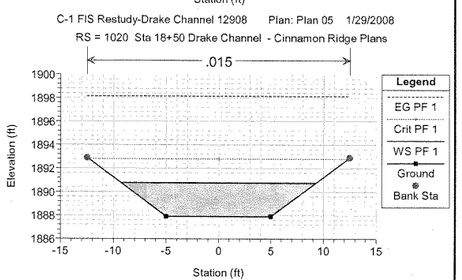

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1025 Sta 21+00 Drake Channel - Cinnamon Ridge Plans
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

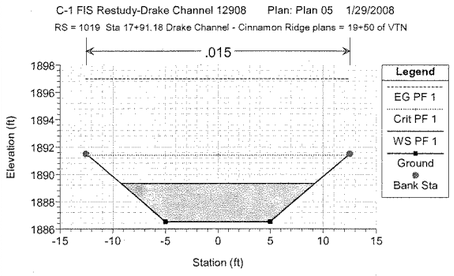

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1024 Sta 20+50 Drake Channel - Cinnamon Ridge Plans
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

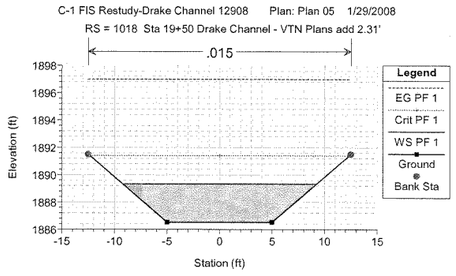

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1023 Sta 20+00 Drake Channel - Cinnamon Ridge Plans
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

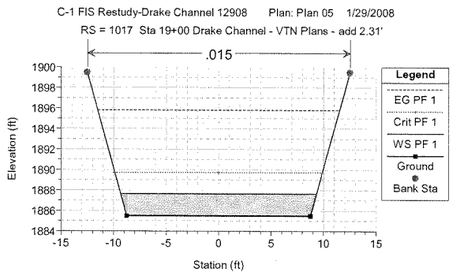

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1022 Sta 19+50 Drake Channel - Cinnamon Ridge Plans
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

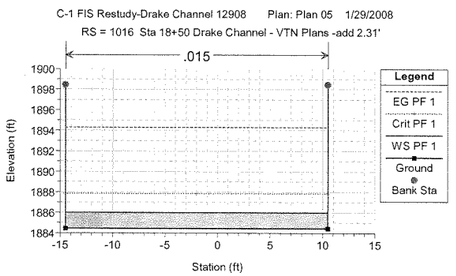

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1021 Sta 19+00 Drake Channel - Cinnamon Ridge Plans
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

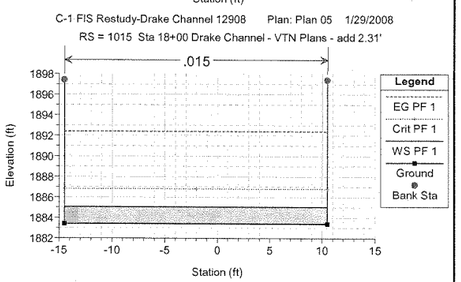

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1020 Sta 18+50 Drake Channel - Cinnamon Ridge Plans
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

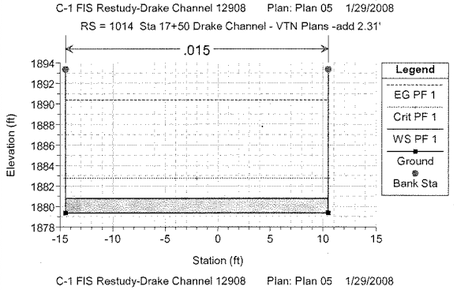

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1019 Sta 17+91.18 Drake Channel - Cinnamon Ridge plans = 19+50 of VTN
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

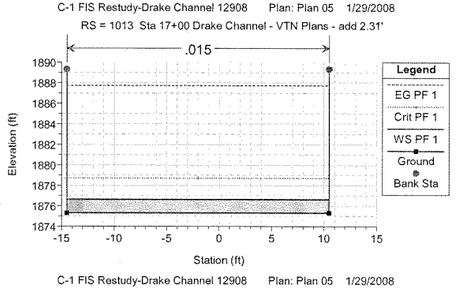

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1018 Sta 19+50 Drake Channel - VTN Plans add 2.31'
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

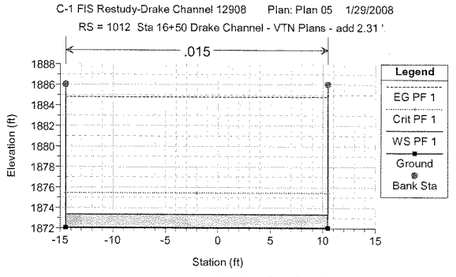

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1017 Sta 19+00 Drake Channel - VTN Plans - add 2.31'
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

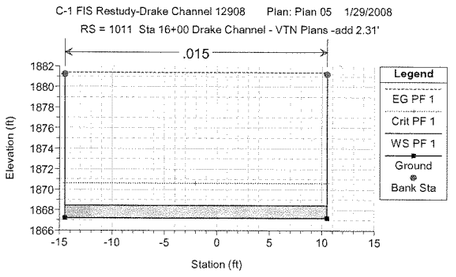

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1016 Sta 18+50 Drake Channel - VTN Plans -add 2.31'
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

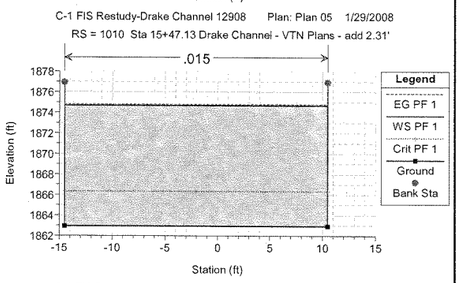

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1015 Sta 18+00 Drake Channel - VTN Plans - add 2.31'
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

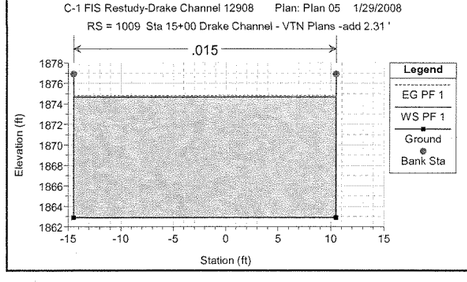

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1014 Sta 17+50 Drake Channel - VTN Plans -add 2.31'
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

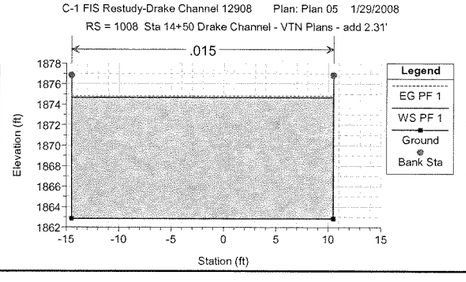

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1013 Sta 17+00 Drake Channel - VTN Plans - add 2.31'
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

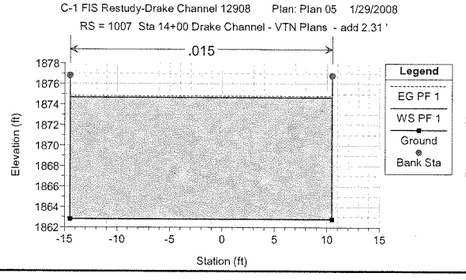

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1012 Sta 16+50 Drake Channel - VTN Plans - add 2.31 '
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

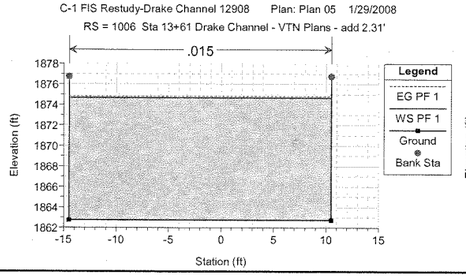

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1011 Sta 16+00 Drake Channel - VTN Plans -add 2.31'
.015
Legend
EG PF 1
Crit PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

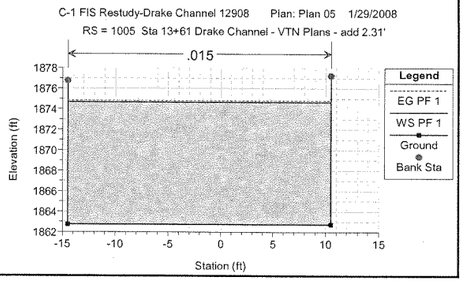

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1010 Sta 15+47.13 Drake Channel - VTN Plans - add 2.31'
.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

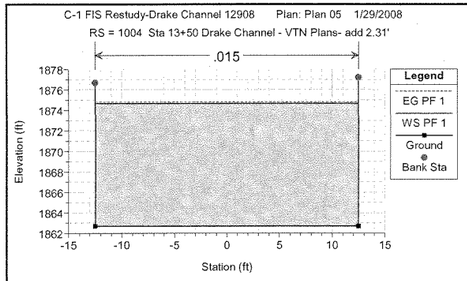

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1009 Sta 15+00 Drake Channel - VTN Plans -add 2.31 '
.015
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

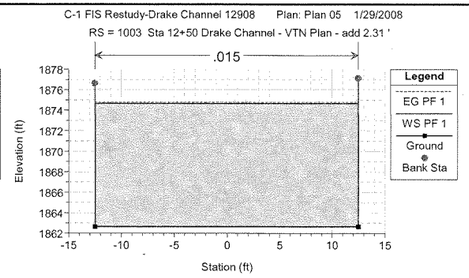

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1008 Sta 14+50 Drake Channel - VTN Plans - add 2.31'
.015
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

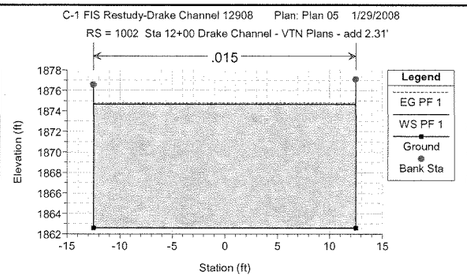

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1007 Sta 14+00 Drake Channel - VTN Plans - add 2.31 '
.015
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

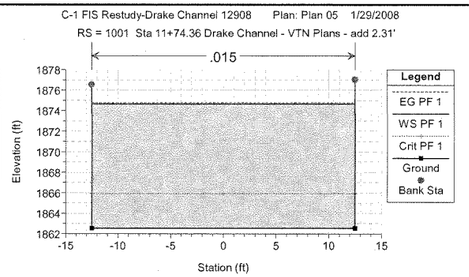

C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1006 Sta 13+61 Drake Channel - VTN Plans - add 2.31'
.015
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1005 Sta 13+61 Drake Channel - VTN Plans - add 2.31'
.015
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1004 Sta 13+50 Drake Channel - VTN Plans- add 2.31'
.015
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1003 Sta 12+50 Drake Channel - VTN Plan - add 2.31 '
.015
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1002 Sta 12+00 Drake Channel - VTN Plans - add 2.31'
.015
Legend
EG PF 1
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


C-1 FIS Restudy-Drake Channel 12908 Plan: Plan 05 1/29/2008
RS = 1001 Sta 11+74.36 Drake Channel - VTN Plans - add 2.31'
.015
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

HEC-RAS Version 3.1.3 May 2005
U.S. Army Corp of Engineers
Hydrologic Engineering Center
609 Second Street
Davis, California

```
X     X  XXXXXX    XXXX        XXXX       XX      XXXX
X     X  X          X   X       X   X     X  X     X
X     X  X          X           X   X    X    X    X
XXXXXXX  XXXX       X       XXX XXXX     XXXXXX    XXXX
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****

PROJECT DATA
Project Title: C-1 FIS Restudy-Drake Channel 12908
Project File : drake12908.prj
Run Date and Time: 1/29/2008 9:40:38 AM

Project in English units

Project Description:
Drake Channel from confluence of C-1 to system headworks, 9000 ft east.

****

PLAN DATA

Plan Title: Plan 05
Plan File : f:\504-424\Drainage\CLOMR\HEC-RAS\DRAKE\12808\drake12908.p05

Geometry Title: Drake Channel Geometrics revised C
Geometry File : f:\504-424\Drainage\CLOMR\HEC-RAS\DRAKE\12808\drake12908.g02

Flow Title : City of Henderson Master Plan - Exist2
Flow File : f:\504-424\Drainage\CLOMR\HEC-RAS\DRAKE\12808\drake12908.f03

Plan Summary Information:
Number of: Cross Sections = 327 Multiple Openings = 0
Culverts = 1 Inline Structures = 0
Bridges = 0 Lateral Structures = 0

Computational Information
Water surface calculation tolerance = 0.003
Critical depth calculation tolerance = 0.003
Maximum number of iterations = 20
Maximum difference tolerance = 0.1
Flow tolerance factor = 0.001

Computation Options
Critical depth computed only where necessary
Conveyance Calculation Method: At breaks in n values only
Friction Slope Method: Average Conveyance
Computational Flow Regime: Mixed Flow

****

FLOW DATA

Flow Title: City of Henderson Master Plan - Exist2
Flow File : f:\504-424\Drainage\CLOMR\HEC-RAS\DRAKE\12808\drake12908.f03

Flow Data (cfs)

River	Reach	RS	PF 1
Drake Channel	C-1 to 9000 ft	E1328	1.1
Drake Channel	C-1 to 9000 ft	E1251	255
Drake Channel	C-1 to 9000 ft	E1167	371
Drake Channel	C-1 to 9000 ft	E1104	516
Drake Channel	C-1 to 9000 ft	E1045	781
Drake Channel	C-1 to 9000 ft	E1030	893

Boundary Conditions

River	Reach	Profile	Upstream	Downstream
Drake Channel	C-1 to 9000 ft	EPF 1	Normal S = 0.002	Known WS = 1874.66

****

GEOMETRY DATA

Geometry Title: Drake Channel Geometrics revised C
Geometry File : f:\504-424\Drainage\CLOMR\HEC-RAS\DRAKE\12808\drake12908.g02

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1328

INPUT
Description: Sta 72+00 - Drake Channel - Headworks
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-30.6	2129.61	-6	2114.81	4	2114.81	33	2131.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-30.6	.03	-30.6	.03	33	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-30.6	33	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2117.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.030	
W.S. Elev (ft)	2117.23	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	2114.88	Flow Area (sq ft)		34.09	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		34.09	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	18.16	Top Width (ft)		18.16	
Vel Total (ft/s)	0.03	Avg. Vel. (ft/s)		0.03	
Max Chl Dpth (ft)	2.42	Hydr. Depth (ft)		1.88	
Conv. Total (cfs)	2451.3	Conv. (cfs)		2451.3	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		19.48	
Min Ch El (ft)	2114.81	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		25.19	
C & E Loss (ft)	0.00	Cum SA (acres)		8.16	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1327

INPUT
Description: Sta 71+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-38.2	2128.81	-10	2114.71	6	2114.71	38.2	2130.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-38.2	.03	-38.2	.03	38.2	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-38.2	38.2	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2117.23	Element	Left OB	Channel	Right OB

* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	*	*	*	*
* W.S. Elev (ft)	* 2117.23	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*	*	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 53.06	*	*	*	*
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 53.06	*	*	*	*
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	*	*	*	*
* Top Width (ft)	* 26.09	* Top Width (ft)	*	* 26.09	*	*	*	*
* Vel Total (ft/s)	* 0.02	* Avg. Vel. (ft/s)	*	* 0.02	*	*	*	*
* Max Chl Dpth (ft)	* 2.52	* Hydr. Depth (ft)	*	* 2.03	*	*	*	*
* Conv. Total (cfs)	* 4095.3	* Conv. (cfs)	*	* 4095.3	*	*	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 27.28	*	*	*	*
* Min Ch El (ft)	* 2114.71	* Shear (lb/sq ft)	*	* 0.00	*	*	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	*	*	*	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 25.14	*	*	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 8.13	*	*	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1326

INPUT
Description: Sta 71+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.4	2128.31	-14	2114.61	7	2114.61	36.4	2129.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.4	.03	-41.4	.03	36.4	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-41.4	36.4	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2117.23	* Element	* Left OB	* Channel	* Right OB	*	*	*
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	*	*	*	*
* W.S. Elev (ft)	* 2117.23	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*	*	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 68.79	*	*	*	*
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 68.79	*	*	*	*
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	*	*	*	*
* Top Width (ft)	* 31.49	* Top Width (ft)	*	* 31.49	*	*	*	*
* Vel Total (ft/s)	* 0.02	* Avg. Vel. (ft/s)	*	* 0.02	*	*	*	*
* Max Chl Dpth (ft)	* 2.62	* Hydr. Depth (ft)	*	* 2.18	*	*	*	*
* Conv. Total (cfs)	* 5591.4	* Conv. (cfs)	*	* 5591.4	*	*	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 32.72	*	*	*	*
* Min Ch El (ft)	* 2114.61	* Shear (lb/sq ft)	*	* 0.00	*	*	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	*	*	*	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 25.07	*	*	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 8.10	*	*	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1325

INPUT
Description: Sta 70+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.4	2127.21	-18	2114.51	10	2114.51	36.6	2127.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.4	.03	-43.4	.03	36.6	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-43.4	36.6	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2117.23	* Element	* Left OB	* Channel	* Right OB	*	*	*
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	*	*	*	*
* W.S. Elev (ft)	* 2117.23	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*	*	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 91.01	*	*	*	*
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 91.01	*	*	*	*
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	*	*	*	*
* Top Width (ft)	* 38.89	* Top Width (ft)	*	* 38.89	*	*	*	*
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	*	*	*	*
* Max Chl Dpth (ft)	* 2.72	* Hydr. Depth (ft)	*	* 2.34	*	*	*	*
* Conv. Total (cfs)	* 7776.3	* Conv. (cfs)	*	* 7776.3	*	*	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 40.17	*	*	*	*
* Min Ch El (ft)	* 2114.51	* Shear (lb/sq ft)	*	* 0.00	*	*	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	*	*	*	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 24.98	*	*	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 8.06	*	*	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1324

INPUT
Description: Sta 70 +00 Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.8	2125.81	-22	2114.41	12	2114.41	35.8	2126.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.8	.03	-44.8	.03	35.8	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-44.8	35.8	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2117.23	* Element	* Left OB	* Channel	* Right OB	*	*	*
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	*	*	*	*
* W.S. Elev (ft)	* 2117.23	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*	*	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 111.85	*	*	*	*
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 111.85	*	*	*	*
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	*	*	*	*
* Top Width (ft)	* 45.29	* Top Width (ft)	*	* 45.29	*	*	*	*
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	*	*	*	*
* Max Chl Dpth (ft)	* 2.82	* Hydr. Depth (ft)	*	* 2.47	*	*	*	*
* Conv. Total (cfs)	* 9929.4	* Conv. (cfs)	*	* 9929.4	*	*	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 46.62	*	*	*	*
* Min Ch El (ft)	* 2114.41	* Shear (lb/sq ft)	*	* 0.00	*	*	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	*	*	*	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 24.86	*	*	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 8.01	*	*	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1323

INPUT
Description: Sta 69+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	2124.31	-25	2114.31	15	2114.31	36	2124.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.03	-45	.03	36	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-45	36	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2117.23	* Element	* Left OB	* Channel	* Right OB	*	*	*
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	*	*	*	*

* W.S. Elev (ft)	* 2117.23	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*		
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 133.92	*	*		
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 133.92	*	*		
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	*	*		
* Top Width (ft)	* 51.69	* Top Width (ft)	*	* 51.69	*	*		
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	*	*		
* Max Chl Dpth (ft)	* 2.92	* Hydr. Depth (ft)	*	* 2.59	*	*		
* Conv. Total (cfs)	* 12296.2	* Conv. (cfs)	*	* 12296.2	*	*		
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 53.06	*	*		
* Min Ch El (ft)	* 2114.31	* Shear (lb/sq ft)	*	* 0.00	*	*		
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	*	*		
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 24.72	*	*		
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.96	*	*		

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1322

INPUT
Description: Sta 69+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.2	2122.81	-29	2114.21	15	2114.21	32.2	2122.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.2	.03	-46.2	.03	32.2	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-46.2 32.2 13 13 13 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2117.23	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2117.23	* Reach Len. (ft)	* 13.00	* 13.00	* 13.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 151.20	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 151.20	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *
* Top Width (ft)	* 56.09	* Top Width (ft)	*	* 56.09	* *
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	* *
* Max Chl Dpth (ft)	* 3.02	* Hydr. Depth (ft)	*	* 2.70	* *
* Conv. Total (cfs)	* 14266.1	* Conv. (cfs)	*	* 14266.1	* *
* Length Wtd. (ft)	* 13.00	* Wetted Per. (ft)	*	* 57.51	* *
* Min Ch El (ft)	* 2114.21	* Shear (lb/sq ft)	*	* 0.00	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 24.56	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.90	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1321

INPUT
Description: Sta 68+87 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.4	2121.31	-32.5	2114.18	17.5	2114.18	30.6	2120.91

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.4	.04	-47.4	.04	30.6	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-47.4 30.6 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2117.23	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.040	* *
* W.S. Elev (ft)	* 2117.23	* Reach Len. (ft)	* 6.00	* 6.00	* 6.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 171.37	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 171.37	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *
* Top Width (ft)	* 62.32	* Top Width (ft)	*	* 62.32	* *
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	* *
* Max Chl Dpth (ft)	* 3.05	* Hydr. Depth (ft)	*	* 2.75	* *
* Conv. Total (cfs)	* 12307.7	* Conv. (cfs)	*	* 12307.7	* *
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	* 63.75	* *
* Min Ch El (ft)	* 2114.18	* Shear (lb/sq ft)	*	* 0.00	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 24.51	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.88	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1320

INPUT
Description: Sta 68+81 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.4	2121.31	-32.5	2114.17	17.5	2114.17	30.6	2120.91

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.4	.028	-47.4	.028	30.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-47.4 30.6 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2117.23	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 2117.23	* Reach Len. (ft)	* 0.10	* 0.10	* 0.10 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 171.96	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 171.96	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *
* Top Width (ft)	* 62.34	* Top Width (ft)	*	* 62.34	* *
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	* *
* Max Chl Dpth (ft)	* 3.06	* Hydr. Depth (ft)	*	* 2.76	* *
* Conv. Total (cfs)	* 17679.2	* Conv. (cfs)	*	* 17679.2	* *
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	* 63.78	* *
* Min Ch El (ft)	* 2114.17	* Shear (lb/sq ft)	*	* 0.00	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 24.48	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.87	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1319

INPUT
Description: Sta 68+81 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.4	2121.31	-32.5	2117.17	17.5	2117.17	30.6	2120.91

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.4	.028	-47.4	.028	30.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-47.4 30.6 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2117.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.028	
W.S. Elev (ft)	2117.23	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		2.97	
E.G. Slope (ft/ft)	*0.002134	Area (sq ft)		2.97	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.42	Top Width (ft)		50.42	
Vel Total (ft/s)	0.37	Avg. Vel. (ft/s)		0.37	
Max Chl Dpth (ft)	0.06	Hydr. Depth (ft)		0.06	
Conv. Total (cfs)	23.8	Conv. (cfs)		23.8	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		50.44	
Min Ch El (ft)	2117.17	Shear (lb/sq ft)		0.01	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)		24.48	
C & E Loss (ft)	0.00	Cum SA (acres)		7.87	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1318

INPUT
Description: Sta 68+75 -Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.4	2121.31	-32.5	2117.16	17.5	2117.16	30.6	2120.91

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.4	.028	-47.4	.028	30.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff	Expan.
-47.4	30.6	.1	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2117.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.		0.028	
W.S. Elev (ft)	2117.18	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	2117.18	Flow Area (sq ft)		1.19	
E.G. Slope (ft/ft)	*0.045018	Area (sq ft)		1.19	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.17	Top Width (ft)		50.17	
Vel Total (ft/s)	0.93	Avg. Vel. (ft/s)		0.93	
Max Chl Dpth (ft)	0.02	Hydr. Depth (ft)		0.02	
Conv. Total (cfs)	5.2	Conv. (cfs)		5.2	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		50.17	
Min Ch El (ft)	2117.16	Shear (lb/sq ft)		0.07	
Alpha	1.00	Stream Power (lb/ft s)		0.06	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		24.48	
C & E Loss (ft)	0.00	Cum SA (acres)		7.86	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1317

INPUT
Description: Sta 68 + 75 Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.4	2121.31	-32.5	2114.16	17.5	2114.16	30.6	2120.91

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.4	.04	-47.4	.04	30.6	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff	Expan.
-47.4	30.6	19	19	19	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2114.23	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.040	
W.S. Elev (ft)	2114.23	Reach Len. (ft)	19.00	19.00	19.00
Crit W.S. (ft)	2114.19	Flow Area (sq ft)		3.35	
E.G. Slope (ft/ft)	*0.002883	Area (sq ft)		3.35	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.27	Top Width (ft)		50.27	
Vel Total (ft/s)	0.33	Avg. Vel. (ft/s)		0.33	
Max Chl Dpth (ft)	0.07	Hydr. Depth (ft)		0.07	
Conv. Total (cfs)	20.5	Conv. (cfs)		20.5	
Length Wtd. (ft)	19.00	Wetted Per. (ft)		50.30	
Min Ch El (ft)	2114.16	Shear (lb/sq ft)		0.01	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		24.48	
C & E Loss (ft)	0.00	Cum SA (acres)		7.86	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1316

INPUT
Description: Sta 68+56 - Inline Gabion Drop Sructure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.4	2121.31	-32.5	2114.12	17.5	2114.12	30.6	2120.91

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.4	.028	-47.4	.028	30.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff	Expan.
-47.4	30.6	6	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2114.18	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.028	
W.S. Elev (ft)	2114.18	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		2.94	
E.G. Slope (ft/ft)	*0.002198	Area (sq ft)		2.94	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.23	Top Width (ft)		50.23	
Vel Total (ft/s)	0.37	Avg. Vel. (ft/s)		0.37	
Max Chl Dpth (ft)	0.06	Hydr. Depth (ft)		0.06	
Conv. Total (cfs)	23.5	Conv. (cfs)		23.5	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		50.26	
Min Ch El (ft)	2114.12	Shear (lb/sq ft)		0.01	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)		24.48	
C & E Loss (ft)	0.00	Cum SA (acres)		7.84	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1315

```
INPUT
Description: Sta 68+50 - Inline Gabion Drop Structure
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -47.4 2121.31    -32.5 2114.11     17.5 2114.11     30.6 2120.91

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -47.4     .028    -47.4     .028     30.6     .028

Bank Sta: Left    Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -47.4    30.6                    .1        .1         .1             .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)          * 2114.15  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.01  * Wt. n-Val.              *          *    0.028 *          *
* W.S. Elev (ft)          * 2114.14  * Reach Len. (ft)        *    0.10  *     0.10 *     0.10  *
* Crit W.S. (ft)          * 2114.14  * Flow Area (sq ft)      *          *     1.31 *          *
* E.G. Slope (ft/ft)      *0.032479  * Area (sq ft)           *          *     1.31 *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)             *          *     1.10 *          *
* Top Width (ft)          *   50.10  * Top Width (ft)        *          *    50.10 *          *
* Vel Total (ft/s)        *    0.84  * Avg. Vel. (ft/s)       *          *     0.84 *          *
* Max Chl Dpth (ft)       *    0.03  * Hydr. Depth (ft)       *          *     0.03 *          *
* Conv. Total (cfs)       *     6.1  * Conv. (cfs)            *          *      6.1 *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)       *          *    50.12 *          *
* Min Ch El (ft)          * 2114.11  * Shear (lb/sq ft)      *          *     0.05 *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *     0.04 *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *    24.48 *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *     7.83 *          *
*****************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1314

INPUT
Description: Sta 68+50 - Drake Channel
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -47.4 2121.31      -13 2104.11       -3 2104.11     30.6 2120.91

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -47.4     .028    -47.4     .028     30.6     .028

Bank Sta: Left    Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -47.4    30.6                   24        24         24             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)          * 2106.53  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.028 *          *
* W.S. Elev (ft)          * 2106.53  * Reach Len. (ft)        *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)          * 2104.18  * Flow Area (sq ft)      *          *   35.94  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)           *          *   35.94  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)             *          *    1.10  *          *
* Top Width (ft)          *   19.69  * Top Width (ft)        *          *   19.69  *          *
* Vel Total (ft/s)        *    0.03  * Avg. Vel. (ft/s)       *          *    0.03  *          *
* Max Chl Dpth (ft)       *    2.42  * Hydr. Depth (ft)       *          *    1.83  *          *
* Conv. Total (cfs)       *  2744.4  * Conv. (cfs)            *          * 2744.4   *          *
* Length Wtd. (ft)        *   24.00  * Wetted Per. (ft)       *          *   20.83  *          *
* Min Ch El (ft)          * 2104.11  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   24.48  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    7.83  *          *
*****************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1313

INPUT
Description: Sta 68+26 - Drake Channel
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -47.6 2120.31      -15 2104.06         0 2104.06     29.6 2118.81

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -47.6     .028    -47.6     .03      29.6     .028

Bank Sta: Left    Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -47.6    29.6                   12        12         12             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)          * 2106.53  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.030 *          *
* W.S. Elev (ft)          * 2106.53  * Reach Len. (ft)        *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *   49.33  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)           *          *   49.33  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)             *          *    1.10  *          *
* Top Width (ft)          *   24.92  * Top Width (ft)        *          *   24.92  *          *
* Vel Total (ft/s)        *    0.02  * Avg. Vel. (ft/s)       *          *    0.02  *          *
* Max Chl Dpth (ft)       *    2.47  * Hydr. Depth (ft)       *          *    1.98  *          *
* Conv. Total (cfs)       *  3737.2  * Conv. (cfs)            *          * 3737.2   *          *
* Length Wtd. (ft)        *   12.00  * Wetted Per. (ft)       *          *   26.08  *          *
* Min Ch El (ft)          * 2104.06  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   24.46  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    7.82  *          *
*****************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1312

INPUT
Description: Sta 68+14 - Drake Channel
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -47.6 2120.31      -15 2104.04         0 2104.04     29.6 2118.81

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -47.6     .03     -47.6     .03      29.6     .03

Bank Sta: Left    Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -47.6    29.6                   14        14         14             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)          * 2106.53  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.030 *          *
* W.S. Elev (ft)          * 2106.53  * Reach Len. (ft)        *   14.00  *   14.00  *   14.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *   49.82  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)           *          *   49.82  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)             *          *    1.10  *          *
* Top Width (ft)          *   24.99  * Top Width (ft)        *          *   24.99  *          *
* Vel Total (ft/s)        *    0.02  * Avg. Vel. (ft/s)       *          *    0.02  *          *
* Max Chl Dpth (ft)       *    2.49  * Hydr. Depth (ft)       *          *    1.99  *          *
* Conv. Total (cfs)       *  3790.8  * Conv. (cfs)            *          * 3790.8   *          *
* Length Wtd. (ft)        *   14.00  * Wetted Per. (ft)       *          *   26.16  *          *
* Min Ch El (ft)          * 2104.04  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
```

* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 24.44	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.81	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1311

INPUT
Description: Sta 68+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.6	2120.31	-15	2104.01	0	2104.01	29.6	2118.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.6	.03	-47.6	.03	29.6	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-47.6 29.6 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2106.53	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2106.53	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 50.54	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 50.54	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *
* Top Width (ft)	* 25.09	* Top Width (ft)	*	* 25.09	* *
* Vel Total (ft/s)	* 0.02	* Avg. Vel. (ft/s)	*	* 0.02	* *
* Max Chl Dpth (ft)	* 2.52	* Hydr. Depth (ft)	*	* 2.01	* *
* Conv. Total (cfs)	* 3872.0	* Conv. (cfs)	*	* 3872.0	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 26.28	* *
* Min Ch El (ft)	* 2104.01	* Shear (lb/sq ft)	*	* 0.00	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 24.43	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.81	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1310

INPUT
Description: Sta 67+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.4	2116.51	-21	2103.91	7	2103.91	32.4	2116.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.4	.03	-46.4	.03	32.4	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-46.4 32.4 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2106.53	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2106.53	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 87.27	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 87.27	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *
* Top Width (ft)	* 38.57	* Top Width (ft)	*	* 38.57	* *
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	* *
* Max Chl Dpth (ft)	* 2.62	* Hydr. Depth (ft)	*	* 2.26	* *
* Conv. Total (cfs)	* 7295.4	* Conv. (cfs)	*	* 7295.4	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 39.80	* *
* Min Ch El (ft)	* 2103.91	* Shear (lb/sq ft)	*	* 0.00	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 24.35	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.77	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1309

INPUT
Description: Sta 67+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.4	2116.51	-21	2103.81	7	2103.81	32.4	2116.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.4	.03	-46.4	.03	32.4	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-46.4 32.4 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2106.53	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2106.53	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 91.02	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 91.02	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *
* Top Width (ft)	* 38.89	* Top Width (ft)	*	* 38.89	* *
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	* *
* Max Chl Dpth (ft)	* 2.72	* Hydr. Depth (ft)	*	* 2.34	* *
* Conv. Total (cfs)	* 7777.5	* Conv. (cfs)	*	* 7777.5	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 40.17	* *
* Min Ch El (ft)	* 2103.81	* Shear (lb/sq ft)	*	* 0.00	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 24.25	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.72	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1308

INPUT
Description: Sta 66+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.8	2114.61	-24	2103.71	19	2103.71	40.8	2114.61

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45.8	.03	-45.8	.03	40.8	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45.8 40.8 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2106.53	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2106.53	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 137.26	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 137.26	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *
* Top Width (ft)	* 54.29	* Top Width (ft)	*	* 54.29	* *
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	* *

* Max Chl Dpth (ft)	* 2.82	* Hydr. Depth (ft)	*	* 2.53	*	*
* Conv. Total (cfs)	* 12415.7	* Conv. (cfs)	*	* 12415.7	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 55.62	*	*
* Min Ch El (ft)	* 2103.71	* Shear (lb/sq ft)	*	* 0.00	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	*	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 24.12	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.67	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1307

INPUT
Description: Sta 66+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.4	2111.81	-27	2103.61	12	2103.61	30.6	2112.91

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.4	.03	-43.4	.03	30.6	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-43.4	30.6	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2106.53	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2106.53	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 131.02	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 131.02	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *
* Top Width (ft)	* 50.69	* Top Width (ft)	*	* 50.69	* *
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	* *
* Max Chl Dpth (ft)	* 2.92	* Hydr. Depth (ft)	*	* 2.58	* *
* Conv. Total (cfs)	* 12005.4	* Conv. (cfs)	*	* 12005.4	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 52.07	* *
* Min Ch El (ft)	* 2103.61	* Shear (lb/sq ft)	*	* 0.00	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 23.96	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.61	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1306

INPUT
Description: Sta 65+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.8	2111.91	-30	2103.51	15	2103.51	31	2111.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.8	.03	-46.8	.03	31	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-46.8	31	13	13	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2106.53	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2106.53	* Reach Len. (ft)	* 13.00	* 13.00	* 13.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 154.24	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 154.24	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *
* Top Width (ft)	* 57.09	* Top Width (ft)	*	* 57.09	* *
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	* *
* Max Chl Dpth (ft)	* 3.02	* Hydr. Depth (ft)	*	* 2.70	* *
* Conv. Total (cfs)	* 14577.9	* Conv. (cfs)	*	* 14577.9	* *
* Length Wtd. (ft)	* 13.00	* Wetted Per. (ft)	*	* 58.51	* *
* Min Ch El (ft)	* 2103.51	* Shear (lb/sq ft)	*	* 0.00	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 23.80	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.55	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1305

INPUT
Description: Sta 65+37 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.6	2110.21	-32.5	2103.48	17.5	2103.48	29.2	2109.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.6	.04	-46.6	.04	29.2	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-46.6	29.2	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2106.53	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.040	* *
* W.S. Elev (ft)	* 2106.53	* Reach Len. (ft)	* 6.00	* 6.00	* 6.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 171.38	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 171.38	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *
* Top Width (ft)	* 62.32	* Top Width (ft)	*	* 62.32	* *
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01	* *
* Max Chl Dpth (ft)	* 3.05	* Hydr. Depth (ft)	*	* 2.75	* *
* Conv. Total (cfs)	* 12309.2	* Conv. (cfs)	*	* 12309.2	* *
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	* 63.75	* *
* Min Ch El (ft)	* 2103.48	* Shear (lb/sq ft)	*	* 0.00	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 23.75	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.53	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1304

INPUT
Description: Sta 65+31 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.6	2110.21	-32.5	2103.47	17.5	2103.47	29.2	2109.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.6	.028	-46.6	.028	29.2	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-46.6	29.2	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2106.53	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 2106.53	* Reach Len. (ft)	* 0.10	* 0.10	* 0.10 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 171.97	* *
* E.G. Slope (ft/ft)	*0.000000	* Area (sq ft)	*	* 171.97	* *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10	* *

* Top Width (ft)	* 62.34	* Top Width (ft)	*	* 62.34 * *
* Vel Total (ft/s)	* 0.01	* Avg. Vel. (ft/s)	*	* 0.01 * *
* Max Chl Dpth (ft)	* 3.06	* Hydr. Depth (ft)	*	* 2.76 * *
* Conv. Total (cfs)	* 17681.2	* Conv. (cfs)	*	* 17681.2 * *
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	* 63.77 * *
* Min Ch El (ft)	* 2103.47	* Shear (lb/sq ft)	*	* 0.00 * *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00 * *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 23.73 * *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.52 * *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1303

INPUT
Description: Sta 65+31 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.6	2110.21	-32.5	2106.47	17.5	2106.47	29.2	2109.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.6	.028	-46.6	.028	29.2	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-46.6	29.2	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2106.53	* Element	* Left OB *	Channel * Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.028 * *
* W.S. Elev (ft)	* 2106.53	* Reach Len. (ft)	* 6.00 *	6.00 * 6.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 2.99 * *
* E.G. Slope (ft/ft)	*0.002076	* Area (sq ft)	*	* 2.99 * *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10 * *
* Top Width (ft)	* 50.45	* Top Width (ft)	*	* 50.45 * *
* Vel Total (ft/s)	* 0.37	* Avg. Vel. (ft/s)	*	* 0.37 * *
* Max Chl Dpth (ft)	* 0.06	* Hydr. Depth (ft)	*	* 0.06 * *
* Conv. Total (cfs)	* 24.1	* Conv. (cfs)	*	* 24.1 * *
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	* 50.47 * *
* Min Ch El (ft)	* 2106.47	* Shear (lb/sq ft)	*	* 0.01 * *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00 * *
* Frctn Loss (ft)	* 0.03	* Cum Volume (acre-ft)	*	* 23.73 * *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.52 * *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1302

INPUT
Description: Sta 65+25 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.6	2110.21	-32.5	2106.46	17.5	2106.46	29.2	2109.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.6	.028	-46.6	.028	29.2	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-46.6	29.2	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2106.50	* Element	* Left OB *	Channel * Right OB *
* Vel Head (ft)	* 0.01	* Wt. n-Val.	*	* 0.028 * *
* W.S. Elev (ft)	* 2106.49	* Reach Len. (ft)	* 0.10 *	0.10 * 0.10 *
* Crit W.S. (ft)	* 2106.49	* Flow Area (sq ft)	*	* 1.24 * *
* E.G. Slope (ft/ft)	*0.039340	* Area (sq ft)	*	* 1.24 * *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10 * *
* Top Width (ft)	* 50.19	* Top Width (ft)	*	* 50.19 * *
* Vel Total (ft/s)	* 0.89	* Avg. Vel. (ft/s)	*	* 0.89 * *
* Max Chl Dpth (ft)	* 0.02	* Hydr. Depth (ft)	*	* 0.02 * *
* Conv. Total (cfs)	* 5.5	* Conv. (cfs)	*	* 5.5 * *
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	* 50.19 * *
* Min Ch El (ft)	* 2106.46	* Shear (lb/sq ft)	*	* 0.06 * *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.05 * *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 23.73 * *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.52 * *

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1301

INPUT
Description: Sta 65+25 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.6	2110.21	-32.5	2103.46	17.5	2103.46	29.2	2109.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.6	.04	-46.6	.04	29.2	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-46.6	29.2	19	19	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2103.53	* Element	* Left OB *	Channel * Right OB *
* Vel Head (ft)	* 0.00	* Wt. n-Val.	*	* 0.040 * *
* W.S. Elev (ft)	* 2103.53	* Reach Len. (ft)	* 19.00 *	19.00 * 19.00 *
* Crit W.S. (ft)	* 2103.49	* Flow Area (sq ft)	*	* 3.34 * *
* E.G. Slope (ft/ft)	*0.002919	* Area (sq ft)	*	* 3.34 * *
* Q Total (cfs)	* 1.10	* Flow (cfs)	*	* 1.10 * *
* Top Width (ft)	* 50.27	* Top Width (ft)	*	* 50.27 * *
* Vel Total (ft/s)	* 0.33	* Avg. Vel. (ft/s)	*	* 0.33 * *
* Max Chl Dpth (ft)	* 0.07	* Hydr. Depth (ft)	*	* 0.07 * *
* Conv. Total (cfs)	* 20.4	* Conv. (cfs)	*	* 20.4 * *
* Length Wtd. (ft)	* 19.00	* Wetted Per. (ft)	*	* 50.30 * *
* Min Ch El (ft)	* 2103.46	* Shear (lb/sq ft)	*	* 0.01 * *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.00 * *
* Frctn Loss (ft)	* 0.05	* Cum Volume (acre-ft)	*	* 23.73 * *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 7.52 * *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1300

INPUT
Description: Sta 65+06 - Inline Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.6	2110.21	-32.5	2103.42	17.5	2103.42	29.2	2109.51

Manning's n Values num= 3

```
     Sta   n Val     Sta   n Val     Sta   n Val
*********************************************
   -46.6    .028   -46.6    .028    29.2    .028

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -46.6    29.2                6       6       6            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2103.48  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.028 *          *
* W.S. Elev (ft)          * 2103.48  * Reach Len. (ft)        *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *          *    2.94  *          *
* E.G. Slope (ft/ft)      *0.002198  * Area (sq ft)           *          *    2.94  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)             *          *    1.10  *          *
* Top Width (ft)          *   50.23  * Top Width (ft)         *          *   50.23  *          *
* Vel Total (ft/s)        *    0.37  * Avg. Vel. (ft/s)       *          *    0.37  *          *
* Max Chl Dpth (ft)       *    0.06  * Hydr. Depth (ft)       *          *    0.06  *          *
* Conv. Total (cfs)       *    23.5  * Conv. (cfs)            *          *    23.5  *          *
* Length Wtd. (ft)        *    6.00  * Wetted Per. (ft)       *          *   50.26  *          *
* Min Ch El (ft)          * 2103.42  * Shear (lb/sq ft)       *          *    0.01  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.03  * Cum Volume (acre-ft)   *          *   23.72  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    7.49  *          *
*****************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1299

INPUT
Description: Sta 65+00 - Inline Gabion Drop Srructrure
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************************
   -46.6 2110.21    -32.5 2103.41     17.5 2103.41     29.2 2109.51

Manning's n Values          num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
   -46.6    .028   -46.6    .028    29.2    .028

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -46.6    29.2                .1      .1      .1            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2103.45  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.01  * Wt. n-Val.              *          *    0.028 *          *
* W.S. Elev (ft)          * 2103.44  * Reach Len. (ft)        *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)          * 2103.44  * Flow Area (sq ft)      *          *    1.31  *          *
* E.G. Slope (ft/ft)      *0.032479  * Area (sq ft)           *          *    1.31  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)             *          *    1.10  *          *
* Top Width (ft)          *   50.10  * Top Width (ft)         *          *   50.10  *          *
* Vel Total (ft/s)        *    0.84  * Avg. Vel. (ft/s)       *          *    0.84  *          *
* Max Chl Dpth (ft)       *    0.03  * Hydr. Depth (ft)       *          *    0.03  *          *
* Conv. Total (cfs)       *     6.1  * Conv. (cfs)            *          *     6.1  *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)       *          *   50.12  *          *
* Min Ch El (ft)          * 2103.41  * Shear (lb/sq ft)       *          *    0.05  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.04  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   23.72  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    7.49  *          *
*****************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1298

INPUT
Description: Sta 65+00 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************************
   -46.6 2110.21      -13 2093.41       -3 2093.41     29.2 2109.51

Manning's n Values          num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
   -46.6    .028   -46.6    .028    29.2    .028

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -46.6    29.2                 24      24      24            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2095.83  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.028 *          *
* W.S. Elev (ft)          * 2095.83  * Reach Len. (ft)        *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)          * 2093.48  * Flow Area (sq ft)      *          *   35.92  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)           *          *   35.92  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)             *          *    1.10  *          *
* Top Width (ft)          *   19.68  * Top Width (ft)         *          *   19.68  *          *
* Vel Total (ft/s)        *    0.03  * Avg. Vel. (ft/s)       *          *    0.03  *          *
* Max Chl Dpth (ft)       *    2.42  * Hydr. Depth (ft)       *          *    1.83  *          *
* Conv. Total (cfs)       *  2741.8  * Conv. (cfs)            *          * 2741.8  *          *
* Length Wtd. (ft)        *   24.00  * Wetted Per. (ft)       *          *   20.82  *          *
* Min Ch El (ft)          * 2093.41  * Shear (lb/sq ft)       *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   23.72  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    7.49  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1297

INPUT
Description: Sta 64+76 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************************
   -46.6 2110.21      -13 2093.36       -3 2093.36     29.2 2109.51

Manning's n Values          num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
   -46.6    .028   -46.6     .03    29.2    .028

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -46.6    29.2                 12      12      12            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2095.83  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.030 *          *
* W.S. Elev (ft)          * 2095.83  * Reach Len. (ft)        *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)       *          *   36.87  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)           *          *   36.87  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)             *          *    1.10  *          *
* Top Width (ft)          *   19.85  * Top Width (ft)         *          *   19.85  *          *
* Vel Total (ft/s)        *    0.03  * Avg. Vel. (ft/s)       *          *    0.03  *          *
* Max Chl Dpth (ft)       *    2.47  * Hydr. Depth (ft)       *          *    1.86  *          *
* Conv. Total (cfs)       *  2655.9  * Conv. (cfs)            *          * 2655.9  *          *
* Length Wtd. (ft)        *   12.00  * Wetted Per. (ft)       *          *   21.02  *          *
* Min Ch El (ft)          * 2093.36  * Shear (lb/sq ft)       *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   23.70  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    7.48  *          *
*****************************************************************************************************

CROSS SECTION
```

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1296

INPUT
Description: Sta 64+64 -Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.6	2110.21	-13	2093.34	-3	2093.34	29.2	2109.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.6	.03	-46.6	.03	29.2	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-46.6 29.2 14 14 14 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.030	
W.S. Elev (ft)	2095.83	Reach Len. (ft)	14.00	14.00	14.00
Crit W.S. (ft)		Flow Area (sq ft)		37.25	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		37.25	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	19.92	Top Width (ft)		19.92	
Vel Total (ft/s)	0.03	Avg. Vel. (ft/s)		0.03	
Max Chl Dpth (ft)	2.49	Hydr. Depth (ft)		1.87	
Conv. Total (cfs)	2695.4	Conv. (cfs)		2695.4	
Length Wtd. (ft)	14.00	Wetted Per. (ft)		21.10	
Min Ch El (ft)	2093.34	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		23.69	
C & E Loss (ft)	0.00	Cum SA (acres)		7.47	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1295

INPUT
Description: Sta 64+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.6	2110.21	-13	2093.31	-3	2093.31	29.2	2109.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.6	.03	-46.6	.03	29.2	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-46.6 29.2 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.030	
W.S. Elev (ft)	2095.83	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		37.83	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		37.83	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	20.02	Top Width (ft)		20.02	
Vel Total (ft/s)	0.03	Avg. Vel. (ft/s)		0.03	
Max Chl Dpth (ft)	2.52	Hydr. Depth (ft)		1.89	
Conv. Total (cfs)	2755.1	Conv. (cfs)		2755.1	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		21.22	
Min Ch El (ft)	2093.31	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		23.68	
C & E Loss (ft)	0.00	Cum SA (acres)		7.46	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1294

INPUT
Description: Sta 64+00 - Drake Channel
Sta 64+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.2	2107.81	-18	2093.21	4	2093.21	30.6	2106.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.2	.03	-47.2	.03	30.6	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-47.2 30.6 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.030	
W.S. Elev (ft)	2095.83	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		71.38	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		71.38	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	32.48	Top Width (ft)		32.48	
Vel Total (ft/s)	0.02	Avg. Vel. (ft/s)		0.02	
Max Chl Dpth (ft)	2.62	Hydr. Depth (ft)		2.20	
Conv. Total (cfs)	5829.0	Conv. (cfs)		5829.0	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		33.72	
Min Ch El (ft)	2093.21	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		23.62	
C & E Loss (ft)	0.00	Cum SA (acres)		7.43	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1293

INPUT
Description: Sta 63+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.8	2106.01	-21	2093.11	7	2093.11	30.4	2104.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.8	.03	-46.8	.03	30.4	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-46.8 30.4 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.030	
W.S. Elev (ft)	2095.83	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		90.97	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		90.97	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	38.88	Top Width (ft)		38.88	
Vel Total (ft/s)	0.01	Avg. Vel. (ft/s)		0.01	
Max Chl Dpth (ft)	2.72	Hydr. Depth (ft)		2.34	
Conv. Total (cfs)	7770.2	Conv. (cfs)		7770.2	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		40.17	
Min Ch El (ft)	2093.11	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		23.53	
C & E Loss (ft)	0.00	Cum SA (acres)		7.39	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1292

INPUT
Description: Sta 63+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.6	2104.81	-24	2093.01	10	2093.01	31.6	2103.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.6	.03	-47.6	.03	31.6	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-47.6	31.6	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.83	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.030
W.S. Elev (ft)	2095.83	Reach Len. (ft)	50.00	50.00 / 50.00
Crit W.S. (ft)		Flow Area (sq ft)		111.80
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		111.80
Q Total (cfs)	1.10	Flow (cfs)		1.10
Top Width (ft)	45.28	Top Width (ft)		45.28
Vel Total (ft/s)	0.01	Avg. Vel. (ft/s)		0.01
Max Chl Dpth (ft)	2.82	Hydr. Depth (ft)		2.47
Conv. Total (cfs)	9922.0	Conv. (cfs)		9922.0
Length Wtd. (ft)	50.00	Wetted Per. (ft)		46.61
Min Ch El (ft)	2093.01	Shear (lb/sq ft)		0.00
Alpha	1.00	Stream Power (lb/ft s)		0.00
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		23.41
C & E Loss (ft)	0.00	Cum SA (acres)		7.34

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1291

INPUT
Description: Sta 62+50 -Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-48.2	2103.51	-27	2092.91	12	2092.91	31.8	2102.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-48.2	.03	-48.2	.03	31.8	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-48.2	31.8	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.83	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.030
W.S. Elev (ft)	2095.83	Reach Len. (ft)	50.00	50.00 / 50.00
Crit W.S. (ft)		Flow Area (sq ft)		130.95
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		130.95
Q Total (cfs)	1.10	Flow (cfs)		1.10
Top Width (ft)	50.68	Top Width (ft)		50.68
Vel Total (ft/s)	0.01	Avg. Vel. (ft/s)		0.01
Max Chl Dpth (ft)	2.92	Hydr. Depth (ft)		2.58
Conv. Total (cfs)	11996.8	Conv. (cfs)		11996.8
Length Wtd. (ft)	50.00	Wetted Per. (ft)		52.06
Min Ch El (ft)	2092.91	Shear (lb/sq ft)		0.00
Alpha	1.00	Stream Power (lb/ft s)		0.00
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		23.27
C & E Loss (ft)	0.00	Cum SA (acres)		7.29

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1290

INPUT
Description: Sta 62+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-48	2101.81	-30	2092.81	15	2092.81	33	2101.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-48	.03	-48	.03	33	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-48	33	13	13	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.83	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.030
W.S. Elev (ft)	2095.83	Reach Len. (ft)	13.00	13.00 / 13.00
Crit W.S. (ft)		Flow Area (sq ft)		154.16
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		154.16
Q Total (cfs)	1.10	Flow (cfs)		1.10
Top Width (ft)	57.08	Top Width (ft)		57.08
Vel Total (ft/s)	0.01	Avg. Vel. (ft/s)		0.01
Max Chl Dpth (ft)	3.02	Hydr. Depth (ft)		2.70
Conv. Total (cfs)	14565.8	Conv. (cfs)		14565.8
Length Wtd. (ft)	13.00	Wetted Per. (ft)		58.51
Min Ch El (ft)	2092.81	Shear (lb/sq ft)		0.00
Alpha	1.00	Stream Power (lb/ft s)		0.00
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		23.11
C & E Loss (ft)	0.00	Cum SA (acres)		7.23

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1289

INPUT
Description: Sta 61+87 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.2	2099.81	-32.5	2092.77	17.5	2092.77	31.2	2099.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.2	.04	-47.2	.04	31.2	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-47.2	31.2	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.83	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.040
W.S. Elev (ft)	2095.83	Reach Len. (ft)	6.00	6.00 / 6.00
Crit W.S. (ft)		Flow Area (sq ft)		171.91
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		171.91
Q Total (cfs)	1.10	Flow (cfs)		1.10
Top Width (ft)	62.35	Top Width (ft)		62.35
Vel Total (ft/s)	0.01	Avg. Vel. (ft/s)		0.01
Max Chl Dpth (ft)	3.06	Hydr. Depth (ft)		2.76
Conv. Total (cfs)	12367.8	Conv. (cfs)		12367.8
Length Wtd. (ft)	6.00	Wetted Per. (ft)		63.78
Min Ch El (ft)	2092.77	Shear (lb/sq ft)		0.00
Alpha	1.00	Stream Power (lb/ft s)		0.00
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		23.06
C & E Loss (ft)	0.00	Cum SA (acres)		7.21

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1288

INPUT
Description: Sta 61+81 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.2	2099.81	-32.5	2092.77	17.5	2092.77	31.2	2099.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.2	.028	-47.2	.028	31.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-47.2 31.2 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.028	
W.S. Elev (ft)	2095.83	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)		Flow Area (sq ft)		171.91	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		171.91	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	62.35	Top Width (ft)		62.35	
Vel Total (ft/s)	0.01	Avg. Vel. (ft/s)		0.01	
Max Chl Dpth (ft)	3.06	Hydr. Depth (ft)		2.76	
Conv. Total (cfs)	17668.3	Conv. (cfs)		17668.3	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		63.78	
Min Ch El (ft)	2092.77	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		23.03	
C & E Loss (ft)	0.00	Cum SA (acres)		7.20	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1287

INPUT
Description: Sta 61+81 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.2	2099.81	-32.5	2095.77	17.5	2095.77	31.2	2099.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.2	.028	-47.2	.028	31.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-47.2 31.2 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.028	
W.S. Elev (ft)	2095.83	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		2.90	
E.G. Slope (ft/ft)	0.002288	Area (sq ft)		2.90	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.41	Top Width (ft)		50.41	
Vel Total (ft/s)	0.38	Avg. Vel. (ft/s)		0.38	
Max Chl Dpth (ft)	0.06	Hydr. Depth (ft)		0.06	
Conv. Total (cfs)	23.0	Conv. (cfs)		23.0	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		50.42	
Min Ch El (ft)	2095.77	Shear (lb/sq ft)		0.01	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)		23.03	
C & E Loss (ft)	0.00	Cum SA (acres)		7.20	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1286

INPUT
Description: Sta 61+75 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.2	2099.81	-32.5	2095.76	17.5	2095.76	31.2	2099.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.2	.028	-47.2	.028	31.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-47.2 31.2 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2095.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.		0.028	
W.S. Elev (ft)	2095.80	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	2095.80	Flow Area (sq ft)		1.81	
E.G. Slope (ft/ft)	0.011004	Area (sq ft)		1.81	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.25	Top Width (ft)		50.25	
Vel Total (ft/s)	0.61	Avg. Vel. (ft/s)		0.61	
Max Chl Dpth (ft)	0.04	Hydr. Depth (ft)		0.04	
Conv. Total (cfs)	10.5	Conv. (cfs)		10.5	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		50.26	
Min Ch El (ft)	2095.76	Shear (lb/sq ft)		0.02	
Alpha	1.00	Stream Power (lb/ft s)		0.02	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		23.03	
C & E Loss (ft)	0.00	Cum SA (acres)		7.19	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1285

INPUT
Description: Sta 61+75 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.2	2099.81	-32.5	2092.76	17.5	2092.76	31.2	2099.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.2	.04	-47.2	.04	31.2	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-47.2 31.2 19 19 19 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2092.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.040	

W.S. Elev (ft)	2092.83	Reach Len. (ft)	19.00	19.00	19.00	
Crit W.S. (ft)	2092.79	Flow Area (sq ft)		3.38		
E.G. Slope (ft/ft)	0.002814	Area (sq ft)		3.38		
Q Total (cfs)	1.10	Flow (cfs)		1.10		
Top Width (ft)	50.27	Top Width (ft)		50.27		
Vel Total (ft/s)	0.33	Avg. Vel. (ft/s)		0.33		
Max Chl Dpth (ft)	0.07	Hydr. Depth (ft)		0.07		
Conv. Total (cfs)	20.7	Conv. (cfs)		20.7		
Length Wtd. (ft)	19.00	Wetted Per. (ft)		50.30		
Min Ch El (ft)	2092.76	Shear (lb/sq ft)		0.01		
Alpha	1.00	Stream Power (lb/ft s)		0.00		
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		23.03		
C & E Loss (ft)	0.00	Cum SA (acres)		7.19		

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1284

INPUT
Description: Sta 61+56 - Inline Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.2	2099.81	-32.5	2092.72	17.5	2092.72	31.2	2099.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.2	.028	-47.2	.028	31.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-47.2 31.2 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2092.78	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.028	
W.S. Elev (ft)	2092.78	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		2.84	
E.G. Slope (ft/ft)	0.002461	Area (sq ft)		2.84	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.23	Top Width (ft)		50.23	
Vel Total (ft/s)	0.39	Avg. Vel. (ft/s)		0.39	
Max Chl Dpth (ft)	0.06	Hydr. Depth (ft)		0.06	
Conv. Total (cfs)	22.2	Conv. (cfs)		22.2	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		50.25	
Min Ch El (ft)	2092.72	Shear (lb/sq ft)		0.01	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)		23.03	
C & E Loss (ft)	0.00	Cum SA (acres)		7.17	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1283

INPUT
Description: Sta 61+50 - Inline Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.2	2099.81	-32.5	2092.71	17.5	2092.71	31.2	2099.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.2	.028	-47.2	.028	31.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-47.2 31.2 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2092.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.		0.028	
W.S. Elev (ft)	2092.74	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	2092.74	Flow Area (sq ft)		1.59	
E.G. Slope (ft/ft)	0.016971	Area (sq ft)		1.59	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.13	Top Width (ft)		50.13	
Vel Total (ft/s)	0.69	Avg. Vel. (ft/s)		0.69	
Max Chl Dpth (ft)	0.03	Hydr. Depth (ft)		0.03	
Conv. Total (cfs)	8.4	Conv. (cfs)		8.4	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		50.14	
Min Ch El (ft)	2092.71	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.02	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		23.03	
C & E Loss (ft)	0.00	Cum SA (acres)		7.17	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1282

INPUT
Description: Sta 61+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.2	2099.81	-13	2082.71	-3	2082.71	31.2	2099.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.2	.028	-47.2	.028	31.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-47.2 31.2 24 24 24 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2085.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.028	
W.S. Elev (ft)	2085.13	Reach Len. (ft)	24.00	24.00	24.00
Crit W.S. (ft)	2082.78	Flow Area (sq ft)		35.94	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		35.94	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	19.69	Top Width (ft)		19.69	
Vel Total (ft/s)	0.03	Avg. Vel. (ft/s)		0.03	
Max Chl Dpth (ft)	2.42	Hydr. Depth (ft)		1.83	
Conv. Total (cfs)	2744.4	Conv. (cfs)		2744.4	
Length Wtd. (ft)	24.00	Wetted Per. (ft)		20.83	
Min Ch El (ft)	2082.71	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		23.03	
C & E Loss (ft)	0.00	Cum SA (acres)		7.16	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1281

INPUT
Description: Sta 61+26 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.2	2099.81	-13	2082.66	-3	2082.66	31.2	2099.81

```
Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************************
   -47.2    .028   -47.2     .03     31.2    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -47.2    31.2                 12        12        12             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2085.13  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2085.13  * Reach Len. (ft)        *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *   36.90  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)           *          *   36.90  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)             *          *    1.10  *          *
* Top Width (ft)          *   19.86  * Top Width (ft)         *          *   19.86  *          *
* Vel Total (ft/s)        *    0.03  * Avg. Vel. (ft/s)       *          *    0.03  *          *
* Max Chl Dpth (ft)       *    2.47  * Hydr. Depth (ft)       *          *    1.86  *          *
* Conv. Total (cfs)       *  2659.0  * Conv. (cfs)           *          *  2659.0  *          *
* Length Wtd. (ft)        *   12.00  * Wetted Per. (ft)       *          *   21.03  *          *
* Min Ch El (ft)          * 2082.66  * Shear (lb/sq ft)       *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   23.01  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    7.15  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1280

INPUT
Description: Sta 61+14- Drake Channel
Station Elevation Data    num=        4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -47.2 2099.81      -13 2082.64       -3 2082.64     31.2 2099.81

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************************
   -47.2     .03   -47.2     .03     31.2     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -47.2    31.2                 14        14        14             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2085.13  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2085.13  * Reach Len. (ft)        *   14.00  *   14.00  *   14.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *   37.28  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)           *          *   37.28  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)             *          *    1.10  *          *
* Top Width (ft)          *   19.93  * Top Width (ft)         *          *   19.93  *          *
* Vel Total (ft/s)        *    0.03  * Avg. Vel. (ft/s)       *          *    0.03  *          *
* Max Chl Dpth (ft)       *    2.49  * Hydr. Depth (ft)       *          *    1.87  *          *
* Conv. Total (cfs)       *  2698.5  * Conv. (cfs)           *          *  2698.5  *          *
* Length Wtd. (ft)        *   14.00  * Wetted Per. (ft)       *          *   21.11  *          *
* Min Ch El (ft)          * 2082.64  * Shear (lb/sq ft)       *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   23.00  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    7.15  *          *
*****************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1279

INPUT
Description: Sta 61+00 - Drake Channel
Station Elevation Data    num=        4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -46.4 2098.31      -15 2082.52        0 2082.52     31.4 2098.31

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************************
   -46.4     .03   -46.4     .03     31.4     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -46.4    31.4                 50        50        50             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2085.13  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2085.13  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *   52.74  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)           *          *   52.74  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)             *          *    1.10  *          *
* Top Width (ft)          *   25.39  * Top Width (ft)         *          *   25.39  *          *
* Vel Total (ft/s)        *    0.02  * Avg. Vel. (ft/s)       *          *    0.02  *          *
* Max Chl Dpth (ft)       *    2.61  * Hydr. Depth (ft)       *          *    2.08  *          *
* Conv. Total (cfs)       *  4119.6  * Conv. (cfs)           *          *  4119.6  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)       *          *   26.63  *          *
* Min Ch El (ft)          * 2082.52  * Shear (lb/sq ft)       *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   22.99  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    7.14  *          *
*****************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1278

INPUT
Description: Sta 60+50 - Drake Channel
Station Elevation Data    num=        4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -46.2 2096.61      -18 2082.44        5 2082.44     33.6 2096.81

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************************
   -46.2     .03   -46.2     .03     33.6     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -46.2    33.6                 50        50        50             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2085.13  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2085.13  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *   76.33  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)           *          *   76.33  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)             *          *    1.10  *          *
* Top Width (ft)          *   33.71  * Top Width (ft)         *          *   33.71  *          *
* Vel Total (ft/s)        *    0.01  * Avg. Vel. (ft/s)       *          *    0.01  *          *
* Max Chl Dpth (ft)       *    2.69  * Hydr. Depth (ft)       *          *    2.26  *          *
* Conv. Total (cfs)       *  6358.7  * Conv. (cfs)           *          *  6358.7  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)       *          *   34.99  *          *
* Min Ch El (ft)          * 2082.44  * Shear (lb/sq ft)       *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   22.91  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    7.11  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1277

INPUT
Description: Sta 60+00 - Drake Channel
```

```
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**********************************************************************
   -45.8 2094.81     -21 2082.35        7 2082.35     33.2 2095.51

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
**************************************************
   -45.8     .03    -45.8     .03     33.2     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -45.8    33.2                  50       50       50              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)          * 2085.13  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.030 *          *
* W.S. Elev (ft)          * 2085.13  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *   93.28  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)           *          *   93.28  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)          *   39.07  * Top Width (ft)        *          *   39.07  *          *
* Vel Total (ft/s)        *    0.01  * Avg. Vel. (ft/s)      *          *    0.01  *          *
* Max Chl Dpth (ft)       *    2.78  * Hydr. Depth (ft)      *          *    2.39  *          *
* Conv. Total (cfs)       *  8072.5  * Conv. (cfs)          *          *  8072.5  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   40.39  *          *
* Min Ch El (ft)          * 2082.35  * Shear (lb/sq ft)     *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *   22.82  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    7.07  *          *
**********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1276

INPUT
Description: Sta 59+50 - Drake Channel
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**********************************************************************
     -46 2093.31     -24 2082.27       10 2082.27     33.4 2094.01

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
**************************************************
     -46     .03      -46     .03     33.4     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
            -46    33.4                  50       50       50              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)          * 2085.13  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.030 *          *
* W.S. Elev (ft)          * 2085.13  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *  113.61  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)           *          *  113.61  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)          *   45.41  * Top Width (ft)        *          *   45.41  *          *
* Vel Total (ft/s)        *    0.01  * Avg. Vel. (ft/s)      *          *    0.01  *          *
* Max Chl Dpth (ft)       *    2.86  * Hydr. Depth (ft)      *          *    2.50  *          *
* Conv. Total (cfs)       * 10170.2  * Conv. (cfs)          *          * 10170.2  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   46.76  *          *
* Min Ch El (ft)          * 2082.27  * Shear (lb/sq ft)     *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *   22.70  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    7.02  *          *
**********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1275

INPUT
Description: Sta 59+00  -Drake Channel
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**********************************************************************
   -46.6 2091.51     -28 2082.18       11 2082.18     32.2 2092.81

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
**************************************************
   -46.6     .03    -46.6     .03     32.2     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -46.6    32.2                  50       50       50              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)          * 2085.13  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.030 *          *
* W.S. Elev (ft)          * 2085.13  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *  132.49  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)           *          *  132.49  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)          *   50.77  * Top Width (ft)        *          *   50.77  *          *
* Vel Total (ft/s)        *    0.01  * Avg. Vel. (ft/s)      *          *    0.01  *          *
* Max Chl Dpth (ft)       *    2.95  * Hydr. Depth (ft)      *          *    2.61  *          *
* Conv. Total (cfs)       * 12214.9  * Conv. (cfs)          *          * 12214.9  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   52.17  *          *
* Min Ch El (ft)          * 2082.18  * Shear (lb/sq ft)     *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *   22.56  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    6.96  *          *
**********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1274

INPUT
Description: Sta 58+50 - Drake Channel
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**********************************************************************
  -47.22 2090.72     -30 2082.09       15 2082.09     33.4 2091.31

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
**************************************************
  -47.22     .03   -47.22     .03     33.4     .03

Bank Sta: Left   Right     Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -47.22   33.4                  13       13       13              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)          * 2085.13  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.00  * Wt. n-Val.              *          *    0.030 *          *
* W.S. Elev (ft)          * 2085.13  * Reach Len. (ft)        *   13.00  *   13.00  *   13.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *  155.33  *          *
* E.G. Slope (ft/ft)      *0.000000  * Area (sq ft)           *          *  155.33  *          *
* Q Total (cfs)           *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)          *   57.14  * Top Width (ft)        *          *   57.14  *          *
* Vel Total (ft/s)        *    0.01  * Avg. Vel. (ft/s)      *          *    0.01  *          *
* Max Chl Dpth (ft)       *    3.04  * Hydr. Depth (ft)      *          *    2.72  *          *
* Conv. Total (cfs)       * 14739.0  * Conv. (cfs)          *          * 14739.0  *          *
* Length Wtd. (ft)        *   13.00  * Wetted Per. (ft)      *          *   58.58  *          *
* Min Ch El (ft)          * 2082.09  * Shear (lb/sq ft)     *          *    0.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *   22.39  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    6.90  *          *
**********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1273

INPUT
Description: Sta 58+37  - Drake Channel
Station Elevation Data    num=       4
```

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.6	2088.31	-32.5	2082.08	17.5	2082.08	32.6	2089.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45.6	.04	-45.6	.04	32.6	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-45.6	32.6	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2085.13	Element			
Vel Head (ft)	0.00	Wt. n-Val.		0.040	
W.S. Elev (ft)	2085.13	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		171.46	
E.G. Slope (ft/ft)	*0.000000	Area (sq ft)		171.46	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	62.38	Top Width (ft)		62.38	
Vel Total (ft/s)	0.01	Avg. Vel. (ft/s)		0.01	
Max Chl Dpth (ft)	3.05	Hydr. Depth (ft)		2.75	
Conv. Total (cfs)	12311.8	Conv. (cfs)		12311.8	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		63.80	
Min Ch El (ft)	2082.08	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		22.34	
C & E Loss (ft)	0.00	Cum SA (acres)		6.88	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1272

INPUT
Description: Sta 58+31 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.6	2088.31	-32.5	2082.07	17.5	2082.07	32.6	2089.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45.6	.028	-45.6	.028	32.6	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-45.6	32.6	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2085.13	Element			
Vel Head (ft)	0.00	Wt. n-Val.		0.028	
W.S. Elev (ft)	2085.13	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)		Flow Area (sq ft)		172.06	
E.G. Slope (ft/ft)	*0.000000	Area (sq ft)		172.06	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	62.40	Top Width (ft)		62.40	
Vel Total (ft/s)	0.01	Avg. Vel. (ft/s)		0.01	
Max Chl Dpth (ft)	3.06	Hydr. Depth (ft)		2.76	
Conv. Total (cfs)	17685.1	Conv. (cfs)		17685.1	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		63.83	
Min Ch El (ft)	2082.07	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		22.32	
C & E Loss (ft)	0.00	Cum SA (acres)		6.87	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1271

INPUT
Description: Sta 58+31 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.6	2088.31	-32.5	2085.07	17.5	2085.07	32.6	2089.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45.6	.028	-45.6	.028	32.6	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-45.6	32.6	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2085.13	Element			
Vel Head (ft)	0.00	Wt. n-Val.		0.028	
W.S. Elev (ft)	2085.13	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		2.97	
E.G. Slope (ft/ft)	*0.002134	Area (sq ft)		2.97	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.43	Top Width (ft)		50.43	
Vel Total (ft/s)	0.37	Avg. Vel. (ft/s)		0.37	
Max Chl Dpth (ft)	0.06	Hydr. Depth (ft)		0.06	
Conv. Total (cfs)	23.8	Conv. (cfs)		23.8	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		50.44	
Min Ch El (ft)	2085.07	Shear (lb/sq ft)		0.01	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)		22.32	
C & E Loss (ft)	0.00	Cum SA (acres)		6.87	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1270

INPUT
Description: Sta 58+25 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.6	2088.31	-32.5	2085.06	17.5	2085.06	32.6	2089.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45.6	.028	-45.6	.028	32.6	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-45.6	32.6	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2085.10	Element			
Vel Head (ft)	0.01	Wt. n-Val.		0.028	
W.S. Elev (ft)	2085.09	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	2085.09	Flow Area (sq ft)		1.28	
E.G. Slope (ft/ft)	*0.034564	Area (sq ft)		1.28	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.18	Top Width (ft)		50.18	
Vel Total (ft/s)	0.86	Avg. Vel. (ft/s)		0.86	
Max Chl Dpth (ft)	0.03	Hydr. Depth (ft)		0.03	
Conv. Total (cfs)	5.9	Conv. (cfs)		5.9	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		50.19	
Min Ch El (ft)	2085.06	Shear (lb/sq ft)		0.06	
Alpha	1.00	Stream Power (lb/ft s)		0.05	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		22.32	
C & E Loss (ft)	0.00	Cum SA (acres)		6.87	

Warning: The energy equation could not be balanced within the specified number of iterations. The

program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1269

INPUT
Description: Sta 58+25 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.6	2088.31	-32.5	2082.06	17.5	2082.06	32.6	2089.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45.6	.04	-45.6	.04	32.6	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45.6 32.6 19 19 19 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2082.12	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.040
W.S. Elev (ft)	2082.12	Reach Len. (ft)	19.00	19.00 / 19.00
Crit W.S. (ft)	2082.09	Flow Area (sq ft)		2.97
E.G. Slope (ft/ft)	0.004303	Area (sq ft)		2.97
Q Total (cfs)	1.10	Flow (cfs)		1.10
Top Width (ft)	50.24	Top Width (ft)		50.24
Vel Total (ft/s)	0.37	Avg. Vel. (ft/s)		0.37
Max Chl Dpth (ft)	0.06	Hydr. Depth (ft)		0.06
Conv. Total (cfs)	16.8	Conv. (cfs)		16.8
Length Wtd. (ft)	19.00	Wetted Per. (ft)		50.27
Min Ch El (ft)	2082.06	Shear (lb/sq ft)		0.02
Alpha	1.00	Stream Power (lb/ft s)		0.01
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		22.32
C & E Loss (ft)	0.00	Cum SA (acres)		6.87

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1268

INPUT
Description: Sta 58+06 - Inline Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.6	2088.31	-32.5	2082.01	17.5	2082.01	32.6	2089.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45.6	.028	-45.6	.028	32.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45.6 32.6 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2082.08	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.028
W.S. Elev (ft)	2082.07	Reach Len. (ft)	6.00	6.00 / 6.00
Crit W.S. (ft)		Flow Area (sq ft)		3.15
E.G. Slope (ft/ft)	0.001749	Area (sq ft)		3.15
Q Total (cfs)	1.10	Flow (cfs)		1.10
Top Width (ft)	50.25	Top Width (ft)		50.25
Vel Total (ft/s)	0.35	Avg. Vel. (ft/s)		0.35
Max Chl Dpth (ft)	0.06	Hydr. Depth (ft)		0.06
Conv. Total (cfs)	26.3	Conv. (cfs)		26.3
Length Wtd. (ft)	6.00	Wetted Per. (ft)		50.28
Min Ch El (ft)	2082.01	Shear (lb/sq ft)		0.01
Alpha	1.00	Stream Power (lb/ft s)		0.00
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)		22.32
C & E Loss (ft)	0.00	Cum SA (acres)		6.84

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1267

INPUT
Description: Sta 58+00 Inline Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.6	2088.31	-32.5	2082.01	17.5	2082.01	32.6	2089.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45.6	.028	-45.6	.028	32.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45.6 32.6 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2082.05	Element	Left OB	Channel / Right OB
Vel Head (ft)	0.01	Wt. n-Val.		0.028
W.S. Elev (ft)	2082.04	Reach Len. (ft)	0.10	0.10 / 0.10
Crit W.S. (ft)	2082.04	Flow Area (sq ft)		1.33
E.G. Slope (ft/ft)	0.030534	Area (sq ft)		1.33
Q Total (cfs)	1.10	Flow (cfs)		1.10
Top Width (ft)	50.11	Top Width (ft)		50.11
Vel Total (ft/s)	0.83	Avg. Vel. (ft/s)		0.83
Max Chl Dpth (ft)	0.03	Hydr. Depth (ft)		0.03
Conv. Total (cfs)	6.3	Conv. (cfs)		6.3
Length Wtd. (ft)	0.10	Wetted Per. (ft)		50.12
Min Ch El (ft)	2082.01	Shear (lb/sq ft)		0.05
Alpha	1.00	Stream Power (lb/ft s)		0.04
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		22.32
C & E Loss (ft)	0.00	Cum SA (acres)		6.84

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1266

INPUT
Description: Sta 58+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.6	2088.31	-13	2072.01	-3	2072.01	32.6	2089.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

```
   -45.6    .028   -45.6    .028    32.6    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -45.6    32.6              24       24       24           .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 2074.43  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.00  * Wt. n-Val.            *          *    0.028 *          *
* W.S. Elev (ft)        * 2074.43  * Reach Len. (ft)       *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)        * 2072.08  * Flow Area (sq ft)     *          *   35.94  *          *
* E.G. Slope (ft/ft)    *0.000000  * Area (sq ft)          *          *   35.94  *          *
* Q Total (cfs)         *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)        *   19.69  * Top Width (ft)        *          *   19.69  *          *
* Vel Total (ft/s)      *    0.03  * Avg. Vel. (ft/s)      *          *    0.03  *          *
* Max Chl Dpth (ft)     *    2.42  * Hydr. Depth (ft)      *          *    1.83  *          *
* Conv. Total (cfs)     *  2743.8  * Conv. (cfs)           *          *  2743.8  *          *
* Length Wtd. (ft)      *   24.00  * Wetted Per. (ft)      *          *   20.83  *          *
* Min Ch El (ft)        * 2072.01  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *          *   22.32  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *          *    6.84  *          *
************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1265

INPUT
Description: Sta 57+76 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**************************************************************************
   -46.8 2087.31      -16 2071.96        0 2071.96     32.8 2088.31

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
***************************************************
   -46.8    .028   -46.8     .03    32.8    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -46.8    32.8              12       12       12           .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 2074.43  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.00  * Wt. n-Val.            *          *    0.030 *          *
* W.S. Elev (ft)        * 2074.43  * Reach Len. (ft)       *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)     *          *   51.80  *          *
* E.G. Slope (ft/ft)    *0.000000  * Area (sq ft)          *          *   51.80  *          *
* Q Total (cfs)         *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)        *   25.92  * Top Width (ft)        *          *   25.92  *          *
* Vel Total (ft/s)      *    0.02  * Avg. Vel. (ft/s)      *          *    0.02  *          *
* Max Chl Dpth (ft)     *    2.47  * Hydr. Depth (ft)      *          *    2.00  *          *
* Conv. Total (cfs)     *  3953.2  * Conv. (cfs)           *          *  3953.2  *          *
* Length Wtd. (ft)      *   12.00  * Wetted Per. (ft)      *          *   27.08  *          *
* Min Ch El (ft)        * 2071.96  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *          *   22.29  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *          *    6.82  *          *
************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1264

INPUT
Description: Sta 57+64 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**************************************************************************
   -46.8 2087.31      -16 2071.94        0 2071.94     32.8 2088.31

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
***************************************************
   -46.8     .03   -46.8     .03    32.8     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -46.8    32.8              14       14       14           .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 2074.43  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.00  * Wt. n-Val.            *          *    0.030 *          *
* W.S. Elev (ft)        * 2074.43  * Reach Len. (ft)       *   14.00  *   14.00  *   14.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)     *          *   52.30  *          *
* E.G. Slope (ft/ft)    *0.000000  * Area (sq ft)          *          *   52.30  *          *
* Q Total (cfs)         *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)        *   25.98  * Top Width (ft)        *          *   25.98  *          *
* Vel Total (ft/s)      *    0.02  * Avg. Vel. (ft/s)      *          *    0.02  *          *
* Max Chl Dpth (ft)     *    2.49  * Hydr. Depth (ft)      *          *    2.01  *          *
* Conv. Total (cfs)     *  4009.8  * Conv. (cfs)           *          *  4009.8  *          *
* Length Wtd. (ft)      *   14.00  * Wetted Per. (ft)      *          *   27.16  *          *
* Min Ch El (ft)        * 2071.94  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *          *   22.28  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *          *    6.82  *          *
************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1263

INPUT
Description: Sta 57+50 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**************************************************************************
   -46.8 2087.31      -16 2071.91        0 2071.91     32.8 2088.31

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
***************************************************
   -46.8     .03   -46.8     .03    32.8     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -46.8    32.8              50       50       50           .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 2074.43  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.00  * Wt. n-Val.            *          *    0.030 *          *
* W.S. Elev (ft)        * 2074.43  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)     *          *   53.06  *          *
* E.G. Slope (ft/ft)    *0.000000  * Area (sq ft)          *          *   53.06  *          *
* Q Total (cfs)         *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)        *   26.09  * Top Width (ft)        *          *   26.09  *          *
* Vel Total (ft/s)      *    0.02  * Avg. Vel. (ft/s)      *          *    0.02  *          *
* Max Chl Dpth (ft)     *    2.52  * Hydr. Depth (ft)      *          *    2.03  *          *
* Conv. Total (cfs)     *  4095.3  * Conv. (cfs)           *          *  4095.3  *          *
* Length Wtd. (ft)      *   50.00  * Wetted Per. (ft)      *          *   27.28  *          *
* Min Ch El (ft)        * 2071.91  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *          *   22.26  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *          *    6.81  *          *
************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1262

INPUT
Description: Sta 57+00 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**************************************************************************
    -46 2085.81      -18 2071.81        4 2071.81     33.4 2086.51

Manning's n Values        num=       3
```

Sta	n Val	Sta	n Val	Sta	n Val
-46	.03	-46	.03	33.4	.03

Bank Sta: Left -46 Right 33.4 Lengths: Left Channel 50 Right 50 Coeff Contr. Left .1 Right .3 Expan. 50

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2074.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.030	
W.S. Elev (ft)	2074.43	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		71.41	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		71.41	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	32.49	Top Width (ft)		32.49	
Vel Total (ft/s)	0.02	Avg. Vel. (ft/s)		0.02	
Max Chl Dpth (ft)	2.62	Hydr. Depth (ft)		2.20	
Conv. Total (cfs)	5832.8	Conv. (cfs)		5832.8	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		33.72	
Min Ch El (ft)	2071.81	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		22.19	
C & E Loss (ft)	0.00	Cum SA (acres)		6.78	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1261

INPUT
Description: Sta 56+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.6	2084.01	-22	2071.71	7	2071.71	34.2	2085.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.6	.03	-46.6	.03	34.2	.03

Bank Sta: Left -46.6 Right 34.2 Lengths: Left Channel 50 Right 50 Coeff Contr. Left .1 Right .3 Expan. 50

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2074.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.030	
W.S. Elev (ft)	2074.43	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		93.73	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		93.73	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	39.89	Top Width (ft)		39.89	
Vel Total (ft/s)	0.01	Avg. Vel. (ft/s)		0.01	
Max Chl Dpth (ft)	2.72	Hydr. Depth (ft)		2.35	
Conv. Total (cfs)	8034.8	Conv. (cfs)		8034.8	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		41.17	
Min Ch El (ft)	2071.71	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		22.09	
C & E Loss (ft)	0.00	Cum SA (acres)		6.73	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1260

INPUT
Description: Sta 56+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.4	2082.81	-24	2071.61	10	2071.61	33.4	2083.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.4	.03	-46.4	.03	33.4	.03

Bank Sta: Left -46.4 Right 33.4 Lengths: Left Channel 50 Right 50 Coeff Contr. Left .1 Right .3 Expan. 50

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2074.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.030	
W.S. Elev (ft)	2074.43	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		111.84	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		111.84	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	45.29	Top Width (ft)		45.29	
Vel Total (ft/s)	0.01	Avg. Vel. (ft/s)		0.01	
Max Chl Dpth (ft)	2.82	Hydr. Depth (ft)		2.47	
Conv. Total (cfs)	9927.9	Conv. (cfs)		9927.9	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		46.62	
Min Ch El (ft)	2071.61	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		21.98	
C & E Loss (ft)	0.00	Cum SA (acres)		6.69	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1259

INPUT
Description: Sta 55+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47	2081.51	-27	2071.51	12	2071.51	33.4	2082.21

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47	.03	-47	.03	33.4	.03

Bank Sta: Left -47 Right 33.4 Lengths: Left Channel 50 Right 50 Coeff Contr. Left .1 Right .3 Expan. 50

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2074.43	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.030	
W.S. Elev (ft)	2074.43	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		131.00	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		131.00	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.69	Top Width (ft)		50.69	
Vel Total (ft/s)	0.01	Avg. Vel. (ft/s)		0.01	
Max Chl Dpth (ft)	2.92	Hydr. Depth (ft)		2.58	
Conv. Total (cfs)	12003.7	Conv. (cfs)		12003.7	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		52.06	
Min Ch El (ft)	2071.51	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		21.84	
C & E Loss (ft)	0.00	Cum SA (acres)		6.63	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1258

INPUT
Description: Sta 55+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.36	2080.09	-30	2071.41	15	2071.41	32.36	2080.09

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

```
*************************************************
  -47.36     .03  -47.36     .03   32.36     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -47.36   32.36                 13       13       13             .1       .3


CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)         * 2074.43  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.00  * Wt. n-Val.            *          *    0.030  *          *
* W.S. Elev (ft)         * 2074.43  * Reach Len. (ft)       *   13.00  *   13.00  *   13.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *  154.23  *          *
* E.G. Slope (ft/ft)     *0.000000  * Area (sq ft)          *          *  154.23  *          *
* Q Total (cfs)          *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)         *   57.09  * Top Width (ft)        *          *   57.09  *          *
* Vel Total (ft/s)       *    0.01  * Avg. Vel. (ft/s)      *          *    0.01  *          *
* Max Chl Dpth (ft)      *    3.02  * Hydr. Depth (ft)      *          *    2.70  *          *
* Conv. Total (cfs)      * 14575.9  * Conv. (cfs)           *          * 14575.9  *          *
* Length Wtd. (ft)       *   13.00  * Wetted Per. (ft)      *          *   58.51  *          *
* Min Ch El (ft)         * 2071.41  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  *          *   21.67  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *          *    6.57  *          *
*****************************************************************************************************


CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1257

INPUT
Description: Sta 54+87 - Drake Channel
Station Elevation Data    num=       4
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
***********************************************************************
  -47.36 2080.09   -32.5 2071.38    17.5 2071.38   32.36 2080.09

Manning's n Values        num=       3
      Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
  -47.36     .04  -47.36     .04   32.36     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -47.36   32.36                 6        6         6              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)         * 2074.43  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.00  * Wt. n-Val.            *          *    0.040  *          *
* W.S. Elev (ft)         * 2074.43  * Reach Len. (ft)       *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *  168.46  *          *
* E.G. Slope (ft/ft)     *0.000000  * Area (sq ft)          *          *  168.46  *          *
* Q Total (cfs)          *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)         *   60.41  * Top Width (ft)        *          *   60.41  *          *
* Vel Total (ft/s)       *    0.01  * Avg. Vel. (ft/s)      *          *    0.01  *          *
* Max Chl Dpth (ft)      *    3.05  * Hydr. Depth (ft)      *          *    2.79  *          *
* Conv. Total (cfs)      * 12176.5  * Conv. (cfs)           *          * 12176.5  *          *
* Length Wtd. (ft)       *    6.00  * Wetted Per. (ft)      *          *   62.07  *          *
* Min Ch El (ft)         * 2071.38  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  *          *   21.63  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *          *    6.55  *          *
*****************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1256

INPUT
Description: Sta 54+81 - Gabion Counterweir
Station Elevation Data    num=       4
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
***********************************************************************
     -47 2078.31   -32.5 2071.37    17.5 2071.37      30 2077.81

Manning's n Values        num=       3
      Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
     -47     .028      -47     .028       30     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -47      30                 .1       .1        .1             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)         * 2074.43  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.00  * Wt. n-Val.            *          *    0.028  *          *
* W.S. Elev (ft)         * 2074.43  * Reach Len. (ft)       *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *  171.95  *          *
* E.G. Slope (ft/ft)     *0.000000  * Area (sq ft)          *          *  171.95  *          *
* Q Total (cfs)          *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)         *   62.34  * Top Width (ft)        *          *   62.34  *          *
* Vel Total (ft/s)       *    0.01  * Avg. Vel. (ft/s)      *          *    0.01  *          *
* Max Chl Dpth (ft)      *    3.06  * Hydr. Depth (ft)      *          *    2.76  *          *
* Conv. Total (cfs)      * 17676.8  * Conv. (cfs)           *          * 17676.8  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)      *          *   63.78  *          *
* Min Ch El (ft)         * 2071.37  * Shear (lb/sq ft)      *          *    0.00  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  *          *   21.60  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *          *    6.54  *          *
*****************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1255

INPUT
Description: Sta 54+81 - Gabion Counterweir
Station Elevation Data    num=       4
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
***********************************************************************
     -47 2078.31   -32.5 2074.37    17.5 2074.37      30 2077.81

Manning's n Values        num=       3
      Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
     -47     .028      -47     .028       30     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -47      30                 6        6         6              .1       .3


CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)         * 2074.43  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.00  * Wt. n-Val.            *          *    0.028  *          *
* W.S. Elev (ft)         * 2074.43  * Reach Len. (ft)       *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *    2.95  *          *
* E.G. Slope (ft/ft)     *0.002164  * Area (sq ft)          *          *    2.95  *          *
* Q Total (cfs)          *    1.10  * Flow (cfs)            *          *    1.10  *          *
* Top Width (ft)         *   50.43  * Top Width (ft)        *          *   50.43  *          *
* Vel Total (ft/s)       *    0.37  * Avg. Vel. (ft/s)      *          *    0.37  *          *
* Max Chl Dpth (ft)      *    0.06  * Hydr. Depth (ft)      *          *    0.06  *          *
* Conv. Total (cfs)      *    23.6  * Conv. (cfs)           *          *    23.6  *          *
* Length Wtd. (ft)       *    6.00  * Wetted Per. (ft)      *          *   50.45  *          *
* Min Ch El (ft)         * 2074.37  * Shear (lb/sq ft)      *          *    0.01  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.00  *          *
* Frctn Loss (ft)        *    0.03  * Cum Volume (acre-ft)  *          *   21.60  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *          *    6.54  *          *
*****************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1254

INPUT
```

Description: Sta 54+75 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47	2078.31	-32.5	2074.36	17.5	2074.36	30	2077.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47	.028	-47	.028	30	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff Contr.	Expan.
-47	30	.1	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2074.40	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.		0.028	
W.S. Elev (ft)	2074.39	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	2074.39	Flow Area (sq ft)		1.30	
E.G. Slope (ft/ft)	0.033488	Area (sq ft)		1.30	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	50.19	Top Width (ft)		50.19	
Vel Total (ft/s)	0.85	Avg. Vel. (ft/s)		0.85	
Max Chl Dpth (ft)	0.03	Hydr. Depth (ft)		0.03	
Conv. Total (cfs)	6.0	Conv. (cfs)		6.0	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		50.20	
Min Ch El (ft)	2074.36	Shear (lb/sq ft)		0.05	
Alpha	1.00	Stream Power (lb/ft s)		0.05	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		21.60	
C & E Loss (ft)	0.00	Cum SA (acres)		6.54	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1253

INPUT
Description: Sta 54+75 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47	2078.31	-32.5	2071.37	17.5	2071.37	30	2077.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47	.04	-47	.04	30	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff Contr.	Expan.
-47	30	19	19	19	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2072.73	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.040	
W.S. Elev (ft)	2072.73	Reach Len. (ft)	19.00	19.00	19.00
Crit W.S. (ft)	2071.40	Flow Area (sq ft)		71.61	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		71.61	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	55.47	Top Width (ft)		55.47	
Vel Total (ft/s)	0.02	Avg. Vel. (ft/s)		0.02	
Max Chl Dpth (ft)	1.36	Hydr. Depth (ft)		1.29	
Conv. Total (cfs)	3130.0	Conv. (cfs)		3130.0	
Length Wtd. (ft)	19.00	Wetted Per. (ft)		56.11	
Min Ch El (ft)	2071.37	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		21.60	
C & E Loss (ft)	0.00	Cum SA (acres)		6.54	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1252

INPUT
Description: Sta 54+56 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47	2078.31	-32.5	2071.41	17.5	2071.41	30	2077.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47	.028	-47	.028	30	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff Contr.	Expan.
-47	30	6	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2072.73	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.00	Wt. n-Val.		0.028	
W.S. Elev (ft)	2072.73	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		69.43	
E.G. Slope (ft/ft)	0.000000	Area (sq ft)		69.43	
Q Total (cfs)	1.10	Flow (cfs)		1.10	
Top Width (ft)	55.34	Top Width (ft)		55.34	
Vel Total (ft/s)	0.02	Avg. Vel. (ft/s)		0.02	
Max Chl Dpth (ft)	1.32	Hydr. Depth (ft)		1.25	
Conv. Total (cfs)	4254.1	Conv. (cfs)		4254.1	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		55.96	
Min Ch El (ft)	2071.41	Shear (lb/sq ft)		0.00	
Alpha	1.00	Stream Power (lb/ft s)		0.00	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		21.57	
C & E Loss (ft)	0.04	Cum SA (acres)		6.51	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1251

INPUT
Description: Sta 54+50 - Inline Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47	2078.31	-32.5	2071.31	17.5	2071.31	30	2077.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47	.028	-47	.028	30	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff Contr.	Expan.
-47	30	.1	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2072.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.45	Wt. n-Val.		0.028	
W.S. Elev (ft)	2072.23	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	2072.23	Flow Area (sq ft)		47.50	
E.G. Slope (ft/ft)	0.012168	Area (sq ft)		47.50	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	53.66	Top Width (ft)		53.66	
Vel Total (ft/s)	5.37	Avg. Vel. (ft/s)		5.37	
Max Chl Dpth (ft)	0.92	Hydr. Depth (ft)		0.89	
Conv. Total (cfs)	2311.7	Conv. (cfs)		2311.7	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		54.09	
Min Ch El (ft)	2071.31	Shear (lb/sq ft)		0.67	

```
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    3.58  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)   *          *   21.56  *          *
* C & E Loss (ft)       *    0.06  * Cum SA (acres)         *          *    6.50  *          *
**************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1250

INPUT
Description: Sa 54+50 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
     -47 2078.31      -13 2061.31       -3 2061.31       30 2077.81

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
     -47    .028     -47    .028       30    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -47      30               24      24      24             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
**************************************************************************************************
* E.G. Elev (ft)        * 2071.84  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    9.66  * Wt. n-Val.            *          *    0.028 *          *
* W.S. Elev (ft)        * 2062.18  * Reach Len. (ft)       *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)        * 2063.62  * Flow Area (sq ft)     *          *   10.23  *          *
* E.G. Slope (ft/ft)    *0.332368  * Area (sq ft)          *          *   10.23  *          *
* Q Total (cfs)         *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)        *   13.48  * Top Width (ft)        *          *   13.48  *          *
* Vel Total (ft/s)      *   24.94  * Avg. Vel. (ft/s)      *          *   24.94  *          *
* Max Chl Dpth (ft)     *    0.87  * Hydr. Depth (ft)      *          *    0.76  *          *
* Conv. Total (cfs)     *   442.3  * Conv. (cfs)           *          *   442.3  *          *
* Length Wtd. (ft)      *   24.00  * Wetted Per. (ft)      *          *   13.89  *          *
* Min Ch El (ft)        * 2061.31  * Shear (lb/sq ft)      *          *   15.27  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *  380.81  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)   *          *   21.56  *          *
* C & E Loss (ft)       *    0.91  * Cum SA (acres)         *          *    6.50  *          *
**************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program selected the water surface that had the least amount of error between computed and
         assumed values.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Note:    Program found supercritical flow starting at this cross section.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1249

INPUT
Description: Sta 54+26 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -45.6 2076.51      -15 2061.26         0 2061.26     33.2 2077.81

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -45.6    .028    -45.6     .03     33.2    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -45.6    33.2               12      12      12             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
**************************************************************************************************
* E.G. Elev (ft)        * 2065.14  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.14  * Wt. n-Val.            *          *   0.030  *          *
* W.S. Elev (ft)        * 2065.00  * Reach Len. (ft)       *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)        * 2063.16  * Flow Area (sq ft)     *          *   84.09  *          *
* E.G. Slope (ft/ft)    *0.001023  * Area (sq ft)          *          *   84.09  *          *
* Q Total (cfs)         *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)        *   30.00  * Top Width (ft)        *          *   30.00  *          *
* Vel Total (ft/s)      *    3.03  * Avg. Vel. (ft/s)      *          *    3.03  *          *
* Max Chl Dpth (ft)     *    3.74  * Hydr. Depth (ft)      *          *    2.80  *          *
* Conv. Total (cfs)     *  7971.7  * Conv. (cfs)           *          *  7971.7  *          *
* Length Wtd. (ft)      *   12.00  * Wetted Per. (ft)      *          *   31.76  *          *
* Min Ch El (ft)        * 2061.26  * Shear (lb/sq ft)      *          *    0.17  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.51  *          *
* Frctn Loss (ft)       *    0.01  * Cum Volume (acre-ft)   *          *   21.54  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)         *          *    6.49  *          *
**************************************************************************************************

Note:    Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1248

INPUT
Description: Sta 54+14 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -45.6 2076.51      -15 2061.24         0 2061.24     33.2 2077.81

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -45.6     .03    -45.6     .03     33.2     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -45.6    33.2               14      14      14             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
**************************************************************************************************
* E.G. Elev (ft)        * 2065.13  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.14  * Wt. n-Val.            *          *   0.030  *          *
* W.S. Elev (ft)        * 2064.99  * Reach Len. (ft)       *   14.00  *   14.00  *   14.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)     *          *   84.30  *          *
* E.G. Slope (ft/ft)    *0.001016  * Area (sq ft)          *          *   84.30  *          *
* Q Total (cfs)         *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)        *   30.01  * Top Width (ft)        *          *   30.01  *          *
* Vel Total (ft/s)      *    3.03  * Avg. Vel. (ft/s)      *          *    3.03  *          *
* Max Chl Dpth (ft)     *    3.75  * Hydr. Depth (ft)      *          *    2.81  *          *
* Conv. Total (cfs)     *  8001.1  * Conv. (cfs)           *          *  8001.1  *          *
* Length Wtd. (ft)      *   14.00  * Wetted Per. (ft)      *          *   31.78  *          *
* Min Ch El (ft)        * 2061.24  * Shear (lb/sq ft)      *          *    0.17  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.51  *          *
* Frctn Loss (ft)       *    0.01  * Cum Volume (acre-ft)   *          *   21.51  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)         *          *    6.48  *          *
**************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1247

INPUT
Description: Sta 54+00 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -45.6 2076.51      -15 2061.21         0 2061.21     33.2 2077.81

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
```

```
**********************************************
   -45.6     .03   -45.6     .03    33.2     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -45.6    33.2                  50        50        50            .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)        * 2065.11  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.14  * Wt. n-Val.            *          *    0.030  *          *
* W.S. Elev (ft)        * 2064.97  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)      *          *   84.76  *          *
* E.G. Slope (ft/ft)    *0.001000  * Area (sq ft)          *          *   84.76  *          *
* Q Total (cfs)         *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)        *   30.05  * Top Width (ft)        *          *   30.05  *          *
* Vel Total (ft/s)      *    3.01  * Avg. Vel. (ft/s)      *          *    3.01  *          *
* Max Chl Dpth (ft)     *    3.76  * Hydr. Depth (ft)      *          *    2.82  *          *
* Conv. Total (cfs)     *  8065.4  * Conv. (cfs)           *          *  8065.4  *          *
* Length Wtd. (ft)      *   50.00  * Wetted Per. (ft)      *          *   31.83  *          *
* Min Ch El (ft)        * 2061.21  * Shear (lb/sq ft)      *          *    0.17  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.50  *          *
* Frctn Loss (ft)       *    0.03  * Cum Volume (acre-ft)  *          *   21.49  *          *
* C & E Loss (ft)       *    0.02  * Cum SA (acres)        *          *    6.47  *          *
*****************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1246

INPUT
Description: Sta 53+50 - Drake Channel
Station Elevation Data    num=      4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**************************************************************
   -46.4 2075.31     -18 2061.11       4 2061.11     34.4 2076.31

Manning's n Values         num=      3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
   -46.4     .03   -46.4     .03    34.4     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -46.4    34.4                  50        50        50            .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)        * 2065.06  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.08  * Wt. n-Val.            *          *    0.030  *          *
* W.S. Elev (ft)        * 2064.99  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)      *          *  115.26  *          *
* E.G. Slope (ft/ft)    *0.000476  * Area (sq ft)          *          *  115.26  *          *
* Q Total (cfs)         *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)        *   37.50  * Top Width (ft)        *          *   37.50  *          *
* Vel Total (ft/s)      *    2.21  * Avg. Vel. (ft/s)      *          *    2.21  *          *
* Max Chl Dpth (ft)     *    3.87  * Hydr. Depth (ft)      *          *    3.07  *          *
* Conv. Total (cfs)     * 11692.1  * Conv. (cfs)           *          * 11692.1  *          *
* Length Wtd. (ft)      *   50.00  * Wetted Per. (ft)      *          *   39.33  *          *
* Min Ch El (ft)        * 2061.11  * Shear (lb/sq ft)      *          *    0.09  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.19  *          *
* Frctn Loss (ft)       *    0.02  * Cum Volume (acre-ft)  *          *   21.37  *          *
* C & E Loss (ft)       *    0.01  * Cum SA (acres)        *          *    6.43  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1245

INPUT
Description: Sta 53+00 - Drake Channel
Station Elevation Data    num=      4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**************************************************************
   -45.6 2073.81     -20 2061.01       5 2061.01     31.6 2074.31

Manning's n Values         num=      3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
   -45.6     .03   -45.6     .03    31.6     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -45.6    31.6                  50        50        50            .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)        * 2065.04  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.06  * Wt. n-Val.            *          *    0.030  *          *
* W.S. Elev (ft)        * 2064.98  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)      *          *  130.61  *          *
* E.G. Slope (ft/ft)    *0.000350  * Area (sq ft)          *          *  130.61  *          *
* Q Total (cfs)         *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)        *   40.86  * Top Width (ft)        *          *   40.86  *          *
* Vel Total (ft/s)      *    1.95  * Avg. Vel. (ft/s)      *          *    1.95  *          *
* Max Chl Dpth (ft)     *    3.97  * Hydr. Depth (ft)      *          *    3.20  *          *
* Conv. Total (cfs)     * 13624.0  * Conv. (cfs)           *          * 13624.0  *          *
* Length Wtd. (ft)      *   50.00  * Wetted Per. (ft)      *          *   42.74  *          *
* Min Ch El (ft)        * 2061.01  * Shear (lb/sq ft)      *          *    0.07  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.13  *          *
* Frctn Loss (ft)       *    0.01  * Cum Volume (acre-ft)  *          *   21.23  *          *
* C & E Loss (ft)       *    0.01  * Cum SA (acres)        *          *    6.39  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1244

INPUT
Description: Sta 52+50 - Drake Channel
Station Elevation Data    num=      4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**************************************************************
   -44.8 2072.31     -22 2060.91       8 2060.91     31.8 2072.81

Manning's n Values         num=      3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
   -44.8     .03   -44.8     .03    31.8     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -44.8    31.8                  50        50        50            .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)        * 2065.02  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.04  * Wt. n-Val.            *          *    0.030  *          *
* W.S. Elev (ft)        * 2064.97  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)        *          * Flow Area (sq ft)      *          *  154.95  *          *
* E.G. Slope (ft/ft)    *0.000233  * Area (sq ft)          *          *  154.95  *          *
* Q Total (cfs)         *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)        *   46.26  * Top Width (ft)        *          *   46.26  *          *
* Vel Total (ft/s)      *    1.65  * Avg. Vel. (ft/s)      *          *    1.65  *          *
* Max Chl Dpth (ft)     *    4.06  * Hydr. Depth (ft)      *          *    3.35  *          *
* Conv. Total (cfs)     * 16723.1  * Conv. (cfs)           *          * 16723.1  *          *
* Length Wtd. (ft)      *   50.00  * Wetted Per. (ft)      *          *   48.17  *          *
* Min Ch El (ft)        * 2060.91  * Shear (lb/sq ft)      *          *    0.05  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.08  *          *
* Frctn Loss (ft)       *    0.01  * Cum Volume (acre-ft)  *          *   21.07  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *          *    6.34  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1243

INPUT
Description: Sta 52+00 - Drake Channel
Station Elevation Data    num=      4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**************************************************************
   -45.4 2071.01     -25 2060.81      10 2060.81     33 2072.31
```

```
Manning's n Values          num=          3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
   -45.4      .03    -45.4      .03       33      .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
          -45.4      33                    50       50       50              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2065.00  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.03  * Wt. n-Val.              *          *    0.030 *          *
* W.S. Elev (ft)          * 2064.97  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *  180.31  *          *
* E.G. Slope (ft/ft)      *0.000162  * Area (sq ft)            *          *  180.31  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)              *          *  255.00  *          *
* Top Width (ft)          *   51.65  * Top Width (ft)         *          *   51.65  *          *
* Vel Total (ft/s)        *    1.41  * Avg. Vel. (ft/s)       *          *    1.41  *          *
* Max Chl Dpth (ft)       *    4.16  * Hydr. Depth (ft)       *          *    3.49  *          *
* Conv. Total (cfs)       * 20047.2  * Conv. (cfs)           *          * 20047.2  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)       *          *   53.61  *          *
* Min Ch El (ft)          * 2060.81  * Shear (lb/sq ft)      *          *    0.03  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.05  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)   *          *   20.87  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    6.28  *          *
*************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1242

INPUT
Description: Sta 51+50 - Drake Channel
Station Elevation Data    num=          4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -45.2 2069.31      -28 2060.71       13 2060.71     32.2 2070.31

Manning's n Values          num=          3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
   -45.2      .03    -45.2      .03     32.2      .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
          -45.2     32.2                    50       50       50              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2064.99  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.02  * Wt. n-Val.              *          *    0.030 *          *
* W.S. Elev (ft)          * 2064.97  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *  211.03  *          *
* E.G. Slope (ft/ft)      *0.000111  * Area (sq ft)            *          *  211.03  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)              *          *  255.00  *          *
* Top Width (ft)          *   58.04  * Top Width (ft)         *          *   58.04  *          *
* Vel Total (ft/s)        *    1.21  * Avg. Vel. (ft/s)       *          *    1.21  *          *
* Max Chl Dpth (ft)       *    4.26  * Hydr. Depth (ft)       *          *    3.64  *          *
* Conv. Total (cfs)       * 24158.0  * Conv. (cfs)           *          * 24158.0  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)       *          *   60.06  *          *
* Min Ch El (ft)          * 2060.71  * Shear (lb/sq ft)      *          *    0.02  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.03  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   20.65  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    6.22  *          *
*************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1241

INPUT
Description: Sta 51+00 - Drake Channel
Station Elevation Data    num=          4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
  -46.36 2068.79      -30 2060.61       15 2060.61     31.4 2068.81

Manning's n Values          num=          3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
  -46.36      .03   -46.36      .03     31.4      .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
          -46.36    31.4                    13       13       13              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2064.99  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.02  * Wt. n-Val.              *          *    0.030 *          *
* W.S. Elev (ft)          * 2064.97  * Reach Len. (ft)        *   13.00  *   13.00  *   13.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *  234.17  *          *
* E.G. Slope (ft/ft)      *0.000087  * Area (sq ft)            *          *  234.17  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)              *          *  255.00  *          *
* Top Width (ft)          *   62.44  * Top Width (ft)         *          *   62.44  *          *
* Vel Total (ft/s)        *    1.09  * Avg. Vel. (ft/s)       *          *    1.09  *          *
* Max Chl Dpth (ft)       *    4.36  * Hydr. Depth (ft)       *          *    3.75  *          *
* Conv. Total (cfs)       * 27398.6  * Conv. (cfs)           *          * 27398.6  *          *
* Length Wtd. (ft)        *   13.00  * Wetted Per. (ft)       *          *   64.49  *          *
* Min Ch El (ft)          * 2060.61  * Shear (lb/sq ft)      *          *    0.02  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.02  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   20.39  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    6.15  *          *
*************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1240

INPUT
Description: Sta 50+87 - Drake Channel
Station Elevation Data    num=          4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
  -46.36 2068.79      -30 2060.58       15 2060.58     31.4 2068.81

Manning's n Values          num=          3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
  -46.36      .04   -46.36      .04     31.4      .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.    Expan.
          -46.36    31.4                     6        6        6              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2064.99  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.02  * Wt. n-Val.              *          *    0.040 *          *
* W.S. Elev (ft)          * 2064.97  * Reach Len. (ft)        *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *  235.82  *          *
* E.G. Slope (ft/ft)      *0.000151  * Area (sq ft)            *          *  235.82  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)              *          *  255.00  *          *
* Top Width (ft)          *   62.49  * Top Width (ft)         *          *   62.49  *          *
* Vel Total (ft/s)        *    1.08  * Avg. Vel. (ft/s)       *          *    1.08  *          *
* Max Chl Dpth (ft)       *    4.39  * Hydr. Depth (ft)       *          *    3.77  *          *
* Conv. Total (cfs)       * 20776.9  * Conv. (cfs)           *          * 20776.9  *          *
* Length Wtd. (ft)        *    6.00  * Wetted Per. (ft)       *          *   64.57  *          *
* Min Ch El (ft)          * 2060.58  * Shear (lb/sq ft)      *          *    0.03  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.04  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   20.32  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    6.13  *          *
*************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1239

INPUT
Description: Sta 50+81 - Gabion Counterweir
Station Elevation Data    num=          4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
```

```
     -45 2066.51   -32.5 2060.56    17.5 2060.56    30.2 2067.11

Manning's n Values          num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
     -45     .028      -45     .028     30.2     .028

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
           -45    30.2                  .1        .1         .1              .3


CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2064.99  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.01  * Wt. n-Val.             *          *    0.028 *          *
* W.S. Elev (ft)          * 2064.97  * Reach Len. (ft)       *    0.10  *     0.10 *    0.10  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)      *          *   259.76 *          *
* E.G. Slope (ft/ft)      *0.000059  * Area (sq ft)           *          *   259.76 *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *   255.00 *          *
* Top Width (ft)          *   67.81  * Top Width (ft)        *          *    67.81 *          *
* Vel Total (ft/s)        *    0.98  * Avg. Vel. (ft/s)      *          *     0.98 *          *
* Max Chl Dpth (ft)       *    4.41  * Hydr. Depth (ft)      *          *     3.83 *          *
* Conv. Total (cfs)       * 33079.3  * Conv. (cfs)           *          * 33079.3  *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)      *          *    69.88 *          *
* Min Ch El (ft)          * 2060.56  * Shear (lb/sq ft)      *          *     0.01 *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *     0.01 *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *    20.29 *          *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)        *          *     6.12 *          *
*************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E    RS: 1238

INPUT
Description: Sta 50+81 - Gabion Counterweir
Station Elevation Data     num=        4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
     -45 2066.51   -32.5 2063.56    17.5 2063.56    30.2 2067.11

Manning's n Values          num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
     -45     .028      -45     .028     30.2     .028

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
           -45    30.2                  6         6          6               .1      .3


CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2064.96  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.26  * Wt. n-Val.             *          *    0.028 *          *
* W.S. Elev (ft)          * 2064.70  * Reach Len. (ft)       *    6.00  *     6.00 *    6.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)      *          *    61.80 *          *
* E.G. Slope (ft/ft)      *0.005704  * Area (sq ft)           *          *   61.80  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)          *   58.87  * Top Width (ft)        *          *   58.87  *          *
* Vel Total (ft/s)        *    4.13  * Avg. Vel. (ft/s)      *          *    4.13  *          *
* Max Chl Dpth (ft)       *    1.14  * Hydr. Depth (ft)      *          *    1.05  *          *
* Conv. Total (cfs)       *  3376.4  * Conv. (cfs)           *          *  3376.4  *          *
* Length Wtd. (ft)        *    6.00  * Wetted Per. (ft)      *          *   59.16  *          *
* Min Ch El (ft)          * 2063.56  * Shear (lb/sq ft)      *          *    0.37  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    1.53  *          *
* Frctn Loss (ft)         *    0.05  * Cum Volume (acre-ft)  *          *   20.29  *          *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)        *          *    6.12  *          *
*************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E    RS: 1237

INPUT
Description: Sta 50+75 - Gabion Counterweir
Station Elevation Data     num=        4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
     -45 2066.51   -32.5 2063.56    17.5 2063.56    30.2 2067.11

Manning's n Values          num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
     -45     .028      -45     .028     30.2     .028

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
           -45    30.2                  .1        .1         .1              .1      .3


CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2064.90  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.43  * Wt. n-Val.             *          *    0.028 *          *
* W.S. Elev (ft)          * 2064.47  * Reach Len. (ft)       *    0.10  *     0.10 *    0.10  *
* Crit W.S. (ft)          * 2064.47  * Flow Area (sq ft)      *          *    48.54 *          *
* E.G. Slope (ft/ft)      *0.012234  * Area (sq ft)           *          *    48.54 *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *   255.00 *          *
* Top Width (ft)          *   57.08  * Top Width (ft)        *          *    57.08 *          *
* Vel Total (ft/s)        *    5.25  * Avg. Vel. (ft/s)      *          *     5.25 *          *
* Max Chl Dpth (ft)       *    0.91  * Hydr. Depth (ft)      *          *     0.85 *          *
* Conv. Total (cfs)       *  2305.5  * Conv. (cfs)           *          *  2305.5  *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)      *          *    57.31 *          *
* Min Ch El (ft)          * 2063.56  * Shear (lb/sq ft)      *          *     0.65 *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *     3.40 *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *    20.28 *          *
* C & E Loss (ft)         *    0.06  * Cum SA (acres)        *          *     6.12 *          *
*************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E    RS: 1236

INPUT
Description: Sta 50+75 - Drake Channel
Station Elevation Data     num=        4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
     -45 2066.51   -32.5 2060.56    17.5 2060.56    30.2 2067.11

Manning's n Values          num=        3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
     -45     .04       -45     .04      30.2     .04

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
           -45    30.2                  19        19         19              .1      .3


CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2064.57  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    3.68  * Wt. n-Val.             *          *    0.040 *          *
* W.S. Elev (ft)          * 2060.89  * Reach Len. (ft)       *   19.00  *    19.00 *   19.00  *
* Crit W.S. (ft)          * 2061.48  * Flow Area (sq ft)      *          *    16.56 *          *
* E.G. Slope (ft/ft)      *0.779286  * Area (sq ft)           *          *    16.56 *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *   255.00 *          *
* Top Width (ft)          *   51.32  * Top Width (ft)        *          *    51.32 *          *
* Vel Total (ft/s)        *   15.40  * Avg. Vel. (ft/s)      *          *    15.40 *          *
* Max Chl Dpth (ft)       *    0.33  * Hydr. Depth (ft)      *          *     0.32 *          *
* Conv. Total (cfs)       *   288.9  * Conv. (cfs)           *          *    288.9 *          *
* Length Wtd. (ft)        *   19.00  * Wetted Per. (ft)      *          *    51.47 *          *
* Min Ch El (ft)          * 2060.56  * Shear (lb/sq ft)      *          *    15.65 *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   241.02 *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *    20.28 *          *
* C & E Loss (ft)         *    0.33  * Cum SA (acres)        *          *     6.12 *          *
```

```
**********************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Note:    Program found supercritical flow starting at this cross section.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1235

INPUT
Description: Sta 50+56 - Inline Gabion Drop Structure
Station Elevation Data    num=      4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**********************************************************************
     -45 2066.51    -32.5 2060.52     17.5 2060.52     30.2 2067.11

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
***************************************************
     -45    .028      -45    .028     30.2    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -45    30.2                   6         6         6              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)         * 2062.02  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.81  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)         * 2061.21  * Reach Len. (ft)        *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)         * 2061.44  * Flow Area (sq ft)      *          *   35.23  *          *
* E.G. Slope (ft/ft)     *0.032118  * Area (sq ft)           *          *   35.23  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)         *   52.75  * Top Width (ft)         *          *   52.75  *          *
* Vel Total (ft/s)       *    7.24  * Avg. Vel. (ft/s)       *          *    7.24  *          *
* Max Chl Dpth (ft)      *    0.69  * Hydr. Depth (ft)       *          *    0.67  *          *
* Conv. Total (cfs)      *  1422.9  * Conv. (cfs)           *          *  1422.9  *          *
* Length Wtd. (ft)       *    6.00  * Wetted Per. (ft)       *          *   53.08  *          *
* Min Ch El (ft)         * 2060.52  * Shear (lb/sq ft)      *          *    1.33  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    9.63  *          *
* Frctn Loss (ft)        *    1.69  * Cum Volume (acre-ft)   *          *   20.27  *          *
* C & E Loss (ft)        *    0.86  * Cum SA (acres)         *          *    6.09  *          *
**********************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1234

INPUT
Description: Sta 50+50 - Inline Gabion Drop Structure
Station Elevation Data    num=      4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**********************************************************************
     -45 2066.51    -32.5 2060.51     17.5 2060.51     30.2 2067.11

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
***************************************************
     -45    .028      -45    .028     30.2    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -45    30.2                  .1        .1        .1             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)         * 2061.87  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.45  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)         * 2061.43  * Reach Len. (ft)        *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)         * 2061.43  * Flow Area (sq ft)      *          *   47.48  *          *
* E.G. Slope (ft/ft)     *0.012188  * Area (sq ft)           *          *   47.48  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)         *   53.67  * Top Width (ft)         *          *   53.67  *          *
* Vel Total (ft/s)       *    5.37  * Avg. Vel. (ft/s)       *          *    5.37  *          *
* Max Chl Dpth (ft)      *    0.92  * Hydr. Depth (ft)       *          *    0.88  *          *
* Conv. Total (cfs)      *  2309.8  * Conv. (cfs)           *          *  2309.8  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)       *          *   54.10  *          *
* Min Ch El (ft)         * 2060.51  * Shear (lb/sq ft)      *          *    0.67  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    3.59  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)   *          *   20.26  *          *
* C & E Loss (ft)        *    0.06  * Cum SA (acres)         *          *    6.09  *          *
**********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1233

INPUT
Description: Sta 50+50 - Drake Channel
Station Elevation Data    num=      4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**********************************************************************
     -45 2066.51     -13 2050.51      -3 2050.51     30.2 2067.11

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
***************************************************
     -45    .028      -45    .028     30.2    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -45    30.2                  24        24        24             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)         * 2061.04  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    9.66  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)         * 2051.38  * Reach Len. (ft)        *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)         * 2052.82  * Flow Area (sq ft)      *          *   10.23  *          *
* E.G. Slope (ft/ft)     *0.332368  * Area (sq ft)           *          *   10.23  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)         *   13.48  * Top Width (ft)         *          *   13.48  *          *
* Vel Total (ft/s)       *   24.94  * Avg. Vel. (ft/s)       *          *   24.94  *          *
* Max Chl Dpth (ft)      *    0.87  * Hydr. Depth (ft)       *          *    0.76  *          *
* Conv. Total (cfs)      *   442.3  * Conv. (cfs)           *          *   442.3  *          *
* Length Wtd. (ft)       *   24.00  * Wetted Per. (ft)       *          *   13.89  *          *
* Min Ch El (ft)         * 2050.51  * Shear (lb/sq ft)      *          *   15.27  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *  380.81  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)   *          *   20.26  *          *
* C & E Loss (ft)        *    0.91  * Cum SA (acres)         *          *    6.09  *          *
**********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program selected the water surface that had the least amount of error between computed and
         assumed values.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1232

INPUT
Description: Sta 50+26 - Drake Channel
```

```
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -44.8 2065.31      -15 2050.46        0 2050.46     29.8 2065.31

Manning's n Values          num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
   -44.8     .028    -44.8     .03     29.8     .028

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          -44.8     29.8                  12        12         12              .1      .3


CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2054.41  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.14  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)          * 2054.27  * Reach Len. (ft)        *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)          * 2052.36  * Flow Area (sq ft)      *          *   86.39  *          *
* E.G. Slope (ft/ft)      *0.000949  * Area (sq ft)           *          *   86.39  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)          *   30.31  * Top Width (ft)        *          *   30.31  *          *
* Vel Total (ft/s)        *    2.95  * Avg. Vel. (ft/s)      *          *    2.95  *          *
* Max Chl Dpth (ft)       *    3.81  * Hydr. Depth (ft)      *          *    2.85  *          *
* Conv. Total (cfs)       *  8278.1  * Conv. (cfs)           *          *  8278.1  *          *
* Length Wtd. (ft)        *   12.00  * Wetted Per. (ft)      *          *   32.10  *          *
* Min Ch El (ft)          * 2050.46  * Shear (lb/sq ft)      *          *    0.16  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.47  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)  *          *   20.24  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    6.07  *          *
*****************************************************************************************************

Note:    Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1231

INPUT
Description: Sta 50+14 - Drake Channel
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -44.8 2065.31      -15 2050.44        0 2050.44     29.8 2065.31

Manning's n Values          num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
   -44.8     .03     -44.8     .03     29.8     .03

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          -44.8     29.8                  14        14         14              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2054.40  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.13  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)          * 2054.26  * Reach Len. (ft)        *   14.00  *   14.00  *   14.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *   86.62  *          *
* E.G. Slope (ft/ft)      *0.000941  * Area (sq ft)           *          *   86.62  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)          *   30.32  * Top Width (ft)        *          *   30.32  *          *
* Vel Total (ft/s)        *    2.94  * Avg. Vel. (ft/s)      *          *    2.94  *          *
* Max Chl Dpth (ft)       *    3.82  * Hydr. Depth (ft)      *          *    2.86  *          *
* Conv. Total (cfs)       *  8311.8  * Conv. (cfs)           *          *  8311.8  *          *
* Length Wtd. (ft)        *   14.00  * Wetted Per. (ft)      *          *   32.12  *          *
* Min Ch El (ft)          * 2050.44  * Shear (lb/sq ft)      *          *    0.16  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.47  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)  *          *   20.21  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    6.07  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1230

INPUT
Description: Sta 50+00 - Drake Channel
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -44.8 2065.31      -15 2050.41        0 2050.41     29.8 2065.31

Manning's n Values          num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
   -44.8     .03     -44.8     .03     29.8     .03

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          -44.8     29.8                  50        50         50              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2054.38  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.13  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)          * 2054.25  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *   87.11  *          *
* E.G. Slope (ft/ft)      *0.000926  * Area (sq ft)           *          *   87.11  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)          *   30.36  * Top Width (ft)        *          *   30.36  *          *
* Vel Total (ft/s)        *    2.93  * Avg. Vel. (ft/s)      *          *    2.93  *          *
* Max Chl Dpth (ft)       *    3.84  * Hydr. Depth (ft)      *          *    2.87  *          *
* Conv. Total (cfs)       *  8380.9  * Conv. (cfs)           *          *  8380.9  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   32.18  *          *
* Min Ch El (ft)          * 2050.41  * Shear (lb/sq ft)      *          *    0.16  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.46  *          *
* Frctn Loss (ft)         *    0.03  * Cum Volume (acre-ft)  *          *   20.19  *          *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)        *          *    6.06  *          *
*****************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1229

INPUT
Description: Sta 49+50 - Drake Channel
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
     -44 2063.31      -18 2050.31        4 2050.31     30.6 2063.61

Manning's n Values          num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
     -44     .03      -44     .03     30.6     .03

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          -44     30.6                  50        50         50              .1      .3


CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2054.33  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.07  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)          * 2054.26  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *  118.19  *          *
* E.G. Slope (ft/ft)      *0.000443  * Area (sq ft)           *          *  118.19  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)          *   37.81  * Top Width (ft)        *          *   37.81  *          *
* Vel Total (ft/s)        *    2.16  * Avg. Vel. (ft/s)      *          *    2.16  *          *
* Max Chl Dpth (ft)       *    3.95  * Hydr. Depth (ft)      *          *    3.13  *          *
* Conv. Total (cfs)       * 12119.3  * Conv. (cfs)           *          * 12119.3  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   39.67  *          *
* Min Ch El (ft)          * 2050.31  * Shear (lb/sq ft)      *          *    0.08  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.18  *          *
* Frctn Loss (ft)         *    0.02  * Cum Volume (acre-ft)  *          *   20.07  *          *
* C & E Loss (ft)         *    0.01  * Cum SA (acres)        *          *    6.02  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
```

REACH: C-1 to 9000 ft E RS: 1228

INPUT
Description: Sta 49+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.8	2061.61	-21	2050.21	7	2050.21	30.2	2061.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.8	.03	-43.8	.03	30.2	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-43.8 30.2 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2054.31	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.05	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 2054.26	* Reach Len. (ft)	* 50.00 *	50.00 *	50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 146.34 *	*
* E.G. Slope (ft/ft)	*0.000266	* Area (sq ft)	*	* 146.34 *	*
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00 *	*
* Top Width (ft)	* 44.21	* Top Width (ft)	*	* 44.21 *	*
* Vel Total (ft/s)	* 1.74	* Avg. Vel. (ft/s)	*	* 1.74 *	*
* Max Chl Dpth (ft)	* 4.05	* Hydr. Depth (ft)	*	* 3.31 *	*
* Conv. Total (cfs)	* 15649.5	* Conv. (cfs)	*	* 15649.5 *	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 46.13 *	*
* Min Ch El (ft)	* 2050.21	* Shear (lb/sq ft)	*	* 0.05 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.09 *	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 19.92 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 5.97 *	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1227

INPUT
Description: Sta 48+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.24	2059.73	-24	2050.11	10	2050.11	29.24	2059.73

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.24	.03	-43.24	.03	29.24	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-43.24 29.24 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2054.30	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.03	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 2054.26	* Reach Len. (ft)	* 50.00 *	50.00 *	50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 175.66 *	*
* E.G. Slope (ft/ft)	*0.000172	* Area (sq ft)	*	* 175.66 *	*
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00 *	*
* Top Width (ft)	* 50.61	* Top Width (ft)	*	* 50.61 *	*
* Vel Total (ft/s)	* 1.45	* Avg. Vel. (ft/s)	*	* 1.45 *	*
* Max Chl Dpth (ft)	* 4.15	* Hydr. Depth (ft)	*	* 3.47 *	*
* Conv. Total (cfs)	* 19447.0	* Conv. (cfs)	*	* 19447.0 *	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 52.57 *	*
* Min Ch El (ft)	* 2050.11	* Shear (lb/sq ft)	*	* 0.04 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.05 *	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 19.73 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 5.91 *	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1226

INPUT
Description: Sta 48+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.44	2059.73	-27	2050.01	12	2050.01	31.44	2059.73

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.44	.03	-46.44	.03	31.44	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-46.44 31.44 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2054.29	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.02	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 2054.26	* Reach Len. (ft)	* 50.00 *	50.00 *	50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 201.92 *	*
* E.G. Slope (ft/ft)	*0.000123	* Area (sq ft)	*	* 201.92 *	*
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00 *	*
* Top Width (ft)	* 56.00	* Top Width (ft)	*	* 56.00 *	*
* Vel Total (ft/s)	* 1.26	* Avg. Vel. (ft/s)	*	* 1.26 *	*
* Max Chl Dpth (ft)	* 4.25	* Hydr. Depth (ft)	*	* 3.61 *	*
* Conv. Total (cfs)	* 22969.8	* Conv. (cfs)	*	* 22969.8 *	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 58.01 *	*
* Min Ch El (ft)	* 2050.01	* Shear (lb/sq ft)	*	* 0.03 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.03 *	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 19.51 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 5.85 *	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1225

INPUT
Description: Sta 47+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44	2056.91	-30	2049.91	15	2049.91	34.62	2059.72

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44	.03	-44	.03	34.62	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-44 34.62 13 13 13 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2054.28	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.02	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 2054.26	* Reach Len. (ft)	* 13.00 *	13.00 *	13.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 233.60 *	*
* E.G. Slope (ft/ft)	*0.000087	* Area (sq ft)	*	* 233.60 *	*
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00 *	*
* Top Width (ft)	* 62.40	* Top Width (ft)	*	* 62.40 *	*
* Vel Total (ft/s)	* 1.09	* Avg. Vel. (ft/s)	*	* 1.09 *	*
* Max Chl Dpth (ft)	* 4.35	* Hydr. Depth (ft)	*	* 3.74 *	*
* Conv. Total (cfs)	* 27300.1	* Conv. (cfs)	*	* 27300.1 *	*
* Length Wtd. (ft)	* 13.00	* Wetted Per. (ft)	*	* 64.45 *	*
* Min Ch El (ft)	* 2049.91	* Shear (lb/sq ft)	*	* 0.02 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.02 *	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 19.26 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 5.79 *	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1224

```
INPUT
Description: Sta 47+37 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
     -44 2056.91      -30 2049.87       15 2049.87    34.62 2059.72

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
     -44     .04       -44     .04    34.62     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -44   34.62                   6        6        6             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)          * 2054.28  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.02  * Wt. n-Val.             *          *    0.040 *          *
* W.S. Elev (ft)          * 2054.26  * Reach Len. (ft)        *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *  235.82  *          *
* E.G. Slope (ft/ft)      *0.000151  * Area (sq ft)           *          *  235.82  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)          *   62.47  * Top Width (ft)         *          *   62.47  *          *
* Vel Total (ft/s)        *    1.08  * Avg. Vel. (ft/s)       *          *    1.08  *          *
* Max Chl Dpth (ft)       *    4.39  * Hydr. Depth (ft)       *          *    3.78  *          *
* Conv. Total (cfs)       * 20780.2  * Conv. (cfs)           *          * 20780.2  *          *
* Length Wtd. (ft)        *    6.00  * Wetted Per. (ft)       *          *   64.55  *          *
* Min Ch El (ft)          * 2049.87  * Shear (lb/sq ft)      *          *    0.03  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.04  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   19.19  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    5.77  *          *
************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1223

INPUT
Description: Sta 47+31 - Gabion Counterweir
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
     -43 2054.81    -32.5 2049.86     17.5 2049.86     29.8 2056.21

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
     -43     .028      -43     .028     29.8     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -43    29.8                   .1       .1       .1             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)          * 2054.28  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.02  * Wt. n-Val.             *          *    0.028 *          *
* W.S. Elev (ft)          * 2054.26  * Reach Len. (ft)        *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *  259.31  *          *
* E.G. Slope (ft/ft)      *0.000060  * Area (sq ft)           *          *  259.31  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)          *   67.86  * Top Width (ft)         *          *   67.86  *          *
* Vel Total (ft/s)        *    0.98  * Avg. Vel. (ft/s)       *          *    0.98  *          *
* Max Chl Dpth (ft)       *    4.40  * Hydr. Depth (ft)       *          *    3.82  *          *
* Conv. Total (cfs)       * 32973.8  * Conv. (cfs)           *          * 32973.8  *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)       *          *   69.91  *          *
* Min Ch El (ft)          * 2049.86  * Shear (lb/sq ft)      *          *    0.01  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.01  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   19.16  *          *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)         *          *    5.76  *          *
************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1222

INPUT
Description: Sta 47+31 - Gabion Counterweir
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
     -43 2054.81    -32.5 2052.86     17.5 2052.86     29.8 2056.21

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
     -43     .028      -43     .028     29.8     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -43    29.8                   6        6        6             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)          * 2054.25  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.26  * Wt. n-Val.             *          *    0.028 *          *
* W.S. Elev (ft)          * 2053.99  * Reach Len. (ft)        *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *   62.35  *          *
* E.G. Slope (ft/ft)      *0.005706  * Area (sq ft)           *          *   62.35  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)          *   60.24  * Top Width (ft)         *          *   60.24  *          *
* Vel Total (ft/s)        *    4.09  * Avg. Vel. (ft/s)       *          *    4.09  *          *
* Max Chl Dpth (ft)       *    1.13  * Hydr. Depth (ft)       *          *    1.03  *          *
* Conv. Total (cfs)       *  3375.8  * Conv. (cfs)           *          *  3375.8  *          *
* Length Wtd. (ft)        *    6.00  * Wetted Per. (ft)       *          *   60.50  *          *
* Min Ch El (ft)          * 2052.86  * Shear (lb/sq ft)      *          *    0.37  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    1.50  *          *
* Frctn Loss (ft)         *    0.05  * Cum Volume (acre-ft)   *          *   19.16  *          *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)         *          *    5.76  *          *
************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1221

INPUT
Description: Sta 47+ 25- Gabion Counterweir
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
     -43 2054.81    -32.5 2052.86     17.5 2052.86     29.8 2056.21

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
     -43     .028      -43     .028     29.8     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -43    29.8                   .1       .1       .1             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)          * 2054.19  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.43  * Wt. n-Val.             *          *    0.028 *          *
* W.S. Elev (ft)          * 2053.76  * Reach Len. (ft)        *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)          * 2053.76  * Flow Area (sq ft)      *          *   48.73  *          *
* E.G. Slope (ft/ft)      *0.012365  * Area (sq ft)           *          *   48.73  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)          *   58.16  * Top Width (ft)         *          *   58.16  *          *
* Vel Total (ft/s)        *    5.23  * Avg. Vel. (ft/s)       *          *    5.23  *          *
* Max Chl Dpth (ft)       *    0.90  * Hydr. Depth (ft)       *          *    0.84  *          *
* Conv. Total (cfs)       *  2293.2  * Conv. (cfs)           *          *  2293.2  *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)       *          *   58.36  *          *
* Min Ch El (ft)          * 2052.86  * Shear (lb/sq ft)      *          *    0.64  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    3.37  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   19.15  *          *
```

```
* C & E Loss (ft)        *    0.07  * Cum SA (acres)          *           *    5.75  *           *
*****************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1220

INPUT
Description: Sta 47+25 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
     -43 2054.81    -32.5 2049.86     17.5 2049.86     29.8 2056.21

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
     -43     .04      -43     .04     29.8     .04

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.   Expan.
            -43    29.8                      19      19        19          .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)          * 2053.86  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    3.67  * Wt. n-Val.             *          *    0.040  *          *
* W.S. Elev (ft)          * 2050.19  * Reach Len. (ft)       *   19.00  *   19.00  *   19.00  *
* Crit W.S. (ft)          * 2050.78  * Flow Area (sq ft)     *          *   16.59  *          *
* E.G. Slope (ft/ft)      *0.775368  * Area (sq ft)          *          *   16.59  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)          *   51.33  * Top Width (ft)        *          *   51.33  *          *
* Vel Total (ft/s)        *   15.37  * Avg. Vel. (ft/s)      *          *   15.37  *          *
* Max Chl Dpth (ft)       *    0.33  * Hydr. Depth (ft)      *          *    0.32  *          *
* Conv. Total (cfs)       *   289.6  * Conv. (cfs)           *          *   289.6  *          *
* Length Wtd. (ft)        *   19.00  * Wetted Per. (ft)      *          *   51.48  *          *
* Min Ch El (ft)          * 2049.86  * Shear (lb/sq ft)     *          *   15.60  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *  239.77  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *   19.15  *          *
* C & E Loss (ft)         *    0.32  * Cum SA (acres)        *          *    5.75  *          *
*****************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Note:    Program found supercritical flow starting at this cross section.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1219

INPUT
Description: Sta 47+06 - Inline Gabion Drop Structure
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
     -43 2054.81    -32.5 2049.91     17.5 2049.91     29.8 2056.21

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
     -43    .028      -43    .028     29.8    .028

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.   Expan.
            -43    29.8                       6       6         6          .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)          * 2051.39  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.78  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)          * 2050.61  * Reach Len. (ft)       *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)          * 2050.83  * Flow Area (sq ft)     *          *   35.94  *          *
* E.G. Slope (ft/ft)      *0.030154  * Area (sq ft)          *          *   35.94  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)          *   52.86  * Top Width (ft)        *          *   52.86  *          *
* Vel Total (ft/s)        *    7.10  * Avg. Vel. (ft/s)      *          *    7.10  *          *
* Max Chl Dpth (ft)       *    0.70  * Hydr. Depth (ft)      *          *    0.68  *          *
* Conv. Total (cfs)       *  1468.5  * Conv. (cfs)           *          *  1468.5  *          *
* Length Wtd. (ft)        *    6.00  * Wetted Per. (ft)      *          *   53.18  *          *
* Min Ch El (ft)          * 2049.91  * Shear (lb/sq ft)     *          *    1.27  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    9.03  *          *
* Frctn Loss (ft)         *    1.60  * Cum Volume (acre-ft)  *          *   19.14  *          *
* C & E Loss (ft)         *    0.87  * Cum SA (acres)        *          *    5.73  *          *
*****************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1218

INPUT
Description: Sta 47+00 - Inline Gabion Drop Structure
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
     -43 2054.81    -32.5 2049.81     17.5 2049.81     29.8 2056.21

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
     -43    .028      -43    .028     29.8    .028

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.   Expan.
            -43    29.8                      .1      .1        .1          .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)          * 2051.19  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.56  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)          * 2050.64  * Reach Len. (ft)       *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)          * 2050.73  * Flow Area (sq ft)     *          *   42.59  *          *
* E.G. Slope (ft/ft)      *0.017340  * Area (sq ft)          *          *   42.59  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)          *   53.32  * Top Width (ft)        *          *   53.32  *          *
* Vel Total (ft/s)        *    5.99  * Avg. Vel. (ft/s)      *          *    5.99  *          *
* Max Chl Dpth (ft)       *    0.82  * Hydr. Depth (ft)      *          *    0.80  *          *
* Conv. Total (cfs)       *  1936.5  * Conv. (cfs)           *          *  1936.5  *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)      *          *   53.70  *          *
* Min Ch El (ft)          * 2049.81  * Shear (lb/sq ft)     *          *    0.86  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    5.14  *          *
* Frctn Loss (ft)         *    0.13  * Cum Volume (acre-ft)  *          *   19.14  *          *
* C & E Loss (ft)         *    0.07  * Cum SA (acres)        *          *    5.72  *          *
*****************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1217

INPUT
Description: Sta 47+00 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
     -43 2054.81     -13 2039.81      -3 2039.81     29.8 2056.21

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
```

```
**********************************************
     -43    .028     -43    .028    29.8    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -43    29.8                24      24       24            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2050.28  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    9.60  * Wt. n-Val.             *          *    0.028 *          *
* W.S. Elev (ft)          * 2040.68  * Reach Len. (ft)       *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)          * 2042.12  * Flow Area (sq ft)     *          *   10.26  *          *
* E.G. Slope (ft/ft)      *0.329328  * Area (sq ft)          *          *   10.26  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)          *   13.49  * Top Width (ft)        *          *   13.49  *          *
* Vel Total (ft/s)        *   24.86  * Avg. Vel. (ft/s)      *          *   24.86  *          *
* Max Chl Dpth (ft)       *    0.87  * Hydr. Depth (ft)      *          *    0.76  *          *
* Conv. Total (cfs)       *   444.4  * Conv. (cfs)           *          *   444.4  *          *
* Length Wtd. (ft)        *   24.00  * Wetted Per. (ft)      *          *   13.90  *          *
* Min Ch El (ft)          * 2039.81  * Shear (lb/sq ft)     *          *   15.17  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *  377.04  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *   19.14  *          *
* C & E Loss (ft)         *    0.90  * Cum SA (acres)        *          *    5.72  *          *
*****************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1216

INPUT
Description: Sta 46+76 - Drake Channel
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**************************************************************************
   -42.2 2053.31     -15 2039.76       0 2039.76    29.2 2054.31

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
**********************************************
   -42.2    .028   -42.2     .03    29.2    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -42.2    29.2                12      12       12            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2043.78  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.13  * Wt. n-Val.             *          *    0.030 *          *
* W.S. Elev (ft)          * 2043.66  * Reach Len. (ft)       *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)          * 2041.66  * Flow Area (sq ft)     *          *   88.93  *          *
* E.G. Slope (ft/ft)      *0.000875  * Area (sq ft)          *          *   88.93  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)          *   30.64  * Top Width (ft)        *          *   30.64  *          *
* Vel Total (ft/s)        *    2.87  * Avg. Vel. (ft/s)      *          *    2.87  *          *
* Max Chl Dpth (ft)       *    3.90  * Hydr. Depth (ft)      *          *    2.90  *          *
* Conv. Total (cfs)       *  8621.1  * Conv. (cfs)           *          *  8621.1  *          *
* Length Wtd. (ft)        *   12.00  * Wetted Per. (ft)      *          *   32.48  *          *
* Min Ch El (ft)          * 2039.76  * Shear (lb/sq ft)     *          *    0.15  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.43  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)  *          *   19.11  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    5.71  *          *
*****************************************************************************************************

Note:    Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1215

INPUT
Description: Sta 46+64 - Drake Channel
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**************************************************************************
   -42.2 2053.31     -15 2039.74       0 2039.74    29.2 2054.31

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
**********************************************
   -42.2     .03   -42.2     .03    29.2     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -42.2    29.2                14      14       14            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2043.77  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.13  * Wt. n-Val.             *          *    0.030 *          *
* W.S. Elev (ft)          * 2043.65  * Reach Len. (ft)       *   14.00  *   14.00  *   14.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)     *          *   89.19  *          *
* E.G. Slope (ft/ft)      *0.000867  * Area (sq ft)          *          *   89.19  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)          *   30.66  * Top Width (ft)        *          *   30.66  *          *
* Vel Total (ft/s)        *    2.86  * Avg. Vel. (ft/s)      *          *    2.86  *          *
* Max Chl Dpth (ft)       *    3.91  * Hydr. Depth (ft)      *          *    2.91  *          *
* Conv. Total (cfs)       *  8659.2  * Conv. (cfs)           *          *  8659.2  *          *
* Length Wtd. (ft)        *   14.00  * Wetted Per. (ft)      *          *   32.50  *          *
* Min Ch El (ft)          * 2039.74  * Shear (lb/sq ft)     *          *    0.15  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.42  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)  *          *   19.08  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    5.70  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1214

INPUT
Description: Sta 46+50 - Drake Channel
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**************************************************************************
   -42.2 2053.31     -15 2039.71       0 2039.71    29.2 2054.31

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
**********************************************
   -42.2     .03   -42.2     .03    29.2     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -42.2    29.2                50      50       50            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2043.76  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.13  * Wt. n-Val.             *          *    0.030 *          *
* W.S. Elev (ft)          * 2043.64  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)     *          *   89.71  *          *
* E.G. Slope (ft/ft)      *0.000853  * Area (sq ft)          *          *   89.71  *          *
* Q Total (cfs)           *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)          *   30.70  * Top Width (ft)        *          *   30.70  *          *
* Vel Total (ft/s)        *    2.84  * Avg. Vel. (ft/s)      *          *    2.84  *          *
* Max Chl Dpth (ft)       *    3.93  * Hydr. Depth (ft)      *          *    2.92  *          *
* Conv. Total (cfs)       *  8733.4  * Conv. (cfs)           *          *  8733.4  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   32.56  *          *
* Min Ch El (ft)          * 2039.71  * Shear (lb/sq ft)     *          *    0.15  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.42  *          *
* Frctn Loss (ft)         *    0.04  * Cum Volume (acre-ft)  *          *   19.06  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    5.69  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1212

INPUT
Description: Sta 46+00 - Drake Channel
Station Elevation Data    num=       4
```

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-42.2	2053.31	-15	2039.61	0	2039.61	29.2	2054.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-42.2	.03	-42.2	.03	29.2	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-42.2	29.2	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2043.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.12	Wt. n-Val.		0.030	
W.S. Elev (ft)	2043.60	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		91.39	
E.G. Slope (ft/ft)	0.000807	Area (sq ft)		91.39	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	30.84	Top Width (ft)		30.84	
Vel Total (ft/s)	2.79	Avg. Vel. (ft/s)		2.79	
Max Chl Dpth (ft)	3.99	Hydr. Depth (ft)		2.96	
Conv. Total (cfs)	8974.9	Conv. (cfs)		8974.9	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		32.73	
Min Ch El (ft)	2039.61	Shear (lb/sq ft)		0.14	
Alpha	1.00	Stream Power (lb/ft s)		0.39	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		18.95	
C & E Loss (ft)	0.01	Cum SA (acres)		5.65	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1211

INPUT
Description: Sta 45+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43	2054.81	-13	2039.51	-3	2039.51	29.8	2056.21

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43	.03	-43	.03	29.8	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-43	29.8	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2043.66	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.21	Wt. n-Val.		0.030	
W.S. Elev (ft)	2043.45	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		69.81	
E.G. Slope (ft/ft)	0.001559	Area (sq ft)		69.81	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	25.46	Top Width (ft)		25.46	
Vel Total (ft/s)	3.65	Avg. Vel. (ft/s)		3.65	
Max Chl Dpth (ft)	3.94	Hydr. Depth (ft)		2.74	
Conv. Total (cfs)	6458.5	Conv. (cfs)		6458.5	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		27.35	
Min Ch El (ft)	2039.51	Shear (lb/sq ft)		0.25	
Alpha	1.00	Stream Power (lb/ft s)		0.91	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)		18.86	
C & E Loss (ft)	0.05	Cum SA (acres)		5.62	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1210

INPUT
Description: Sta 45+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.8	2049.21	-25	2039.41	9	2039.41	31	2050.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.8	.03	-44.8	.03	31	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-44.8	31	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2043.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.		0.030	
W.S. Elev (ft)	2043.55	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		175.39	
E.G. Slope (ft/ft)	0.000173	Area (sq ft)		175.39	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	50.72	Top Width (ft)		50.72	
Vel Total (ft/s)	1.45	Avg. Vel. (ft/s)		1.45	
Max Chl Dpth (ft)	4.14	Hydr. Depth (ft)		3.46	
Conv. Total (cfs)	19374.5	Conv. (cfs)		19374.5	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		52.66	
Min Ch El (ft)	2039.41	Shear (lb/sq ft)		0.04	
Alpha	1.00	Stream Power (lb/ft s)		0.05	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		18.72	
C & E Loss (ft)	0.00	Cum SA (acres)		5.58	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1209

INPUT
Description: Sta 44+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.8	2047.81	-28	2039.31	12	2039.31	30.8	2048.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.8	.03	-44.8	.03	30.8	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-44.8	30.8	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2043.57	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.030	
W.S. Elev (ft)	2043.55	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		205.12	
E.G. Slope (ft/ft)	0.000119	Area (sq ft)		205.12	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	56.77	Top Width (ft)		56.77	
Vel Total (ft/s)	1.24	Avg. Vel. (ft/s)		1.24	
Max Chl Dpth (ft)	4.24	Hydr. Depth (ft)		3.61	
Conv. Total (cfs)	23371.2	Conv. (cfs)		23371.2	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		58.79	
Min Ch El (ft)	2039.31	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.03	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		18.50	
C & E Loss (ft)	0.00	Cum SA (acres)		5.52	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1208

INPUT

```
Description: Sta 44+00  - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
  -43.94 2046.18     -30 2039.21      15 2039.21    30.8 2047.11

Manning's n Values        num=       3
     Sta    n Val     Sta    n Val     Sta    n Val
*********************************************
  -43.94     .03  -43.94     .03    30.8     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -43.94    30.8                 13        13        13            .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         * 2043.57  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.02  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)         * 2043.55  * Reach Len. (ft)       *   13.00  *   13.00  *   13.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *  232.85  *          *
* E.G. Slope (ft/ft)     *0.000088  * Area (sq ft)           *          *  232.85  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)         *   62.35  * Top Width (ft)        *          *   62.35  *          *
* Vel Total (ft/s)       *    1.10  * Avg. Vel. (ft/s)      *          *    1.10  *          *
* Max Chl Dpth (ft)      *    4.34  * Hydr. Depth (ft)      *          *    3.73  *          *
* Conv. Total (cfs)      * 27169.9  * Conv. (cfs)           *          * 27169.9  *          *
* Length Wtd. (ft)       *   13.00  * Wetted Per. (ft)      *          *   64.40  *          *
* Min Ch El (ft)         * 2039.21  * Shear (lb/sq ft)      *          *    0.02  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.02  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  *          *   18.25  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *          *    5.45  *          *
*************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1207

INPUT
Description: Sta 43+87 - Drake Channel
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
  -43.94 2046.18     -30 2039.18      15 2039.18    30.8 2047.11

Manning's n Values        num=       3
     Sta    n Val     Sta    n Val     Sta    n Val
*********************************************
  -43.94     .04  -43.94     .04    30.8     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -43.94    30.8                  6         6         6            .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         * 2043.57  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.02  * Wt. n-Val.             *          *    0.040  *          *
* W.S. Elev (ft)         * 2043.55  * Reach Len. (ft)       *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *  234.48  *          *
* E.G. Slope (ft/ft)     *0.000153  * Area (sq ft)           *          *  234.48  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)         *   62.40  * Top Width (ft)        *          *   62.40  *          *
* Vel Total (ft/s)       *    1.09  * Avg. Vel. (ft/s)      *          *    1.09  *          *
* Max Chl Dpth (ft)      *    4.37  * Hydr. Depth (ft)      *          *    3.76  *          *
* Conv. Total (cfs)      * 20601.8  * Conv. (cfs)           *          * 20601.8  *          *
* Length Wtd. (ft)       *    6.00  * Wetted Per. (ft)      *          *   64.47  *          *
* Min Ch El (ft)         * 2039.18  * Shear (lb/sq ft)      *          *    0.03  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.04  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  *          *   18.18  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)        *          *    5.43  *          *
*************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1206

INPUT
Description: Sta 43+81 - Gabion Counterweir
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -43.4 2045.31    -32.5 2039.17     17.5 2039.17     33.4 2044.31

Manning's n Values        num=       3
     Sta    n Val     Sta    n Val     Sta    n Val
*********************************************
   -43.4     .028   -43.4     .028    33.4     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -43.4     33.4                 .1        .1        .1            .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         * 2043.56  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.01  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)         * 2043.55  * Reach Len. (ft)       *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *  265.63  *          *
* E.G. Slope (ft/ft)     *0.000059  * Area (sq ft)           *          *  265.63  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)         *   71.32  * Top Width (ft)        *          *   71.32  *          *
* Vel Total (ft/s)       *    0.96  * Avg. Vel. (ft/s)      *          *    0.96  *          *
* Max Chl Dpth (ft)      *    4.38  * Hydr. Depth (ft)      *          *    3.72  *          *
* Conv. Total (cfs)      * 33301.2  * Conv. (cfs)           *          * 33301.2  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)      *          *   73.16  *          *
* Min Ch El (ft)         * 2039.17  * Shear (lb/sq ft)      *          *    0.01  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.01  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  *          *   18.14  *          *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)        *          *    5.42  *          *
*************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1205

INPUT
Description: Sta 43+81 - Gabion Counterweir
Counterweir
Station Elevation Data    num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -43.4 2045.31    -32.5 2042.17     17.5 2042.17     33.4 2044.31

Manning's n Values        num=       3
     Sta    n Val     Sta    n Val     Sta    n Val
*********************************************
   -43.4     .028   -43.4     .028    33.4     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -43.4     33.4                 6         6         6            .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)         * 2043.54  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.26  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)         * 2043.28  * Reach Len. (ft)       *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)      *          *   61.90  *          *
* E.G. Slope (ft/ft)     *0.006076  * Area (sq ft)           *          *   61.90  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)         *   62.04  * Top Width (ft)        *          *   62.04  *          *
* Vel Total (ft/s)       *    4.12  * Avg. Vel. (ft/s)      *          *    4.12  *          *
* Max Chl Dpth (ft)      *    1.10  * Hydr. Depth (ft)      *          *    1.00  *          *
* Conv. Total (cfs)      *  3271.5  * Conv. (cfs)           *          *  3271.5  *          *
* Length Wtd. (ft)       *    6.00  * Wetted Per. (ft)      *          *   62.27  *          *
* Min Ch El (ft)         * 2042.17  * Shear (lb/sq ft)      *          *    0.38  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    1.55  *          *
* Frctn Loss (ft)        *    0.05  * Cum Volume (acre-ft)  *          *   18.14  *          *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)        *          *    5.42  *          *
*************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
```

0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1204

INPUT
Description: Sta 43+75 -Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.4	2045.31	-32.5	2042.16	17.5	2042.16	33.4	2044.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.4	.028	-43.4	.028	33.4	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff	Expan.
-43.4	33.4	.1	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2043.47	Element		0.028	
Vel Head (ft)	0.42	Wt. n-Val.		0.028	
W.S. Elev (ft)	2043.06	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	2043.06	Flow Area (sq ft)		49.25	
E.G. Slope (ft/ft)	*0.012365	Area (sq ft)		49.25	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	59.74	Top Width (ft)		59.74	
Vel Total (ft/s)	5.18	Avg. Vel. (ft/s)		5.18	
Max Chl Dpth (ft)	0.90	Hydr. Depth (ft)		0.82	
Conv. Total (cfs)	2293.2	Conv. (cfs)		2293.2	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		59.93	
Min Ch El (ft)	2042.16	Shear (lb/sq ft)		0.63	
Alpha	1.00	Stream Power (lb/ft s)		3.28	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		18.14	
C & E Loss (ft)	0.06	Cum SA (acres)		5.41	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1203

INPUT
Description: Sta 43+75 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.4	2045.31	-32.5	2039.16	17.5	2039.16	33.4	2044.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.4	.04	-43.4	.04	33.4	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff	Expan.
-43.4	33.4	19	19	19	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2043.15	Element		0.040	
Vel Head (ft)	3.66	Wt. n-Val.		0.040	
W.S. Elev (ft)	2039.49	Reach Len. (ft)	19.00	19.00	19.00
Crit W.S. (ft)	2040.08	Flow Area (sq ft)		16.61	
E.G. Slope (ft/ft)	*0.776537	Area (sq ft)		16.61	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	51.59	Top Width (ft)		51.59	
Vel Total (ft/s)	15.35	Avg. Vel. (ft/s)		15.35	
Max Chl Dpth (ft)	0.33	Hydr. Depth (ft)		0.32	
Conv. Total (cfs)	289.4	Conv. (cfs)		289.4	
Length Wtd. (ft)	19.00	Wetted Per. (ft)		51.73	
Min Ch El (ft)	2039.16	Shear (lb/sq ft)		15.57	
Alpha	1.00	Stream Power (lb/ft s)		238.99	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		18.14	
C & E Loss (ft)	0.32	Cum SA (acres)		5.41	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Program found supercritical flow starting at this cross section.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1202

INPUT
Description: Sta 43+56 - Inline Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.4	2045.31	-32.5	2039.12	17.5	2039.12	33.4	2044.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.4	.028	-43.4	.028	33.4	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left	Channel	Right	Coeff	Expan.
-43.4	33.4	6	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

			Left OB	Channel	Right OB
E.G. Elev (ft)	2040.61	Element		0.028	
Vel Head (ft)	0.80	Wt. n-Val.		0.028	
W.S. Elev (ft)	2039.81	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)	2040.04	Flow Area (sq ft)		35.43	
E.G. Slope (ft/ft)	*0.031942	Area (sq ft)		35.43	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	53.31	Top Width (ft)		53.31	
Vel Total (ft/s)	7.20	Avg. Vel. (ft/s)		7.20	
Max Chl Dpth (ft)	0.69	Hydr. Depth (ft)		0.66	
Conv. Total (cfs)	1426.8	Conv. (cfs)		1426.8	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		53.60	
Min Ch El (ft)	2039.12	Shear (lb/sq ft)		1.32	
Alpha	1.00	Stream Power (lb/ft s)		9.49	
Frctn Loss (ft)	1.68	Cum Volume (acre-ft)		18.12	
C & E Loss (ft)	0.86	Cum SA (acres)		5.39	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1201

INPUT
Description: Sta 43+50 Inline Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.4	2045.31	-32.5	2039.11	17.5	2039.11	33.4	2044.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.4	.028	-43.4	.028	33.4	.028

```
Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -43.4    33.4               .1       .1       .1             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 2040.47  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.44  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)         * 2040.03  * Reach Len. (ft)        *     0.10 *     0.10 *     0.10 *
* Crit W.S. (ft)         * 2040.03  * Flow Area (sq ft)      *          *   47.77  *          *
* E.G. Slope (ft/ft)     *0.012145  * Area (sq ft)           *          *   47.77  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)         *   54.41  * Top Width (ft)         *          *   54.41  *          *
* Vel Total (ft/s)       *    5.34  * Avg. Vel. (ft/s)       *          *    5.34  *          *
* Max Chl Dpth (ft)      *    0.92  * Hydr. Depth (ft)       *          *    0.88  *          *
* Conv. Total (cfs)      *  2313.9  * Conv. (cfs)           *          *  2313.9  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)       *          *   54.80  *          *
* Min Ch El (ft)         * 2039.11  * Shear (lb/sq ft)       *          *    0.66  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    3.53  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)   *          *   18.12  *          *
* C & E Loss (ft)        *    0.09  * Cum SA (acres)         *          *    5.38  *          *
************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1200

INPUT
Description: Sta 43+50  - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev     Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -43.4 2045.31     -13 2029.11        3 2029.11     33.4 2044.31

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -43.4     .03    -43.4     .03     33.4     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -43.4    33.4               24       24       24             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 2039.53  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    9.83  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)         * 2029.70  * Reach Len. (ft)        *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)         * 2030.95  * Flow Area (sq ft)      *          *   10.14  *          *
* E.G. Slope (ft/ft)     *0.578649  * Area (sq ft)           *          *   10.14  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)         *   18.29  * Top Width (ft)         *          *   18.29  *          *
* Vel Total (ft/s)       *   25.16  * Avg. Vel. (ft/s)       *          *   25.16  *          *
* Max Chl Dpth (ft)      *    0.59  * Hydr. Depth (ft)       *          *    0.55  *          *
* Conv. Total (cfs)      *   335.2  * Conv. (cfs)           *          *   335.2  *          *
* Length Wtd. (ft)       *   24.00  * Wetted Per. (ft)       *          *   18.58  *          *
* Min Ch El (ft)         * 2029.11  * Shear (lb/sq ft)       *          *   19.71  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *  495.82  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)   *          *   18.12  *          *
* C & E Loss (ft)        *    0.94  * Cum SA (acres)         *          *    5.38  *          *
************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1199

INPUT
Description: Sta 43+26 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev     Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -42.6 2042.81     -15 2029.06        0 2029.06     29.6 2043.81

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -42.6     .028   -42.6     .03     29.6     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -42.6    29.6               12       12       12             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 2032.84  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.15  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)         * 2032.69  * Reach Len. (ft)        *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)         * 2030.96  * Flow Area (sq ft)      *          *   80.86  *          *
* E.G. Slope (ft/ft)     *0.001142  * Area (sq ft)           *          *   80.86  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)         *   29.57  * Top Width (ft)         *          *   29.57  *          *
* Vel Total (ft/s)       *    3.15  * Avg. Vel. (ft/s)       *          *    3.15  *          *
* Max Chl Dpth (ft)      *    3.63  * Hydr. Depth (ft)       *          *    2.73  *          *
* Conv. Total (cfs)      *  7544.3  * Conv. (cfs)           *          *  7544.3  *          *
* Length Wtd. (ft)       *   12.00  * Wetted Per. (ft)       *          *   31.27  *          *
* Min Ch El (ft)         * 2029.06  * Shear (lb/sq ft)       *          *    0.18  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.58  *          *
* Frctn Loss (ft)        *    0.01  * Cum Volume (acre-ft)   *          *   18.09  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    5.37  *          *
************************************************************************************************

Note:    Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1198

INPUT
Description: Sta 43+14 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev     Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -42.6 2042.81     -15 2029.04        0 2029.04     29.6 2043.81

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -42.6     .03    -42.6     .03     29.6     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -42.6    29.6               14       14       14             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)         * 2032.83  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.15  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)         * 2032.68  * Reach Len. (ft)        *   14.00  *   14.00  *   14.00  *
* Crit W.S. (ft)         *         * Flow Area (sq ft)      *          *   81.01  *          *
* E.G. Slope (ft/ft)     *0.001136  * Area (sq ft)           *          *   81.01  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)             *          *  255.00  *          *
* Top Width (ft)         *   29.57  * Top Width (ft)         *          *   29.57  *          *
* Vel Total (ft/s)       *    3.15  * Avg. Vel. (ft/s)       *          *    3.15  *          *
* Max Chl Dpth (ft)      *    3.64  * Hydr. Depth (ft)       *          *    2.74  *          *
* Conv. Total (cfs)      *  7567.0  * Conv. (cfs)           *          *  7567.0  *          *
* Length Wtd. (ft)       *   14.00  * Wetted Per. (ft)       *          *   31.28  *          *
* Min Ch El (ft)         * 2029.04  * Shear (lb/sq ft)       *          *    0.18  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.58  *          *
* Frctn Loss (ft)        *    0.02  * Cum Volume (acre-ft)   *          *   18.07  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    5.36  *          *
************************************************************************************************

CROSS SECTION
```

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1197

INPUT
Description: Sta 43+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-42.6	2042.81	-15	2029.01	0	2029.01	29.6	2043.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-42.6	.03	-42.6	.03	29.6	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

	-42.6	29.6	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2032.81	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.		0.030	
W.S. Elev (ft)	2032.66	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		81.41	
E.G. Slope (ft/ft)	0.001119	Area (sq ft)		81.41	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	29.60	Top Width (ft)		29.60	
Vel Total (ft/s)	3.13	Avg. Vel. (ft/s)		3.13	
Max Chl Dpth (ft)	3.65	Hydr. Depth (ft)		2.75	
Conv. Total (cfs)	7621.6	Conv. (cfs)		7621.6	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		31.33	
Min Ch El (ft)	2029.01	Shear (lb/sq ft)		0.18	
Alpha	1.00	Stream Power (lb/ft s)		0.57	
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)		18.05	
C & E Loss (ft)	0.02	Cum SA (acres)		5.35	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1196

INPUT
Description: Sta 42+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.8	2040.81	-18	2028.91	3	2028.91	29.2	2042.01

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.8	.03	-41.8	.03	29.2	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

	-41.8	29.2	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2032.75	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.09	Wt. n-Val.		0.030	
W.S. Elev (ft)	2032.67	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		107.10	
E.G. Slope (ft/ft)	0.000576	Area (sq ft)		107.10	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	36.03	Top Width (ft)		36.03	
Vel Total (ft/s)	2.38	Avg. Vel. (ft/s)		2.38	
Max Chl Dpth (ft)	3.76	Hydr. Depth (ft)		2.97	
Conv. Total (cfs)	10622.5	Conv. (cfs)		10622.5	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		37.80	
Min Ch El (ft)	2028.91	Shear (lb/sq ft)		0.10	
Alpha	1.00	Stream Power (lb/ft s)		0.24	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)		17.94	
C & E Loss (ft)	0.01	Cum SA (acres)		5.31	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1195

INPUT
Description: Sta 42+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41	2039.31	-20	2028.81	6	2028.81	30	2040.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41	.03	-41	.03	30	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

	-41	30	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2032.72	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.06	Wt. n-Val.		0.030	
W.S. Elev (ft)	2032.66	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		129.89	
E.G. Slope (ft/ft)	0.000362	Area (sq ft)		129.89	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	41.41	Top Width (ft)		41.41	
Vel Total (ft/s)	1.96	Avg. Vel. (ft/s)		1.96	
Max Chl Dpth (ft)	3.85	Hydr. Depth (ft)		3.14	
Conv. Total (cfs)	13395.4	Conv. (cfs)		13395.4	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		43.23	
Min Ch El (ft)	2028.81	Shear (lb/sq ft)		0.07	
Alpha	1.00	Stream Power (lb/ft s)		0.13	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)		17.80	
C & E Loss (ft)	0.00	Cum SA (acres)		5.27	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1194

INPUT
Description: Sta 41+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-40.2	2037.81	-22	2028.71	8	2028.71	29.8	2039.61

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-40.2	.03	-40.2	.03	29.8	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

	-40.2	29.8	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2032.70	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.		0.030	
W.S. Elev (ft)	2032.66	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		149.65	
E.G. Slope (ft/ft)	0.000257	Area (sq ft)		149.65	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	45.79	Top Width (ft)		45.79	
Vel Total (ft/s)	1.70	Avg. Vel. (ft/s)		1.70	
Max Chl Dpth (ft)	3.95	Hydr. Depth (ft)		3.27	
Conv. Total (cfs)	15893.6	Conv. (cfs)		15893.6	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		47.66	
Min Ch El (ft)	2028.71	Shear (lb/sq ft)		0.05	
Alpha	1.00	Stream Power (lb/ft s)		0.09	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		17.64	
C & E Loss (ft)	0.00	Cum SA (acres)		5.22	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1193

INPUT
Description: Sta 41+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-40.96	2036.59	-25	2028.61	10	2028.61	29.4	2038.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-40.96	.03	-40.96	.03	29.4	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-40.96	29.4	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2032.69	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.		0.030	
W.S. Elev (ft)	2032.66	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		174.37	
E.G. Slope (ft/ft)	0.000179	Area (sq ft)		174.37	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	51.19	Top Width (ft)		51.19	
Vel Total (ft/s)	1.46	Avg. Vel. (ft/s)		1.46	
Max Chl Dpth (ft)	4.05	Hydr. Depth (ft)		3.41	
Conv. Total (cfs)	19081.8	Conv. (cfs)		19081.8	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		53.10	
Min Ch El (ft)	2028.61	Shear (lb/sq ft)		0.04	
Alpha	1.00	Stream Power (lb/ft s)		0.05	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		17.45	
C & E Loss (ft)	0.00	Cum SA (acres)		5.16	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1192

INPUT
Description: Sta 40+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.16	2036.59	-28	2028.51	12	2028.51	28.6	2036.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.16	.03	-44.16	.03	28.6	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-44.16	28.6	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2032.68	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.		0.030	
W.S. Elev (ft)	2032.65	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		200.13	
E.G. Slope (ft/ft)	0.000128	Area (sq ft)		200.13	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	56.58	Top Width (ft)		56.58	
Vel Total (ft/s)	1.27	Avg. Vel. (ft/s)		1.27	
Max Chl Dpth (ft)	4.14	Hydr. Depth (ft)		3.54	
Conv. Total (cfs)	22496.5	Conv. (cfs)		22496.5	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		58.53	
Min Ch El (ft)	2028.51	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.03	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		17.24	
C & E Loss (ft)	0.00	Cum SA (acres)		5.10	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1191

INPUT
Description: Sta 40+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.56	2036.59	-30	2028.41	15	2028.41	31.56	2036.59

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.56	.03	-46.56	.03	31.56	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-46.56	31.56	13	13	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2032.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.030	
W.S. Elev (ft)	2032.65	Reach Len. (ft)	13.00	13.00	13.00
Crit W.S. (ft)		Flow Area (sq ft)		227.38	
E.G. Slope (ft/ft)	0.000095	Area (sq ft)		227.38	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	62.18	Top Width (ft)		62.18	
Vel Total (ft/s)	1.12	Avg. Vel. (ft/s)		1.12	
Max Chl Dpth (ft)	4.24	Hydr. Depth (ft)		3.66	
Conv. Total (cfs)	26178.0	Conv. (cfs)		26178.0	
Length Wtd. (ft)	13.00	Wetted Per. (ft)		64.16	
Min Ch El (ft)	2028.41	Shear (lb/sq ft)		0.02	
Alpha	1.00	Stream Power (lb/ft s)		0.02	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		16.99	
C & E Loss (ft)	0.00	Cum SA (acres)		5.03	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1190

INPUT
Description: Sta 39+87 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.56	2036.59	-30	2028.38	15	2028.38	31.56	2036.59

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.56	.04	-46.56	.04	31.56	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-46.56	31.56	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2032.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.02	Wt. n-Val.		0.040	
W.S. Elev (ft)	2032.65	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		229.03	
E.G. Slope (ft/ft)	0.000165	Area (sq ft)		229.03	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	62.23	Top Width (ft)		62.23	
Vel Total (ft/s)	1.11	Avg. Vel. (ft/s)		1.11	
Max Chl Dpth (ft)	4.27	Hydr. Depth (ft)		3.68	
Conv. Total (cfs)	19856.6	Conv. (cfs)		19856.6	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		64.23	
Min Ch El (ft)	2028.38	Shear (lb/sq ft)		0.04	
Alpha	1.00	Stream Power (lb/ft s)		0.04	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		16.93	
C & E Loss (ft)	0.00	Cum SA (acres)		5.01	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1189

INPUT
Description: Sta 39+81 - Gabion Counterweir
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-48	2035	-42.2	2031.81	-32.5	2028.37	17.5	2028.37	31.2	2032.81
35	2035								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-48	.028	-48	.028	35	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-48 35 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2032.67	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.01	Wt. n-Val.		0.028	
W.S. Elev (ft)	2032.66	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)		Flow Area (sq ft)		268.08	
E.G. Slope (ft/ft)	*0.000060	Area (sq ft)		268.08	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	74.46	Top Width (ft)		74.46	
Vel Total (ft/s)	0.95	Avg. Vel. (ft/s)		0.95	
Max Chl Dpth (ft)	4.28	Hydr. Depth (ft)		3.60	
Conv. Total (cfs)	32983.3	Conv. (cfs)		32983.3	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		75.94	
Min Ch El (ft)	2028.37	Shear (lb/sq ft)		0.01	
Alpha	1.00	Stream Power (lb/ft s)		0.01	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		16.89	
C & E Loss (ft)	0.02	Cum SA (acres)		5.00	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1188

INPUT
Description: Sta 39+81 - Gabion Counterweir
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-48	2035	-42.2	2031.81	-32.5	2031.37	17.5	2031.37	31.2	2032.81
35	2035								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-48	.028	-48	.028	35	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-48 35 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2032.65	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.24	Wt. n-Val.		0.028	
W.S. Elev (ft)	2032.41	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		65.53	
E.G. Slope (ft/ft)	*0.005974	Area (sq ft)		65.53	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	70.70	Top Width (ft)		70.70	
Vel Total (ft/s)	3.89	Avg. Vel. (ft/s)		3.89	
Max Chl Dpth (ft)	1.04	Hydr. Depth (ft)		0.93	
Conv. Total (cfs)	3299.2	Conv. (cfs)		3299.2	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		70.92	
Min Ch El (ft)	2031.37	Shear (lb/sq ft)		0.34	
Alpha	1.00	Stream Power (lb/ft s)		1.34	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		16.89	
C & E Loss (ft)	0.01	Cum SA (acres)		5.00	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1187

INPUT
Description: Sta 39+75 - Gabion Counterweir
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-48	2035	-42.2	2031.81	-32.5	2031.36	17.5	2031.36	31.2	2032.81
35	2035								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-48	.028	-48	.028	35	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-48 35 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2032.58	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.38	Wt. n-Val.		0.028	
W.S. Elev (ft)	2032.20	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	2032.20	Flow Area (sq ft)		51.43	
E.G. Slope (ft/ft)	*0.012788	Area (sq ft)		51.43	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	68.34	Top Width (ft)		68.34	
Vel Total (ft/s)	4.96	Avg. Vel. (ft/s)		4.96	
Max Chl Dpth (ft)	0.84	Hydr. Depth (ft)		0.75	
Conv. Total (cfs)	2254.9	Conv. (cfs)		2254.9	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		68.50	
Min Ch El (ft)	2031.36	Shear (lb/sq ft)		0.60	
Alpha	1.00	Stream Power (lb/ft s)		2.97	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		16.88	
C & E Loss (ft)	0.05	Cum SA (acres)		4.99	

Warning: The energy equation could not be balanced within the specified number of iterations. The
program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
depth, the calculated water surface came back below critical depth. This indicates that there
is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1186

INPUT
Description: Sta 39+75 - Gabion Counterweir
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-48	2035	-42.2	2031.81	-32.5	2028.36	17.5	2028.36	31.2	2032.81
35	2035								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-48	.04	-48	.04	35	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-48 35 19 19 19 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2032.26	Element	Left OB	Channel	Right OB

```
* Vel Head (ft)          *    3.57  * Wt. n-Val.            *          *   0.040  *          *
* W.S. Elev (ft)         * 2028.69  * Reach Len. (ft)       *   19.00   *  19.00   *   19.00  *
* Crit W.S. (ft)         * 2029.27  * Flow Area (sq ft)     *          *  16.82   *          *
* E.G. Slope (ft/ft)     *0.750432  * Area (sq ft)          *          *  16.82   *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)           *          *  255.00  *          *
* Top Width (ft)         *   51.94  * Top Width (ft)       *          *  51.94   *          *
* Vel Total (ft/s)       *   15.16  * Avg. Vel. (ft/s)     *          *  15.16   *          *
* Max Chl Dpth (ft)      *    0.33  * Hydr. Depth (ft)     *          *   0.32   *          *
* Conv. Total (cfs)      *   294.4  * Conv. (cfs)          *          *  294.4   *          *
* Length Wtd. (ft)       *   19.00  * Wetted Per. (ft)     *          *  52.05   *          *
* Min Ch El (ft)         * 2028.36  * Shear (lb/sq ft)     *          *  15.14   *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *  229.51  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  *          *  16.88   *          *
* C & E Loss (ft)        *    0.32  * Cum SA (acres)        *          *   4.99   *          *
*****************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Note:    Program found supercritical flow starting at this cross section.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1185

INPUT
Description: Sta 39+56 - Inline Gabion Drop Structure
Station Elevation Data    num=       6
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************************
     -48    2035   -42.2 2031.81   -32.5 2028.31    17.5 2028.31    31.2 2032.81
      37    2034

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
     -48    .028    -48    .028      37    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -48      37                   6         6         6             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)         * 2029.79  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.79  * Wt. n-Val.            *          *   0.028  *          *
* W.S. Elev (ft)         * 2029.00  * Reach Len. (ft)       *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)         * 2029.22  * Flow Area (sq ft)     *          *  35.85   *          *
* E.G. Slope (ft/ft)     *0.031208  * Area (sq ft)          *          *  35.85   *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)           *          *  255.00  *          *
* Top Width (ft)         *   54.01  * Top Width (ft)       *          *  54.01   *          *
* Vel Total (ft/s)       *    7.11  * Avg. Vel. (ft/s)     *          *   7.11   *          *
* Max Chl Dpth (ft)      *    0.69  * Hydr. Depth (ft)     *          *   0.66   *          *
* Conv. Total (cfs)      *  1443.5  * Conv. (cfs)          *          *  1443.5  *          *
* Length Wtd. (ft)       *    6.00  * Wetted Per. (ft)     *          *  54.24   *          *
* Min Ch El (ft)         * 2028.31  * Shear (lb/sq ft)     *          *   1.29   *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   9.16   *          *
* Frctn Loss (ft)        *    1.64  * Cum Volume (acre-ft)  *          *  16.87   *          *
* C & E Loss (ft)        *    0.83  * Cum SA (acres)        *          *   4.97   *          *
*****************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1184

INPUT
Description: Sta 39+50 - Inline Gabion Drop Structure -
Station Elevation Data    num=       6
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************************************
     -48    2035   -42.2 2031.81   -32.5 2028.31    17.5 2028.31    31.2 2032.81
      37    2034

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
     -48    .028    -42.2    .028    31.2    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -42.2    31.2                .1        .1        .1             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)         * 2029.66  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.44  * Wt. n-Val.            *          *   0.028  *          *
* W.S. Elev (ft)         * 2029.22  * Reach Len. (ft)       *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)         * 2029.22  * Flow Area (sq ft)     *          *  48.03   *          *
* E.G. Slope (ft/ft)     *0.012167  * Area (sq ft)          *          *  48.03   *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)           *          *  255.00  *          *
* Top Width (ft)         *   55.31  * Top Width (ft)       *          *  55.31   *          *
* Vel Total (ft/s)       *    5.31  * Avg. Vel. (ft/s)     *          *   5.31   *          *
* Max Chl Dpth (ft)      *    0.91  * Hydr. Depth (ft)     *          *   0.87   *          *
* Conv. Total (cfs)      *  2311.7  * Conv. (cfs)          *          *  2311.7  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)     *          *  55.61   *          *
* Min Ch El (ft)         * 2028.31  * Shear (lb/sq ft)     *          *   0.66   *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   3.48   *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  *          *  16.87   *          *
* C & E Loss (ft)        *    0.09  * Cum SA (acres)        *          *   4.96   *          *
*****************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1183

INPUT
Description: Sta 39+50 - Drake Channel
Station Elevation Data    num=       4
     Sta    Elev     Sta    Elev     Sta    Elev     Sta    Elev
*************************************************************
   -42.2 2031.81     -15 2018.31       2 2018.31    31.2 2032.81

Manning's n Values        num=       3
     Sta   n Val     Sta   n Val     Sta   n Val
*************************************************
   -42.2    .028   -42.2    .028    31.2    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -42.2    31.2                24        24        24             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************
* E.G. Elev (ft)         * 2028.71  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    9.85  * Wt. n-Val.            *          *   0.028  *          *
* W.S. Elev (ft)         * 2018.87  * Reach Len. (ft)       *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)         * 2020.08  * Flow Area (sq ft)     *          *  10.13   *          *
* E.G. Slope (ft/ft)     *0.539809  * Area (sq ft)          *          *  10.13   *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)           *          *  255.00  *          *
* Top Width (ft)         *   19.25  * Top Width (ft)       *          *  19.25   *          *
* Vel Total (ft/s)       *   25.18  * Avg. Vel. (ft/s)     *          *  25.18   *          *
* Max Chl Dpth (ft)      *    0.56  * Hydr. Depth (ft)     *          *   0.53   *          *
* Conv. Total (cfs)      *   347.1  * Conv. (cfs)          *          *  347.1   *          *
* Length Wtd. (ft)       *   24.00  * Wetted Per. (ft)     *          *  19.51   *          *
* Min Ch El (ft)         * 2018.31  * Shear (lb/sq ft)     *          *  17.49   *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *  440.40  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  *          *  16.87   *          *
* C & E Loss (ft)        *    0.94  * Cum SA (acres)        *          *   4.96   *          *
*****************************************************************************************
```

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1182

INPUT
Description: Sta 39+26 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.2	2030.71	-18	2018.25	5	2018.25	30	2030.61

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.2	.028	-43.2	.03	30	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-43.2	30	12	12	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2022.07	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.030	
W.S. Elev (ft)	2021.99	Reach Len. (ft)	12.00	12.00	12.00
Crit W.S. (ft)	2019.74	Flow Area (sq ft)		114.25	
E.G. Slope (ft/ft)	0.000499	Area (sq ft)		114.25	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	38.12	Top Width (ft)		38.12	
Vel Total (ft/s)	2.23	Avg. Vel. (ft/s)		2.23	
Max Chl Dpth (ft)	3.74	Hydr. Depth (ft)		3.00	
Conv. Total (cfs)	11416.0	Conv. (cfs)		11416.0	
Length Wtd. (ft)	12.00	Wetted Per. (ft)		39.87	
Min Ch El (ft)	2018.25	Shear (lb/sq ft)		0.09	
Alpha	1.00	Stream Power (lb/ft s)		0.20	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		16.83	
C & E Loss (ft)	0.00	Cum SA (acres)		4.95	

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1181

INPUT
Description: Sta 39+14 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.2	2030.71	-18	2018.23	5	2018.23	30	2030.61

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.2	.03	-43.2	.03	30	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-43.2	30	14	14	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2022.06	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.030	
W.S. Elev (ft)	2021.98	Reach Len. (ft)	14.00	14.00	14.00
Crit W.S. (ft)		Flow Area (sq ft)		114.75	
E.G. Slope (ft/ft)	0.000492	Area (sq ft)		114.75	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	38.16	Top Width (ft)		38.16	
Vel Total (ft/s)	2.22	Avg. Vel. (ft/s)		2.22	
Max Chl Dpth (ft)	3.75	Hydr. Depth (ft)		3.01	
Conv. Total (cfs)	11492.4	Conv. (cfs)		11492.4	
Length Wtd. (ft)	14.00	Wetted Per. (ft)		39.91	
Min Ch El (ft)	2018.23	Shear (lb/sq ft)		0.09	
Alpha	1.00	Stream Power (lb/ft s)		0.20	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		16.80	
C & E Loss (ft)	0.00	Cum SA (acres)		4.94	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1180

INPUT
Description: Sta 39+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.2	2030.71	-18	2018.21	5	2018.21	30	2030.61

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.2	.03	-43.2	.03	30	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-43.2	30	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2022.05	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.030	
W.S. Elev (ft)	2021.98	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		115.23	
E.G. Slope (ft/ft)	0.000486	Area (sq ft)		115.23	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	38.19	Top Width (ft)		38.19	
Vel Total (ft/s)	2.21	Avg. Vel. (ft/s)		2.21	
Max Chl Dpth (ft)	3.77	Hydr. Depth (ft)		3.02	
Conv. Total (cfs)	11563.6	Conv. (cfs)		11563.6	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		39.95	
Min Ch El (ft)	2018.21	Shear (lb/sq ft)		0.09	
Alpha	1.00	Stream Power (lb/ft s)		0.19	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)		16.76	
C & E Loss (ft)	0.00	Cum SA (acres)		4.93	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1179

INPUT
Description: Sta 38+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.2	2030.71	-18	2018.11	5	2018.11	30	2030.61

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.2	.03	-43.2	.03	30	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-43.2	30	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	2022.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.07	Wt. n-Val.		0.030	
W.S. Elev (ft)	2021.96	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		118.02	
E.G. Slope (ft/ft)	0.000453	Area (sq ft)		118.02	
Q Total (cfs)	255.00	Flow (cfs)		255.00	
Top Width (ft)	38.38	Top Width (ft)		38.38	
Vel Total (ft/s)	2.16	Avg. Vel. (ft/s)		2.16	
Max Chl Dpth (ft)	3.85	Hydr. Depth (ft)		3.07	
Conv. Total (cfs)	11985.3	Conv. (cfs)		11985.3	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		40.20	

```
* Min Ch El (ft)         * 2018.11  * Shear (lb/sq ft)       *           *    0.08  *           *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *           *    0.18  *           *
* Frctn Loss (ft)        *    0.02  * Cum Volume (acre-ft)   *           *   16.63  *           *
* C & E Loss (ft)        *    0.01  * Cum SA (acres)         *           *    4.88  *           *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1178

INPUT
Description: Sta 38+00 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -43.2 2029.11      -21 2018.01        8 2018.01    28.6 2028.31

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -43.2      .03    -43.2      .03     28.6      .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -43.2    28.6                  50       50       50             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)         * 2022.00  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.05  * Wt. n-Val.            *          *    0.030  *          *
* W.S. Elev (ft)         * 2021.96  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          *  145.55  *          *
* E.G. Slope (ft/ft)     *0.000274  * Area (sq ft)          *          *  145.55  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)         *   44.78  * Top Width (ft)        *          *   44.78  *          *
* Vel Total (ft/s)       *    1.75  * Avg. Vel. (ft/s)      *          *    1.75  *          *
* Max Chl Dpth (ft)      *    3.95  * Hydr. Depth (ft)      *          *    3.25  *          *
* Conv. Total (cfs)      * 15393.6  * Conv. (cfs)          *          * 15393.6  *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)      *          *   46.64  *          *
* Min Ch El (ft)         * 2018.01  * Shear (lb/sq ft)      *          *    0.05  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.09  *          *
* Frctn Loss (ft)        *    0.01  * Cum Volume (acre-ft)   *          *   16.48  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    4.83  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1177

INPUT
Description: Sta 37+50 --Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -43.6 2027.71      -24 2017.91       12 2017.91    31.8 2027.81

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -43.6      .03    -43.6      .03     31.8      .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -43.6    31.8                  50       50       50             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)         * 2021.99  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.03  * Wt. n-Val.            *          *    0.030  *          *
* W.S. Elev (ft)         * 2021.96  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          *  178.38  *          *
* E.G. Slope (ft/ft)     *0.000170  * Area (sq ft)          *          *  178.38  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)         *   52.18  * Top Width (ft)        *          *   52.18  *          *
* Vel Total (ft/s)       *    1.43  * Avg. Vel. (ft/s)      *          *    1.43  *          *
* Max Chl Dpth (ft)      *    4.05  * Hydr. Depth (ft)      *          *    3.42  *          *
* Conv. Total (cfs)      * 19575.3  * Conv. (cfs)          *          * 19575.3  *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)      *          *   54.09  *          *
* Min Ch El (ft)         * 2017.91  * Shear (lb/sq ft)      *          *    0.03  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.05  *          *
* Frctn Loss (ft)        *    0.01  * Cum Volume (acre-ft)   *          *   16.29  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    4.78  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1176

INPUT
Description: Sta 37+00 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
     -43 2025.81      -27 2017.81       16 2017.81      33 2026.31

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
     -43      .03      -43      .03       33      .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -43      33                  50       50       50             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)         * 2021.98  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.02  * Wt. n-Val.            *          *    0.030  *          *
* W.S. Elev (ft)         * 2021.96  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          *  212.63  *          *
* E.G. Slope (ft/ft)     *0.000112  * Area (sq ft)          *          *  212.63  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)         *   59.58  * Top Width (ft)        *          *   59.58  *          *
* Vel Total (ft/s)       *    1.20  * Avg. Vel. (ft/s)      *          *    1.20  *          *
* Max Chl Dpth (ft)      *    4.15  * Hydr. Depth (ft)      *          *    3.57  *          *
* Conv. Total (cfs)      * 24069.7  * Conv. (cfs)          *          * 24069.7  *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)      *          *   61.54  *          *
* Min Ch El (ft)         * 2017.81  * Shear (lb/sq ft)      *          *    0.02  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.03  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)   *          *   16.07  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    4.71  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1175

INPUT
Description: Sta 36+50  - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
  -44.14 2025.28      -29 2017.71       19 2017.71    34.14 2025.28

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
  -44.14      .03   -44.14      .03    34.14      .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -44.14   34.14                 50       50       50             .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)         * 2021.97  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.02  * Wt. n-Val.            *          *    0.030  *          *
* W.S. Elev (ft)         * 2021.95  * Reach Len. (ft)       *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         *          * Flow Area (sq ft)     *          *  239.74  *          *
* E.G. Slope (ft/ft)     *0.000084  * Area (sq ft)          *          *  239.74  *          *
* Q Total (cfs)          *  255.00  * Flow (cfs)            *          *  255.00  *          *
* Top Width (ft)         *   64.98  * Top Width (ft)        *          *   64.98  *          *
* Vel Total (ft/s)       *    1.06  * Avg. Vel. (ft/s)      *          *    1.06  *          *
* Max Chl Dpth (ft)      *    4.24  * Hydr. Depth (ft)      *          *    3.69  *          *
* Conv. Total (cfs)      * 27785.7  * Conv. (cfs)          *          * 27785.7  *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)      *          *   66.98  *          *
* Min Ch El (ft)         * 2017.71  * Shear (lb/sq ft)      *          *    0.02  *          *
```

* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.02	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 15.81	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 4.64	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1174

INPUT
Description: Sta 36+00 - Drake Channel
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43	2024	-40.4	2021.81	-32	2017.61	20	2017.61	33	2024.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43	.03	-43	.03	33	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-43	33	13	13	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2021.97	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.01	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2021.95	* Reach Len. (ft)	* 13.00	* 13.00	* 13.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 263.52	* *
* E.G. Slope (ft/ft)	*0.000067	* Area (sq ft)	*	* 263.52	* *
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00	* *
* Top Width (ft)	* 69.25	* Top Width (ft)	*	* 69.25	* *
* Vel Total (ft/s)	* 0.97	* Avg. Vel. (ft/s)	*	* 0.97	* *
* Max Chl Dpth (ft)	* 4.34	* Hydr. Depth (ft)	*	* 3.81	* *
* Conv. Total (cfs)	* 31194.1	* Conv. (cfs)	*	* 31194.1	* *
* Length Wtd. (ft)	* 13.00	* Wetted Per. (ft)	*	* 71.32	* *
* Min Ch El (ft)	* 2017.61	* Shear (lb/sq ft)	*	* 0.02	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.01	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 15.52	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 4.57	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1173

INPUT
Description: Sta 35+87 - Drake Channel
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43	2024	-40.4	2021.81	-32	2017.61	20	2017.61	33	2024.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43	.04	-43	.04	33	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-43	33	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2021.97	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.01	* Wt. n-Val.	*	* 0.040	* *
* W.S. Elev (ft)	* 2021.95	* Reach Len. (ft)	* 6.00	* 6.00	* 6.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 263.44	* *
* E.G. Slope (ft/ft)	*0.000119	* Area (sq ft)	*	* 263.44	* *
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00	* *
* Top Width (ft)	* 69.25	* Top Width (ft)	*	* 69.25	* *
* Vel Total (ft/s)	* 0.97	* Avg. Vel. (ft/s)	*	* 0.97	* *
* Max Chl Dpth (ft)	* 4.34	* Hydr. Depth (ft)	*	* 3.80	* *
* Conv. Total (cfs)	* 23385.2	* Conv. (cfs)	*	* 23385.2	* *
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	* 71.32	* *
* Min Ch El (ft)	* 2017.61	* Shear (lb/sq ft)	*	* 0.03	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.03	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 15.44	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 4.54	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1172

INPUT
Description: Sta 35+81 - Gabion Counterweir
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43	2024	-40.4	2021.81	-32.5	2017.57	17.5	2017.57	33	2024.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43	.028	-43	.028	33	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-43	33	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2021.97	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.01	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 2021.95	* Reach Len. (ft)	* 0.10	* 0.10	* 0.10 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 259.63	* *
* E.G. Slope (ft/ft)	*0.000060	* Area (sq ft)	*	* 259.63	* *
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00	* *
* Top Width (ft)	* 68.45	* Top Width (ft)	*	* 68.45	* *
* Vel Total (ft/s)	* 0.98	* Avg. Vel. (ft/s)	*	* 0.98	* *
* Max Chl Dpth (ft)	* 4.38	* Hydr. Depth (ft)	*	* 3.79	* *
* Conv. Total (cfs)	* 32873.1	* Conv. (cfs)	*	* 32873.1	* *
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	* 70.45	* *
* Min Ch El (ft)	* 2017.57	* Shear (lb/sq ft)	*	* 0.01	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.01	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 15.40	* *
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	*	* 4.53	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1171

INPUT
Description: Sta 35+81 - Gabion Counterweir
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43	2024	-40.4	2021.81	-32.5	2020.57	17.5	2020.57	33	2024.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43	.028	-43	.028	33	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-43	33	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2021.94	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.26	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 2021.68	* Reach Len. (ft)	* 6.00	* 6.00	* 6.00 *
* Crit W.S. (ft)	* 2021.47	* Flow Area (sq ft)	*	* 61.99	* *
* E.G. Slope (ft/ft)	*0.006024	* Area (sq ft)	*	* 61.99	* *
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00	* *
* Top Width (ft)	* 61.91	* Top Width (ft)	*	* 61.91	* *
* Vel Total (ft/s)	* 4.11	* Avg. Vel. (ft/s)	*	* 4.11	* *
* Max Chl Dpth (ft)	* 1.11	* Hydr. Depth (ft)	*	* 1.00	* *
* Conv. Total (cfs)	* 3285.3	* Conv. (cfs)	*	* 3285.3	* *

* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	* 62.12	* *
* Min Ch El (ft)	* 2020.57	* Shear (lb/sq ft)	*	* 0.38	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 1.54	* *
* Frctn Loss (ft)	* 0.05	* Cum Volume (acre-ft)	*	* 15.40	* *
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	*	* 4.53	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1170

INPUT
Description: Sta 35+75 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-40.4	2021.81	-32.5	2020.56	17.5	2020.56	33	2024.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-40.4	.028	-40.4	.028	33	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-40.4 33 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2021.88	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.42	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 2021.46	* Reach Len. (ft)	* 0.10	* 0.10	* 0.10 *
* Crit W.S. (ft)	* 2021.46	* Flow Area (sq ft)	*	* 49.17	* *
* E.G. Slope (ft/ft)	*0.012388	* Area (sq ft)	*	* 49.17	* *
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00	* *
* Top Width (ft)	* 59.59	* Top Width (ft)	*	* 59.59	* *
* Vel Total (ft/s)	* 5.19	* Avg. Vel. (ft/s)	*	* 5.19	* *
* Max Chl Dpth (ft)	* 0.90	* Hydr. Depth (ft)	*	* 0.83	* *
* Conv. Total (cfs)	* 2291.1	* Conv. (cfs)	*	* 2291.1	* *
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	* 59.76	* *
* Min Ch El (ft)	* 2020.56	* Shear (lb/sq ft)	*	* 0.64	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 3.30	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 15.40	* *
* C & E Loss (ft)	* 0.09	* Cum SA (acres)	*	* 4.53	* *

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1169

INPUT
Description: Sta 35+75 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-40.4	2021.81	-32.5	2017.57	17.5	2017.57	33	2024.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-40.4	.04	-40.4	.04	33	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-40.4 33 19 19 19 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2021.55	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 3.65	* Wt. n-Val.	*	* 0.040	* *
* W.S. Elev (ft)	* 2017.90	* Reach Len. (ft)	* 19.00	* 19.00	* 19.00 *
* Crit W.S. (ft)	* 2018.49	* Flow Area (sq ft)	*	* 16.63	* *
* E.G. Slope (ft/ft)	*0.769210	* Area (sq ft)	*	* 16.63	* *
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00	* *
* Top Width (ft)	* 51.39	* Top Width (ft)	*	* 51.39	* *
* Vel Total (ft/s)	* 15.33	* Avg. Vel. (ft/s)	*	* 15.33	* *
* Max Chl Dpth (ft)	* 0.33	* Hydr. Depth (ft)	*	* 0.32	* *
* Conv. Total (cfs)	* 290.7	* Conv. (cfs)	*	* 290.7	* *
* Length Wtd. (ft)	* 19.00	* Wetted Per. (ft)	*	* 51.54	* *
* Min Ch El (ft)	* 2017.57	* Shear (lb/sq ft)	*	* 15.50	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 237.60	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 15.40	* *
* C & E Loss (ft)	* 0.32	* Cum SA (acres)	*	* 4.53	* *

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Program found supercritical flow starting at this cross section.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1168

INPUT
Description: Sta 35+56 - Inline Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-40	2020.81	-32.5	2017.52	17.5	2017.52	23	2022.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-40	.028	-40	.028	23	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-40 23 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2019.33	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.13	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 2019.20	* Reach Len. (ft)	* 6.00	* 6.00	* 6.00 *
* Crit W.S. (ft)	* 2018.44	* Flow Area (sq ft)	*	* 88.68	* *
* E.G. Slope (ft/ft)	*0.001618	* Area (sq ft)	*	* 88.68	* *
* Q Total (cfs)	* 255.00	* Flow (cfs)	*	* 255.00	* *
* Top Width (ft)	* 55.75	* Top Width (ft)	*	* 55.75	* *
* Vel Total (ft/s)	* 2.88	* Avg. Vel. (ft/s)	*	* 2.88	* *
* Max Chl Dpth (ft)	* 1.68	* Hydr. Depth (ft)	*	* 1.59	* *
* Conv. Total (cfs)	* 6339.3	* Conv. (cfs)	*	* 6339.3	* *
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	* 56.73	* *
* Min Ch El (ft)	* 2017.52	* Shear (lb/sq ft)	*	* 0.16	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.45	* *
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	*	* 15.37	* *
* C & E Loss (ft)	* 0.04	* Cum SA (acres)	*	* 4.50	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1167

INPUT
Description: Sta 35+50 - Inline Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
     -40 2020.81    -32.5 2017.51     17.5 2017.51       23 2022.31

Manning's n Values          num=        3
      Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
      -40     .028      -40     .028       23     .028

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
           -40       23                      .1       .1        .1              .3


CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2019.26  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.57  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)          * 2018.69  * Reach Len. (ft)        *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)          * 2018.69  * Flow Area (sq ft)      *          *   61.15  *          *
* E.G. Slope (ft/ft)      *0.011266  * Area (sq ft)           *          *   61.15  *          *
* Q Total (cfs)           *  371.00  * Flow (cfs)            *          *  371.00  *          *
* Top Width (ft)          *   54.02  * Top Width (ft)        *          *   54.02  *          *
* Vel Total (ft/s)        *    6.07  * Avg. Vel. (ft/s)      *          *    6.07  *          *
* Max Chl Dpth (ft)       *    1.18  * Hydr. Depth (ft)      *          *    1.13  *          *
* Conv. Total (cfs)       *  3495.3  * Conv. (cfs)           *          *  3495.3  *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)      *          *   54.71  *          *
* Min Ch El (ft)          * 2017.51  * Shear (lb/sq ft)      *          *    0.79  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    4.77  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *   15.36  *          *
* C & E Loss (ft)         *    0.06  * Cum SA (acres)        *          *    4.50  *          *
*************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1166

INPUT
Description: Sta 35+ 50 - Drake Channel
Station Elevation Data     num=        4
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************
      -40 2020.81      -15 2008.31       -5 2008.31       23 2022.31

Manning's n Values          num=        3
      Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
      -40     .028      -40     .028       23     .028

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
           -40       23                      24       24        24              .1       .3


CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2018.42  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    8.87  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)          * 2009.55  * Reach Len. (ft)        *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)          * 2011.17  * Flow Area (sq ft)      *          *   15.52  *          *
* E.G. Slope (ft/ft)      *0.203483  * Area (sq ft)           *          *   15.52  *          *
* Q Total (cfs)           *  371.00  * Flow (cfs)            *          *  371.00  *          *
* Top Width (ft)          *   14.97  * Top Width (ft)        *          *   14.97  *          *
* Vel Total (ft/s)        *   23.90  * Avg. Vel. (ft/s)      *          *   23.90  *          *
* Max Chl Dpth (ft)       *    1.24  * Hydr. Depth (ft)      *          *    1.04  *          *
* Conv. Total (cfs)       *   822.5  * Conv. (cfs)           *          *   822.5  *          *
* Length Wtd. (ft)        *   24.00  * Wetted Per. (ft)      *          *   15.56  *          *
* Min Ch El (ft)          * 2008.31  * Shear (lb/sq ft)      *          *   12.67  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *  302.90  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *   15.36  *          *
* C & E Loss (ft)         *    0.83  * Cum SA (acres)        *          *    4.50  *          *
*************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Note:    Program found supercritical flow starting at this cross section.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1165

INPUT
Description: Sta 35+26 - Drake Channel
Station Elevation Data     num=        4
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************
   -40.2 2019.31      -18 2008.26       -1 2008.26     23.2 2020.31

Manning's n Values          num=        3
      Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
   -40.2     .028   -40.2     .03     23.2     .028

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          -40.2    23.2                      12       12        12              .1       .3


CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2012.73  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.18  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)          * 2012.55  * Reach Len. (ft)        *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)          * 2010.50  * Flow Area (sq ft)      *          *  110.01  *          *
* E.G. Slope (ft/ft)      *0.001056  * Area (sq ft)           *          *  110.01  *          *
* Q Total (cfs)           *  371.00  * Flow (cfs)            *          *  371.00  *          *
* Top Width (ft)          *   34.25  * Top Width (ft)        *          *   34.25  *          *
* Vel Total (ft/s)        *    3.37  * Avg. Vel. (ft/s)      *          *    3.37  *          *
* Max Chl Dpth (ft)       *    4.29  * Hydr. Depth (ft)      *          *    3.21  *          *
* Conv. Total (cfs)       * 11417.6  * Conv. (cfs)           *          * 11417.6  *          *
* Length Wtd. (ft)        *   12.00  * Wetted Per. (ft)      *          *   36.27  *          *
* Min Ch El (ft)          * 2008.26  * Shear (lb/sq ft)      *          *    0.20  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.67  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)  *          *   15.33  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    4.48  *          *
*************************************************************************************************

Note:    Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1164

INPUT
Description: Sta 35+14 - Drake Channel
Station Elevation Data     num=        4
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************
   -40.2 2019.31      -18 2008.24       -1 2008.24     23.2 2020.31

Manning's n Values          num=        3
      Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
   -40.2     .03    -40.2     .03     23.2     .03

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          -40.2    23.2                      14       14        14              .1       .3


CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 2012.72  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.18  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)          * 2012.54  * Reach Len. (ft)        *   14.00  *   14.00  *   14.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *  110.21  *          *
* E.G. Slope (ft/ft)      *0.001050  * Area (sq ft)           *          *  110.21  *          *
* Q Total (cfs)           *  371.00  * Flow (cfs)            *          *  371.00  *          *
* Top Width (ft)          *   34.25  * Top Width (ft)        *          *   34.25  *          *
* Vel Total (ft/s)        *    3.37  * Avg. Vel. (ft/s)      *          *    3.37  *          *
* Max Chl Dpth (ft)       *    4.30  * Hydr. Depth (ft)      *          *    3.22  *          *
* Conv. Total (cfs)       * 11450.5  * Conv. (cfs)           *          * 11450.5  *          *
* Length Wtd. (ft)        *   14.00  * Wetted Per. (ft)      *          *   36.27  *          *
```

* Min Ch El (ft)	* 2008.24	* Shear (lb/sq ft)	*	* 0.20	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.67	* *
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 15.30	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 4.47	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1163

INPUT
Description: Sta 35+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-40.2	2019.31	-18	2008.21	-1	2008.21	23.2	2020.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-40.2	.03	-40.2	.03	23.2	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-40.2	23.2	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2012.70	* Element	* Left OB *	Channel * Right OB *
* Vel Head (ft)	* 0.17	* Wt. n-Val.	*	* 0.030 * *
* W.S. Elev (ft)	* 2012.53	* Reach Len. (ft)	* 50.00	* 50.00 * 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 110.67 * *
* E.G. Slope (ft/ft)	*0.001036	* Area (sq ft)	*	* 110.67 * *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00 * *
* Top Width (ft)	* 34.27	* Top Width (ft)	*	* 34.27 * *
* Vel Total (ft/s)	* 3.35	* Avg. Vel. (ft/s)	*	* 3.35 * *
* Max Chl Dpth (ft)	* 4.32	* Hydr. Depth (ft)	*	* 3.23 * *
* Conv. Total (cfs)	* 11523.9	* Conv. (cfs)	*	* 11523.9 * *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 36.31 * *
* Min Ch El (ft)	* 2008.21	* Shear (lb/sq ft)	*	* 0.20 * *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.66 * *
* Frctn Loss (ft)	* 0.04	* Cum Volume (acre-ft)	*	* 15.26 * *
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	*	* 4.46 * *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1162

INPUT
Description: Sta 34+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41	2018.11	-21	2008.11	3	2008.11	20.4	2016.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41	.03	-41	.03	20.4	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-41	20.4	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2012.64	* Element	* Left OB *	Channel * Right OB *
* Vel Head (ft)	* 0.10	* Wt. n-Val.	*	* 0.030 * *
* W.S. Elev (ft)	* 2012.54	* Reach Len. (ft)	* 50.00	* 50.00 * 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 145.68 * *
* E.G. Slope (ft/ft)	*0.000533	* Area (sq ft)	*	* 145.68 * *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00 * *
* Top Width (ft)	* 41.73	* Top Width (ft)	*	* 41.73 * *
* Vel Total (ft/s)	* 2.55	* Avg. Vel. (ft/s)	*	* 2.55 * *
* Max Chl Dpth (ft)	* 4.43	* Hydr. Depth (ft)	*	* 3.49 * *
* Conv. Total (cfs)	* 16072.6	* Conv. (cfs)	*	* 16072.6 * *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 43.82 * *
* Min Ch El (ft)	* 2008.11	* Shear (lb/sq ft)	*	* 0.11 * *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.28 * *
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	*	* 15.12 * *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 4.42 * *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1161

INPUT
Description: Sta 34+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-39.6	2016.31	-23	2008.01	7	2008.01	23.6	2016.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-39.6	.03	-39.6	.03	23.6	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-39.6	23.6	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2012.61	* Element	* Left OB *	Channel * Right OB *
* Vel Head (ft)	* 0.07	* Wt. n-Val.	*	* 0.030 * *
* W.S. Elev (ft)	* 2012.55	* Reach Len. (ft)	* 50.00	* 50.00 * 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 177.17 * *
* E.G. Slope (ft/ft)	*0.000333	* Area (sq ft)	*	* 177.17 * *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00 * *
* Top Width (ft)	* 48.14	* Top Width (ft)	*	* 48.14 * *
* Vel Total (ft/s)	* 2.09	* Avg. Vel. (ft/s)	*	* 2.09 * *
* Max Chl Dpth (ft)	* 4.53	* Hydr. Depth (ft)	*	* 3.68 * *
* Conv. Total (cfs)	* 20320.5	* Conv. (cfs)	*	* 20320.5 * *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 50.28 * *
* Min Ch El (ft)	* 2008.01	* Shear (lb/sq ft)	*	* 0.07 * *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.15 * *
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 14.93 * *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 4.37 * *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1160

INPUT
Description: Sta 33+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.12	2014.97	-27	2007.91	10	2007.91	25.8	2015.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.12	.03	-41.12	.03	25.8	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-41.12	25.8	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2012.59	* Element	* Left OB *	Channel * Right OB *
* Vel Head (ft)	* 0.05	* Wt. n-Val.	*	* 0.030 * *
* W.S. Elev (ft)	* 2012.55	* Reach Len. (ft)	* 50.00	* 50.00 * 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 214.56 * *
* E.G. Slope (ft/ft)	*0.000212	* Area (sq ft)	*	* 214.56 * *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00 * *
* Top Width (ft)	* 55.55	* Top Width (ft)	*	* 55.55 * *
* Vel Total (ft/s)	* 1.73	* Avg. Vel. (ft/s)	*	* 1.73 * *
* Max Chl Dpth (ft)	* 4.64	* Hydr. Depth (ft)	*	* 3.86 * *
* Conv. Total (cfs)	* 25497.7	* Conv. (cfs)	*	* 25497.7 * *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 57.74 * *
* Min Ch El (ft)	* 2007.91	* Shear (lb/sq ft)	*	* 0.05 * *

* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.08	* *
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 14.71	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 4.31	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1159

INPUT
Description: Sta 33+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44	2014.81	-30	2007.81	14	2007.81	28	2014.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44	.03	-44	.03	28	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-44 28 13 13 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2012.58	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.03	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2012.55	* Reach Len. (ft)	* 13.00	* 13.00	* 13.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 253.33	* *
* E.G. Slope (ft/ft)	*0.000143	* Area (sq ft)	*	* 253.33	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 62.95	* Top Width (ft)	*	* 62.95	* *
* Vel Total (ft/s)	* 1.46	* Avg. Vel. (ft/s)	*	* 1.46	* *
* Max Chl Dpth (ft)	* 4.74	* Hydr. Depth (ft)	*	* 4.02	* *
* Conv. Total (cfs)	* 31016.3	* Conv. (cfs)	*	* 31016.3	* *
* Length Wtd. (ft)	* 13.00	* Wetted Per. (ft)	*	* 65.19	* *
* Min Ch El (ft)	* 2007.81	* Shear (lb/sq ft)	*	* 0.03	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.05	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 14.44	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 4.24	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1158

INPUT
Description: Sta 32+87 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44	2014.81	-30	2008.61	14	2008.61	28	2014.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44	.04	-44	.04	28	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-44 28 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2012.58	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.05	* Wt. n-Val.	*	* 0.040	* *
* W.S. Elev (ft)	* 2012.53	* Reach Len. (ft)	* 6.00	* 6.00	* 6.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 206.94	* *
* E.G. Slope (ft/ft)	*0.000480	* Area (sq ft)	*	* 206.94	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 61.69	* Top Width (ft)	*	* 61.69	* *
* Vel Total (ft/s)	* 1.79	* Avg. Vel. (ft/s)	*	* 1.79	* *
* Max Chl Dpth (ft)	* 3.92	* Hydr. Depth (ft)	*	* 3.35	* *
* Conv. Total (cfs)	* 16925.7	* Conv. (cfs)	*	* 16925.7	* *
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	* 63.34	* *
* Min Ch El (ft)	* 2008.61	* Shear (lb/sq ft)	*	* 0.10	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.18	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 14.37	* *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 4.22	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1157

INPUT
Description: Sta 32+81 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.2	2013.31	-32.5	2007.77	17.5	2007.77	25.6	2013.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.2	.028	-41.2	.028	25.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.2 25.6 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2012.57	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.03	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 2012.54	* Reach Len. (ft)	* 0.10	* 0.10	* 0.10 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 272.98	* *
* E.G. Slope (ft/ft)	*0.000101	* Area (sq ft)	*	* 272.98	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 64.46	* Top Width (ft)	*	* 64.46	* *
* Vel Total (ft/s)	* 1.36	* Avg. Vel. (ft/s)	*	* 1.36	* *
* Max Chl Dpth (ft)	* 4.77	* Hydr. Depth (ft)	*	* 4.23	* *
* Conv. Total (cfs)	* 36835.3	* Conv. (cfs)	*	* 36835.3	* *
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	* 67.33	* *
* Min Ch El (ft)	* 2007.77	* Shear (lb/sq ft)	*	* 0.03	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.03	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 14.34	* *
* C & E Loss (ft)	* 0.03	* Cum SA (acres)	*	* 4.21	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1156

INPUT
Description: Sta 32 + 81 -Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.2	2013.31	-32.5	2010.77	17.5	2010.77	25.6	2013.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.2	.028	-41.2	.028	25.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.2 25.6 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2012.54	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.37	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 2012.17	* Reach Len. (ft)	* 6.00	* 6.00	* 6.00 *
* Crit W.S. (ft)	* 2011.93	* Flow Area (sq ft)	*	* 76.39	* *

```
* E.G. Slope (ft/ft)     *0.006024  * Area (sq ft)           *           *   76.39  *           *
* Q Total (cfs)          *  371.00  * Flow (cfs)            *           *  371.00  *           *
* Top Width (ft)         *   59.25  * Top Width (ft)        *           *   59.25  *           *
* Vel Total (ft/s)       *    4.86  * Avg. Vel. (ft/s)      *           *    4.86  *           *
* Max Chl Dpth (ft)      *    1.40  * Hydr. Depth (ft)      *           *    1.29  *           *
* Conv. Total (cfs)      *  4779.9  * Conv. (cfs)           *           *  4779.9  *           *
* Length Wtd. (ft)       *    6.00  * Wetted Per. (ft)      *           *   59.66  *           *
* Min Ch El (ft)         * 2010.77  * Shear (lb/sq ft)      *           *    0.48  *           *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    2.34  *           *
* Frctn Loss (ft)        *    0.05  * Cum Volume (acre-ft)  *           *   14.34  *           *
* C & E Loss (ft)        *    0.02  * Cum SA (acres)        *           *    4.21  *           *
*********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1155

INPUT
Description: Sta 32+ 75 - Gabion Counterweir
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*********************************************************************
   -41.2 2013.31   -32.5 2010.76    17.5 2010.76    25.6 2013.31

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -41.2    .028   -41.2    .028    25.6    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -41.2    25.6                 .1        .1        .1            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)         * 2012.47  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.55  * Wt. n-Val.            *          *    0.028  *          *
* W.S. Elev (ft)         * 2011.92  * Reach Len. (ft)       *    0.10  *     0.10  *    0.10  *
* Crit W.S. (ft)         * 2011.92  * Flow Area (sq ft)     *          *   62.43  *          *
* E.G. Slope (ft/ft)     *0.011362  * Area (sq ft)          *          *   62.43  *          *
* Q Total (cfs)          *  371.00  * Flow (cfs)            *          *  371.00  *          *
* Top Width (ft)         *   57.64  * Top Width (ft)        *          *   57.64  *          *
* Vel Total (ft/s)       *    5.94  * Avg. Vel. (ft/s)      *          *    5.94  *          *
* Max Chl Dpth (ft)      *    1.16  * Hydr. Depth (ft)      *          *    1.08  *          *
* Conv. Total (cfs)      *  3480.6  * Conv. (cfs)           *          *  3480.6  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)      *          *   57.99  *          *
* Min Ch El (ft)         * 2010.76  * Shear (lb/sq ft)      *          *    0.76  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    4.54  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  *          *   14.33  *          *
* C & E Loss (ft)        *    0.07  * Cum SA (acres)        *          *    4.20  *          *
*********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1154

INPUT
Description: Sta 32+75 - Drake Channel
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*********************************************************************
   -41.2 2013.31   -32.5 2007.76    17.5 2007.76    25.6 2013.31

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -41.2     .04    -41.2     .04    25.6     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -41.2    25.6                  19        19        19            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)         * 2012.13  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    3.91  * Wt. n-Val.            *          *    0.040  *          *
* W.S. Elev (ft)         * 2008.22  * Reach Len. (ft)       *   19.00  *   19.00  *   19.00  *
* Crit W.S. (ft)         * 2008.94  * Flow Area (sq ft)     *          *   23.38  *          *
* E.G. Slope (ft/ft)     *0.525240  * Area (sq ft)          *          *   23.38  *          *
* Q Total (cfs)          *  371.00  * Flow (cfs)            *          *  371.00  *          *
* Top Width (ft)         *   51.40  * Top Width (ft)        *          *   51.40  *          *
* Vel Total (ft/s)       *   15.87  * Avg. Vel. (ft/s)      *          *   15.87  *          *
* Max Chl Dpth (ft)      *    0.46  * Hydr. Depth (ft)      *          *    0.45  *          *
* Conv. Total (cfs)      *   511.9  * Conv. (cfs)           *          *   511.9  *          *
* Length Wtd. (ft)       *   19.00  * Wetted Per. (ft)      *          *   51.67  *          *
* Min Ch El (ft)         * 2007.76  * Shear (lb/sq ft)      *          *   14.84  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *  235.43  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)  *          *   14.33  *          *
* C & E Loss (ft)        *    0.34  * Cum SA (acres)        *          *    4.20  *          *
*********************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Note:    Program found supercritical flow starting at this cross section.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1153

INPUT
Description: Sta 32+56 - Inline Gabion Drop Structure
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*********************************************************************
   -41.2 2012.61   -32.5 2007.71    17.5 2007.71    25.6 2012.81

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -41.2    .028   -41.2    .028    25.6    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -41.2    25.6                   6         6         6            .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)         * 2009.68  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    1.12  * Wt. n-Val.            *          *    0.028  *          *
* W.S. Elev (ft)         * 2008.56  * Reach Len. (ft)       *    6.00  *     6.00  *    6.00  *
* Crit W.S. (ft)         * 2008.89  * Flow Area (sq ft)     *          *   43.73  *          *
* E.G. Slope (ft/ft)     *0.033306  * Area (sq ft)          *          *   43.73  *          *
* Q Total (cfs)          *  371.00  * Flow (cfs)            *          *  371.00  *          *
* Top Width (ft)         *   52.86  * Top Width (ft)        *          *   52.86  *          *
* Vel Total (ft/s)       *    8.48  * Avg. Vel. (ft/s)      *          *    8.48  *          *
* Max Chl Dpth (ft)      *    0.85  * Hydr. Depth (ft)      *          *    0.83  *          *
* Conv. Total (cfs)      *  2032.9  * Conv. (cfs)           *          *  2032.9  *          *
* Length Wtd. (ft)       *    6.00  * Wetted Per. (ft)      *          *   53.33  *          *
* Min Ch El (ft)         * 2007.71  * Shear (lb/sq ft)      *          *    1.70  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *   14.47  *          *
* Frctn Loss (ft)        *    1.62  * Cum Volume (acre-ft)  *          *   14.31  *          *
* C & E Loss (ft)        *    0.84  * Cum SA (acres)        *          *    4.18  *          *
*********************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1152

INPUT
```

```
Description: Sta 32+50 - Inline Gabion Weir Drop Structure
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -41.2 2012.61    -32.5 2007.71     17.5 2007.71     25.6 2012.81

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -41.2     .028    -41.2     .028     25.6     .028

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          -41.2     25.6                   .1        .1        .1              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2009.46  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.57  * Wt. n-Val.              *          *    0.028  *          *
* W.S. Elev (ft)          * 2008.89  * Reach Len. (ft)        *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)          * 2008.89  * Flow Area (sq ft)      *          *   61.11  *          *
* E.G. Slope (ft/ft)      *0.011260  * Area (sq ft)           *          *   61.11  *          *
* Q Total (cfs)           *  371.00  * Flow (cfs)             *          *  371.00  *          *
* Top Width (ft)          *   53.95  * Top Width (ft)         *          *   53.95  *          *
* Vel Total (ft/s)        *    6.07  * Avg. Vel. (ft/s)       *          *    6.07  *          *
* Max Chl Dpth (ft)       *    1.18  * Hydr. Depth (ft)       *          *    1.13  *          *
* Conv. Total (cfs)       *  3496.2  * Conv. (cfs)           *          *  3496.2  *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)       *          *   54.60  *          *
* Min Ch El (ft)          * 2007.71  * Shear (lb/sq ft)       *          *    0.79  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    4.78  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   14.30  *          *
* C & E Loss (ft)         *    0.06  * Cum SA (acres)         *          *    4.17  *          *
*****************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1151

INPUT
Description: Sta 32+50 - Drake Channel
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -41.2 2012.61     -13 1998.51      -3 1998.51     25.6 2012.81

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -41.2     .028    -41.2     .028     25.6     .028

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          -41.2     25.6                  24        24        24              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2008.62  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    8.87  * Wt. n-Val.              *          *    0.028  *          *
* W.S. Elev (ft)          * 1999.75  * Reach Len. (ft)        *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)          * 2001.37  * Flow Area (sq ft)      *          *   15.52  *          *
* E.G. Slope (ft/ft)      *0.203483  * Area (sq ft)           *          *   15.52  *          *
* Q Total (cfs)           *  371.00  * Flow (cfs)             *          *  371.00  *          *
* Top Width (ft)          *   14.97  * Top Width (ft)         *          *   14.97  *          *
* Vel Total (ft/s)        *   23.90  * Avg. Vel. (ft/s)       *          *   23.90  *          *
* Max Chl Dpth (ft)       *    1.24  * Hydr. Depth (ft)       *          *    1.04  *          *
* Conv. Total (cfs)       *   822.5  * Conv. (cfs)           *          *   822.5  *          *
* Length Wtd. (ft)        *   24.00  * Wetted Per. (ft)       *          *   15.56  *          *
* Min Ch El (ft)          * 1998.51  * Shear (lb/sq ft)       *          *   12.67  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *  302.90  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *   14.30  *          *
* C & E Loss (ft)         *    0.85  * Cum SA (acres)         *          *    4.17  *          *
*****************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1150

INPUT
Description: Sta 32+26 - Drake Channel
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -40.8 2011.31     -15 1998.46       0 1998.46     25.8 2011.31

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -40.8     .028    -40.8     .03      25.8     .028

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          -40.8     25.8                  12        12        12              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2002.94  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.21  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2002.73  * Reach Len. (ft)        *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)          * 2000.84  * Flow Area (sq ft)      *          *  100.52  *          *
* E.G. Slope (ft/ft)      *0.001316  * Area (sq ft)           *          *  100.52  *          *
* Q Total (cfs)           *  371.00  * Flow (cfs)             *          *  371.00  *          *
* Top Width (ft)          *   32.13  * Top Width (ft)         *          *   32.13  *          *
* Vel Total (ft/s)        *    3.69  * Avg. Vel. (ft/s)       *          *    3.69  *          *
* Max Chl Dpth (ft)       *    4.27  * Hydr. Depth (ft)       *          *    3.13  *          *
* Conv. Total (cfs)       * 10228.2  * Conv. (cfs)           *          * 10228.2  *          *
* Length Wtd. (ft)        *   12.00  * Wetted Per. (ft)       *          *   34.14  *          *
* Min Ch El (ft)          * 1998.46  * Shear (lb/sq ft)       *          *    0.24  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.89  *          *
* Frctn Loss (ft)         *    0.02  * Cum Volume (acre-ft)   *          *   14.27  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)         *          *    4.16  *          *
*****************************************************************************************************

Note:    Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1149

INPUT
Description: Sta 32+14 - Drake Channel
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -40.8 2011.31     -15 1998.44       0 1998.44     25.8 2011.31

Manning's n Values         num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -40.8     .03     -40.8     .03      25.8     .03

Bank Sta: Left    Right     Lengths: Left Channel    Right      Coeff Contr.    Expan.
          -40.8     25.8                  14        14        14              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 2002.92  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.21  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 2002.71  * Reach Len. (ft)        *   14.00  *   14.00  *   14.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)       *          *  100.60  *          *
* E.G. Slope (ft/ft)      *0.001312  * Area (sq ft)           *          *  100.60  *          *
* Q Total (cfs)           *  371.00  * Flow (cfs)             *          *  371.00  *          *
* Top Width (ft)          *   32.12  * Top Width (ft)         *          *   32.12  *          *
* Vel Total (ft/s)        *    3.69  * Avg. Vel. (ft/s)       *          *    3.69  *          *
```

* Max Chl Dpth (ft)	* 4.27	* Hydr. Depth (ft)	*	* 3.13	*	*
* Conv. Total (cfs)	* 10243.3	* Conv. (cfs)	*	* 10243.3	*	*
* Length Wtd. (ft)	* 14.00	* Wetted Per. (ft)	*	* 34.13	*	*
* Min Ch El (ft)	* 1998.44	* Shear (lb/sq ft)	*	* 0.24	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.89	*	*
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	*	* 14.24	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 4.15	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1148

INPUT
Description: Sta 32+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-40.8	2011.31	-15	1998.41	0	1998.41	25.8	2011.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-40.8	.03	-40.8	.03	25.8	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-40.8	25.8	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2002.90	* Element	* Left OB *	Channel	* Right OB *
* Vel Head (ft)	* 0.21	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2002.69	* Reach Len. (ft)	* 50.00 *	50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 100.92	* *
* E.G. Slope (ft/ft)	*0.001299	* Area (sq ft)	*	* 100.92	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 32.13	* Top Width (ft)	*	* 32.13	* *
* Vel Total (ft/s)	* 3.68	* Avg. Vel. (ft/s)	*	* 3.68	* *
* Max Chl Dpth (ft)	* 4.28	* Hydr. Depth (ft)	*	* 3.14	* *
* Conv. Total (cfs)	* 10292.8	* Conv. (cfs)	*	* 10292.8	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 34.15	* *
* Min Ch El (ft)	* 1998.41	* Shear (lb/sq ft)	*	* 0.24	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.88	* *
* Frctn Loss (ft)	* 0.04	* Cum Volume (acre-ft)	*	* 14.21	* *
* C & E Loss (ft)	* 0.03	* Cum SA (acres)	*	* 4.14	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1147

INPUT
Description: Sta 31 + 50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-42.6	2009.61	-20	1998.31	5	1998.31	27.6	2009.61

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-42.6	.03	-42.6	.03	27.6	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-42.6	27.6	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2002.83	* Element	* Left OB *	Channel	* Right OB *
* Vel Head (ft)	* 0.10	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2002.74	* Reach Len. (ft)	* 50.00 *	50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 149.77	* *
* E.G. Slope (ft/ft)	*0.000500	* Area (sq ft)	*	* 149.77	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 42.70	* Top Width (ft)	*	* 42.70	* *
* Vel Total (ft/s)	* 2.48	* Avg. Vel. (ft/s)	*	* 2.48	* *
* Max Chl Dpth (ft)	* 4.42	* Hydr. Depth (ft)	*	* 3.51	* *
* Conv. Total (cfs)	* 16588.3	* Conv. (cfs)	*	* 16588.3	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 44.79	* *
* Min Ch El (ft)	* 1998.31	* Shear (lb/sq ft)	*	* 0.10	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.26	* *
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	*	* 14.07	* *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 4.10	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1146

INPUT
Description: Sta 31+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.8	2008.11	-22	1998.21	8	1998.21	27.8	2008.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.8	.03	-41.8	.03	27.8	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-41.8	27.8	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2002.80	* Element	* Left OB *	Channel	* Right OB *
* Vel Head (ft)	* 0.07	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2002.73	* Reach Len. (ft)	* 50.00 *	50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 176.61	* *
* E.G. Slope (ft/ft)	*0.000336	* Area (sq ft)	*	* 176.61	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 48.09	* Top Width (ft)	*	* 48.09	* *
* Vel Total (ft/s)	* 2.10	* Avg. Vel. (ft/s)	*	* 2.10	* *
* Max Chl Dpth (ft)	* 4.52	* Hydr. Depth (ft)	*	* 3.67	* *
* Conv. Total (cfs)	* 20227.0	* Conv. (cfs)	*	* 20227.0	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 50.23	* *
* Min Ch El (ft)	* 1998.21	* Shear (lb/sq ft)	*	* 0.07	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.16	* *
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 13.88	* *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 4.05	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1145

INPUT
Description: Sta 30+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.4	2006.31	-25	1998.11	10	1998.11	26.4	2006.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.4	.03	-41.4	.03	26.4	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-41.4	26.4	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2002.78	* Element	* Left OB *	Channel	* Right OB *
* Vel Head (ft)	* 0.05	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2002.73	* Reach Len. (ft)	* 50.00 *	50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 204.45	* *
* E.G. Slope (ft/ft)	*0.000237	* Area (sq ft)	*	* 204.45	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *

* Top Width (ft)	* 53.48	* Top Width (ft)	* 53.48	*
* Vel Total (ft/s)	* 1.81	* Avg. Vel. (ft/s)	* 1.81	*
* Max Chl Dpth (ft)	* 4.62	* Hydr. Depth (ft)	* 3.82	*
* Conv. Total (cfs)	* 24106.6	* Conv. (cfs)	* 24106.6	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	* 55.67	*
* Min Ch El (ft)	* 1998.11	* Shear (lb/sq ft)	* 0.05	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 0.10	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	* 13.66	*
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	* 3.99	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1144

INPUT
Description: Sta 30+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-42.2	2004.11	-30	1998.01	15	1998.01	27.2	2004.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-42.2	.03	-42.2	.03	27.2	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-42.2 27.2 13 13 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2002.77	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.03	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 2002.74	* Reach Len. (ft)	* 13.00	* 13.00	* 13.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 257.31	* *
* E.G. Slope (ft/ft)	*0.000138	* Area (sq ft)	*	* 257.31	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 63.90	* Top Width (ft)	*	* 63.90	* *
* Vel Total (ft/s)	* 1.44	* Avg. Vel. (ft/s)	*	* 1.44	* *
* Max Chl Dpth (ft)	* 4.73	* Hydr. Depth (ft)	*	* 4.03	* *
* Conv. Total (cfs)	* 31526.7	* Conv. (cfs)	*	* 31526.7	* *
* Length Wtd. (ft)	* 13.00	* Wetted Per. (ft)	*	* 66.13	* *
* Min Ch El (ft)	* 1998.01	* Shear (lb/sq ft)	*	* 0.03	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.05	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 13.40	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 3.92	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1143

INPUT
Description: Sta 29+87 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-42.2	2004.11	-30	1997.98	15	1997.98	27.2	2004.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-42.2	.04	-42.2	.04	27.2	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-42.2 27.2 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2002.77	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.03	* Wt. n-Val.	*	* 0.040	* *
* W.S. Elev (ft)	* 2002.73	* Reach Len. (ft)	* 6.00	* 6.00	* 6.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 258.87	* *
* E.G. Slope (ft/ft)	*0.000241	* Area (sq ft)	*	* 258.87	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 63.92	* Top Width (ft)	*	* 63.92	* *
* Vel Total (ft/s)	* 1.43	* Avg. Vel. (ft/s)	*	* 1.43	* *
* Max Chl Dpth (ft)	* 4.75	* Hydr. Depth (ft)	*	* 4.05	* *
* Conv. Total (cfs)	* 23875.4	* Conv. (cfs)	*	* 23875.4	* *
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	* 66.17	* *
* Min Ch El (ft)	* 1997.98	* Shear (lb/sq ft)	*	* 0.06	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.08	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 13.32	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 3.90	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1142

INPUT
Description: Sta 29+81 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.2	2003.31	-32.5	1997.97	17.5	1997.97	25.2	2003.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.2	.028	-41.2	.028	25.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.2 25.2 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2002.76	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.03	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 2002.74	* Reach Len. (ft)	* 0.10	* 0.10	* 0.10 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 273.10	* *
* E.G. Slope (ft/ft)	*0.000102	* Area (sq ft)	*	* 273.10	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 64.63	* Top Width (ft)	*	* 64.63	* *
* Vel Total (ft/s)	* 1.36	* Avg. Vel. (ft/s)	*	* 1.36	* *
* Max Chl Dpth (ft)	* 4.76	* Hydr. Depth (ft)	*	* 4.23	* *
* Conv. Total (cfs)	* 36810.3	* Conv. (cfs)	*	* 36810.3	* *
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	* 67.47	* *
* Min Ch El (ft)	* 1997.97	* Shear (lb/sq ft)	*	* 0.03	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.03	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 13.28	* *
* C & E Loss (ft)	* 0.03	* Cum SA (acres)	*	* 3.89	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1141

INPUT
Description: Sta 29+81 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.2	2003.31	-32.5	2000.97	17.5	2000.97	25.2	2003.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.2	.028	-41.2	.028	25.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.2 25.2 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2002.73	* Element	* Left OB	* Channel	* Right OB *

* Vel Head (ft)	* 0.36	* Wt. n-Val.	*	* 0.028	*	*		
* W.S. Elev (ft)	* 2002.37	* Reach Len. (ft)	* 6.00	* 6.00	* 6.00	*		
* Crit W.S. (ft)	* 2002.13	* Flow Area (sq ft)	*	* 76.61	*	*		
* E.G. Slope (ft/ft)	*0.006036	* Area (sq ft)	*	* 76.61	*	*		
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	*	*		
* Top Width (ft)	* 59.78	* Top Width (ft)	*	* 59.78	*	*		
* Vel Total (ft/s)	* 4.84	* Avg. Vel. (ft/s)	*	* 4.84	*	*		
* Max Chl Dpth (ft)	* 1.40	* Hydr. Depth (ft)	*	* 1.28	*	*		
* Conv. Total (cfs)	* 4775.5	* Conv. (cfs)	*	* 4775.5	*	*		
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	* 60.17	*	*		
* Min Ch El (ft)	* 2000.97	* Shear (lb/sq ft)	*	* 0.48	*	*		
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 2.32	*	*		
* Frctn Loss (ft)	* 0.05	* Cum Volume (acre-ft)	*	* 13.28	*	*		
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	*	* 3.89	*	*		

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1140

INPUT
Description: Sta 29+75 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.2	2003.31	-32.5	2000.96	17.5	2000.96	25.2	2003.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.2	.028	-41.2	.028	25.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.2 25.2 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2002.66	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.54	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 2002.12	* Reach Len. (ft)	* 0.10	* 0.10	* 0.10 *
* Crit W.S. (ft)	* 2002.12	* Flow Area (sq ft)	*	* 62.72	* *
* E.G. Slope (ft/ft)	*0.011304	* Area (sq ft)	*	* 62.72	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 58.10	* Top Width (ft)	*	* 58.10	* *
* Vel Total (ft/s)	* 5.92	* Avg. Vel. (ft/s)	*	* 5.92	* *
* Max Chl Dpth (ft)	* 1.16	* Hydr. Depth (ft)	*	* 1.08	* *
* Conv. Total (cfs)	* 3489.5	* Conv. (cfs)	*	* 3489.5	* *
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	* 58.42	* *
* Min Ch El (ft)	* 2000.96	* Shear (lb/sq ft)	*	* 0.76	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 4.48	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 13.27	* *
* C & E Loss (ft)	* 0.07	* Cum SA (acres)	*	* 3.88	* *

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1139

INPUT
Description: Sta 29+75 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.2	2003.31	-32.5	1997.97	17.5	1997.97	25.2	2003.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.2	.04	-41.2	.04	25.2	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.2 25.2 19 19 19 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 2002.33	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 3.90	* Wt. n-Val.	*	* 0.040	* *
* W.S. Elev (ft)	* 1998.43	* Reach Len. (ft)	* 19.00	* 19.00	* 19.00 *
* Crit W.S. (ft)	* 1999.15	* Flow Area (sq ft)	*	* 23.42	* *
* E.G. Slope (ft/ft)	*0.522352	* Area (sq ft)	*	* 23.42	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 51.42	* Top Width (ft)	*	* 51.42	* *
* Vel Total (ft/s)	* 15.84	* Avg. Vel. (ft/s)	*	* 15.84	* *
* Max Chl Dpth (ft)	* 0.46	* Hydr. Depth (ft)	*	* 0.46	* *
* Conv. Total (cfs)	* 513.3	* Conv. (cfs)	*	* 513.3	* *
* Length Wtd. (ft)	* 19.00	* Wetted Per. (ft)	*	* 51.69	* *
* Min Ch El (ft)	* 1997.97	* Shear (lb/sq ft)	*	* 14.78	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 234.04	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 13.27	* *
* C & E Loss (ft)	* 0.34	* Cum SA (acres)	*	* 3.88	* *

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Program found supercritical flow starting at this cross section.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1138

INPUT
Description: Sta 29+56 - Inline Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.2	2002.81	-32.5	1997.92	17.5	1997.92	25.2	2002.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.2	.028	-41.2	.028	25.2	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-41.2 25.2 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1999.89	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 1.11	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 1998.77	* Reach Len. (ft)	* 6.00	* 6.00	* 6.00 *
* Crit W.S. (ft)	* 1999.10	* Flow Area (sq ft)	*	* 43.79	* *
* E.G. Slope (ft/ft)	*0.033150	* Area (sq ft)	*	* 43.79	* *
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	* *
* Top Width (ft)	* 52.86	* Top Width (ft)	*	* 52.86	* *
* Vel Total (ft/s)	* 8.47	* Avg. Vel. (ft/s)	*	* 8.47	* *
* Max Chl Dpth (ft)	* 0.85	* Hydr. Depth (ft)	*	* 0.83	* *
* Conv. Total (cfs)	* 2037.7	* Conv. (cfs)	*	* 2037.7	* *
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	* 53.33	* *
* Min Ch El (ft)	* 1997.92	* Shear (lb/sq ft)	*	* 1.70	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 14.40	* *
* Frctn Loss (ft)	* 1.61	* Cum Volume (acre-ft)	*	* 13.26	* *
* C & E Loss (ft)	* 0.83	* Cum SA (acres)	*	* 3.86	* *

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel

```
REACH: C-1 to 9000 ft E   RS: 1137

INPUT
Description: Sta 29+50 - Inline Gabion Drop Structure
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*********************************************************************
   -41.2 2002.81   -32.5 1997.91    17.5 1997.91    25.2 2002.81

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -41.2    .028   -41.2    .028    25.2    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -41.2    25.2                 .1        .1        .1             .3


CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1999.66  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.57  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)          * 1999.09  * Reach Len. (ft)        *    0.10  *     0.10  *    0.10  *
* Crit W.S. (ft)          * 1999.09  * Flow Area (sq ft)      *          *    61.27  *          *
* E.G. Slope (ft/ft)      *0.011166  * Area (sq ft)           *          *    61.27  *          *
* Q Total (cfs)           *  371.00  * Flow (cfs)            *          *   371.00  *          *
* Top Width (ft)          *   53.95  * Top Width (ft)        *          *    53.95  *          *
* Vel Total (ft/s)        *    6.06  * Avg. Vel. (ft/s)      *          *     6.06  *          *
* Max Chl Dpth (ft)       *    1.18  * Hydr. Depth (ft)      *          *     1.14  *          *
* Conv. Total (cfs)       *  3511.0  * Conv. (cfs)           *          *   3511.0  *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)      *          *    54.60  *          *
* Min Ch El (ft)          * 1997.91  * Shear (lb/sq ft)      *          *     0.78  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *     4.74  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *    13.25  *          *
* C & E Loss (ft)         *    0.05  * Cum SA (acres)        *          *     3.85  *          *
*************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1136

INPUT
Description: Sta 29+50 - Drake Channel
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*********************************************************************
   -41.2 2002.81     -13 1988.71      -3 1988.71    25.2 2002.81

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -41.2    .028   -41.2    .028    25.2    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -41.2    25.2                  24        24        24             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1998.82  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    8.87  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)          * 1989.95  * Reach Len. (ft)        *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)          * 1991.57  * Flow Area (sq ft)      *          *   15.52  *          *
* E.G. Slope (ft/ft)      *0.203483  * Area (sq ft)           *          *   15.52  *          *
* Q Total (cfs)           *  371.00  * Flow (cfs)            *          *  371.00  *          *
* Top Width (ft)          *   14.97  * Top Width (ft)        *          *   14.97  *          *
* Vel Total (ft/s)        *   23.90  * Avg. Vel. (ft/s)      *          *   23.90  *          *
* Max Chl Dpth (ft)       *    1.24  * Hydr. Depth (ft)      *          *    1.04  *          *
* Conv. Total (cfs)       *   822.5  * Conv. (cfs)           *          *   822.5  *          *
* Length Wtd. (ft)        *   24.00  * Wetted Per. (ft)      *          *   15.56  *          *
* Min Ch El (ft)          * 1988.71  * Shear (lb/sq ft)      *          *   12.67  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *  302.90  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *   13.25  *          *
* C & E Loss (ft)         *    0.83  * Cum SA (acres)        *          *    3.85  *          *
*************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1135

INPUT
Description: Sta 29+26 - Drake Channel
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*********************************************************************
   -36.5 1998.81     -16 1988.66       0 1988.66    26.5 2001.81

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -36.5    .028   -36.5     .03    26.5    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -36.5    26.5                 12        12        12             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1993.07  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.20  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)          * 1992.87  * Reach Len. (ft)        *   12.00  *   12.00  *   12.00  *
* Crit W.S. (ft)          * 1990.97  * Flow Area (sq ft)      *          *  102.96  *          *
* E.G. Slope (ft/ft)      *0.001253  * Area (sq ft)           *          *  102.96  *          *
* Q Total (cfs)           *  371.00  * Flow (cfs)            *          *  371.00  *          *
* Top Width (ft)          *   32.97  * Top Width (ft)        *          *   32.97  *          *
* Vel Total (ft/s)        *    3.60  * Avg. Vel. (ft/s)      *          *    3.60  *          *
* Max Chl Dpth (ft)       *    4.21  * Hydr. Depth (ft)      *          *    3.12  *          *
* Conv. Total (cfs)       * 10482.8  * Conv. (cfs)           *          * 10482.8  *          *
* Length Wtd. (ft)        *   12.00  * Wetted Per. (ft)      *          *   34.94  *          *
* Min Ch El (ft)          * 1988.66  * Shear (lb/sq ft)      *          *    0.23  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.83  *          *
* Frctn Loss (ft)         *    0.02  * Cum Volume (acre-ft)  *          *   13.22  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    3.84  *          *
*************************************************************************************************

Note:    Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1134

INPUT
Description: Sta 29+14 - Drake Channel
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*********************************************************************
   -36.5 1998.81     -16 1988.64       0 1988.64    26.5 2001.81

Manning's n Values        num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -36.5     .03   -36.5     .03    26.5     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -36.5    26.5                 14        14        14             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1993.05  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.20  * Wt. n-Val.             *          *    0.030  *          *
* W.S. Elev (ft)          * 1992.85  * Reach Len. (ft)        *   14.00  *   14.00  *   14.00  *
* Crit W.S. (ft)          *         * Flow Area (sq ft)      *          *  103.07  *          *
* E.G. Slope (ft/ft)      *0.001248  * Area (sq ft)           *          *  103.07  *          *
```

* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	*
* Top Width (ft)	* 32.96	* Top Width (ft)	*	* 32.96	*
* Vel Total (ft/s)	* 3.60	* Avg. Vel. (ft/s)	*	* 3.60	*
* Max Chl Dpth (ft)	* 4.21	* Hydr. Depth (ft)	*	* 3.13	*
* Conv. Total (cfs)	* 10501.6	* Conv. (cfs)	*	* 10501.6	*
* Length Wtd. (ft)	* 14.00	* Wetted Per. (ft)	*	* 34.93	*
* Min Ch El (ft)	* 1988.64	* Shear (lb/sq ft)	*	* 0.23	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.83	*
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	*	* 13.19	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 3.83	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1133

INPUT
Description: Sta 29+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-36.5	1998.81	-16	1988.61	0	1988.61	26.5	2001.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-36.5	.03	-36.5	.03	26.5	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-36.5	26.5	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1993.03	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.20	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 1992.83	* Reach Len. (ft)	* 50.00 *	50.00 *	50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 103.42 *	*
* E.G. Slope (ft/ft)	*0.001235	* Area (sq ft)	*	* 103.42 *	*
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00 *	*
* Top Width (ft)	* 32.97	* Top Width (ft)	*	* 32.97 *	*
* Vel Total (ft/s)	* 3.59	* Avg. Vel. (ft/s)	*	* 3.59 *	*
* Max Chl Dpth (ft)	* 4.22	* Hydr. Depth (ft)	*	* 3.14 *	*
* Conv. Total (cfs)	* 10556.8	* Conv. (cfs)	*	* 10556.8 *	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 34.96 *	*
* Min Ch El (ft)	* 1988.61	* Shear (lb/sq ft)	*	* 0.23 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.82 *	*
* Frctn Loss (ft)	* 0.03	* Cum Volume (acre-ft)	*	* 13.16 *	*
* C & E Loss (ft)	* 0.04	* Cum SA (acres)	*	* 3.82 *	*

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1132

INPUT
Description: Sta 28+50 -Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-42.7	1998.31	-22	1988.51	8	1988.51	28.7	1998.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-42.7	.03	-42.7	.03	28.7	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-42.7	28.7	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1992.96	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.07	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 1992.89	* Reach Len. (ft)	* 50.00 *	50.00 *	50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 172.03 *	*
* E.G. Slope (ft/ft)	*0.000370	* Area (sq ft)	*	* 172.03 *	*
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00 *	*
* Top Width (ft)	* 48.51	* Top Width (ft)	*	* 48.51 *	*
* Vel Total (ft/s)	* 2.16	* Avg. Vel. (ft/s)	*	* 2.16 *	*
* Max Chl Dpth (ft)	* 4.38	* Hydr. Depth (ft)	*	* 3.55 *	*
* Conv. Total (cfs)	* 19295.2	* Conv. (cfs)	*	* 19295.2 *	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 50.48 *	*
* Min Ch El (ft)	* 1988.51	* Shear (lb/sq ft)	*	* 0.08 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.17 *	*
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	*	* 13.00 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 3.77 *	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1131

INPUT
Description: Sta 28+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-42.7	1998.31	-22	1988.41	8	1988.41	28.7	1998.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-42.7	.03	-42.7	.03	28.7	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-42.7	28.7	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1992.95	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.07	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 1992.88	* Reach Len. (ft)	* 50.00 *	50.00 *	50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 175.70 *	*
* E.G. Slope (ft/ft)	*0.000347	* Area (sq ft)	*	* 175.70 *	*
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00 *	*
* Top Width (ft)	* 48.68	* Top Width (ft)	*	* 48.68 *	*
* Vel Total (ft/s)	* 2.11	* Avg. Vel. (ft/s)	*	* 2.11 *	*
* Max Chl Dpth (ft)	* 4.47	* Hydr. Depth (ft)	*	* 3.61 *	*
* Conv. Total (cfs)	* 19928.9	* Conv. (cfs)	*	* 19928.9 *	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 50.70 *	*
* Min Ch El (ft)	* 1988.41	* Shear (lb/sq ft)	*	* 0.07 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.16 *	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 12.80 *	*
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 3.72 *	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1130

INPUT
Description: Sta 27+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-42.4	1996.81	-25	1988.31	10	1988.31	29.4	1997.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-42.4	.03	-42.4	.03	29.4	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-42.4	29.4	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1992.93	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.05	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 1992.87	* Reach Len. (ft)	* 50.00 *	50.00 *	50.00 *

* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	*	202.32	*	*
* E.G. Slope (ft/ft)	*0.000246	* Area (sq ft)	*	*	202.32	*	*
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	*	371.00	*	*
* Top Width (ft)	* 53.66	* Top Width (ft)	*	*	53.66	*	*
* Vel Total (ft/s)	* 1.83	* Avg. Vel. (ft/s)	*	*	1.83	*	*
* Max Chl Dpth (ft)	* 4.56	* Hydr. Depth (ft)	*	*	3.77	*	*
* Conv. Total (cfs)	* 23658.2	* Conv. (cfs)	*	*	23658.2	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	*	55.77	*	*
* Min Ch El (ft)	* 1988.31	* Shear (lb/sq ft)	*	*	0.06	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	*	0.10	*	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	*	12.58	*	*
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	*	3.66	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1129

INPUT
Description: Sta 27+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-47.96	1996.94	-30	1988.21	15	1988.21	32.96	1996.94

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-47.96	.03	-47.96	.03	32.96	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-47.96 32.96 13 13 13 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1992.91	* Element	*	* Left OB *	Channel	* Right OB *	
* Vel Head (ft)	* 0.03	* Wt. n-Val.	*	*	0.030	*	*
* W.S. Elev (ft)	* 1992.88	* Reach Len. (ft)	*	13.00 *	13.00	* 13.00 *	
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	*	254.90	*	*
* E.G. Slope (ft/ft)	*0.000144	* Area (sq ft)	*	*	254.90	*	*
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	*	371.00	*	*
* Top Width (ft)	* 64.21	* Top Width (ft)	*	*	64.21	*	*
* Vel Total (ft/s)	* 1.46	* Avg. Vel. (ft/s)	*	*	1.46	*	*
* Max Chl Dpth (ft)	* 4.67	* Hydr. Depth (ft)	*	*	3.97	*	*
* Conv. Total (cfs)	* 30967.6	* Conv. (cfs)	*	*	30967.6	*	*
* Length Wtd. (ft)	* 13.00	* Wetted Per. (ft)	*	*	66.36	*	*
* Min Ch El (ft)	* 1988.21	* Shear (lb/sq ft)	*	*	0.03	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	*	0.05	*	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	*	12.32	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	*	3.59	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1128

INPUT
Description: Sta 26+87 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	1993.31	-32.5	1988.17	17	1988.17	32	1993.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.04	-45	.04	32	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45 32 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1992.91	* Element	*	* Left OB *	Channel	* Right OB *	
* Vel Head (ft)	* 0.02	* Wt. n-Val.	*	*	0.040	*	*
* W.S. Elev (ft)	* 1992.88	* Reach Len. (ft)	*	6.00 *	6.00	* 6.00 *	
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	*	292.61	*	*
* E.G. Slope (ft/ft)	*0.000194	* Area (sq ft)	*	*	292.61	*	*
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	*	371.00	*	*
* Top Width (ft)	* 74.71	* Top Width (ft)	*	*	74.71	*	*
* Vel Total (ft/s)	* 1.27	* Avg. Vel. (ft/s)	*	*	1.27	*	*
* Max Chl Dpth (ft)	* 4.71	* Hydr. Depth (ft)	*	*	3.92	*	*
* Conv. Total (cfs)	* 26602.4	* Conv. (cfs)	*	*	26602.4	*	*
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	*	76.42	*	*
* Min Ch El (ft)	* 1988.17	* Shear (lb/sq ft)	*	*	0.05	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	*	0.06	*	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	*	12.24	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	*	3.57	*	*

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1127

INPUT
Description: Sta 26+81 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	1993.31	-32.5	1988.16	17	1988.16	32	1993.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.028	-45	.028	32	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45 32 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1992.91	* Element	*	* Left OB *	Channel	* Right OB *	
* Vel Head (ft)	* 0.02	* Wt. n-Val.	*	*	0.028	*	*
* W.S. Elev (ft)	* 1992.88	* Reach Len. (ft)	*	0.10 *	0.10	* 0.10 *	
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	*	293.18	*	*
* E.G. Slope (ft/ft)	*0.000095	* Area (sq ft)	*	*	293.18	*	*
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	*	371.00	*	*
* Top Width (ft)	* 74.71	* Top Width (ft)	*	*	74.71	*	*
* Vel Total (ft/s)	* 1.27	* Avg. Vel. (ft/s)	*	*	1.27	*	*
* Max Chl Dpth (ft)	* 4.72	* Hydr. Depth (ft)	*	*	3.92	*	*
* Conv. Total (cfs)	* 38126.2	* Conv. (cfs)	*	*	38126.2	*	*
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	*	76.43	*	*
* Min Ch El (ft)	* 1988.16	* Shear (lb/sq ft)	*	*	0.02	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	*	0.03	*	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	*	12.20	*	*
* C & E Loss (ft)	* 0.03	* Cum SA (acres)	*	*	3.56	*	*

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1126

INPUT
Description: Sta 26+81 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	1993.31	-32.5	1991.16	17	1991.16	32	1993.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.028	-45	.028	32	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45 32 6 6 6 .1 .3

```
CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 1992.88  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.32  * Wt. n-Val.            *         *    0.028 *          *
* W.S. Elev (ft)        * 1992.55  * Reach Len. (ft)       *    6.00 *    6.00 *    6.00  *
* Crit W.S. (ft)        * 1992.30  * Flow Area (sq ft)     *         *   81.36 *          *
* E.G. Slope (ft/ft)    *0.005760  * Area (sq ft)          *         *   81.36 *          *
* Q Total (cfs)         *  371.00  * Flow (cfs)            *         *  371.00 *          *
* Top Width (ft)        *   67.32  * Top Width (ft)        *         *   67.32 *          *
* Vel Total (ft/s)      *    4.56  * Avg. Vel. (ft/s)      *         *    4.56 *          *
* Max Chl Dpth (ft)     *    1.39  * Hydr. Depth (ft)      *         *    1.21 *          *
* Conv. Total (cfs)     *  4888.4  * Conv. (cfs)           *         *  4888.4 *          *
* Length Wtd. (ft)      *    6.00  * Wetted Per. (ft)      *         *   67.53 *          *
* Min Ch El (ft)        * 1991.16  * Shear (lb/sq ft)      *         *    0.43 *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *         *    1.98 *          *
* Frctn Loss (ft)       *    0.05  * Cum Volume (acre-ft)  *         *   12.20 *          *
* C & E Loss (ft)       *    0.02  * Cum SA (acres)        *         *    3.56 *          *
************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1125

INPUT
Description: Sta 26+75 - Gabion Counterweir
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************************
     -45 1993.31    -32.5 1991.16       17 1991.16       32 1993.31

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
     -45     .028      -45     .028       32     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            -45      32             .1      .1      .1              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 1992.81  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.51  * Wt. n-Val.            *         *    0.028 *          *
* W.S. Elev (ft)        * 1992.30  * Reach Len. (ft)       *    0.10 *    0.10 *    0.10  *
* Crit W.S. (ft)        * 1992.30  * Flow Area (sq ft)     *         *   64.78 *          *
* E.G. Slope (ft/ft)    *0.011523  * Area (sq ft)          *         *   64.78 *          *
* Q Total (cfs)         *  371.00  * Flow (cfs)            *         *  371.00 *          *
* Top Width (ft)        *   64.09  * Top Width (ft)        *         *   64.09 *          *
* Vel Total (ft/s)      *    5.73  * Avg. Vel. (ft/s)      *         *    5.73 *          *
* Max Chl Dpth (ft)     *    1.14  * Hydr. Depth (ft)      *         *    1.01 *          *
* Conv. Total (cfs)     *  3456.1  * Conv. (cfs)           *         *  3456.1 *          *
* Length Wtd. (ft)      *    0.10  * Wetted Per. (ft)      *         *   64.27 *          *
* Min Ch El (ft)        * 1991.16  * Shear (lb/sq ft)      *         *    0.73 *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *         *    4.15 *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *         *   12.19 *          *
* C & E Loss (ft)       *    0.07  * Cum SA (acres)        *         *    3.55 *          *
************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1124

INPUT
Description: Sta 26+75 - Gabion Counterweir
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************************
     -45 1993.31    -32.5 1988.16       17 1988.16       32 1993.31

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
     -45      .04      -45      .04       32      .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            -45      32             19      19      19              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 1992.47  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)         *    3.85  * Wt. n-Val.            *         *    0.046 *          *
* W.S. Elev (ft)        * 1988.62  * Reach Len. (ft)       *   19.00 *   19.00 *   19.00  *
* Crit W.S. (ft)        * 1989.33  * Flow Area (sq ft)     *         *   23.56 *          *
* E.G. Slope (ft/ft)    *0.518252  * Area (sq ft)          *         *   23.56 *          *
* Q Total (cfs)         *  371.00  * Flow (cfs)            *         *  371.00 *          *
* Top Width (ft)        *   51.98  * Top Width (ft)        *         *   51.98 *          *
* Vel Total (ft/s)      *   15.75  * Avg. Vel. (ft/s)      *         *   15.75 *          *
* Max Chl Dpth (ft)     *    0.46  * Hydr. Depth (ft)      *         *    0.45 *          *
* Conv. Total (cfs)     *   515.4  * Conv. (cfs)           *         *   515.4 *          *
* Length Wtd. (ft)      *   19.00  * Wetted Per. (ft)      *         *   52.15 *          *
* Min Ch El (ft)        * 1988.16  * Shear (lb/sq ft)      *         *   14.62 *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *         *  230.18 *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *         *   12.19 *          *
* C & E Loss (ft)       *    0.33  * Cum SA (acres)        *         *    3.55 *          *
************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Note:    Program found supercritical flow starting at this cross section.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1123

INPUT
Description: Sta 26+56 - Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************************
     -45 1992.31    -32.5 1988.16       17 1988.16       32 1992.31

Manning's n Values        num=       3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
     -45     .028      -45     .028       32     .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
            -45      32              6       6       6              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
************************************************************************************************
* E.G. Elev (ft)        * 1990.08  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)         *    1.06  * Wt. n-Val.            *         *    0.028 *          *
* W.S. Elev (ft)        * 1989.02  * Reach Len. (ft)       *    6.00 *    6.00 *    6.00  *
* Crit W.S. (ft)        * 1989.33  * Flow Area (sq ft)     *         *   44.95 *          *
* E.G. Slope (ft/ft)    *0.032009  * Area (sq ft)          *         *   44.95 *          *
* Q Total (cfs)         *  371.00  * Flow (cfs)            *         *  371.00 *          *
* Top Width (ft)        *   55.19  * Top Width (ft)        *         *   55.19 *          *
* Vel Total (ft/s)      *    8.25  * Avg. Vel. (ft/s)      *         *    8.25 *          *
* Max Chl Dpth (ft)     *    0.86  * Hydr. Depth (ft)      *         *    0.81 *          *
* Conv. Total (cfs)     *  2073.7  * Conv. (cfs)           *         *  2073.7 *          *
* Length Wtd. (ft)      *    6.00  * Wetted Per. (ft)      *         *   55.45 *          *
* Min Ch El (ft)        * 1988.16  * Shear (lb/sq ft)      *         *    1.62 *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *         *   13.37 *          *
* Frctn Loss (ft)       *    1.56  * Cum Volume (acre-ft)  *         *   12.17 *          *
* C & E Loss (ft)       *    0.84  * Cum SA (acres)        *         *    3.53 *          *
************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
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section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1122

INPUT
Description: Sta 26+50 -Inline Gabion Drop Structure
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	1992.31	-32.5	1988.11	17	1988.11	32	1992.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.028	-45	.028	32	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45 32 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1989.83	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.59	Wt. n-Val.		0.028	
W.S. Elev (ft)	1989.24	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	1989.28	Flow Area (sq ft)		59.93	
E.G. Slope (ft/ft)	0.012789	Area (sq ft)		59.93	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	56.88	Top Width (ft)		56.88	
Vel Total (ft/s)	6.19	Avg. Vel. (ft/s)		6.19	
Max Chl Dpth (ft)	1.13	Hydr. Depth (ft)		1.05	
Conv. Total (cfs)	3280.6	Conv. (cfs)		3280.6	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		57.22	
Min Ch El (ft)	1988.11	Shear (lb/sq ft)		0.84	
Alpha	1.00	Stream Power (lb/ft s)		5.18	
Frctn Loss (ft)	0.11	Cum Volume (acre-ft)		12.16	
C & E Loss (ft)	0.15	Cum SA (acres)		3.52	

Warning: The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1121

INPUT
Description: Sta 26+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	1992.31	-18	1978.11	5	1978.11	32	1992.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.03	-45	.03	32	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45 32 24 24 24 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1988.87	Element	Left OB	Channel	Right OB
Vel Head (ft)	10.16	Wt. n-Val.		0.030	
W.S. Elev (ft)	1978.71	Reach Len. (ft)	24.00	24.00	24.00
Crit W.S. (ft)	1980.00	Flow Area (sq ft)		14.50	
E.G. Slope (ft/ft)	0.568536	Area (sq ft)		14.50	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	25.28	Top Width (ft)		25.28	
Vel Total (ft/s)	25.58	Avg. Vel. (ft/s)		25.58	
Max Chl Dpth (ft)	0.60	Hydr. Depth (ft)		0.57	
Conv. Total (cfs)	492.0	Conv. (cfs)		492.0	
Length Wtd. (ft)	24.00	Wetted Per. (ft)		25.58	
Min Ch El (ft)	1978.11	Shear (lb/sq ft)		20.12	
Alpha	1.00	Stream Power (lb/ft s)		514.76	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		12.16	
C & E Loss (ft)	0.96	Cum SA (acres)		3.52	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1120

INPUT
Description: Sta 26+26 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	1991.41	-18	1978.06	5	1978.06	32	1991.41

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.028	-45	.03	32	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45 32 12 12 12 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1982.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.		0.030	
W.S. Elev (ft)	1982.16	Reach Len. (ft)	12.00	12.00	12.00
Crit W.S. (ft)	1979.95	Flow Area (sq ft)		128.15	
E.G. Slope (ft/ft)	0.000759	Area (sq ft)		128.15	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	39.57	Top Width (ft)		39.57	
Vel Total (ft/s)	2.90	Avg. Vel. (ft/s)		2.90	
Max Chl Dpth (ft)	4.10	Hydr. Depth (ft)		3.24	
Conv. Total (cfs)	13463.6	Conv. (cfs)		13463.6	
Length Wtd. (ft)	12.00	Wetted Per. (ft)		41.48	
Min Ch El (ft)	1978.06	Shear (lb/sq ft)		0.15	
Alpha	1.00	Stream Power (lb/ft s)		0.42	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		12.13	
C & E Loss (ft)	0.00	Cum SA (acres)		3.50	

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1119

INPUT
Description: Sta 26+14 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	1991.41	-18	1978.04	5	1978.04	32	1991.41

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.03	-45	.03	32	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45 32 14 14 14 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1982.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.13	Wt. n-Val.		0.030	
W.S. Elev (ft)	1982.15	Reach Len. (ft)	14.00	14.00	14.00

* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	*	128.56	*	*
* E.G. Slope (ft/ft)	*0.000752	* Area (sq ft)	*	*	128.56	*	*
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	*	371.00	*	*
* Top Width (ft)	* 39.59	* Top Width (ft)	*	*	39.59	*	*
* Vel Total (ft/s)	* 2.89	* Avg. Vel. (ft/s)	*	*	2.89	*	*
* Max Chl Dpth (ft)	* 4.11	* Hydr. Depth (ft)	*	*	3.25	*	*
* Conv. Total (cfs)	* 13527.9	* Conv. (cfs)	*	*	13527.9	*	*
* Length Wtd. (ft)	* 14.00	* Wetted Per. (ft)	*	*	41.51	*	*
* Min Ch El (ft)	* 1978.04	* Shear (lb/sq ft)	*	*	0.15	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	*	0.42	*	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	*	12.09	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	*	3.49	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1118

INPUT
Description: Sta 26+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	1991.41	-18	1978.01	5	1978.01	32	1991.41

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.03	-45	.03	32	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-45	32	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1982.27	* Element	*	Left OB *	Channel	* Right OB	*
* Vel Head (ft)	* 0.13	* Wt. n-Val.	*	*	0.030	*	*
* W.S. Elev (ft)	* 1982.14	* Reach Len. (ft)	*	50.00 *	50.00	* 50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	*	129.30	*	*
* E.G. Slope (ft/ft)	*0.000739	* Area (sq ft)	*	*	129.30	*	*
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	*	371.00	*	*
* Top Width (ft)	* 39.64	* Top Width (ft)	*	*	39.64	*	*
* Vel Total (ft/s)	* 2.87	* Avg. Vel. (ft/s)	*	*	2.87	*	*
* Max Chl Dpth (ft)	* 4.13	* Hydr. Depth (ft)	*	*	3.26	*	*
* Conv. Total (cfs)	* 13644.9	* Conv. (cfs)	*	*	13644.9	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	*	41.57	*	*
* Min Ch El (ft)	* 1978.01	* Shear (lb/sq ft)	*	*	0.14	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	*	0.41	*	*
* Frctn Loss (ft)	* 0.04	* Cum Volume (acre-ft)	*	*	12.05	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	*	3.48	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1117

INPUT
Description: Sta 25+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45	1991.41	-18	1977.91	5	1977.91	32	1991.41

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45	.03	-45	.03	32	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-45	32	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1982.23	* Element	*	Left OB *	Channel	* Right OB	*
* Vel Head (ft)	* 0.12	* Wt. n-Val.	*	*	0.030	*	*
* W.S. Elev (ft)	* 1982.11	* Reach Len. (ft)	*	50.00 *	50.00	* 50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	*	131.71	*	*
* E.G. Slope (ft/ft)	*0.000699	* Area (sq ft)	*	*	131.71	*	*
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	*	371.00	*	*
* Top Width (ft)	* 39.78	* Top Width (ft)	*	*	39.78	*	*
* Vel Total (ft/s)	* 2.82	* Avg. Vel. (ft/s)	*	*	2.82	*	*
* Max Chl Dpth (ft)	* 4.20	* Hydr. Depth (ft)	*	*	3.31	*	*
* Conv. Total (cfs)	* 14029.1	* Conv. (cfs)	*	*	14029.1	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	*	41.76	*	*
* Min Ch El (ft)	* 1977.91	* Shear (lb/sq ft)	*	*	0.14	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	*	0.39	*	*
* Frctn Loss (ft)	* 0.03	* Cum Volume (acre-ft)	*	*	11.90	*	*
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	*	3.43	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1116

INPUT
Description: Sta 25+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.6	1990.11	-20	1977.81	8	1977.81	32.6	1990.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.6	.03	-44.6	.03	32.6	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-44.6	32.6	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1982.19	* Element	*	Left OB *	Channel	* Right OB	*
* Vel Head (ft)	* 0.09	* Wt. n-Val.	*	*	0.030	*	*
* W.S. Elev (ft)	* 1982.10	* Reach Len. (ft)	*	50.00 *	50.00	* 50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	*	157.08	*	*
* E.G. Slope (ft/ft)	*0.000458	* Area (sq ft)	*	*	157.08	*	*
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	*	371.00	*	*
* Top Width (ft)	* 45.17	* Top Width (ft)	*	*	45.17	*	*
* Vel Total (ft/s)	* 2.36	* Avg. Vel. (ft/s)	*	*	2.36	*	*
* Max Chl Dpth (ft)	* 4.29	* Hydr. Depth (ft)	*	*	3.48	*	*
* Conv. Total (cfs)	* 17342.3	* Conv. (cfs)	*	*	17342.3	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	*	47.20	*	*
* Min Ch El (ft)	* 1977.81	* Shear (lb/sq ft)	*	*	0.10	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	*	0.22	*	*
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	*	*	11.73	*	*
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	*	3.38	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1115

INPUT
Description: Sta 24+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.2	1988.31	-23	1977.71	12	1977.71	33.2	1988.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.2	.03	-44.2	.03	33.2	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-44.2	33.2	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1982.16	* Element	*	Left OB *	Channel	* Right OB	*
* Vel Head (ft)	* 0.06	* Wt. n-Val.	*	*	0.030	*	*
* W.S. Elev (ft)	* 1982.11	* Reach Len. (ft)	*	50.00 *	50.00	* 50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	*	192.51	*	*

* E.G. Slope (ft/ft)	*0.000283	* Area (sq ft)	*	* 192.51	*	*	*
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	*	*	*
* Top Width (ft)	* 52.58	* Top Width (ft)	*	* 52.58	*	*	*
* Vel Total (ft/s)	* 1.93	* Avg. Vel. (ft/s)	*	* 1.93	*	*	*
* Max Chl Dpth (ft)	* 4.40	* Hydr. Depth (ft)	*	* 3.66	*	*	*
* Conv. Total (cfs)	* 22072.4	* Conv. (cfs)	*	* 22072.4	*	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 54.66	*	*	*
* Min Ch El (ft)	* 1977.71	* Shear (lb/sq ft)	*	* 0.06	*	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.12	*	*	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 11.53	*	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 3.33	*	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1114

INPUT
Description: Sta 24+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.4	1986.81	-26	1977.61	15	1977.61	33	1986.61

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.4	.03	-44.4	.03	33	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-44.4	33	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1982.15	* Element	* Left OB *	Channel	* Right OB *	*
* Vel Head (ft)	* 0.04	* Wt. n-Val.	*	* 0.030	*	*
* W.S. Elev (ft)	* 1982.11	* Reach Len. (ft)	* 50.00 *	50.00	* 50.00 *	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 224.70	*	*
* E.G. Slope (ft/ft)	*0.000196	* Area (sq ft)	*	* 224.70	*	*
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	*	*
* Top Width (ft)	* 58.98	* Top Width (ft)	*	* 58.98	*	*
* Vel Total (ft/s)	* 1.65	* Avg. Vel. (ft/s)	*	* 1.65	*	*
* Max Chl Dpth (ft)	* 4.49	* Hydr. Depth (ft)	*	* 3.81	*	*
* Conv. Total (cfs)	* 26516.9	* Conv. (cfs)	*	* 26516.9	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 61.10	*	*
* Min Ch El (ft)	* 1977.61	* Shear (lb/sq ft)	*	* 0.04	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.07	*	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 11.29	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 3.26	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1113

INPUT
Description: Sta 23+50 -Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.4	1986.21	-29	1977.51	19	1977.51	36.4	1986.21

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.4	.03	-46.4	.03	36.4	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-46.4	36.4	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1982.14	* Element	* Left OB *	Channel	* Right OB *	*
* Vel Head (ft)	* 0.03	* Wt. n-Val.	*	* 0.030	*	*
* W.S. Elev (ft)	* 1982.11	* Reach Len. (ft)	* 50.00 *	50.00	* 50.00 *	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 262.78	*	*
* E.G. Slope (ft/ft)	*0.000135	* Area (sq ft)	*	* 262.78	*	*
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	*	*
* Top Width (ft)	* 66.38	* Top Width (ft)	*	* 66.38	*	*
* Vel Total (ft/s)	* 1.41	* Avg. Vel. (ft/s)	*	* 1.41	*	*
* Max Chl Dpth (ft)	* 4.59	* Hydr. Depth (ft)	*	* 3.96	*	*
* Conv. Total (cfs)	* 31880.3	* Conv. (cfs)	*	* 31880.3	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 68.55	*	*
* Min Ch El (ft)	* 1977.51	* Shear (lb/sq ft)	*	* 0.03	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.05	*	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 11.01	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 3.19	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1112

INPUT
Description: Sta 23+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-40.2	1983.51	-30	1977.41	20	1977.41	31.4	1983.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-40.2	.03	-40.2	.03	31.4	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-40.2	31.4	13	13	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1982.13	* Element	* Left OB *	Channel	* Right OB *	*
* Vel Head (ft)	* 0.03	* Wt. n-Val.	*	* 0.030	*	*
* W.S. Elev (ft)	* 1982.10	* Reach Len. (ft)	* 13.00 *	13.00	* 13.00 *	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 274.91	*	*
* E.G. Slope (ft/ft)	*0.000119	* Area (sq ft)	*	* 274.91	*	*
* Q Total (cfs)	* 371.00	* Flow (cfs)	*	* 371.00	*	*
* Top Width (ft)	* 67.22	* Top Width (ft)	*	* 67.22	*	*
* Vel Total (ft/s)	* 1.35	* Avg. Vel. (ft/s)	*	* 1.35	*	*
* Max Chl Dpth (ft)	* 4.69	* Hydr. Depth (ft)	*	* 4.09	*	*
* Conv. Total (cfs)	* 34014.9	* Conv. (cfs)	*	* 34014.9	*	*
* Length Wtd. (ft)	* 13.00	* Wetted Per. (ft)	*	* 69.63	*	*
* Min Ch El (ft)	* 1977.41	* Shear (lb/sq ft)	*	* 0.03	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.04	*	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 10.70	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 3.12	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1111

INPUT
Description: Sta 22+87 - Drake Channel
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-59	1983	-42.4	1981.81	-32.5	1977.37	17.5	1977.37	21.4	1981.31
26	1982.5								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-59	.04	-59	.04	26	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-59	26	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1982.13	* Element	* Left OB *	Channel	* Right OB *	*
* Vel Head (ft)	* 0.03	* Wt. n-Val.	*	* 0.040	*	*
* W.S. Elev (ft)	* 1982.10	* Reach Len. (ft)	* 6.00 *	6.00	* 6.00 *	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 273.77	*	*

E.G. Slope (ft/ft)	0.000231	Area (sq ft)		273.77	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	70.86	Top Width (ft)		70.86	
Vel Total (ft/s)	1.36	Avg. Vel. (ft/s)		1.36	
Max Chl Dpth (ft)	4.73	Hydr. Depth (ft)		3.86	
Conv. Total (cfs)	24421.6	Conv. (cfs)		24421.6	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		73.57	
Min Ch El (ft)	1977.37	Shear (lb/sq ft)		0.05	
Alpha	1.00	Stream Power (lb/ft s)		0.07	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		10.62	
C & E Loss (ft)	0.00	Cum SA (acres)		3.09	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1110

INPUT
Description: Sta 22+81 - Gabion Counterweir
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-59	1983	-42.4	1981.81	-32.5	1977.37	17.5	1977.37	21.4	1981.31
26	1982.5								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-59	.028	-59	.028	26	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-59 26 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1982.13	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.03	Wt. n-Val.		0.028	
W.S. Elev (ft)	1982.10	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)		Flow Area (sq ft)		273.70	
E.G. Slope (ft/ft)	0.000113	Area (sq ft)		273.70	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	70.85	Top Width (ft)		70.85	
Vel Total (ft/s)	1.36	Avg. Vel. (ft/s)		1.36	
Max Chl Dpth (ft)	4.73	Hydr. Depth (ft)		3.86	
Conv. Total (cfs)	34878.9	Conv. (cfs)		34878.9	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		73.55	
Min Ch El (ft)	1977.37	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.04	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		10.59	
C & E Loss (ft)	0.03	Cum SA (acres)		3.09	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1109

INPUT
Description: Sta 22+81 - Gabion Counterweir
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-59	1983	-42.4	1981.81	-32.5	1980.37	17.5	1980.37	21.4	1981.31
26	1982.5								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-59	.028	-59	.028	26	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-59 26 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1982.10	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.33	Wt. n-Val.		0.028	
W.S. Elev (ft)	1981.77	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		80.47	
E.G. Slope (ft/ft)	0.005738	Area (sq ft)		80.47	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	65.25	Top Width (ft)		65.25	
Vel Total (ft/s)	4.61	Avg. Vel. (ft/s)		4.61	
Max Chl Dpth (ft)	1.40	Hydr. Depth (ft)		1.23	
Conv. Total (cfs)	4897.5	Conv. (cfs)		4897.5	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		65.52	
Min Ch El (ft)	1980.37	Shear (lb/sq ft)		0.44	
Alpha	1.00	Stream Power (lb/ft s)		2.03	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		10.58	
C & E Loss (ft)	0.02	Cum SA (acres)		3.08	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1108

INPUT
Description: Sta 22+75 - Gabion Counterweir
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-59	1983	-42.4	1981.81	-32.5	1980.37	17.5	1980.37	21.4	1981.31
26	1982.5								

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-59	.028	-59	.028	26	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-59 26 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1982.03	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.52	Wt. n-Val.		0.028	
W.S. Elev (ft)	1981.51	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	1981.51	Flow Area (sq ft)		64.15	
E.G. Slope (ft/ft)	0.011526	Area (sq ft)		64.15	
Q Total (cfs)	371.00	Flow (cfs)		371.00	
Top Width (ft)	62.51	Top Width (ft)		62.51	
Vel Total (ft/s)	5.78	Avg. Vel. (ft/s)		5.78	
Max Chl Dpth (ft)	1.14	Hydr. Depth (ft)		1.03	
Conv. Total (cfs)	3455.6	Conv. (cfs)		3455.6	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		62.73	
Min Ch El (ft)	1980.37	Shear (lb/sq ft)		0.74	
Alpha	1.00	Stream Power (lb/ft s)		4.26	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		10.57	
C & E Loss (ft)	0.06	Cum SA (acres)		3.08	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m) between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1107

INPUT
Description: Sta 22+75 - Drake Channel
Station Elevation Data num= 6

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
     -59    1983   -42.4 1981.81   -32.5 1977.37    17.5 1977.37    21.4 1981.31
      26  1982.5

Manning's n Values          num=          3
    Sta   n Val      Sta   n Val      Sta   n Val
**************************************************
     -59    .04      -59    .04       26    .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -59      26              19      19      19              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)          * 1981.69  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    3.86  * Wt. n-Val.           *          *    0.040  *          *
* W.S. Elev (ft)          * 1977.83  * Reach Len. (ft)      *   19.00  *   19.00  *   19.00  *
* Crit W.S. (ft)          * 1978.55  * Flow Area (sq ft)    *          *   23.53  *          *
* E.G. Slope (ft/ft)      *0.515473  * Area (sq ft)         *          *   23.53  *          *
* Q Total (cfs)           *  371.00  * Flow (cfs)           *          *  371.00  *          *
* Top Width (ft)          *   51.49  * Top Width (ft)       *          *   51.49  *          *
* Vel Total (ft/s)        *   15.76  * Avg. Vel. (ft/s)     *          *   15.76  *          *
* Max Chl Dpth (ft)       *    0.46  * Hydr. Depth (ft)     *          *    0.46  *          *
* Conv. Total (cfs)       *   516.7  * Conv. (cfs)          *          *   516.7  *          *
* Length Wtd. (ft)        *   19.00  * Wetted Per. (ft)     *          *   51.79  *          *
* Min Ch El (ft)          * 1977.37  * Shear (lb/sq ft)     *          *   14.62  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *  230.55  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *   10.57  *          *
* C & E Loss (ft)         *    0.33  * Cum SA (acres)        *          *    3.08  *          *
*********************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Note:    Program found supercritical flow starting at this cross section.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1106

INPUT
Description: Sta 22+56 - Drake Channel
Station Elevation Data    num=       4
    Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**************************************************************************
   -42.4 1981.81   -32.5 1977.31    17.5 1977.31    21.4 1981.31

Manning's n Values          num=          3
    Sta   n Val      Sta   n Val      Sta   n Val
**************************************************
   -42.4    .028   -42.4    .028    21.4    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -42.4    21.4              6       6       6              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)          * 1979.28  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.11  * Wt. n-Val.           *          *   0.028  *          *
* W.S. Elev (ft)          * 1978.16  * Reach Len. (ft)      *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)          * 1978.49  * Flow Area (sq ft)    *          *   43.86  *          *
* E.G. Slope (ft/ft)      *0.032900  * Area (sq ft)         *          *   43.86  *          *
* Q Total (cfs)           *  371.00  * Flow (cfs)           *          *  371.00  *          *
* Top Width (ft)          *   52.71  * Top Width (ft)       *          *   52.71  *          *
* Vel Total (ft/s)        *    8.46  * Avg. Vel. (ft/s)     *          *    8.46  *          *
* Max Chl Dpth (ft)       *    0.85  * Hydr. Depth (ft)     *          *    0.83  *          *
* Conv. Total (cfs)       *  2045.4  * Conv. (cfs)          *          *  2045.4  *          *
* Length Wtd. (ft)        *    6.00  * Wetted Per. (ft)     *          *   53.26  *          *
* Min Ch El (ft)          * 1977.31  * Shear (lb/sq ft)     *          *    1.69  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   14.31  *          *
* Frctn Loss (ft)         *    1.59  * Cum Volume (acre-ft)  *          *   10.56  *          *
* C & E Loss (ft)         *    0.82  * Cum SA (acres)        *          *    3.05  *          *
*********************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1105

INPUT
Description: Sta 22+50 - Drake Channel
Station Elevation Data    num=       4
    Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**************************************************************************
   -42.4 1981.81   -32.5 1977.31    17.5 1977.31    21.4 1981.31

Manning's n Values          num=          3
    Sta   n Val      Sta   n Val      Sta   n Val
**************************************************
   -42.4    .028   -42.4    .028    21.4    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -42.4    21.4               .1      .1      .1              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)          * 1979.06  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.57  * Wt. n-Val.           *          *   0.028  *          *
* W.S. Elev (ft)          * 1978.49  * Reach Len. (ft)      *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)          * 1978.49  * Flow Area (sq ft)    *          *   61.14  *          *
* E.G. Slope (ft/ft)      *0.011214  * Area (sq ft)         *          *   61.14  *          *
* Q Total (cfs)           *  371.00  * Flow (cfs)           *          *  371.00  *          *
* Top Width (ft)          *   53.74  * Top Width (ft)       *          *   53.74  *          *
* Vel Total (ft/s)        *    6.07  * Avg. Vel. (ft/s)     *          *    6.07  *          *
* Max Chl Dpth (ft)       *    1.18  * Hydr. Depth (ft)     *          *    1.14  *          *
* Conv. Total (cfs)       *  3503.4  * Conv. (cfs)          *          *  3503.4  *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)     *          *   54.49  *          *
* Min Ch El (ft)          * 1977.31  * Shear (lb/sq ft)     *          *    0.79  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    4.77  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *   10.55  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    3.05  *          *
*********************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1104

INPUT
Description: Sta 22+50 - Drake Channel
Station Elevation Data    num=       4
    Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**************************************************************************
   -42.4 1981.81     -15 1968.11      -5 1968.11    21.4 1981.31

Manning's n Values          num=          3
    Sta   n Val      Sta   n Val      Sta   n Val
**************************************************
   -42.4    .028   -42.4    .028    21.4    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -42.4    21.4              24      24      24              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*********************************************************************************************
* E.G. Elev (ft)          * 1978.27  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    8.50  * Wt. n-Val.           *          *   0.028  *          *
* W.S. Elev (ft)          * 1969.77  * Reach Len. (ft)      *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)          * 1971.55  * Flow Area (sq ft)    *          *   22.06  *          *
* E.G. Slope (ft/ft)      *0.141746  * Area (sq ft)         *          *   22.06  *          *
```

* Q Total (cfs)	* 516.00	* Flow (cfs)	* 516.00	*
* Top Width (ft)	* 16.63	* Top Width (ft)	* 16.63	*
* Vel Total (ft/s)	* 23.39	* Avg. Vel. (ft/s)	* 23.39	*
* Max Chl Dpth (ft)	* 1.66	* Hydr. Depth (ft)	* 1.33	*
* Conv. Total (cfs)	* 1370.5	* Conv. (cfs)	* 1370.5	*
* Length Wtd. (ft)	* 24.00	* Wetted Per. (ft)	* 17.41	*
* Min Ch El (ft)	* 1968.11	* Shear (lb/sq ft)	* 11.21	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 262.29	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	* 10.55	*
* C & E Loss (ft)	* 0.79	* Cum SA (acres)	* 3.05	*

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1103

INPUT
Description: Sta 22+26 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.8	1978.81	-22	1967.96	2	1967.96	22.8	1978.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.8	.028	-43.8	.03	22.8	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-43.8	22.8	12	12	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1972.95	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.16	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 1972.79	* Reach Len. (ft)	* 12.00 *	12.00 *	12.00 *
* Crit W.S. (ft)	* 1970.23	* Flow Area (sq ft)	*	* 162.80 *	*
* E.G. Slope (ft/ft)	*0.000752	* Area (sq ft)	*	* 162.80 *	*
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00 *	*
* Top Width (ft)	* 43.41	* Top Width (ft)	*	* 43.41 *	*
* Vel Total (ft/s)	* 3.17	* Avg. Vel. (ft/s)	*	* 3.17 *	*
* Max Chl Dpth (ft)	* 4.83	* Hydr. Depth (ft)	*	* 3.75 *	*
* Conv. Total (cfs)	* 18812.7	* Conv. (cfs)	*	* 18812.7 *	*
* Length Wtd. (ft)	* 12.00	* Wetted Per. (ft)	*	* 45.68 *	*
* Min Ch El (ft)	* 1967.96	* Shear (lb/sq ft)	*	* 0.17 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.53 *	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 10.50 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 3.03 *	*

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1102

INPUT
Description: Sta 22+14 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.8	1978.81	-22	1967.94	2	1967.94	22.8	1978.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.8	.03	-43.8	.03	22.8	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-43.8	22.8	14	14	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1972.94	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.16	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 1972.78	* Reach Len. (ft)	* 14.00 *	14.00 *	14.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 163.21 *	*
* E.G. Slope (ft/ft)	*0.000746	* Area (sq ft)	*	* 163.21 *	*
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00 *	*
* Top Width (ft)	* 43.42	* Top Width (ft)	*	* 43.42 *	*
* Vel Total (ft/s)	* 3.16	* Avg. Vel. (ft/s)	*	* 3.16 *	*
* Max Chl Dpth (ft)	* 4.84	* Hydr. Depth (ft)	*	* 3.76 *	*
* Conv. Total (cfs)	* 18886.5	* Conv. (cfs)	*	* 18886.5 *	*
* Length Wtd. (ft)	* 14.00	* Wetted Per. (ft)	*	* 45.70 *	*
* Min Ch El (ft)	* 1967.94	* Shear (lb/sq ft)	*	* 0.17 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.53 *	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 10.46 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 3.02 *	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1101

INPUT
Description: Sta 22+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.8	1978.81	-22	1967.91	2	1967.91	22.8	1978.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.8	.03	-43.8	.03	22.8	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-43.8	22.8	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1972.93	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.15	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 1972.77	* Reach Len. (ft)	* 50.00 *	50.00 *	50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 162.96 *	*
* E.G. Slope (ft/ft)	*0.000736	* Area (sq ft)	*	* 162.96 *	*
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00 *	*
* Top Width (ft)	* 43.45	* Top Width (ft)	*	* 43.45 *	*
* Vel Total (ft/s)	* 3.15	* Avg. Vel. (ft/s)	*	* 3.15 *	*
* Max Chl Dpth (ft)	* 4.86	* Hydr. Depth (ft)	*	* 3.77 *	*
* Conv. Total (cfs)	* 19021.0	* Conv. (cfs)	*	* 19021.0 *	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 45.74 *	*
* Min Ch El (ft)	* 1967.91	* Shear (lb/sq ft)	*	* 0.16 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.52 *	*
* Frctn Loss (ft)	* 0.04	* Cum Volume (acre-ft)	*	* 10.40 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 3.00 *	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1100

INPUT
Description: Sta 21+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.8	1978.81	-22	1967.91	2	1967.91	22.8	1978.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.8	.03	-43.8	.03	22.8	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-43.8	22.8	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1972.89	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.16	Wt. n-Val.		0.030	
W.S. Elev (ft)	1972.73	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		162.18	
E.G. Slope (ft/ft)	0.000759	Area (sq ft)		162.18	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	43.28	Top Width (ft)		43.28	
Vel Total (ft/s)	3.18	Avg. Vel. (ft/s)		3.18	
Max Chl Dpth (ft)	4.82	Hydr. Depth (ft)		3.75	
Conv. Total (cfs)	18728.5	Conv. (cfs)		18728.5	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		45.56	
Min Ch El (ft)	1967.91	Shear (lb/sq ft)		0.17	
Alpha	1.00	Stream Power (lb/ft s)		0.54	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)		10.22	
C & E Loss (ft)	0.01	Cum SA (acres)		2.95	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1099

INPUT
Description: Sta 21+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44	1977.31	-25	1967.81	5	1967.81	23	1976.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44	.03	-44	.03	23	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-44	23	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1972.84	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.		0.030	
W.S. Elev (ft)	1972.74	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		196.31	
E.G. Slope (ft/ft)	0.000479	Area (sq ft)		196.31	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	49.70	Top Width (ft)		49.70	
Vel Total (ft/s)	2.63	Avg. Vel. (ft/s)		2.63	
Max Chl Dpth (ft)	4.93	Hydr. Depth (ft)		3.95	
Conv. Total (cfs)	23565.9	Conv. (cfs)		23565.9	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		52.03	
Min Ch El (ft)	1967.81	Shear (lb/sq ft)		0.11	
Alpha	1.00	Stream Power (lb/ft s)		0.30	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)		10.01	
C & E Loss (ft)	0.01	Cum SA (acres)		2.90	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1098

INPUT
Description: Sta 20+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.46	1975.94	-28	1967.71	8	1967.71	24.46	1975.94

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.46	.03	-44.46	.03	24.46	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-44.46	24.46	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1972.82	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.030	
W.S. Elev (ft)	1972.74	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		231.55	
E.G. Slope (ft/ft)	0.000323	Area (sq ft)		231.55	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	56.11	Top Width (ft)		56.11	
Vel Total (ft/s)	2.23	Avg. Vel. (ft/s)		2.23	
Max Chl Dpth (ft)	5.03	Hydr. Depth (ft)		4.13	
Conv. Total (cfs)	28703.3	Conv. (cfs)		28703.3	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		58.48	
Min Ch El (ft)	1967.71	Shear (lb/sq ft)		0.08	
Alpha	1.00	Stream Power (lb/ft s)		0.18	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		9.77	
C & E Loss (ft)	0.01	Cum SA (acres)		2.84	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1097

INPUT
Description: Sta 20+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-48.64	1975.93	-32	1967.61	12	1967.61	28.64	1975.93

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-48.64	.03	-48.64	.03	28.64	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-48.64	28.64	13	13	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1972.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.		0.030	
W.S. Elev (ft)	1972.74	Reach Len. (ft)	13.00	13.00	13.00
Crit W.S. (ft)		Flow Area (sq ft)		278.45	
E.G. Slope (ft/ft)	0.000209	Area (sq ft)		278.45	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	64.53	Top Width (ft)		64.53	
Vel Total (ft/s)	1.85	Avg. Vel. (ft/s)		1.85	
Max Chl Dpth (ft)	5.13	Hydr. Depth (ft)		4.32	
Conv. Total (cfs)	35668.7	Conv. (cfs)		35668.7	
Length Wtd. (ft)	13.00	Wetted Per. (ft)		66.95	
Min Ch El (ft)	1967.61	Shear (lb/sq ft)		0.05	
Alpha	1.00	Stream Power (lb/ft s)		0.10	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		9.47	
C & E Loss (ft)	0.00	Cum SA (acres)		2.77	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1096

INPUT
Description: Sta 19+87 - Drake Channel
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46	1973	-44	1972.81	-35	1967.59	15	1967.59	23	1974.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46	.04	-46	.04	23	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-46	23	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1972.79	* Element	* Left OB *	Channel	* Right OB *
* Vel Head (ft)	* 0.05	* Wt. n-Val.	*	0.040	* *
* W.S. Elev (ft)	* 1972.74	* Reach Len. (ft)	* 6.00 *	6.00	* 6.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	295.21	* *
* E.G. Slope (ft/ft)	*0.000312	* Area (sq ft)	*	295.21	* *
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	516.00	* *
* Top Width (ft)	* 64.59	* Top Width (ft)	*	64.59	* *
* Vel Total (ft/s)	* 1.75	* Avg. Vel. (ft/s)	*	1.75	* *
* Max Chl Dpth (ft)	* 5.15	* Hydr. Depth (ft)	*	4.57	* *
* Conv. Total (cfs)	* 29195.6	* Conv. (cfs)	*	29195.6	* *
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	67.96	* *
* Min Ch El (ft)	* 1967.59	* Shear (lb/sq ft)	*	0.08	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	0.15	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	9.39	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	2.75	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1095

INPUT
Description: Sta 19+81 - Gabion Counterweir
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46	1973	-44	1972.81	-35	1967.58	15	1967.58	23	1974.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46	.028	-46	.028	23	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-46	23	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1972.79	* Element	* Left OB *	Channel	* Right OB *
* Vel Head (ft)	* 0.05	* Wt. n-Val.	*	0.028	* *
* W.S. Elev (ft)	* 1972.74	* Reach Len. (ft)	* 0.10 *	0.10	* 0.10 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	295.71	* *
* E.G. Slope (ft/ft)	*0.000152	* Area (sq ft)	*	295.71	* *
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	516.00	* *
* Top Width (ft)	* 64.59	* Top Width (ft)	*	64.59	* *
* Vel Total (ft/s)	* 1.74	* Avg. Vel. (ft/s)	*	1.74	* *
* Max Chl Dpth (ft)	* 5.16	* Hydr. Depth (ft)	*	4.58	* *
* Conv. Total (cfs)	* 41822.5	* Conv. (cfs)	*	41822.5	* *
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	67.97	* *
* Min Ch El (ft)	* 1967.58	* Shear (lb/sq ft)	*	0.04	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	0.07	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	9.35	* *
* C & E Loss (ft)	* 0.04	* Cum SA (acres)	*	2.74	* *

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1094

INPUT
Description: Sta 19+81 - Gabion Counterweir
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46	1973	-44	1972.81	-35	1970.58	15	1970.58	23	1974.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46	.028	-46	.028	23	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-46	23	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1972.75	* Element	* Left OB *	Channel	* Right OB *
* Vel Head (ft)	* 0.48	* Wt. n-Val.	*	0.028	* *
* W.S. Elev (ft)	* 1972.26	* Reach Len. (ft)	* 6.00 *	6.00	* 6.00 *
* Crit W.S. (ft)	* 1972.02	* Flow Area (sq ft)	*	92.35	* *
* E.G. Slope (ft/ft)	*0.006318	* Area (sq ft)	*	92.35	* *
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	516.00	* *
* Top Width (ft)	* 59.96	* Top Width (ft)	*	59.96	* *
* Vel Total (ft/s)	* 5.59	* Avg. Vel. (ft/s)	*	5.59	* *
* Max Chl Dpth (ft)	* 1.68	* Hydr. Depth (ft)	*	1.54	* *
* Conv. Total (cfs)	* 6492.0	* Conv. (cfs)	*	6492.0	* *
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	60.58	* *
* Min Ch El (ft)	* 1970.58	* Shear (lb/sq ft)	*	0.60	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	3.36	* *
* Frctn Loss (ft)	* 0.05	* Cum Volume (acre-ft)	*	9.35	* *
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	*	2.74	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1093

INPUT
Description: Sta 19+75 - Gabion Counterweir
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46	1973	-44	1972.81	-35	1970.56	15	1970.56	23	1974.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46	.028	-46	.028	23	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-46	23	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1972.68	* Element	* Left OB *	Channel	* Right OB *
* Vel Head (ft)	* 0.68	* Wt. n-Val.	*	0.028	* *
* W.S. Elev (ft)	* 1972.00	* Reach Len. (ft)	* 0.10 *	0.10	* 0.10 *
* Crit W.S. (ft)	* 1972.00	* Flow Area (sq ft)	*	78.23	* *
* E.G. Slope (ft/ft)	*0.010610	* Area (sq ft)	*	78.23	* *
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	516.00	* *
* Top Width (ft)	* 58.48	* Top Width (ft)	*	58.48	* *
* Vel Total (ft/s)	* 6.60	* Avg. Vel. (ft/s)	*	6.60	* *
* Max Chl Dpth (ft)	* 1.44	* Hydr. Depth (ft)	*	1.34	* *
* Conv. Total (cfs)	* 5009.6	* Conv. (cfs)	*	5009.6	* *
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	59.02	* *
* Min Ch El (ft)	* 1970.56	* Shear (lb/sq ft)	*	0.88	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	5.79	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	9.33	* *
* C & E Loss (ft)	* 0.16	* Cum SA (acres)	*	2.73	* *

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1092

```
INPUT
Description: Sta 19+75 - Drake Channel
Station Elevation Data    num=      5
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************************
     -46     1973      -44 1972.81      -35 1967.56       15 1967.56       23 1974.81

Manning's n Values        num=      3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
     -46     .04       -46     .04       23     .04

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -46      23             19      19      19             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1970.89  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.14  * Wt. n-Val.             *          *    0.040  *          *
* W.S. Elev (ft)          * 1970.75  * Reach Len. (ft)       *   19.00  *   19.00  *   19.00  *
* Crit W.S. (ft)          * 1969.03  * Flow Area (sq ft)     *          *  173.89  *          *
* E.G. Slope (ft/ft)      *0.001582  * Area (sq ft)          *          *  173.89  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)          *   58.99  * Top Width (ft)        *          *   58.99  *          *
* Vel Total (ft/s)        *    2.97  * Avg. Vel. (ft/s)      *          *    2.97  *          *
* Max Chl Dpth (ft)       *    3.19  * Hydr. Depth (ft)      *          *    2.95  *          *
* Conv. Total (cfs)       * 12975.0  * Conv. (cfs)          *          * 12975.0  *          *
* Length Wtd. (ft)        *   19.00  * Wetted Per. (ft)      *          *   61.08  *          *
* Min Ch El (ft)          * 1967.56  * Shear (lb/sq ft)     *          *    0.28  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.83  *          *
* Frctn Loss (ft)         *    0.02  * Cum Volume (acre-ft)  *          *    9.33  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    2.73  *          *
*************************************************************************************************

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1091

INPUT
Description: Sta 19+55- Gabion Drop Structure
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
     -44 1972.81      -35 1967.51       15 1967.51       23 1974.31

Manning's n Values        num=      3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
     -44    .028      -44    .028       23    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -44      23             6       6       6             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1970.87  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.13  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)          * 1970.73  * Reach Len. (ft)       *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)          *          * Flow Area (sq ft)      *          *  176.10  *          *
* E.G. Slope (ft/ft)      *0.000747  * Area (sq ft)          *          *  176.10  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)          *   59.27  * Top Width (ft)        *          *   59.27  *          *
* Vel Total (ft/s)        *    2.93  * Avg. Vel. (ft/s)      *          *    2.93  *          *
* Max Chl Dpth (ft)       *    3.22  * Hydr. Depth (ft)      *          *    2.97  *          *
* Conv. Total (cfs)       * 18880.1  * Conv. (cfs)          *          * 18880.1  *          *
* Length Wtd. (ft)        *    6.00  * Wetted Per. (ft)      *          *   61.33  *          *
* Min Ch El (ft)          * 1967.51  * Shear (lb/sq ft)     *          *    0.13  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.39  *          *
* Frctn Loss (ft)         *    0.01  * Cum Volume (acre-ft)  *          *    9.26  *          *
* C & E Loss (ft)         *    0.08  * Cum SA (acres)        *          *    2.71  *          *
*************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1090

INPUT
Description: Sta 19+50 - Gabion Drop Structure
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
     -44 1972.81      -35 1967.51       -15 1967.51       23 1974.31

Manning's n Values        num=      3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
     -44    .028      -44    .028       23    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -44      23             .1      .1      .1             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1970.78  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.91  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)          * 1969.86  * Reach Len. (ft)       *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)          * 1969.86  * Flow Area (sq ft)     *          *   67.27  *          *
* E.G. Slope (ft/ft)      *0.009758  * Area (sq ft)          *          *   67.27  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)          *   37.15  * Top Width (ft)        *          *   37.15  *          *
* Vel Total (ft/s)        *    7.67  * Avg. Vel. (ft/s)      *          *    7.67  *          *
* Max Chl Dpth (ft)       *    2.35  * Hydr. Depth (ft)      *          *    1.81  *          *
* Conv. Total (cfs)       * 5223.7  * Conv. (cfs)          *          * 5223.7  *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)      *          *   38.00  *          *
* Min Ch El (ft)          * 1967.51  * Shear (lb/sq ft)     *          *    1.08  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    8.27  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *    9.24  *          *
* C & E Loss (ft)         *    0.10  * Cum SA (acres)        *          *    2.70  *          *
*************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical
         depth, the calculated water surface came back below critical depth.  This indicates that there
         is not a valid subcritical answer.  The program defaulted to critical depth.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1089

INPUT
Description: Sta 19+50 -Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
     -44 1972.81      -15 1958.31       -5 1958.31       23 1972.31

Manning's n Values        num=      3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
     -44    .028      -44    .028       23    .028

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -44      23             24      24      24             .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1969.87  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *   10.01  * Wt. n-Val.             *          *    0.028  *          *
* W.S. Elev (ft)          * 1959.86  * Reach Len. (ft)       *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)          * 1961.75  * Flow Area (sq ft)     *          *   20.33  *          *
* E.G. Slope (ft/ft)      *0.179401  * Area (sq ft)          *          *   20.33  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)            *          *  516.00  *          *
```

* Top Width (ft)	* 16.21	* Top Width (ft)	*	* 16.21	*
* Vel Total (ft/s)	* 25.38	* Avg. Vel. (ft/s)	*	* 25.38	*
* Max Chl Dpth (ft)	* 1.55	* Hydr. Depth (ft)	*	* 1.25	*
* Conv. Total (cfs)	* 1218.3	* Conv. (cfs)	*	* 1218.3	*
* Length Wtd. (ft)	* 24.00	* Wetted Per. (ft)	*	* 16.94	*
* Min Ch El (ft)	* 1958.31	* Shear (lb/sq ft)	*	* 13.44	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 341.20	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 9.24	*
* C & E Loss (ft)	* 0.91	* Cum SA (acres)	*	* 2.70	*

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Program found supercritical flow starting at this cross section.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1088

INPUT
Description: Sta 19+26 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.2	1971.31	-18	1958.26	0	1958.26	25.2	1970.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.2	.028	-44.2	.03	25.2	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-44.2	25.2	12	12	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1963.20	* Element	* Left OB	* Channel * Right OB *
* Vel Head (ft)	* 0.25	* Wt. n-Val.	*	* 0.030 * *
* W.S. Elev (ft)	* 1962.95	* Reach Len. (ft)	* 12.00	* 12.00 * 12.00 *
* Crit W.S. (ft)	* 1960.91	* Flow Area (sq ft)	*	* 128.54 * *
* E.G. Slope (ft/ft)	*0.001341	* Area (sq ft)	*	* 128.54 * *
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00 * *
* Top Width (ft)	* 36.83	* Top Width (ft)	*	* 36.83 * *
* Vel Total (ft/s)	* 4.01	* Avg. Vel. (ft/s)	*	* 4.01 * *
* Max Chl Dpth (ft)	* 4.69	* Hydr. Depth (ft)	*	* 3.49 * *
* Conv. Total (cfs)	* 14092.2	* Conv. (cfs)	*	* 14092.2 * *
* Length Wtd. (ft)	* 12.00	* Wetted Per. (ft)	*	* 39.03 * *
* Min Ch El (ft)	* 1958.26	* Shear (lb/sq ft)	*	* 0.28 * *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 1.11 * *
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	*	* 9.20 * *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 2.69 * *

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1087

INPUT
Description: Sta 19+14 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.2	1971.31	-18	1958.24	0	1958.24	25.2	1970.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.2	.03	-44.2	.03	25.2	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-44.2	25.2	14	14	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1963.18	* Element	* Left OB	* Channel * Right OB *
* Vel Head (ft)	* 0.25	* Wt. n-Val.	*	* 0.030 * *
* W.S. Elev (ft)	* 1962.93	* Reach Len. (ft)	* 14.00	* 14.00 * 14.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 128.62 * *
* E.G. Slope (ft/ft)	*0.001338	* Area (sq ft)	*	* 128.62 * *
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00 * *
* Top Width (ft)	* 36.82	* Top Width (ft)	*	* 36.82 * *
* Vel Total (ft/s)	* 4.01	* Avg. Vel. (ft/s)	*	* 4.01 * *
* Max Chl Dpth (ft)	* 4.69	* Hydr. Depth (ft)	*	* 3.49 * *
* Conv. Total (cfs)	* 14108.7	* Conv. (cfs)	*	* 14108.7 * *
* Length Wtd. (ft)	* 14.00	* Wetted Per. (ft)	*	* 39.03 * *
* Min Ch El (ft)	* 1958.24	* Shear (lb/sq ft)	*	* 0.28 * *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 1.10 * *
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	*	* 9.16 * *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 2.68 * *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1086

INPUT
Description: Sta 19+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.2	1971.31	-18	1958.21	0	1958.21	25.2	1970.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.2	.03	-44.2	.03	25.2	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-44.2	25.2	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1963.16	* Element	* Left OB	* Channel * Right OB *
* Vel Head (ft)	* 0.25	* Wt. n-Val.	*	* 0.030 * *
* W.S. Elev (ft)	* 1962.92	* Reach Len. (ft)	* 50.00	* 50.00 * 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 128.97 * *
* E.G. Slope (ft/ft)	*0.001326	* Area (sq ft)	*	* 128.97 * *
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00 * *
* Top Width (ft)	* 36.82	* Top Width (ft)	*	* 36.82 * *
* Vel Total (ft/s)	* 4.00	* Avg. Vel. (ft/s)	*	* 4.00 * *
* Max Chl Dpth (ft)	* 4.71	* Hydr. Depth (ft)	*	* 3.50 * *
* Conv. Total (cfs)	* 14168.3	* Conv. (cfs)	*	* 14168.3 * *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 39.04 * *
* Min Ch El (ft)	* 1958.21	* Shear (lb/sq ft)	*	* 0.27 * *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 1.09 * *
* Frctn Loss (ft)	* 0.05	* Cum Volume (acre-ft)	*	* 9.12 * *
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	*	* 2.66 * *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1085

INPUT
Description: Sta 18+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.4	1968.81	-20	1958.11	3	1958.11	24.4	1968.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.4	.03	-41.4	.03	24.4	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-41.4	24.4	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1963.09	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.17	* Wt. n-Val.	*	* 0.030	*	*
* W.S. Elev (ft)	* 1962.92	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 156.90	*	*
* E.G. Slope (ft/ft)	*0.000822	* Area (sq ft)	*	* 156.90	*	*
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00	*	*
* Top Width (ft)	* 42.24	* Top Width (ft)	*	* 42.24	*	*
* Vel Total (ft/s)	* 3.29	* Avg. Vel. (ft/s)	*	* 3.29	*	*
* Max Chl Dpth (ft)	* 4.81	* Hydr. Depth (ft)	*	* 3.71	*	*
* Conv. Total (cfs)	* 18000.6	* Conv. (cfs)	*	* 18000.6	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 44.51	*	*
* Min Ch El (ft)	* 1958.11	* Shear (lb/sq ft)	*	* 0.18	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.59	*	*
* Frctn Loss (ft)	* 0.03	* Cum Volume (acre-ft)	*	* 8.96	*	*
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	*	* 2.62	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1084

INPUT
Description: Sta 18+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.4	1968.81	-22	1958.01	8	1958.01	29.4	1968.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.4	.03	-43.4	.03	29.4	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Right	Coeff Contr.	Expan.
-43.4	29.4	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1963.04	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.11	* Wt. n-Val.	*	* 0.030	*	*
* W.S. Elev (ft)	* 1962.93	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 195.61	*	*
* E.G. Slope (ft/ft)	*0.000483	* Area (sq ft)	*	* 195.61	*	*
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00	*	*
* Top Width (ft)	* 49.50	* Top Width (ft)	*	* 49.50	*	*
* Vel Total (ft/s)	* 2.64	* Avg. Vel. (ft/s)	*	* 2.64	*	*
* Max Chl Dpth (ft)	* 4.92	* Hydr. Depth (ft)	*	* 3.95	*	*
* Conv. Total (cfs)	* 23482.4	* Conv. (cfs)	*	* 23482.4	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 51.84	*	*
* Min Ch El (ft)	* 1958.01	* Shear (lb/sq ft)	*	* 0.11	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.30	*	*
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	*	* 8.76	*	*
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 2.57	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1083

INPUT
Description: Sta 17+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.8	1966.31	-25	1957.91	12.5	1957.91	32.9	1968.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.8	.03	-41.8	.03	32.9	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Right	Coeff Contr.	Expan.
-41.8	32.9	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1963.01	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.07	* Wt. n-Val.	*	* 0.030	*	*
* W.S. Elev (ft)	* 1962.94	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 239.07	*	*
* E.G. Slope (ft/ft)	*0.000301	* Area (sq ft)	*	* 239.07	*	*
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00	*	*
* Top Width (ft)	* 57.61	* Top Width (ft)	*	* 57.61	*	*
* Vel Total (ft/s)	* 2.16	* Avg. Vel. (ft/s)	*	* 2.16	*	*
* Max Chl Dpth (ft)	* 5.03	* Hydr. Depth (ft)	*	* 4.15	*	*
* Conv. Total (cfs)	* 29766.2	* Conv. (cfs)	*	* 29766.2	*	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 59.98	*	*
* Min Ch El (ft)	* 1957.91	* Shear (lb/sq ft)	*	* 0.07	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.16	*	*
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 8.51	*	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 2.51	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1082

INPUT
Description: Sta 17+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-39.5	1966.31	-22.5	1957.81	17.5	1957.81	36.1	1967.11

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-39.5	.03	-39.5	.03	36.1	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Right	Coeff Contr.	Expan.
-39.5	36.1	13	13	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1962.99	* Element	* Left OB	* Channel	* Right OB	*
* Vel Head (ft)	* 0.06	* Wt. n-Val.	*	* 0.030	*	*
* W.S. Elev (ft)	* 1962.93	* Reach Len. (ft)	* 13.00	* 13.00	* 13.00	*
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 257.25	*	*
* E.G. Slope (ft/ft)	*0.000251	* Area (sq ft)	*	* 257.25	*	*
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00	*	*
* Top Width (ft)	* 60.48	* Top Width (ft)	*	* 60.48	*	*
* Vel Total (ft/s)	* 2.01	* Avg. Vel. (ft/s)	*	* 2.01	*	*
* Max Chl Dpth (ft)	* 5.12	* Hydr. Depth (ft)	*	* 4.25	*	*
* Conv. Total (cfs)	* 32586.6	* Conv. (cfs)	*	* 32586.6	*	*
* Length Wtd. (ft)	* 13.00	* Wetted Per. (ft)	*	* 62.90	*	*
* Min Ch El (ft)	* 1957.81	* Shear (lb/sq ft)	*	* 0.06	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.13	*	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 8.22	*	*
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 2.44	*	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1081

INPUT
Description: Sta 16+87 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.6	1964.31	-30	1957.77	20	1957.77	35.6	1966.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.6	.04	-41.6	.04	35.6	.04

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Right	Coeff Contr.	Expan.
-41.6	35.6	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1962.98	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.04	* Wt. n-Val.	*	0.040 *	*
* W.S. Elev (ft)	* 1962.94	* Reach Len. (ft)	* 6.00 *	6.00 *	6.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	306.60 *	*
* E.G. Slope (ft/ft)	*0.000293	* Area (sq ft)	*	306.60 *	*
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	516.00 *	*
* Top Width (ft)	* 68.61	* Top Width (ft)	*	68.61 *	*
* Vel Total (ft/s)	* 1.68	* Avg. Vel. (ft/s)	*	1.68 *	*
* Max Chl Dpth (ft)	* 5.17	* Hydr. Depth (ft)	*	4.47 *	*
* Conv. Total (cfs)	* 30120.8	* Conv. (cfs)	*	30120.8 *	*
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	71.29 *	*
* Min Ch El (ft)	* 1957.77	* Shear (lb/sq ft)	*	0.08 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	0.13 *	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	8.14 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	2.42 *	*

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1080

INPUT
Description: Sta 16+ 81 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.6	1964.31	-30	1957.76	20	1957.76	35.6	1966.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.6	.028	-41.6	.028	35.6	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-41.6	35.6	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1962.98	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.04	* Wt. n-Val.	*	0.028 *	*
* W.S. Elev (ft)	* 1962.94	* Reach Len. (ft)	* 0.10 *	0.10 *	0.10 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	307.15 *	*
* E.G. Slope (ft/ft)	*0.000143	* Area (sq ft)	*	307.15 *	*
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	516.00 *	*
* Top Width (ft)	* 68.62	* Top Width (ft)	*	68.62 *	*
* Vel Total (ft/s)	* 1.68	* Avg. Vel. (ft/s)	*	1.68 *	*
* Max Chl Dpth (ft)	* 5.18	* Hydr. Depth (ft)	*	4.48 *	*
* Conv. Total (cfs)	* 43151.7	* Conv. (cfs)	*	43151.7 *	*
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	71.31 *	*
* Min Ch El (ft)	* 1957.76	* Shear (lb/sq ft)	*	0.04 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	0.06 *	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	8.10 *	*
* C & E Loss (ft)	* 0.04	* Cum SA (acres)	*	2.41 *	*

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1079

INPUT
Description: Sta 16+81 - Gabion Counterwier
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.6	1964.31	-30	1960.76	20	1960.76	35.6	1966.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.6	.028	-41.6	.028	35.6	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-41.6	35.6	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1962.94	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.45	* Wt. n-Val.	*	0.028 *	*
* W.S. Elev (ft)	* 1962.49	* Reach Len. (ft)	* 6.00 *	6.00 *	6.00 *
* Crit W.S. (ft)	* 1962.20	* Flow Area (sq ft)	*	95.47 *	*
* E.G. Slope (ft/ft)	*0.005716	* Area (sq ft)	*	95.47 *	*
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	516.00 *	*
* Top Width (ft)	* 60.50	* Top Width (ft)	*	60.50 *	*
* Vel Total (ft/s)	* 5.40	* Avg. Vel. (ft/s)	*	5.40 *	*
* Max Chl Dpth (ft)	* 1.73	* Hydr. Depth (ft)	*	1.58 *	*
* Conv. Total (cfs)	* 6825.1	* Conv. (cfs)	*	6825.1 *	*
* Length Wtd. (ft)	* 6.00	* Wetted Per. (ft)	*	61.06 *	*
* Min Ch El (ft)	* 1960.76	* Shear (lb/sq ft)	*	0.56 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	3.02 *	*
* Frctn Loss (ft)	* 0.05	* Cum Volume (acre-ft)	*	8.10 *	*
* C & E Loss (ft)	* 0.02	* Cum SA (acres)	*	2.41 *	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1078

INPUT
Description: Sta 16+75 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-41.6	1964.31	-30	1960.76	20	1960.76	35.6	1966.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-41.6	.028	-41.6	.028	35.6	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-41.6	35.6	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1962.87	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.67	* Wt. n-Val.	*	0.028 *	*
* W.S. Elev (ft)	* 1962.20	* Reach Len. (ft)	* 0.10 *	0.10 *	0.10 *
* Crit W.S. (ft)	* 1962.20	* Flow Area (sq ft)	*	78.38 *	*
* E.G. Slope (ft/ft)	*0.010589	* Area (sq ft)	*	78.38 *	*
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	516.00 *	*
* Top Width (ft)	* 58.76	* Top Width (ft)	*	58.76 *	*
* Vel Total (ft/s)	* 6.58	* Avg. Vel. (ft/s)	*	6.58 *	*
* Max Chl Dpth (ft)	* 1.44	* Hydr. Depth (ft)	*	1.33 *	*
* Conv. Total (cfs)	* 5014.4	* Conv. (cfs)	*	5014.4 *	*
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	59.23 *	*
* Min Ch El (ft)	* 1960.76	* Shear (lb/sq ft)	*	0.87 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	5.76 *	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	8.08 *	*
* C & E Loss (ft)	* 0.09	* Cum SA (acres)	*	2.40 *	*

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1077

INPUT
Description: Sta 16+75 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
**************************************************************
   -41.6 1964.31      -30 1957.76       20 1957.76     35.6 1966.31

Manning's n Values          num=          3
     Sta    n Val      Sta    n Val      Sta    n Val
***********************************************
   -41.6     .04    -41.6     .04     35.6     .04

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -41.6    35.6              19       19       19             .1        .3


CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1962.52  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    4.14  * Wt. n-Val.             *          *    0.040 *          *
* W.S. Elev (ft)          * 1958.38  * Reach Len. (ft)       *   19.00  *   19.00  *   19.00  *
* Crit W.S. (ft)          * 1959.22  * Flow Area (sq ft)     *          *   31.59  *          *
* E.G. Slope (ft/ft)      *0.381069  * Area (sq ft)          *          *   31.59  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)          *   52.22  * Top Width (ft)        *          *   52.22  *          *
* Vel Total (ft/s)        *   16.33  * Avg. Vel. (ft/s)      *          *   16.33  *          *
* Max Chl Dpth (ft)       *    0.62  * Hydr. Depth (ft)      *          *    0.60  *          *
* Conv. Total (cfs)       *   835.9  * Conv. (cfs)           *          *   835.9  *          *
* Length Wtd. (ft)        *   19.00  * Wetted Per. (ft)      *          *   52.54  *          *
* Min Ch El (ft)          * 1957.76  * Shear (lb/sq ft)      *          *   14.30  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *  233.63  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *    8.08  *          *
* C & E Loss (ft)         *    0.35  * Cum SA (acres)        *          *    2.40  *          *
*****************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Note:    Program found supercritical flow starting at this cross section.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1076

INPUT
Description: Sta 16+56 - Drake Channel
Station Elevation Data    num=          4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
***********************************************************************
   -41.6 1964.31     -30 1957.71       20 1957.71     35.6 1966.31

Manning's n Values          num=          3
     Sta    n Val      Sta    n Val      Sta    n Val
***********************************************
   -41.6     .028    -41.6     .028     35.6     .028

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -41.6    35.6              6        6        6             .1        .3


CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1960.19  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.45  * Wt. n-Val.             *          *   0.028  *          *
* W.S. Elev (ft)          * 1958.74  * Reach Len. (ft)       *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)          * 1959.17  * Flow Area (sq ft)     *          *   53.42  *          *
* E.G. Slope (ft/ft)      *0.033787  * Area (sq ft)          *          *   53.42  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)          *   53.68  * Top Width (ft)        *          *   53.68  *          *
* Vel Total (ft/s)        *    9.66  * Avg. Vel. (ft/s)      *          *    9.66  *          *
* Max Chl Dpth (ft)       *    1.03  * Hydr. Depth (ft)      *          *    1.00  *          *
* Conv. Total (cfs)       *  2807.2  * Conv. (cfs)           *          *  2807.2  *          *
* Length Wtd. (ft)        *    6.00  * Wetted Per. (ft)      *          *   54.22  *          *
* Min Ch El (ft)          * 1957.71  * Shear (lb/sq ft)      *          *    2.08  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   20.07  *          *
* Frctn Loss (ft)         *    1.52  * Cum Volume (acre-ft)  *          *    8.06  *          *
* C & E Loss (ft)         *    0.81  * Cum SA (acres)        *          *    2.38  *          *
*****************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1075

INPUT
Description: Sta 16+50 - Drake Channel
Station Elevation Data    num=          4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
***********************************************************************
   -41.6 1964.31     -30 1957.71       20 1957.71     35.6 1966.31

Manning's n Values          num=          3
     Sta    n Val      Sta    n Val      Sta    n Val
***********************************************
   -41.6     .028    -41.6     .028     35.6     .028

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -41.6    35.6              .1       .1       .1             .1        .3


CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1959.88  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.77  * Wt. n-Val.             *          *   0.028  *          *
* W.S. Elev (ft)          * 1959.11  * Reach Len. (ft)       *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)          * 1959.17  * Flow Area (sq ft)     *          *   73.29  *          *
* E.G. Slope (ft/ft)      *0.012213  * Area (sq ft)          *          *   73.29  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)          *   54.99  * Top Width (ft)        *          *   54.99  *          *
* Vel Total (ft/s)        *    7.04  * Avg. Vel. (ft/s)      *          *    7.04  *          *
* Max Chl Dpth (ft)       *    1.40  * Hydr. Depth (ft)      *          *    1.33  *          *
* Conv. Total (cfs)       *  4669.1  * Conv. (cfs)           *          *  4669.1  *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)      *          *   55.71  *          *
* Min Ch El (ft)          * 1957.71  * Shear (lb/sq ft)      *          *    1.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    7.06  *          *
* Frctn Loss (ft)         *    0.10  * Cum Volume (acre-ft)  *          *    8.06  *          *
* C & E Loss (ft)         *    0.22  * Cum SA (acres)        *          *    2.37  *          *
*****************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program selected the water surface that had the least amount of error between computed and
         assumed values.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1074

INPUT
Description: Sta 16+50 - Drake Channel
Station Elevation Data    num=          4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
***********************************************************************
   -41.6 1964.31     -10 1948.51        0 1948.51     35.6 1966.31

Manning's n Values          num=          3
     Sta    n Val      Sta    n Val      Sta    n Val
***********************************************
   -41.6     .028    -41.6     .028     35.6     .028

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -41.6    35.6              24       24       24             .1        .3


CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1959.06  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    8.92  * Wt. n-Val.             *          *   0.028  *          *
* W.S. Elev (ft)          * 1950.14  * Reach Len. (ft)       *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)          * 1951.95  * Flow Area (sq ft)     *          *   21.53  *          *
* E.G. Slope (ft/ft)      *0.152029  * Area (sq ft)          *          *   21.53  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)            *          *  516.00  *          *
* Top Width (ft)          *   16.50  * Top Width (ft)        *          *   16.50  *          *
```

* Vel Total (ft/s)	* 23.97	* Avg. Vel. (ft/s)	*	* 23.97	*	*
* Max Chl Dpth (ft)	* 1.62	* Hydr. Depth (ft)	*	* 1.30	*	*
* Conv. Total (cfs)	* 1323.4	* Conv. (cfs)	*	* 1323.4	*	*
* Length Wtd. (ft)	* 24.00	* Wetted Per. (ft)	*	* 17.27	*	*
* Min Ch El (ft)	* 1948.51	* Shear (lb/sq ft)	*	* 11.83	*	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 283.64	*	*
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 8.06	*	*
* C & E Loss (ft)	* 0.82	* Cum SA (acres)	*	* 2.37	*	*

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1073

INPUT
Description: Sta 16+26 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.2	1963.51	-13	1948.46	3	1948.46	36.6	1965.21

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.2	.028	-43.2	.03	36.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-43.2 36.6 12 12 12 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1953.43	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.29	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 1953.13	* Reach Len. (ft)	* 12.00 *	12.00 *	12.00 *
* Crit W.S. (ft)	* 1951.27	* Flow Area (sq ft)	*	* 118.52 *	*
* E.G. Slope (ft/ft)	*0.001633	* Area (sq ft)	*	* 118.52 *	*
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00 *	*
* Top Width (ft)	* 34.74	* Top Width (ft)	*	* 34.74 *	*
* Vel Total (ft/s)	* 4.35	* Avg. Vel. (ft/s)	*	* 4.35 *	*
* Max Chl Dpth (ft)	* 4.67	* Hydr. Depth (ft)	*	* 3.41 *	*
* Conv. Total (cfs)	* 12769.3	* Conv. (cfs)	*	* 12769.3 *	*
* Length Wtd. (ft)	* 12.00	* Wetted Per. (ft)	*	* 36.94 *	*
* Min Ch El (ft)	* 1948.46	* Shear (lb/sq ft)	*	* 0.33 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 1.42 *	*
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	*	* 8.02 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 2.36 *	*

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1072

INPUT
Description: Sta 16+14 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.2	1963.51	-13	1948.44	3	1948.44	36.6	1965.21

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.2	.03	-43.2	.03	36.6	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-43.2 36.6 14 14 14 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1953.41	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.29	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 1953.11	* Reach Len. (ft)	* 14.00 *	14.00 *	14.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 118.47 *	*
* E.G. Slope (ft/ft)	*0.001634	* Area (sq ft)	*	* 118.47 *	*
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00 *	*
* Top Width (ft)	* 34.72	* Top Width (ft)	*	* 34.72 *	*
* Vel Total (ft/s)	* 4.36	* Avg. Vel. (ft/s)	*	* 4.36 *	*
* Max Chl Dpth (ft)	* 4.67	* Hydr. Depth (ft)	*	* 3.41 *	*
* Conv. Total (cfs)	* 12764.8	* Conv. (cfs)	*	* 12764.8 *	*
* Length Wtd. (ft)	* 14.00	* Wetted Per. (ft)	*	* 36.92 *	*
* Min Ch El (ft)	* 1948.44	* Shear (lb/sq ft)	*	* 0.33 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 1.43 *	*
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	*	* 7.98 *	*
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 2.35 *	*

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1071

INPUT
Description: Sta 16+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-43.2	1963.51	-13	1948.41	3	1948.41	36.6	1965.21

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-43.2	.03	-43.2	.03	36.6	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-43.2 36.6 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1953.38	* Element	* Left OB *	Channel *	Right OB *
* Vel Head (ft)	* 0.29	* Wt. n-Val.	*	* 0.030 *	*
* W.S. Elev (ft)	* 1953.09	* Reach Len. (ft)	* 50.00 *	50.00 *	50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 118.64 *	*
* E.G. Slope (ft/ft)	*0.001626	* Area (sq ft)	*	* 118.64 *	*
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00 *	*
* Top Width (ft)	* 34.71	* Top Width (ft)	*	* 34.71 *	*
* Vel Total (ft/s)	* 4.35	* Avg. Vel. (ft/s)	*	* 4.35 *	*
* Max Chl Dpth (ft)	* 4.68	* Hydr. Depth (ft)	*	* 3.42 *	*
* Conv. Total (cfs)	* 12795.4	* Conv. (cfs)	*	* 12795.4 *	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 36.92 *	*
* Min Ch El (ft)	* 1948.41	* Shear (lb/sq ft)	*	* 0.33 *	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 1.42 *	*
* Frctn Loss (ft)	* 0.05	* Cum Volume (acre-ft)	*	* 7.95 *	*
* C & E Loss (ft)	* 0.04	* Cum SA (acres)	*	* 2.33 *	*

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1070

INPUT
Description: Sta 15+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-45.9	1962.51	-17.5	1948.31	7.5	1948.31	42.5	1965.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-45.9	.03	-45.9	.03	42.5	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-45.9 42.5 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1953.29	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.15	Wt. n-Val.		0.030	
W.S. Elev (ft)	1953.14	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		167.40	
E.G. Slope (ft/ft)	0.000704	Area (sq ft)		167.40	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	44.32	Top Width (ft)		44.32	
Vel Total (ft/s)	3.08	Avg. Vel. (ft/s)		3.08	
Max Chl Dpth (ft)	4.83	Hydr. Depth (ft)		3.78	
Conv. Total (cfs)	19447.3	Conv. (cfs)		19447.3	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		46.60	
Min Ch El (ft)	1948.31	Shear (lb/sq ft)		0.16	
Alpha	1.00	Stream Power (lb/ft s)		0.49	
Frctn Loss (ft)	0.03	Cum Volume (acre-ft)		7.78	
C & E Loss (ft)	0.01	Cum SA (acres)		2.29	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1069

INPUT
Description: Sta 15+00 -Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-49.38	1962.9	-20	1948.21	10	1948.21	38.6	1962.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-49.38	.03	-49.38	.03	38.6	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-49.38	38.6	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1953.25	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.		0.030	
W.S. Elev (ft)	1953.14	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		196.48	
E.G. Slope (ft/ft)	0.000478	Area (sq ft)		196.48	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	49.72	Top Width (ft)		49.72	
Vel Total (ft/s)	2.63	Avg. Vel. (ft/s)		2.63	
Max Chl Dpth (ft)	4.93	Hydr. Depth (ft)		3.95	
Conv. Total (cfs)	23594.2	Conv. (cfs)		23594.2	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		52.04	
Min Ch El (ft)	1948.21	Shear (lb/sq ft)		0.11	
Alpha	1.00	Stream Power (lb/ft s)		0.30	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)		7.57	
C & E Loss (ft)	0.01	Cum SA (acres)		2.24	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1068

INPUT
Description: Sta 14+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-46.5	1960.11	-22.5	1948.11	12.5	1948.11	37.9	1958.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-46.5	.03	-46.5	.03	37.9	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-46.5	37.9	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1953.22	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.08	Wt. n-Val.		0.030	
W.S. Elev (ft)	1953.14	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)		Flow Area (sq ft)		232.93	
E.G. Slope (ft/ft)	0.000326	Area (sq ft)		232.93	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	57.59	Top Width (ft)		57.59	
Vel Total (ft/s)	2.22	Avg. Vel. (ft/s)		2.22	
Max Chl Dpth (ft)	5.03	Hydr. Depth (ft)		4.04	
Conv. Total (cfs)	28577.2	Conv. (cfs)		28577.2	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		59.75	
Min Ch El (ft)	1948.11	Shear (lb/sq ft)		0.08	
Alpha	1.00	Stream Power (lb/ft s)		0.18	
Frctn Loss (ft)	0.01	Cum Volume (acre-ft)		7.33	
C & E Loss (ft)	0.01	Cum SA (acres)		2.17	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1067

INPUT
Description: Sta 14+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-51.1	1959.81	-27.5	1948.01	17.5	1948.01	38.5	1958.51

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-51.1	.03	-51.1	.03	38.5	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-51.1	38.5	13	13	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1953.20	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.05	Wt. n-Val.		0.030	
W.S. Elev (ft)	1953.15	Reach Len. (ft)	13.00	13.00	13.00
Crit W.S. (ft)		Flow Area (sq ft)		283.89	
E.G. Slope (ft/ft)	0.000200	Area (sq ft)		283.89	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	65.54	Top Width (ft)		65.54	
Vel Total (ft/s)	1.82	Avg. Vel. (ft/s)		1.82	
Max Chl Dpth (ft)	5.14	Hydr. Depth (ft)		4.33	
Conv. Total (cfs)	36468.5	Conv. (cfs)		36468.5	
Length Wtd. (ft)	13.00	Wetted Per. (ft)		67.97	
Min Ch El (ft)	1948.01	Shear (lb/sq ft)		0.05	
Alpha	1.00	Stream Power (lb/ft s)		0.09	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		7.03	
C & E Loss (ft)	0.00	Cum SA (acres)		2.10	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1066

INPUT
Description: Sta 13+87 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-51.2	1957.31	-30	1947.97	20	1947.97	41	1958.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-51.2	.04	-51.2	.04	41	.04

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-51.2	41	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1953.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.		0.040	
W.S. Elev (ft)	1953.15	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)		Flow Area (sq ft)		316.72	
E.G. Slope (ft/ft)	0.000280	Area (sq ft)		316.72	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	72.28	Top Width (ft)		72.28	
Vel Total (ft/s)	1.63	Avg. Vel. (ft/s)		1.63	
Max Chl Dpth (ft)	5.18	Hydr. Depth (ft)		4.38	
Conv. Total (cfs)	30855.4	Conv. (cfs)		30855.4	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		74.58	
Min Ch El (ft)	1947.97	Shear (lb/sq ft)		0.07	
Alpha	1.00	Stream Power (lb/ft s)		0.12	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		6.94	
C & E Loss (ft)	0.00	Cum SA (acres)		2.08	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1065

INPUT
Description: Sta 13+81 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-51.2	1957.31	-30	1947.97	20	1947.97	41	1958.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-51.2	.028	-51.2	.028	41	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-51.2 41 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1953.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.04	Wt. n-Val.		0.028	
W.S. Elev (ft)	1953.15	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)		Flow Area (sq ft)		316.63	
E.G. Slope (ft/ft)	0.000137	Area (sq ft)		316.63	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	72.27	Top Width (ft)		72.27	
Vel Total (ft/s)	1.63	Avg. Vel. (ft/s)		1.63	
Max Chl Dpth (ft)	5.18	Hydr. Depth (ft)		4.38	
Conv. Total (cfs)	44060.9	Conv. (cfs)		44060.9	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		74.57	
Min Ch El (ft)	1947.97	Shear (lb/sq ft)		0.04	
Alpha	1.00	Stream Power (lb/ft s)		0.06	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		6.90	
C & E Loss (ft)	0.04	Cum SA (acres)		2.07	

Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1064

INPUT
Description: Sta 13+ 81 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-51.2	1957.31	-30	1950.97	20	1950.97	41	1958.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-51.2	.028	-51.2	.028	41	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-51.2 41 6 6 6 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1953.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.45	Wt. n-Val.		0.028	
W.S. Elev (ft)	1952.70	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)	1952.41	Flow Area (sq ft)		95.57	
E.G. Slope (ft/ft)	0.005721	Area (sq ft)		95.57	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	60.71	Top Width (ft)		60.71	
Vel Total (ft/s)	5.40	Avg. Vel. (ft/s)		5.40	
Max Chl Dpth (ft)	1.73	Hydr. Depth (ft)		1.57	
Conv. Total (cfs)	6822.2	Conv. (cfs)		6822.2	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		61.26	
Min Ch El (ft)	1950.97	Shear (lb/sq ft)		0.56	
Alpha	1.00	Stream Power (lb/ft s)		3.01	
Frctn Loss (ft)	0.05	Cum Volume (acre-ft)		6.90	
C & E Loss (ft)	0.02	Cum SA (acres)		2.07	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1063

INPUT
Description: Sta 13+75 - Gabion Counterwier
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-51.2	1957.31	-30	1950.97	20	1950.97	41	1958.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-51.2	.028	-51.2	.028	41	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-51.2 41 .1 .1 .1 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1953.08	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.67	Wt. n-Val.		0.028	
W.S. Elev (ft)	1952.41	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	1952.41	Flow Area (sq ft)		78.52	
E.G. Slope (ft/ft)	0.010569	Area (sq ft)		78.52	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	58.94	Top Width (ft)		58.94	
Vel Total (ft/s)	6.57	Avg. Vel. (ft/s)		6.57	
Max Chl Dpth (ft)	1.44	Hydr. Depth (ft)		1.33	
Conv. Total (cfs)	5019.3	Conv. (cfs)		5019.3	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		59.40	
Min Ch El (ft)	1950.97	Shear (lb/sq ft)		0.87	
Alpha	1.00	Stream Power (lb/ft s)		5.73	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		6.88	
C & E Loss (ft)	0.09	Cum SA (acres)		2.06	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1062

INPUT
Description: Sta 13+75 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-51.2	1957.31	-30	1947.96	20	1947.96	41	1958.31

```
Manning's n Values          num=          3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
   -51.2     .04    -51.2     .04       41     .04

Bank Sta: Left    Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -51.2       41              19      19       19          .1           .3


CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1952.73  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    4.15  * Wt. n-Val.              *          *    0.040  *          *
* W.S. Elev (ft)          * 1948.58  * Reach Len. (ft)        *   19.00  *   19.00  *   19.00  *
* Crit W.S. (ft)          * 1949.41  * Flow Area (sq ft)      *          *   31.55  *          *
* E.G. Slope (ft/ft)      *0.386277  * Area (sq ft)           *          *   31.55  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)          *   52.64  * Top Width (ft)         *          *   52.64  *          *
* Vel Total (ft/s)        *   16.36  * Avg. Vel. (ft/s)       *          *   16.36  *          *
* Max Chl Dpth (ft)       *    0.61  * Hydr. Depth (ft)       *          *    0.60  *          *
* Conv. Total (cfs)       *  830.2   * Conv. (cfs)           *          *  830.2   *          *
* Length Wtd. (ft)        *   19.00  * Wetted Per. (ft)       *          *   52.91  *          *
* Min Ch El (ft)          * 1947.96  * Shear (lb/sq ft)      *          *   14.38  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *  235.16  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)   *          *    6.88  *          *
* C & E Loss (ft)         *    0.35  * Cum SA (acres)         *          *    2.06  *          *
*************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Note:    Program found supercritical flow starting at this cross section.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1061

INPUT
Description: Sta 13+56 - Drake Channel
Station Elevation Data     num=          4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -49.2 1956.31      -30 1947.91       20 1947.91       39 1957.81

Manning's n Values          num=          3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
   -49.2     .028    -49.2     .028       39     .028

Bank Sta: Left    Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -49.2       39              6       6        6           .1           .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1950.38  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    1.44  * Wt. n-Val.              *          *   0.028  *          *
* W.S. Elev (ft)          * 1948.94  * Reach Len. (ft)        *    6.00  *    6.00  *    6.00  *
* Crit W.S. (ft)          * 1949.37  * Flow Area (sq ft)      *          *  53.54   *          *
* E.G. Slope (ft/ft)      *0.034006  * Area (sq ft)           *          *  53.54   *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)          *   54.32  * Top Width (ft)         *          *   54.32  *          *
* Vel Total (ft/s)        *    9.64  * Avg. Vel. (ft/s)       *          *    9.64  *          *
* Max Chl Dpth (ft)       *    1.03  * Hydr. Depth (ft)       *          *    0.99  *          *
* Conv. Total (cfs)       *  2798.1  * Conv. (cfs)           *          *  2798.1  *          *
* Length Wtd. (ft)        *    6.00  * Wetted Per. (ft)       *          *   54.78  *          *
* Min Ch El (ft)          * 1947.91  * Shear (lb/sq ft)      *          *    2.07  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   20.00  *          *
* Frctn Loss (ft)         *    1.54  * Cum Volume (acre-ft)   *          *    6.87  *          *
* C & E Loss (ft)         *    0.81  * Cum SA (acres)         *          *    2.04  *          *
*************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1060

INPUT
Description: Sta 13+50 - Drake Channel
Station Elevation Data     num=          4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -47.6 1955.31      -30 1947.91       20 1947.91     37.6 1957.81

Manning's n Values          num=          3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
   -47.6     .028    -47.6     .028     37.6     .028

Bank Sta: Left    Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -47.6     37.6              .1      .1       .1          .1           .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1950.07  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.76  * Wt. n-Val.              *          *   0.028  *          *
* W.S. Elev (ft)          * 1949.30  * Reach Len. (ft)        *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)          * 1949.37  * Flow Area (sq ft)      *          *  73.58   *          *
* E.G. Slope (ft/ft)      *0.012256  * Area (sq ft)           *          *  73.58   *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)          *   55.78  * Top Width (ft)         *          *   55.78  *          *
* Vel Total (ft/s)        *    7.01  * Avg. Vel. (ft/s)       *          *    7.01  *          *
* Max Chl Dpth (ft)       *    1.39  * Hydr. Depth (ft)       *          *    1.32  *          *
* Conv. Total (cfs)       *  4661.0  * Conv. (cfs)           *          *  4661.0  *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)       *          *   56.43  *          *
* Min Ch El (ft)          * 1947.91  * Shear (lb/sq ft)      *          *    1.00  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    7.00  *          *
* Frctn Loss (ft)         *    0.10  * Cum Volume (acre-ft)   *          *    6.86  *          *
* C & E Loss (ft)         *    0.22  * Cum SA (acres)         *          *    2.03  *          *
*************************************************************************************************

Warning: The energy equation could not be balanced within the specified number of iterations.  The
         program selected the water surface that had the least amount of error between computed and
         assumed values.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than
         0.7 or greater than 1.4.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1059

INPUT
Description: Sta 13+50 - Drake Channel
Station Elevation Data     num=          4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*********************************************************************
   -47.4 1955.31      -10 1938.71        0 1938.71     37.4 1957.41

Manning's n Values          num=          3
     Sta    n Val      Sta    n Val      Sta    n Val
*********************************************************
   -47.4     .028    -47.4     .028     37.4     .028

Bank Sta: Left    Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -47.4     37.4              24      24       24          .1           .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1949.24  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    8.93  * Wt. n-Val.              *          *   0.028  *          *
* W.S. Elev (ft)          * 1940.31  * Reach Len. (ft)        *   24.00  *   24.00  *   24.00  *
* Crit W.S. (ft)          * 1942.11  * Flow Area (sq ft)      *          *  21.52   *          *
* E.G. Slope (ft/ft)      *0.155517  * Area (sq ft)           *          *  21.52   *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)          *   16.82  * Top Width (ft)         *          *   16.82  *          *
* Vel Total (ft/s)        *   23.98  * Avg. Vel. (ft/s)       *          *   23.98  *          *
* Max Chl Dpth (ft)       *    1.60  * Hydr. Depth (ft)       *          *    1.28  *          *
```

* Conv. Total (cfs)	* 1308.5	* Conv. (cfs)	*	* 1308.5	* *
* Length Wtd. (ft)	* 24.00	* Wetted Per. (ft)	*	* 17.54	* *
* Min Ch El (ft)	* 1938.71	* Shear (lb/sq ft)	*	* 11.91	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 285.59	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 6.86	* *
* C & E Loss (ft)	* 0.82	* Cum SA (acres)	*	* 2.03	* *

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1058

INPUT
Description: Sta 13+26 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.6	1955.91	-10	1938.66	3	1938.66	34.4	1954.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.6	.028	-44.6	.028	34.4	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Channel	Right	Coeff Contr.	Expan.
-44.6	34.4	12	12	12	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1944.71	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.20	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 1944.51	* Reach Len. (ft)	* 12.00	* 12.00	* 12.00 *
* Crit W.S. (ft)	* 1941.75	* Flow Area (sq ft)	*	* 144.61	* *
* E.G. Slope (ft/ft)	*0.000794	* Area (sq ft)	*	* 144.61	* *
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00	* *
* Top Width (ft)	* 36.46	* Top Width (ft)	*	* 36.46	* *
* Vel Total (ft/s)	* 3.57	* Avg. Vel. (ft/s)	*	* 3.57	* *
* Max Chl Dpth (ft)	* 5.85	* Hydr. Depth (ft)	*	* 3.97	* *
* Conv. Total (cfs)	* 18317.6	* Conv. (cfs)	*	* 18317.6	* *
* Length Wtd. (ft)	* 12.00	* Wetted Per. (ft)	*	* 39.21	* *
* Min Ch El (ft)	* 1938.66	* Shear (lb/sq ft)	*	* 0.18	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.65	* *
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 6.81	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 2.02	* *

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1057

INPUT
Description: Sta 13+14 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.6	1955.91	-10	1938.64	3	1938.64	34.4	1954.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.6	.028	-44.6	.03	34.4	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Channel	Right	Coeff Contr.	Expan.
-44.6	34.4	14	14	14	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1944.70	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.20	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 1944.50	* Reach Len. (ft)	* 14.00	* 14.00	* 14.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 144.90	* *
* E.G. Slope (ft/ft)	*0.000905	* Area (sq ft)	*	* 144.90	* *
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00	* *
* Top Width (ft)	* 36.47	* Top Width (ft)	*	* 36.47	* *
* Vel Total (ft/s)	* 3.56	* Avg. Vel. (ft/s)	*	* 3.56	* *
* Max Chl Dpth (ft)	* 5.86	* Hydr. Depth (ft)	*	* 3.97	* *
* Conv. Total (cfs)	* 17148.4	* Conv. (cfs)	*	* 17148.4	* *
* Length Wtd. (ft)	* 14.00	* Wetted Per. (ft)	*	* 39.24	* *
* Min Ch El (ft)	* 1938.64	* Shear (lb/sq ft)	*	* 0.21	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.74	* *
* Frctn Loss (ft)	* 0.01	* Cum Volume (acre-ft)	*	* 6.77	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 2.01	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1056

INPUT
Description: Sta 13+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.6	1955.91	-10	1938.61	3	1938.61	34.4	1952.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.6	.03	-44.6	.03	34.4	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Channel	Right	Coeff Contr.	Expan.
-44.6	34.4	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1944.68	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.18	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 1944.50	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	* 1938.61	* Shear (lb/sq ft)	*	* 0.19	* *
* E.G. Slope (ft/ft)	*0.000836	* Area (sq ft)	*	* 150.88	* *
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00	* *
* Top Width (ft)	* 38.26	* Top Width (ft)	*	* 38.26	* *
* Vel Total (ft/s)	* 3.42	* Avg. Vel. (ft/s)	*	* 3.42	* *
* Max Chl Dpth (ft)	* 5.89	* Hydr. Depth (ft)	*	* 3.94	* *
* Conv. Total (cfs)	* 17847.1	* Conv. (cfs)	*	* 17847.1	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 40.88	* *
* Min Ch El (ft)	* 1938.61	* Shear (lb/sq ft)	*	* 0.19	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.66	* *
* Frctn Loss (ft)	* 0.03	* Cum Volume (acre-ft)	*	* 6.72	* *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 2.00	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1055

INPUT
Description: Sta 12+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-44.6	1954.81	-12	1938.51	5	1938.51	37.6	1954.81

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-44.6	.03	-44.6	.03	37.6	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Channel	Right	Coeff Contr.	Expan.
-44.6	37.6	50	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1944.63	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.14	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 1944.49	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *

* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 173.29	* *
* E.G. Slope (ft/ft)	*0.000577	* Area (sq ft)	*	* 173.29	* *
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00	* *
* Top Width (ft)	* 40.93	* Top Width (ft)	*	* 40.93	* *
* Vel Total (ft/s)	* 2.98	* Avg. Vel. (ft/s)	*	* 2.98	* *
* Max Chl Dpth (ft)	* 5.98	* Hydr. Depth (ft)	*	* 4.23	* *
* Conv. Total (cfs)	* 21485.3	* Conv. (cfs)	*	* 21485.3	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 43.76	* *
* Min Ch El (ft)	* 1938.51	* Shear (lb/sq ft)	*	* 0.14	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.42	* *
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	*	* 6.54	* *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 1.95	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1054

INPUT
Description: Sta 12+00 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-38	1951.31	-12	1938.41	10	1938.41	38	1952.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-38	.03	-38	.03	38	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-38	38	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1944.60	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.09	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 1944.50	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 208.71	* *
* E.G. Slope (ft/ft)	*0.000365	* Area (sq ft)	*	* 208.71	* *
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00	* *
* Top Width (ft)	* 46.54	* Top Width (ft)	*	* 46.54	* *
* Vel Total (ft/s)	* 2.47	* Avg. Vel. (ft/s)	*	* 2.47	* *
* Max Chl Dpth (ft)	* 6.09	* Hydr. Depth (ft)	*	* 4.48	* *
* Conv. Total (cfs)	* 27016.9	* Conv. (cfs)	*	* 27016.9	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 49.40	* *
* Min Ch El (ft)	* 1938.41	* Shear (lb/sq ft)	*	* 0.10	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.24	* *
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	*	* 6.32	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 1.90	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1053

INPUT
Description: Sta 11+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-31.6	1951.31	-12	1938.32	12	1938.32	31.6	1951.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-31.6	.03	-31.6	.03	31.6	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-31.6	31.6	67	67	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1944.58	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.10	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 1944.48	* Reach Len. (ft)	* 67.00	* 67.00	* 67.00 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 205.02	* *
* E.G. Slope (ft/ft)	*0.000355	* Area (sq ft)	*	* 205.02	* *
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00	* *
* Top Width (ft)	* 42.58	* Top Width (ft)	*	* 42.58	* *
* Vel Total (ft/s)	* 2.52	* Avg. Vel. (ft/s)	*	* 2.52	* *
* Max Chl Dpth (ft)	* 6.16	* Hydr. Depth (ft)	*	* 4.81	* *
* Conv. Total (cfs)	* 27385.6	* Conv. (cfs)	*	* 27385.6	* *
* Length Wtd. (ft)	* 67.00	* Wetted Per. (ft)	*	* 46.29	* *
* Min Ch El (ft)	* 1938.32	* Shear (lb/sq ft)	*	* 0.10	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.25	* *
* Frctn Loss (ft)	* 0.02	* Cum Volume (acre-ft)	*	* 6.08	* *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 1.85	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1052

INPUT
Description: Station 10+83 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-31.6	1950.31	-12	1938.19	12	1938.19	31.6	1950.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-31.6	.028	-31.6	.028	31.6	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-31.6	31.6	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1944.55	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 0.09	* Wt. n-Val.	*	* 0.028	* *
* W.S. Elev (ft)	* 1944.46	* Reach Len. (ft)	* 0.10	* 0.10	* 0.10 *
* Crit W.S. (ft)	*	* Flow Area (sq ft)	*	* 214.19	* *
* E.G. Slope (ft/ft)	*0.000279	* Area (sq ft)	*	* 214.19	* *
* Q Total (cfs)	* 516.00	* Flow (cfs)	*	* 516.00	* *
* Top Width (ft)	* 44.29	* Top Width (ft)	*	* 44.29	* *
* Vel Total (ft/s)	* 2.41	* Avg. Vel. (ft/s)	*	* 2.41	* *
* Max Chl Dpth (ft)	* 6.27	* Hydr. Depth (ft)	*	* 4.84	* *
* Conv. Total (cfs)	* 30871.3	* Conv. (cfs)	*	* 30871.3	* *
* Length Wtd. (ft)	* 0.10	* Wetted Per. (ft)	*	* 47.85	* *
* Min Ch El (ft)	* 1938.19	* Shear (lb/sq ft)	*	* 0.08	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.19	* *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 5.76	* *
* C & E Loss (ft)	* 0.06	* Cum SA (acres)	*	* 1.78	* *

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1051

INPUT
Description: Sta 10 + 83 - Gabion Counterweir
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-31.6	1950.31	-12	1941.19	12	1941.19	31.6	1950.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-31.6	.028	-31.6	.028	31.6	.028

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-31.6	31.6	6	6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1944.49	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.69	Wt. n-Val.		0.028	
W.S. Elev (ft)	1943.80	Reach Len. (ft)	6.00	6.00	6.00
Crit W.S. (ft)	1943.45	Flow Area (sq ft)		77.34	
E.G. Slope (ft/ft)	*0.005782	Area (sq ft)		77.34	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	35.23	Top Width (ft)		35.23	
Vel Total (ft/s)	6.67	Avg. Vel. (ft/s)		6.67	
Max Chl Dpth (ft)	2.61	Hydr. Depth (ft)		2.20	
Conv. Total (cfs)	6786.1	Conv. (cfs)		6786.1	
Length Wtd. (ft)	6.00	Wetted Per. (ft)		36.38	
Min Ch El (ft)	1941.19	Shear (lb/sq ft)		0.77	
Alpha	1.00	Stream Power (lb/ft s)		5.12	
Frctn Loss (ft)	0.04	Cum Volume (acre-ft)		5.76	
C & E Loss (ft)	0.03	Cum SA (acres)		1.78	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1050

INPUT
Description: Sta 10+77 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-31.6	1950.31	-12	1941.19	12	1941.19	31.6	1950.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-31.6	.028	-31.6	.028	31.6	.028

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Right	Coeff Contr.	Expan.
-31.6	31.6	.1	.1	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1944.42	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.97	Wt. n-Val.		0.028	
W.S. Elev (ft)	1943.45	Reach Len. (ft)	0.10	0.10	0.10
Crit W.S. (ft)	1943.45	Flow Area (sq ft)		65.32	
E.G. Slope (ft/ft)	*0.009542	Area (sq ft)		65.32	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	33.73	Top Width (ft)		33.73	
Vel Total (ft/s)	7.90	Avg. Vel. (ft/s)		7.90	
Max Chl Dpth (ft)	2.26	Hydr. Depth (ft)		1.94	
Conv. Total (cfs)	5282.4	Conv. (cfs)		5282.4	
Length Wtd. (ft)	0.10	Wetted Per. (ft)		34.73	
Min Ch El (ft)	1941.19	Shear (lb/sq ft)		1.12	
Alpha	1.00	Stream Power (lb/ft s)		8.85	
Frctn Loss (ft)	0.00	Cum Volume (acre-ft)		5.75	
C & E Loss (ft)	0.23	Cum SA (acres)		1.78	

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1049

INPUT
Description: Sta 10+ 77 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-31.6	1950.31	-12	1938.19	12	1938.19	31.6	1950.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-31.6	.03	-31.6	.03	31.6	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Right	Coeff Contr.	Expan.
-31.6	31.6	27	27	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1943.04	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.19	Wt. n-Val.		0.030	
W.S. Elev (ft)	1942.85	Reach Len. (ft)	27.00	27.00	27.00
Crit W.S. (ft)	1940.49	Flow Area (sq ft)		146.80	
E.G. Slope (ft/ft)	*0.000941	Area (sq ft)		146.80	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	39.06	Top Width (ft)		39.06	
Vel Total (ft/s)	3.51	Avg. Vel. (ft/s)		3.51	
Max Chl Dpth (ft)	4.66	Hydr. Depth (ft)		3.76	
Conv. Total (cfs)	16825.3	Conv. (cfs)		16825.3	
Length Wtd. (ft)	27.00	Wetted Per. (ft)		41.71	
Min Ch El (ft)	1938.19	Shear (lb/sq ft)		0.21	
Alpha	1.00	Stream Power (lb/ft s)		0.73	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)		5.75	
C & E Loss (ft)	0.03	Cum SA (acres)		1.78	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1048

INPUT
Description: Sta 10+50 - Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-40	1948.31	-15	1938.13	15	1938.13	40	1949.31

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-40	.03	-40	.03	40	.03

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Right	Coeff Contr.	Expan.
-40	40	43	43	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1942.99	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.11	Wt. n-Val.		0.030	
W.S. Elev (ft)	1942.89	Reach Len. (ft)	43.00	43.00	43.00
Crit W.S. (ft)		Flow Area (sq ft)		195.76	
E.G. Slope (ft/ft)	*0.000512	Area (sq ft)		195.76	
Q Total (cfs)	516.00	Flow (cfs)		516.00	
Top Width (ft)	52.32	Top Width (ft)		52.32	
Vel Total (ft/s)	2.64	Avg. Vel. (ft/s)		2.64	
Max Chl Dpth (ft)	4.76	Hydr. Depth (ft)		3.74	
Conv. Total (cfs)	22808.1	Conv. (cfs)		22808.1	
Length Wtd. (ft)	43.00	Wetted Per. (ft)		54.26	
Min Ch El (ft)	1938.13	Shear (lb/sq ft)		0.12	
Alpha	1.00	Stream Power (lb/ft s)		0.30	
Frctn Loss (ft)	0.02	Cum Volume (acre-ft)		5.64	
C & E Loss (ft)	0.02	Cum SA (acres)		1.75	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1047

INPUT
Description: Sta 23+74.18 - Upstream Face of Race Track Bridge
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
     -40    1946     -15  1938.1      15  1938.1      40    1947

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
**********************************************
     -40    .015     -40    .015       40    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -40      40                 92       92       92             .1      .3
Ineffective Flow     num=       2
   Sta L    Sta R    Elev  Permanent
     -40      -13    1946       F
      13       40    1946       F

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1942.96  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.29  * Wt. n-Val.              *          *    0.015  *          *
* W.S. Elev (ft)          * 1942.67  * Reach Len. (ft)        *   92.00  *   92.00  *   92.00  *
* Crit W.S. (ft)          * 1940.40  * Flow Area (sq ft)      *          *  118.76  *          *
* E.G. Slope (ft/ft)      *0.000254  * Area (sq ft)           *          *  199.34  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)          *   57.28  * Top Width (ft)         *          *   57.28  *          *
* Vel Total (ft/s)        *    4.35  * Avg. Vel. (ft/s)       *          *    4.35  *          *
* Max Chl Dpth (ft)       *    4.57  * Hydr. Depth (ft)       *          *    4.57  *          *
* Conv. Total (cfs)       * 32384.9  * Conv. (cfs)           *          * 32384.9  *          *
* Length Wtd. (ft)        *   92.00  * Wetted Per. (ft)      *          *   26.00  *          *
* Min Ch El (ft)          * 1938.10  * Shear (lb/sq ft)      *          *    0.07  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *    0.31  *          *
* Frctn Loss (ft)         *          * Cum Volume (acre-ft)   *          *    5.45  *          *
* C & E Loss (ft)         *          * Cum SA (acres)         *          *    1.70  *          *
*****************************************************************************************************

Note:    Multiple critical depths were found at this location.  The critical depth with the lowest, valid,
         energy was used.

CULVERT


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1046.5

INPUT
Description: Bridge at Race Track
Distance from Upstream XS =       .1
Deck/Roadway Width        =     91.8
Weir Coefficient          =      2.6
Upstream  Deck/Roadway Coordinates
    num=       2
    Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord
**********************************************
     -13 1945.25  1943.1       13 1945.25  1943.1

Upstream Bridge Cross Section Data
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**************************************************************************
     -40    1946      -15  1938.1       15  1938.1       40    1947

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
**********************************************
     -40    .015     -40    .015       40    .015

Bank Sta: Left   Right    Coeff Contr.   Expan.
           -40      40            .1        .3
Ineffective Flow     num=       2
   Sta L    Sta R    Elev  Permanent
     -40      -13    1946       F
      13       40    1946       F

Downstream  Deck/Roadway Coordinates
    num=       2
    Sta Hi Cord Lo Cord      Sta Hi Cord Lo Cord
**********************************************
     -13 1946.25  1944.1       13 1946.25  1944.1

Downstream Bridge Cross Section Data
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**************************************************************************
     -13 1946.61      -13  1937.2       13  1937.2       13 1946.61

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
**********************************************
     -13     .03      -13     .03       13     .03

Bank Sta: Left   Right    Coeff Contr.   Expan.
           -13      13            .1        .3
Ineffective Flow     num=       2
   Sta L    Sta R    Elev  Permanent
     -13      -13    1946       F
      13       13    1946       F

Upstream Embankment side slope             =      0 horiz. to 1.0 vertical
Downstream Embankment side slope           =      0 horiz. to 1.0 vertical
Maximum allowable submergence for weir flow =     .95
Elevation at which weir flow begins        =
Energy head used in spillway design        =
Spillway height used in design             =
Weir crest shape                           = Broad Crested

Number of Culverts =  1

Culvert Name      Shape      Rise    Span
Culvert #1          Box         6      12
FHWA Chart # 8 - Flared wingwalls
FHWA Scale # 1 - Wingwall flared 30 to 75 deg.
Solution Criteria = Highest U.S. EG
Culvert Upstrm Dist  Length    Top n  Bottom n  Depth Blocked  Entrance Loss Coef   Exit Loss Coef
                .1     91.9     .015      .015          0                    1                1
Number of Barrels =  2
Upstream   Elevation =  1938.1
Centerline Stations
    Sta.     Sta.
      -7        7
Downstream Elevation =  1937.1
Centerline Stations
    Sta.     Sta.
      -7        7

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1046

INPUT
Description: Sta 22+82.18  - Drake Channel at Race Track Bridge
Station Elevation Data    num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
**************************************************************************
     -13 1946.61      -13  1937.2       13  1937.2       13 1946.61

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
**********************************************
     -13     .03      -13     .03       13     .03

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
           -13      13                62.18   62.18   62.18             .1      .3
Ineffective Flow     num=       2
   Sta L    Sta R    Elev  Permanent
     -13      -13    1946       F
      13       13    1946       F

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1940.96  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    0.62  * Wt. n-Val.              *          *    0.030  *          *
* W.S. Elev (ft)          * 1940.34  * Reach Len. (ft)        *   62.18  *   62.18  *   62.18  *
* Crit W.S. (ft)          * 1939.52  * Flow Area (sq ft)      *          *   81.69  *          *
* E.G. Slope (ft/ft)      *0.004717  * Area (sq ft)           *          *   81.69  *          *
* Q Total (cfs)           *  516.00  * Flow (cfs)             *          *  516.00  *          *
* Top Width (ft)          *   26.00  * Top Width (ft)         *          *   26.00  *          *
* Vel Total (ft/s)        *    6.32  * Avg. Vel. (ft/s)       *          *    6.32  *          *
* Max Chl Dpth (ft)       *    3.14  * Hydr. Depth (ft)       *          *    3.14  *          *
* Conv. Total (cfs)       *  7513.0  * Conv. (cfs)           *          *  7513.0  *          *
* Length Wtd. (ft)        *   62.18  * Wetted Per. (ft)      *          *   32.28  *          *
* Min Ch El (ft)          * 1937.20  * Shear (lb/sq ft)      *          *    0.75  *          *
```

* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 4.71	* *
* Frctn Loss (ft)	* 0.49	* Cum Volume (acre-ft)	*	* 5.15	* *
* C & E Loss (ft)	* 0.09	* Cum SA (acres)	*	* 1.61	* *

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1045

INPUT
Description: Sta 22+20 - Drake Channel - Edge of Concrete
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.5	1944	-12.5	1936	15	1936	15	1943.92

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.5	.03	-12.5	.03	15	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-12.5	15	70	70	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1940.39	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 1.47	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 1938.92	* Reach Len. (ft)	* 70.00	* 70.00	* 70.00 *
* Crit W.S. (ft)	* 1938.92	* Flow Area (sq ft)	*	* 80.24	* *
* E.G. Slope (ft/ft)	*0.011972	* Area (sq ft)	*	* 80.24	* *
* Q Total (cfs)	* 781.00	* Flow (cfs)	*	* 781.00	* *
* Top Width (ft)	* 27.50	* Top Width (ft)	*	* 27.50	* *
* Vel Total (ft/s)	* 9.73	* Avg. Vel. (ft/s)	*	* 9.73	* *
* Max Chl Dpth (ft)	* 2.92	* Hydr. Depth (ft)	*	* 2.92	* *
* Conv. Total (cfs)	* 7137.8	* Conv. (cfs)	*	* 7137.8	* *
* Length Wtd. (ft)	* 70.00	* Wetted Per. (ft)	*	* 33.34	* *
* Min Ch El (ft)	* 1936.00	* Shear (lb/sq ft)	*	* 1.80	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 17.51	* *
* Frctn Loss (ft)	* 0.82	* Cum Volume (acre-ft)	*	* 5.04	* *
* C & E Loss (ft)	* 0.13	* Cum SA (acres)	*	* 1.57	* *

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1044

INPUT
Description: Sta 21 + 50 -Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-30	1942.7	-30	1935	15	1935	15	1945.5

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-30	.03	-30	.03	15	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-30	15	69.6	69.6	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1938.83	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 2.45	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 1936.38	* Reach Len. (ft)	* 69.60	* 69.60	* 69.60 *
* Crit W.S. (ft)	* 1937.11	* Flow Area (sq ft)	*	* 62.19	* *
* E.G. Slope (ft/ft)	*0.045220	* Area (sq ft)	*	* 62.19	* *
* Q Total (cfs)	* 781.00	* Flow (cfs)	*	* 781.00	* *
* Top Width (ft)	* 45.00	* Top Width (ft)	*	* 45.00	* *
* Vel Total (ft/s)	* 12.56	* Avg. Vel. (ft/s)	*	* 12.56	* *
* Max Chl Dpth (ft)	* 1.38	* Hydr. Depth (ft)	*	* 1.38	* *
* Conv. Total (cfs)	* 3672.7	* Conv. (cfs)	*	* 3672.7	* *
* Length Wtd. (ft)	* 69.60	* Wetted Per. (ft)	*	* 47.76	* *
* Min Ch El (ft)	* 1935.00	* Shear (lb/sq ft)	*	* 3.68	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 46.16	* *
* Frctn Loss (ft)	* 1.46	* Cum Volume (acre-ft)	*	* 4.92	* *
* C & E Loss (ft)	* 0.10	* Cum SA (acres)	*	* 1.51	* *

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1043

INPUT
Description: Sta 20+80.40 - Drake Channel --End Transition
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-25	1939.62	-25	1933.65	15	1933.65	15	1941.82

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-25	.03	-25	.03	15	.03

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-25	15	101.21	101.21	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1937.07	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 1.14	* Wt. n-Val.	*	* 0.030	* *
* W.S. Elev (ft)	* 1935.93	* Reach Len. (ft)	* 101.21	* 101.21	* 101.21 *
* Crit W.S. (ft)	* 1935.93	* Flow Area (sq ft)	*	* 91.09	* *
* E.G. Slope (ft/ft)	*0.011547	* Area (sq ft)	*	* 91.09	* *
* Q Total (cfs)	* 781.00	* Flow (cfs)	*	* 781.00	* *
* Top Width (ft)	* 40.00	* Top Width (ft)	*	* 40.00	* *
* Vel Total (ft/s)	* 8.57	* Avg. Vel. (ft/s)	*	* 8.57	* *
* Max Chl Dpth (ft)	* 2.28	* Hydr. Depth (ft)	*	* 2.28	* *
* Conv. Total (cfs)	* 7268.2	* Conv. (cfs)	*	* 7268.2	* *
* Length Wtd. (ft)	* 101.21	* Wetted Per. (ft)	*	* 44.55	* *
* Min Ch El (ft)	* 1933.65	* Shear (lb/sq ft)	*	* 1.47	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 12.64	* *
* Frctn Loss (ft)	* 0.50	* Cum Volume (acre-ft)	*	* 4.80	* *
* C & E Loss (ft)	* 0.03	* Cum SA (acres)	*	* 1.44	* *

Warning: The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning: During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1042

```
INPUT
Description: Sta 19+79.19 - Drake Channel -Begin Transition
Station Elevation Data     num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*****************************************************************
  -17.63  1934.7  -17.63  1928.7     7.74  1928.7    15.75 1934.55

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
  -17.63    .015  -17.63    .015    15.75    .015

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
         -17.63   15.75              79.19   79.19   79.19              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1935.22  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    4.86  * Wt. n-Val.             *          *    0.015  *          *
* W.S. Elev (ft)          * 1930.37  * Reach Len. (ft)        *   79.19  *   79.19  *   79.19  *
* Crit W.S. (ft)          * 1931.70  * Flow Area (sq ft)      *          *   44.16  *          *
* E.G. Slope (ft/ft)      *0.018921  * Area (sq ft)           *          *   44.16  *          *
* Q Total (cfs)           *  781.00  * Flow (cfs)            *          *  781.00  *          *
* Top Width (ft)          *   27.65  * Top Width (ft)         *          *   27.65  *          *
* Vel Total (ft/s)        *   17.69  * Avg. Vel. (ft/s)       *          *   17.69  *          *
* Max Chl Dpth (ft)       *    1.67  * Hydr. Depth (ft)       *          *    1.60  *          *
* Conv. Total (cfs)       *  5677.8  * Conv. (cfs)           *          *  5677.8  *          *
* Length Wtd. (ft)        *   79.19  * Wetted Per. (ft)       *          *   29.86  *          *
* Min Ch El (ft)          * 1928.70  * Shear (lb/sq ft)      *          *    1.75  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   30.90  *          *
* Frctn Loss (ft)         *    1.47  * Cum Volume (acre-ft)   *          *    4.64  *          *
* C & E Loss (ft)         *    0.37  * Cum SA (acres)         *          *    1.36  *          *
*************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1041

INPUT
Description: Sta 19+00 - Drake Channel
Station Elevation Data     num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*****************************************************************
  -17.63 1932.59  -17.63  1926.6     7.74  1926.6    15.75 1932.45

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
  -17.63    .015  -17.63    .015    15.75    .015

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
         -17.63   15.75              100     100     100              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1933.55  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    5.37  * Wt. n-Val.             *          *    0.015  *          *
* W.S. Elev (ft)          * 1928.19  * Reach Len. (ft)        *  100.00  *  100.00  *  100.00  *
* Crit W.S. (ft)          * 1929.60  * Flow Area (sq ft)      *          *   42.01  *          *
* E.G. Slope (ft/ft)      *0.022125  * Area (sq ft)           *          *   42.01  *          *
* Q Total (cfs)           *  781.00  * Flow (cfs)            *          *  781.00  *          *
* Top Width (ft)          *   27.54  * Top Width (ft)         *          *   27.54  *          *
* Vel Total (ft/s)        *   18.59  * Avg. Vel. (ft/s)       *          *   18.59  *          *
* Max Chl Dpth (ft)       *    1.59  * Hydr. Depth (ft)       *          *    1.53  *          *
* Conv. Total (cfs)       *  5250.6  * Conv. (cfs)           *          *  5250.6  *          *
* Length Wtd. (ft)        *  100.00  * Wetted Per. (ft)       *          *   29.65  *          *
* Min Ch El (ft)          * 1926.60  * Shear (lb/sq ft)      *          *    1.96  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   36.38  *          *
* Frctn Loss (ft)         *    1.62  * Cum Volume (acre-ft)   *          *    4.56  *          *
* C & E Loss (ft)         *    0.05  * Cum SA (acres)         *          *    1.31  *          *
*************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1040

INPUT
Description: Sta 18+00  - Drake Channel
Station Elevation Data     num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*****************************************************************
  -17.63 1929.59  -17.63  1923.6     7.74  1923.6    15.75 1929.45

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
  -17.63    .015  -17.63    .015    15.75    .015

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
         -17.63   15.75              100     100     100              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1931.09  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    5.98  * Wt. n-Val.             *          *    0.015  *          *
* W.S. Elev (ft)          * 1925.11  * Reach Len. (ft)        *  100.00  *  100.00  *  100.00  *
* Crit W.S. (ft)          * 1926.59  * Flow Area (sq ft)      *          *   39.80  *          *
* E.G. Slope (ft/ft)      *0.026243  * Area (sq ft)           *          *   39.80  *          *
* Q Total (cfs)           *  781.00  * Flow (cfs)            *          *  781.00  *          *
* Top Width (ft)          *   27.43  * Top Width (ft)         *          *   27.43  *          *
* Vel Total (ft/s)        *   19.62  * Avg. Vel. (ft/s)       *          *   19.62  *          *
* Max Chl Dpth (ft)       *    1.51  * Hydr. Depth (ft)       *          *    1.45  *          *
* Conv. Total (cfs)       *  4821.1  * Conv. (cfs)           *          *  4821.1  *          *
* Length Wtd. (ft)        *  100.00  * Wetted Per. (ft)       *          *   29.43  *          *
* Min Ch El (ft)          * 1923.60  * Shear (lb/sq ft)      *          *    2.22  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   43.47  *          *
* Frctn Loss (ft)         *    2.41  * Cum Volume (acre-ft)   *          *    4.47  *          *
* C & E Loss (ft)         *    0.06  * Cum SA (acres)         *          *    1.25  *          *
*************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1039

INPUT
Description: Sta 17+00 - Drake Channel
Station Elevation Data     num=       4
     Sta    Elev      Sta    Elev      Sta    Elev      Sta    Elev
*****************************************************************
  -17.63 1926.59  -17.63  1921.6     7.74  1921.6    15.75 1926.45

Manning's n Values         num=       3
     Sta   n Val      Sta   n Val      Sta   n Val
*********************************************
  -17.63    .015  -17.63    .015    15.75    .015

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
         -17.63   15.75              100     100     100              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1928.48  * Element                *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    5.30  * Wt. n-Val.             *          *    0.015  *          *
* W.S. Elev (ft)          * 1923.19  * Reach Len. (ft)        *  100.00  *  100.00  *  100.00  *
* Crit W.S. (ft)          * 1924.58  * Flow Area (sq ft)      *          *   42.28  *          *
* E.G. Slope (ft/ft)      *0.022018  * Area (sq ft)           *          *   42.28  *          *
* Q Total (cfs)           *  781.00  * Flow (cfs)            *          *  781.00  *          *
* Top Width (ft)          *   27.99  * Top Width (ft)         *          *   27.99  *          *
* Vel Total (ft/s)        *   18.47  * Avg. Vel. (ft/s)       *          *   18.47  *          *
* Max Chl Dpth (ft)       *    1.58  * Hydr. Depth (ft)       *          *    1.51  *          *
```

* Conv. Total (cfs)	* 5263.4	* Conv. (cfs)	*	* 5263.4	* *
* Length Wtd. (ft)	* 100.00	* Wetted Per. (ft)	*	* 30.01	* *
* Min Ch El (ft)	* 1921.60	* Shear (lb/sq ft)	*	* 1.94	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 35.77	* *
* Frctn Loss (ft)	* 2.40	* Cum Volume (acre-ft)	*	* 4.37	* *
* C & E Loss (ft)	* 0.20	* Cum SA (acres)	*	* 1.19	* *

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1038

INPUT
Description: Sta 16+00 Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-17.63	1923.59	-17.63	1918.6	7.74	1918.6	15.75	1923.45

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-17.63	.015	-17.63	.015	15.75	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-17.63 15.75 100 100 100 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1926.02	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 5.92	* Wt. n-Val.	*	* 0.015	* *
* W.S. Elev (ft)	* 1920.10	* Reach Len. (ft)	* 100.00	* 100.00	* 100.00 *
* Crit W.S. (ft)	* 1921.59	* Flow Area (sq ft)	*	* 40.00	* *
* E.G. Slope (ft/ft)	*0.026198	* Area (sq ft)	*	* 40.00	* *
* Q Total (cfs)	* 781.00	* Flow (cfs)	*	* 781.00	* *
* Top Width (ft)	* 27.85	* Top Width (ft)	*	* 27.85	* *
* Vel Total (ft/s)	* 19.52	* Avg. Vel. (ft/s)	*	* 19.52	* *
* Max Chl Dpth (ft)	* 1.50	* Hydr. Depth (ft)	*	* 1.44	* *
* Conv. Total (cfs)	* 4825.2	* Conv. (cfs)	*	* 4825.2	* *
* Length Wtd. (ft)	* 100.00	* Wetted Per. (ft)	*	* 29.78	* *
* Min Ch El (ft)	* 1918.60	* Shear (lb/sq ft)	*	* 2.20	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 42.90	* *
* Frctn Loss (ft)	* 2.40	* Cum Volume (acre-ft)	*	* 4.28	* *
* C & E Loss (ft)	* 0.06	* Cum SA (acres)	*	* 1.12	* *

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1037

INPUT
Description: Sta 15+00 Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-17.2	1920.61	-17.2	1915.53	8.13	1915.53	16.06	1920.39

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-17.2	.015	-17.2	.015	16.06	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-17.2 16.06 100 100 100 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1923.25	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 6.26	* Wt. n-Val.	*	* 0.015	* *
* W.S. Elev (ft)	* 1917.00	* Reach Len. (ft)	* 100.00	* 100.00	* 100.00 *
* Crit W.S. (ft)	* 1918.51	* Flow Area (sq ft)	*	* 38.91	* *
* E.G. Slope (ft/ft)	*0.028518	* Area (sq ft)	*	* 38.91	* *
* Q Total (cfs)	* 781.00	* Flow (cfs)	*	* 781.00	* *
* Top Width (ft)	* 27.72	* Top Width (ft)	*	* 27.72	* *
* Vel Total (ft/s)	* 20.07	* Avg. Vel. (ft/s)	*	* 20.07	* *
* Max Chl Dpth (ft)	* 1.47	* Hydr. Depth (ft)	*	* 1.40	* *
* Conv. Total (cfs)	* 4624.8	* Conv. (cfs)	*	* 4624.8	* *
* Length Wtd. (ft)	* 100.00	* Wetted Per. (ft)	*	* 29.60	* *
* Min Ch El (ft)	* 1915.53	* Shear (lb/sq ft)	*	* 2.34	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 46.97	* *
* Frctn Loss (ft)	* 2.73	* Cum Volume (acre-ft)	*	* 4.19	* *
* C & E Loss (ft)	* 0.03	* Cum SA (acres)	*	* 1.06	* *

Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1036

INPUT
Description: Sta 14+00 Drake Channel
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-16.72	1917.65	-16.72	1912.6	8.55	1912.6	16.48	1917.33

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-16.72	.015	-16.72	.015	16.48	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-16.72 16.48 100 100 100 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1920.38	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 6.31	* Wt. n-Val.	*	* 0.015	* *
* W.S. Elev (ft)	* 1914.06	* Reach Len. (ft)	* 100.00	* 100.00	* 100.00 *
* Crit W.S. (ft)	* 1915.58	* Flow Area (sq ft)	*	* 38.73	* *
* E.G. Slope (ft/ft)	*0.028934	* Area (sq ft)	*	* 38.73	* *
* Q Total (cfs)	* 781.00	* Flow (cfs)	*	* 781.00	* *
* Top Width (ft)	* 27.72	* Top Width (ft)	*	* 27.72	* *
* Vel Total (ft/s)	* 20.16	* Avg. Vel. (ft/s)	*	* 20.16	* *
* Max Chl Dpth (ft)	* 1.46	* Hydr. Depth (ft)	*	* 1.40	* *
* Conv. Total (cfs)	* 4591.4	* Conv. (cfs)	*	* 4591.4	* *
* Length Wtd. (ft)	* 100.00	* Wetted Per. (ft)	*	* 29.59	* *
* Min Ch El (ft)	* 1912.60	* Shear (lb/sq ft)	*	* 2.36	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 47.68	* *
* Frctn Loss (ft)	* 2.87	* Cum Volume (acre-ft)	*	* 4.10	* *
* C & E Loss (ft)	* 0.01	* Cum SA (acres)	*	* 1.00	* *

Warning: The energy loss was greater than 1.0 ft (0.3 m), between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1035

INPUT
Description: Sta 13+00 Drake Channel - C&B plans from survey
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-15.71	1914.23	-15.71	1908.15	8.86	1908.15	16.55	1913.17

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-15.71	.015	-15.71	.015	16.55	.015

```
Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
        -15.71   16.55              42.69   42.69   42.69          .1         .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1917.02  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)           *    7.48  * Wt. n-Val.             *         *    0.015 *          *
* W.S. Elev (ft)          * 1909.54  * Reach Len. (ft)       *   42.69  *   42.69  *   42.69  *
* Crit W.S. (ft)          * 1911.19  * Flow Area (sq ft)     *          *   35.58  *          *
* E.G. Slope (ft/ft)      *0.036520  * Area (sq ft)          *          *   35.58  *          *
* Q Total (cfs)           *  781.00  * Flow (cfs)            *          *  781.00  *          *
* Top Width (ft)          *   26.70  * Top Width (ft)        *          *   26.70  *          *
* Vel Total (ft/s)        *   21.95  * Avg. Vel. (ft/s)      *          *   21.95  *          *
* Max Chl Dpth (ft)       *    1.39  * Hydr. Depth (ft)      *          *    1.33  *          *
* Conv. Total (cfs)       *  4086.8  * Conv. (cfs)          *          *  4086.8  *          *
* Length Wtd. (ft)        *   42.69  * Wetted Per. (ft)      *          *   28.50  *          *
* Min Ch El (ft)          * 1908.15  * Shear (lb/sq ft)     *          *    2.85  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *         *   62.48  *          *
* Frctn Loss (ft)         *    3.24  * Cum Volume (acre-ft)  *          *    4.02  *          *
* C & E Loss (ft)         *    0.12  * Cum SA (acres)        *          *    0.93  *          *
*************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1034

INPUT
Description: Sta 12+57.31  - Drake Channel  - C&B plans from survey
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
   -10.78     1911   -10.78 1906.69     9.29 1906.69    17.38     1911

Manning's n Values          num=         3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -10.78     .015   -10.78     .015    17.38     .015

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
        -10.78   17.38              57.31   57.31   57.31          .1         .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1915.54  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)           *    7.17  * Wt. n-Val.             *         *    0.015 *          *
* W.S. Elev (ft)          * 1908.37  * Reach Len. (ft)       *   57.31  *   57.31  *   57.31  *
* Crit W.S. (ft)          * 1910.10  * Flow Area (sq ft)     *          *   36.34  *          *
* E.G. Slope (ft/ft)      *0.029074  * Area (sq ft)          *          *   36.34  *          *
* Q Total (cfs)           *  781.00  * Flow (cfs)            *          *  781.00  *          *
* Top Width (ft)          *   23.22  * Top Width (ft)        *          *   23.22  *          *
* Vel Total (ft/s)        *   21.49  * Avg. Vel. (ft/s)      *          *   21.49  *          *
* Max Chl Dpth (ft)       *    1.68  * Hydr. Depth (ft)      *          *    1.56  *          *
* Conv. Total (cfs)       *  4580.3  * Conv. (cfs)          *          *  4580.3  *          *
* Length Wtd. (ft)        *   57.31  * Wetted Per. (ft)      *          *   25.32  *          *
* Min Ch El (ft)          * 1906.69  * Shear (lb/sq ft)     *          *    2.61  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *         *   55.98  *          *
* Frctn Loss (ft)         *    1.39  * Cum Volume (acre-ft)  *          *    3.98  *          *
* C & E Loss (ft)         *    0.09  * Cum SA (acres)        *          *    0.91  *          *
*************************************************************************************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1033

INPUT
Description: Sta 12+00 Drake Channel - C&B Plans from survey
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
   -10.78 1910.14   -10.78 1905.11     9.29 1905.11    17.38 1909.42

Manning's n Values          num=         3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -10.78     .015   -10.78     .015    17.38     .015

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
        -10.78   17.38              100     100     100          .1         .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1913.86  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)           *    7.06  * Wt. n-Val.             *         *    0.015 *          *
* W.S. Elev (ft)          * 1906.80  * Reach Len. (ft)       *  100.00  *  100.00  *  100.00  *
* Crit W.S. (ft)          * 1908.52  * Flow Area (sq ft)     *          *   36.63  *          *
* E.G. Slope (ft/ft)      *0.028360  * Area (sq ft)          *          *   36.63  *          *
* Q Total (cfs)           *  781.00  * Flow (cfs)            *          *  781.00  *          *
* Top Width (ft)          *   23.25  * Top Width (ft)        *          *   23.25  *          *
* Vel Total (ft/s)        *   21.32  * Avg. Vel. (ft/s)      *          *   21.32  *          *
* Max Chl Dpth (ft)       *    1.69  * Hydr. Depth (ft)      *          *    1.58  *          *
* Conv. Total (cfs)       *  4637.6  * Conv. (cfs)          *          *  4637.6  *          *
* Length Wtd. (ft)        *  100.00  * Wetted Per. (ft)      *          *   25.36  *          *
* Min Ch El (ft)          * 1905.11  * Shear (lb/sq ft)     *          *    2.56  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *         *   54.53  *          *
* Frctn Loss (ft)         *    1.65  * Cum Volume (acre-ft)  *          *    3.93  *          *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)        *          *    0.88  *          *
*************************************************************************************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1032

INPUT
Description: Sta 11+00 Drake Channel - C&B plans from survey
Station Elevation Data     num=       4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*************************************************************************
   -10.31 1908.12   -10.31 1903.12     9.92 1903.25    17.56 1908.24

Manning's n Values          num=         3
     Sta    n Val      Sta    n Val      Sta    n Val
*************************************************
   -10.31     .015   -10.31     .015    17.56     .015

Bank Sta: Left   Right    Lengths: Left Channel   Right      Coeff Contr.   Expan.
        -10.31   17.56              100     100     100          .1         .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1911.07  * Element                * Left OB *  Channel * Right OB *
* Vel Head (ft)           *    6.05  * Wt. n-Val.             *         *    0.015 *          *
* W.S. Elev (ft)          * 1905.02  * Reach Len. (ft)       *  100.00  *  100.00  *  100.00  *
* Crit W.S. (ft)          * 1906.63  * Flow Area (sq ft)     *          *   39.56  *          *
* E.G. Slope (ft/ft)      *0.021963  * Area (sq ft)          *          *   39.56  *          *
* Q Total (cfs)           *  781.00  * Flow (cfs)            *          *  781.00  *          *
* Top Width (ft)          *   22.94  * Top Width (ft)        *          *   22.94  *          *
* Vel Total (ft/s)        *   19.74  * Avg. Vel. (ft/s)      *          *   19.74  *          *
* Max Chl Dpth (ft)       *    1.90  * Hydr. Depth (ft)      *          *    1.72  *          *
* Conv. Total (cfs)       *  5270.0  * Conv. (cfs)          *          *  5270.0  *          *
* Length Wtd. (ft)        *  100.00  * Wetted Per. (ft)      *          *   25.37  *          *
* Min Ch El (ft)          * 1903.12  * Shear (lb/sq ft)     *          *    2.14  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *         *   42.21  *          *
* Frctn Loss (ft)         *    2.49  * Cum Volume (acre-ft)  *          *    3.84  *          *
* C & E Loss (ft)         *    0.30  * Cum SA (acres)        *          *    0.83  *          *
*************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION
```

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1031

INPUT
Description: Sta 24+53.03 -Cinnamon Ridge = Sta 10+00 Drake Channel
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24.21	1909.4	-15.03	1906.6	-6.77	1901.6	10.92	1901.6	27.24	1906.6

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24.21	.015	-24.21	.015	27.24	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24.21	27.24	105.3	105.3	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1908.76	Element	Left OB	Channel / Right OB
Vel Head (ft)	5.26	Wt. n-Val.		0.015
W.S. Elev (ft)	1903.50	Reach Len. (ft)	105.30	105.30 / 105.30
Crit W.S. (ft)	1904.93	Flow Area (sq ft)		42.43
E.G. Slope (ft/ft)	0.019682	Area (sq ft)		42.43
Q Total (cfs)	781.00	Flow (cfs)		781.00
Top Width (ft)	27.02	Top Width (ft)		27.02
Vel Total (ft/s)	18.41	Avg. Vel. (ft/s)		18.41
Max Chl Dpth (ft)	1.90	Hydr. Depth (ft)		1.57
Conv. Total (cfs)	5567.0	Conv. (cfs)		5567.0
Length Wtd. (ft)	105.30	Wetted Per. (ft)		27.83
Min Ch El (ft)	1901.60	Shear (lb/sq ft)		1.87
Alpha	1.00	Stream Power (lb/ft s)		34.48
Frctn Loss (ft)	2.08	Cum Volume (acre-ft)		3.75
C & E Loss (ft)	0.24	Cum SA (acres)		0.77

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1030

INPUT
Description: Sta 23+48 Drake Channel - Cinnamon Ridge Plans
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-24.21	1907.85	-15.03	1905.26	-6.77	1900.26	10.92	1900.26	27.24	1905.26

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-24.21	.015	-24.21	.015	27.24	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-24.21	27.24	39.39	39.39	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1906.83	Element	Left OB	Channel / Right OB
Vel Head (ft)	4.26	Wt. n-Val.		0.015
W.S. Elev (ft)	1902.57	Reach Len. (ft)	39.39	39.39 / 39.39
Crit W.S. (ft)	1903.86	Flow Area (sq ft)		53.90
E.G. Slope (ft/ft)	0.012819	Area (sq ft)		53.90
Q Total (cfs)	893.00	Flow (cfs)		893.00
Top Width (ft)	29.03	Top Width (ft)		29.03
Vel Total (ft/s)	16.57	Avg. Vel. (ft/s)		16.57
Max Chl Dpth (ft)	2.31	Hydr. Depth (ft)		1.86
Conv. Total (cfs)	7887.3	Conv. (cfs)		7887.3
Length Wtd. (ft)	39.39	Wetted Per. (ft)		30.02
Min Ch El (ft)	1900.26	Shear (lb/sq ft)		1.44
Alpha	1.00	Stream Power (lb/ft s)		23.80
Frctn Loss (ft)	1.63	Cum Volume (acre-ft)		3.63
C & E Loss (ft)	0.30	Cum SA (acres)		0.70

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1029

INPUT
Description: Sta 23+08.29 Drake Channel - Cinnamon Ridge Plans
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.08	1904.42	-3.83	1899.42	6.62	1899.42	17.03	1904.1	28.83	1904.34

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.08	.015	-12.08	.015	28.83	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-12.08	28.83	58.7	58.7	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1906.14	Element	Left OB	Channel / Right OB
Vel Head (ft)	3.10	Wt. n-Val.		0.015
W.S. Elev (ft)	1903.04	Reach Len. (ft)	58.70	58.70 / 58.70
Crit W.S. (ft)	1904.00	Flow Area (sq ft)		63.25
E.G. Slope (ft/ft)	0.006295	Area (sq ft)		63.25
Q Total (cfs)	893.00	Flow (cfs)		893.00
Top Width (ft)	24.48	Top Width (ft)		24.48
Vel Total (ft/s)	14.12	Avg. Vel. (ft/s)		14.12
Max Chl Dpth (ft)	3.62	Hydr. Depth (ft)		2.58
Conv. Total (cfs)	11255.1	Conv. (cfs)		11255.1
Length Wtd. (ft)	58.70	Wetted Per. (ft)		26.27
Min Ch El (ft)	1899.42	Shear (lb/sq ft)		0.95
Alpha	1.00	Stream Power (lb/ft s)		13.36
Frctn Loss (ft)	0.34	Cum Volume (acre-ft)		3.58
C & E Loss (ft)	0.35	Cum SA (acres)		0.68

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1028

INPUT
Description: Sta 22+50 Drake Channel - Cinnamon Ridge Plans
Station Elevation Data num= 5

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.5	1902.55	-5	1898.55	5	1898.55	17.1	1898.79	23.19	1903.55

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.5	.015	-12.5	.015	23.19	.015

Bank Sta: Left	Right	Lengths: Left Channel	Right	Coeff Contr.	Expan.
-12.5	23.19	67.6	67.7	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1905.42	Element	Left OB	Channel / Right OB
Vel Head (ft)	4.79	Wt. n-Val.		0.015
W.S. Elev (ft)	1900.64	Reach Len. (ft)	67.60	67.70 / 67.70
Crit W.S. (ft)	1902.02	Flow Area (sq ft)		50.87
E.G. Slope (ft/ft)	0.015207	Area (sq ft)		50.87
Q Total (cfs)	893.00	Flow (cfs)		893.00
Top Width (ft)	28.37	Top Width (ft)		28.37

* Vel Total (ft/s)	* 17.56	* Avg. Vel. (ft/s)	*	* 17.56	* *
* Max Chl Dpth (ft)	* 2.08	* Hydr. Depth (ft)	*	* 1.79	* *
* Conv. Total (cfs)	* 7241.5	* Conv. (cfs)	*	* 7241.5	* *
* Length Wtd. (ft)	* 67.70	* Wetted Per. (ft)	*	* 29.53	* *
* Min Ch El (ft)	* 1898.55	* Shear (lb/sq ft)	*	* 1.64	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 28.71	* *
* Frctn Loss (ft)	* 0.55	* Cum Volume (acre-ft)	*	* 3.50	* *
* C & E Loss (ft)	* 0.17	* Cum SA (acres)	*	* 0.64	* *

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1027

INPUT
Description: Sta 21+82.30 Drake Channel - Cinnamon Ridge Plans
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.5	1901.54	-5	1896.54	5	1896.54	12.5	1901.54

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.5	.015	-12.5	.015	12.5	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-12.5 12.5 32.3 32.3 32.3 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1904.54	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 4.57	* Wt. n-Val.	*	* 0.015	* *
* W.S. Elev (ft)	* 1899.98	* Reach Len. (ft)	* 32.30	* 32.30	* 32.30 *
* Crit W.S. (ft)	* 1901.43	* Flow Area (sq ft)	*	* 52.06	* *
* E.G. Slope (ft/ft)	*0.009731	* Area (sq ft)	*	* 52.06	* *
* Q Total (cfs)	* 893.00	* Flow (cfs)	*	* 893.00	* *
* Top Width (ft)	* 20.31	* Top Width (ft)	*	* 20.31	* *
* Vel Total (ft/s)	* 17.15	* Avg. Vel. (ft/s)	*	* 17.15	* *
* Max Chl Dpth (ft)	* 3.44	* Hydr. Depth (ft)	*	* 2.56	* *
* Conv. Total (cfs)	* 9052.6	* Conv. (cfs)	*	* 9052.6	* *
* Length Wtd. (ft)	* 32.30	* Wetted Per. (ft)	*	* 22.39	* *
* Min Ch El (ft)	* 1896.54	* Shear (lb/sq ft)	*	* 1.41	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 24.23	* *
* Frctn Loss (ft)	* 0.81	* Cum Volume (acre-ft)	*	* 3.42	* *
* C & E Loss (ft)	* 0.07	* Cum SA (acres)	*	* 0.60	* *

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1026

INPUT
Description: Sta 21+50 Drake Channel - Cinnamon Ridge Plans
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.5	1900.6	-5	1895.6	5	1895.6	12.5	1900.6

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.5	.015	-12.5	.015	12.5	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-12.5 12.5 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1904.13	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 5.27	* Wt. n-Val.	*	* 0.015	* *
* W.S. Elev (ft)	* 1898.86	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	* 1900.49	* Flow Area (sq ft)	*	* 48.46	* *
* E.G. Slope (ft/ft)	*0.011884	* Area (sq ft)	*	* 48.46	* *
* Q Total (cfs)	* 893.00	* Flow (cfs)	*	* 893.00	* *
* Top Width (ft)	* 19.77	* Top Width (ft)	*	* 19.77	* *
* Vel Total (ft/s)	* 18.43	* Avg. Vel. (ft/s)	*	* 18.43	* *
* Max Chl Dpth (ft)	* 3.26	* Hydr. Depth (ft)	*	* 2.45	* *
* Conv. Total (cfs)	* 8191.7	* Conv. (cfs)	*	* 8191.7	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 21.74	* *
* Min Ch El (ft)	* 1895.60	* Shear (lb/sq ft)	*	* 1.65	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 30.48	* *
* Frctn Loss (ft)	* 0.35	* Cum Volume (acre-ft)	*	* 3.39	* *
* C & E Loss (ft)	* 0.07	* Cum SA (acres)	*	* 0.59	* *

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1025

INPUT
Description: Sta 21+00 Drake Channel - Cinnamon Ridge Plans
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.5	1898.4	-5	1893.4	5	1893.4	12.5	1898.4

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.5	.015	-12.5	.015	12.5	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-12.5 12.5 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1903.25	* Element	* Left OB	* Channel	* Right OB *
* Vel Head (ft)	* 6.91	* Wt. n-Val.	*	* 0.015	* *
* W.S. Elev (ft)	* 1896.34	* Reach Len. (ft)	* 50.00	* 50.00	* 50.00 *
* Crit W.S. (ft)	* 1898.29	* Flow Area (sq ft)	*	* 42.32	* *
* E.G. Slope (ft/ft)	*0.017364	* Area (sq ft)	*	* 42.32	* *
* Q Total (cfs)	* 893.00	* Flow (cfs)	*	* 893.00	* *
* Top Width (ft)	* 18.81	* Top Width (ft)	*	* 18.81	* *
* Vel Total (ft/s)	* 21.10	* Avg. Vel. (ft/s)	*	* 21.10	* *
* Max Chl Dpth (ft)	* 2.94	* Hydr. Depth (ft)	*	* 2.25	* *
* Conv. Total (cfs)	* 6776.9	* Conv. (cfs)	*	* 6776.9	* *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 20.59	* *
* Min Ch El (ft)	* 1893.40	* Shear (lb/sq ft)	*	* 2.23	* *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 47.01	* *
* Frctn Loss (ft)	* 0.71	* Cum Volume (acre-ft)	*	* 3.33	* *
* C & E Loss (ft)	* 0.16	* Cum SA (acres)	*	* 0.57	* *

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1024

INPUT
Description: Sta 20+50 Drake Channel - Cinnamon Ridge Plans
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.5	1897.2	-5	1892.2	5	1892.2	12.5	1897.2

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.5	.015	-12.5	.015	12.5	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-12.5 12.5 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1902.32	Element	Left OB	Channel	Right OB
Vel Head (ft)	7.24	Wt. n-Val.		0.015	
W.S. Elev (ft)	1895.09	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	1897.09	Flow Area (sq ft)		41.37	
E.G. Slope (ft/ft)	0.018509	Area (sq ft)		41.37	
Q Total (cfs)	893.00	Flow (cfs)		893.00	
Top Width (ft)	18.66	Top Width (ft)		18.66	
Vel Total (ft/s)	21.59	Avg. Vel. (ft/s)		21.59	
Max Chl Dpth (ft)	2.89	Hydr. Depth (ft)		2.22	
Conv. Total (cfs)	6563.8	Conv. (cfs)		6563.8	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		20.41	
Min Ch El (ft)	1892.20	Shear (lb/sq ft)		2.34	
Alpha	1.00	Stream Power (lb/ft s)		50.56	
Frctn Loss (ft)	0.90	Cum Volume (acre-ft)		3.29	
C & E Loss (ft)	0.03	Cum SA (acres)		0.54	

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1023

INPUT
Description: Sta 20+00 Drake Channel - Cinnamon Ridge Plans
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.5	1895.6	-5	1890.6	5	1890.6	12.5	1895.6

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.5	.015	-12.5	.015	12.5	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Right	Coeff Contr.	Expan.
-12.5	12.5	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1901.28	Element	Left OB	Channel	Right OB
Vel Head (ft)	7.89	Wt. n-Val.		0.015	
W.S. Elev (ft)	1893.39	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	1895.49	Flow Area (sq ft)		39.63	
E.G. Slope (ft/ft)	0.020889	Area (sq ft)		39.63	
Q Total (cfs)	893.00	Flow (cfs)		893.00	
Top Width (ft)	18.38	Top Width (ft)		18.38	
Vel Total (ft/s)	22.53	Avg. Vel. (ft/s)		22.53	
Max Chl Dpth (ft)	2.79	Hydr. Depth (ft)		2.16	
Conv. Total (cfs)	6178.6	Conv. (cfs)		6178.6	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		20.07	
Min Ch El (ft)	1890.60	Shear (lb/sq ft)		2.58	
Alpha	1.00	Stream Power (lb/ft s)		58.03	
Frctn Loss (ft)	0.98	Cum Volume (acre-ft)		3.24	
C & E Loss (ft)	0.06	Cum SA (acres)		0.52	

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1022

INPUT
Description: Sta 19+50 Drake Channel - Cinnamon Ridge Plans
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.5	1894.7	-5	1889.7	5	1889.7	12.5	1894.7

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.5	.015	-12.5	.015	12.5	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Right	Coeff Contr.	Expan.
-12.5	12.5	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1900.19	Element	Left OB	Channel	Right OB
Vel Head (ft)	7.66	Wt. n-Val.		0.015	
W.S. Elev (ft)	1892.52	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	1894.59	Flow Area (sq ft)		40.20	
E.G. Slope (ft/ft)	0.020071	Area (sq ft)		40.20	
Q Total (cfs)	893.00	Flow (cfs)		893.00	
Top Width (ft)	18.47	Top Width (ft)		18.47	
Vel Total (ft/s)	22.22	Avg. Vel. (ft/s)		22.22	
Max Chl Dpth (ft)	2.82	Hydr. Depth (ft)		2.18	
Conv. Total (cfs)	6303.3	Conv. (cfs)		6303.3	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		20.18	
Min Ch El (ft)	1889.70	Shear (lb/sq ft)		2.50	
Alpha	1.00	Stream Power (lb/ft s)		55.45	
Frctn Loss (ft)	1.02	Cum Volume (acre-ft)		3.19	
C & E Loss (ft)	0.07	Cum SA (acres)		0.50	

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1021

INPUT
Description: Sta 19+00 Drake Channel - Cinnamon Ridge Plans
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-12.5	1893.8	-5	1888.8	5	1888.8	12.5	1893.8

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-12.5	.015	-12.5	.015	12.5	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.

Left	Right	Left Channel	Right	Coeff Contr.	Expan.
-12.5	12.5	50	50	.1	.3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1899.15	Element	Left OB	Channel	Right OB
Vel Head (ft)	7.50	Wt. n-Val.		0.015	
W.S. Elev (ft)	1891.65	Reach Len. (ft)	50.00	50.00	50.00
Crit W.S. (ft)	1893.69	Flow Area (sq ft)		40.63	
E.G. Slope (ft/ft)	0.019477	Area (sq ft)		40.63	
Q Total (cfs)	893.00	Flow (cfs)		893.00	
Top Width (ft)	18.54	Top Width (ft)		18.54	
Vel Total (ft/s)	21.98	Avg. Vel. (ft/s)		21.98	
Max Chl Dpth (ft)	2.85	Hydr. Depth (ft)		2.19	
Conv. Total (cfs)	6398.8	Conv. (cfs)		6398.8	
Length Wtd. (ft)	50.00	Wetted Per. (ft)		20.26	
Min Ch El (ft)	1888.80	Shear (lb/sq ft)		2.44	
Alpha	1.00	Stream Power (lb/ft s)		53.58	
Frctn Loss (ft)	0.99	Cum Volume (acre-ft)		3.15	
C & E Loss (ft)	0.05	Cum SA (acres)		0.48	

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1020

INPUT
Description: Sta 18+50 Drake Channel - Cinnamon Ridge Plans
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev

```
*****************************************************************
   -12.5  1892.9       -5  1887.9        5  1887.9     12.5  1892.9

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -12.5    .015    -12.5    .015     12.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -12.5    12.5             58.82   58.82   58.82          .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1898.15  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    7.39  * Wt. n-Val.              *          *    0.015 *          *
* W.S. Elev (ft)          * 1890.76  * Reach Len. (ft)        *   58.82  *   58.82  *   58.82  *
* Crit W.S. (ft)          * 1892.79  * Flow Area (sq ft)      *          *   40.94  *          *
* E.G. Slope (ft/ft)      *0.019058  * Area (sq ft)           *          *   40.94  *          *
* Q Total (cfs)           *  893.00  * Flow (cfs)            *          *  893.00  *          *
* Top Width (ft)          *   18.59  * Top Width (ft)        *          *   18.59  *          *
* Vel Total (ft/s)        *   21.81  * Avg. Vel. (ft/s)      *          *   21.81  *          *
* Max Chl Dpth (ft)       *    2.86  * Hydr. Depth (ft)      *          *    2.20  *          *
* Conv. Total (cfs)       *  6468.7  * Conv. (cfs)           *          *  6468.7  *          *
* Length Wtd. (ft)        *   58.82  * Wetted Per. (ft)      *          *   20.33  *          *
* Min Ch El (ft)          * 1887.90  * Shear (lb/sq ft)      *          *    2.40  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   52.27  *          *
* Frctn Loss (ft)         *    0.96  * Cum Volume (acre-ft)  *          *    3.10  *          *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)        *          *    0.46  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1019

INPUT
Description: Sta 17+91.18 Drake Channel - Cinnamon Ridge plans = 19+50 of VTN
             plans
Station Elevation Data     num=        4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************
   -12.5  1891.5       -5 1886.51        5 1886.51     12.5  1891.5

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -12.5    .015    -12.5    .015     12.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -12.5    12.5             .1      .1      .1           .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1896.98  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    7.64  * Wt. n-Val.              *          *    0.015 *          *
* W.S. Elev (ft)          * 1889.34  * Reach Len. (ft)        *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)          * 1891.39  * Flow Area (sq ft)      *          *   40.26  *          *
* E.G. Slope (ft/ft)      *0.019993  * Area (sq ft)           *          *   40.26  *          *
* Q Total (cfs)           *  893.00  * Flow (cfs)            *          *  893.00  *          *
* Top Width (ft)          *   18.49  * Top Width (ft)        *          *   18.49  *          *
* Vel Total (ft/s)        *   22.18  * Avg. Vel. (ft/s)      *          *   22.18  *          *
* Max Chl Dpth (ft)       *    2.83  * Hydr. Depth (ft)      *          *    2.18  *          *
* Conv. Total (cfs)       *  6315.6  * Conv. (cfs)           *          *  6315.6  *          *
* Length Wtd. (ft)        *    0.10  * Wetted Per. (ft)      *          *   20.20  *          *
* Min Ch El (ft)          * 1886.51  * Shear (lb/sq ft)      *          *    2.49  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   55.17  *          *
* Frctn Loss (ft)         *    1.15  * Cum Volume (acre-ft)  *          *    3.05  *          *
* C & E Loss (ft)         *    0.03  * Cum SA (acres)        *          *    0.43  *          *
*****************************************************************************************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1018

INPUT
Description: Sta 19+50 Drake Channel - VTN Plans add 2.31'
Station Elevation Data     num=        4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************
   -12.5  1891.5       -5 1886.51        5 1886.51     12.5  1891.5

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -12.5    .015    -12.5    .015     12.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -12.5    12.5             50      50      50           .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1896.98  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    7.64  * Wt. n-Val.              *          *    0.015 *          *
* W.S. Elev (ft)          * 1889.34  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          * 1891.39  * Flow Area (sq ft)      *          *   40.26  *          *
* E.G. Slope (ft/ft)      *0.019993  * Area (sq ft)           *          *   40.26  *          *
* Q Total (cfs)           *  893.00  * Flow (cfs)            *          *  893.00  *          *
* Top Width (ft)          *   18.49  * Top Width (ft)        *          *   18.49  *          *
* Vel Total (ft/s)        *   22.18  * Avg. Vel. (ft/s)      *          *   22.18  *          *
* Max Chl Dpth (ft)       *    2.83  * Hydr. Depth (ft)      *          *    2.18  *          *
* Conv. Total (cfs)       *  6315.6  * Conv. (cfs)           *          *  6315.6  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   20.20  *          *
* Min Ch El (ft)          * 1886.51  * Shear (lb/sq ft)      *          *    2.49  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   55.17  *          *
* Frctn Loss (ft)         *    0.00  * Cum Volume (acre-ft)  *          *    3.05  *          *
* C & E Loss (ft)         *    0.00  * Cum SA (acres)        *          *    0.43  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1017

INPUT
Description: Sta 19+00 Drake Channel - VTN Plans - add 2.31'
Station Elevation Data     num=        4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
*****************************************************************
   -12.5 1899.49    -8.75 1885.49     8.75 1885.49     12.5 1899.49

Manning's n Values          num=        3
     Sta   n Val      Sta   n Val      Sta   n Val
*************************************************
   -12.5    .015    -12.5    .015     12.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -12.5    12.5             50      50      50           .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)          * 1895.81  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    8.17  * Wt. n-Val.              *          *    0.015 *          *
* W.S. Elev (ft)          * 1887.64  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          * 1889.72  * Flow Area (sq ft)      *          *   38.94  *          *
* E.G. Slope (ft/ft)      *0.024968  * Area (sq ft)           *          *   38.94  *          *
* Q Total (cfs)           *  893.00  * Flow (cfs)            *          *  893.00  *          *
* Top Width (ft)          *   18.65  * Top Width (ft)        *          *   18.65  *          *
* Vel Total (ft/s)        *   22.93  * Avg. Vel. (ft/s)      *          *   22.93  *          *
* Max Chl Dpth (ft)       *    2.15  * Hydr. Depth (ft)      *          *    2.09  *          *
* Conv. Total (cfs)       *  5651.4  * Conv. (cfs)           *          *  5651.4  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)      *          *   21.96  *          *
* Min Ch El (ft)          * 1885.49  * Shear (lb/sq ft)      *          *    2.76  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   63.39  *          *
* Frctn Loss (ft)         *    1.11  * Cum Volume (acre-ft)  *          *    3.00  *          *
* C & E Loss (ft)         *    0.05  * Cum SA (acres)        *          *    0.41  *          *
*****************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION
```

```
RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1016

INPUT
Description: Sta 18+50 Drake Channel - VTN Plans -add 2.31'
Station Elevation Data     num=       4
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
    -14.5 1898.45    -14.5 1884.45     10.5 1884.45     10.5 1898.45

Manning's n Values         num=       3
      Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
    -14.5     .015    -14.5     .015     10.5     .015

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -14.5    10.5                  50       50       50              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1894.31  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    8.32  * Wt. n-Val.              *          *    0.015  *          *
* W.S. Elev (ft)          * 1885.99  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          * 1887.85  * Flow Area (sq ft)      *          *   38.58  *          *
* E.G. Slope (ft/ft)      *0.035755  * Area (sq ft)           *          *   38.58  *          *
* Q Total (cfs)           *  893.00  * Flow (cfs)            *          *  893.00  *          *
* Top Width (ft)          *   25.00  * Top Width (ft)         *          *   25.00  *          *
* Vel Total (ft/s)        *   23.15  * Avg. Vel. (ft/s)       *          *   23.15  *          *
* Max Chl Dpth (ft)       *    1.54  * Hydr. Depth (ft)       *          *    1.54  *          *
* Conv. Total (cfs)       *  4722.6  * Conv. (cfs)           *          *  4722.6  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)       *          *   28.09  *          *
* Min Ch El (ft)          * 1884.45  * Shear (lb/sq ft)      *          *    3.07  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   70.97  *          *
* Frctn Loss (ft)         *    1.48  * Cum Volume (acre-ft)   *          *    2.96  *          *
* C & E Loss (ft)         *    0.02  * Cum SA (acres)         *          *    0.39  *          *
*************************************************************************************************

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1015

INPUT
Description: Sta 18+00 Drake Channel - VTN Plans - add 2.31'
Station Elevation Data     num=       4
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
    -14.5 1897.41    -14.5 1883.41     10.5 1883.41     10.5 1897.41

Manning's n Values         num=       3
      Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
    -14.5     .015    -14.5     .015     10.5     .015

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -14.5    10.5                  50       50       50              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1892.41  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    7.35  * Wt. n-Val.              *          *    0.015  *          *
* W.S. Elev (ft)          * 1885.05  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          * 1886.81  * Flow Area (sq ft)      *          *   41.03  *          *
* E.G. Slope (ft/ft)      *0.029384  * Area (sq ft)           *          *   41.03  *          *
* Q Total (cfs)           *  893.00  * Flow (cfs)            *          *  893.00  *          *
* Top Width (ft)          *   25.00  * Top Width (ft)         *          *   25.00  *          *
* Vel Total (ft/s)        *   21.76  * Avg. Vel. (ft/s)       *          *   21.76  *          *
* Max Chl Dpth (ft)       *    1.64  * Hydr. Depth (ft)       *          *    1.64  *          *
* Conv. Total (cfs)       *  5209.5  * Conv. (cfs)           *          *  5209.5  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)       *          *   28.28  *          *
* Min Ch El (ft)          * 1883.41  * Shear (lb/sq ft)      *          *    2.66  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   57.92  *          *
* Frctn Loss (ft)         *    1.62  * Cum Volume (acre-ft)   *          *    2.91  *          *
* C & E Loss (ft)         *    0.29  * Cum SA (acres)         *          *    0.36  *          *
*************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1014

INPUT
Description: Sta 17+50 Drake Channel - VTN Plans -add 2.31'
Station Elevation Data     num=       4
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
    -14.5 1893.36    -14.5 1879.36     10.5 1879.36     10.5 1893.36

Manning's n Values         num=       3
      Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
    -14.5     .015    -14.5     .015     10.5     .015

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -14.5    10.5                  50       50       50              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1890.39  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *    9.59  * Wt. n-Val.              *          *    0.015  *          *
* W.S. Elev (ft)          * 1880.80  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          * 1882.76  * Flow Area (sq ft)      *          *   35.93  *          *
* E.G. Slope (ft/ft)      *0.044855  * Area (sq ft)           *          *   35.93  *          *
* Q Total (cfs)           *  893.00  * Flow (cfs)            *          *  893.00  *          *
* Top Width (ft)          *   25.00  * Top Width (ft)         *          *   25.00  *          *
* Vel Total (ft/s)        *   24.85  * Avg. Vel. (ft/s)       *          *   24.85  *          *
* Max Chl Dpth (ft)       *    1.44  * Hydr. Depth (ft)       *          *    1.44  *          *
* Conv. Total (cfs)       *  4216.5  * Conv. (cfs)           *          *  4216.5  *          *
* Length Wtd. (ft)        *   50.00  * Wetted Per. (ft)       *          *   27.87  *          *
* Min Ch El (ft)          * 1879.36  * Shear (lb/sq ft)      *          *    3.61  *          *
* Alpha                   *    1.00  * Stream Power (lb/ft s) *          *   89.71  *          *
* Frctn Loss (ft)         *    1.80  * Cum Volume (acre-ft)   *          *    2.87  *          *
* C & E Loss (ft)         *    0.22  * Cum SA (acres)         *          *    0.33  *          *
*************************************************************************************************

Warning: The velocity head has changed by more than 0.5 ft (0.15 m).  This may indicate the need for
         additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross
         section.  This may indicate the need for additional cross sections.

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1013

INPUT
Description: Sta 17+00 Drake Channel - VTN Plans - add 2.31'
Station Elevation Data     num=       4
      Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
    -14.5 1889.31    -14.5 1875.31     10.5 1875.31     10.5 1889.31

Manning's n Values         num=       3
      Sta    n Val      Sta    n Val      Sta    n Val
*********************************************
    -14.5     .015    -14.5     .015     10.5     .015

Bank Sta: Left   Right     Lengths: Left Channel   Right      Coeff Contr.    Expan.
          -14.5    10.5                  50       50       50              .1       .3

CROSS SECTION OUTPUT  Profile #PF 1
*************************************************************************************************
* E.G. Elev (ft)          * 1887.73  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)           *   11.08  * Wt. n-Val.              *          *    0.015  *          *
* W.S. Elev (ft)          * 1876.65  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)          * 1878.71  * Flow Area (sq ft)      *          *   33.43  *          *
* E.G. Slope (ft/ft)      *0.056527  * Area (sq ft)           *          *   33.43  *          *
* Q Total (cfs)           *  893.00  * Flow (cfs)            *          *  893.00  *          *
* Top Width (ft)          *   25.00  * Top Width (ft)         *          *   25.00  *          *
```

* Vel Total (ft/s)	* 26.71	* Avg. Vel. (ft/s)	* 26.71	*
* Max Chl Dpth (ft)	* 1.34	* Hydr. Depth (ft)	* 1.34	*
* Conv. Total (cfs)	* 3756.0	* Conv. (cfs)	* 3756.0	*
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	* 27.67	*
* Min Ch El (ft)	* 1875.31	* Shear (lb/sq ft)	* 4.26	*
* Alpha	* 1.00	* Stream Power (lb/ft s)	* 113.87	*
* Frctn Loss (ft)	* 2.51	* Cum Volume (acre-ft)	* 2.83	*
* C & E Loss (ft)	* 0.15	* Cum SA (acres)	* 0.30	*

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1012

INPUT
Description: Sta 16+50 Drake Channel - VTN Plans - add 2.31 '
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-14.5	1886.04	-14.5	1872.04	10.5	1872.04	10.5	1886.04

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-14.5	.015	-14.5	.015	10.5	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-14.5 10.5 50 50 50 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1884.79	* Element	* Left OB	* Channel * Right OB *
* Vel Head (ft)	* 11.44	* Wt. n-Val.	*	* 0.015 * *
* W.S. Elev (ft)	* 1873.36	* Reach Len. (ft)	* 50.00	* 50.00 * 50.00 *
* Crit W.S. (ft)	* 1875.44	* Flow Area (sq ft)	*	* 32.90 * *
* E.G. Slope (ft/ft)	*0.059469	* Area (sq ft)	*	* 32.90 * *
* Q Total (cfs)	* 893.00	* Flow (cfs)	*	* 893.00 * *
* Top Width (ft)	* 25.00	* Top Width (ft)	*	* 25.00 * *
* Vel Total (ft/s)	* 27.14	* Avg. Vel. (ft/s)	*	* 27.14 * *
* Max Chl Dpth (ft)	* 1.32	* Hydr. Depth (ft)	*	* 1.32 * *
* Conv. Total (cfs)	* 3661.9	* Conv. (cfs)	*	* 3661.9 * *
* Length Wtd. (ft)	* 50.00	* Wetted Per. (ft)	*	* 27.63 * *
* Min Ch El (ft)	* 1872.04	* Shear (lb/sq ft)	*	* 4.42 * *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 119.98 * *
* Frctn Loss (ft)	* 2.90	* Cum Volume (acre-ft)	*	* 2.79 * *
* C & E Loss (ft)	* 0.04	* Cum SA (acres)	*	* 0.27 * *

Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1011

INPUT
Description: Sta 16+00 Drake Channel - VTN Plans -add 2.31'
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-14.5	1881.21	-14.5	1867.21	10.5	1867.21	10.5	1881.21

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-14.5	.015	-14.5	.015	10.5	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-14.5 10.5 52.87 52.87 52.87 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1881.37	* Element	* Left OB	* Channel * Right OB *
* Vel Head (ft)	* 12.93	* Wt. n-Val.	*	* 0.015 * *
* W.S. Elev (ft)	* 1868.45	* Reach Len. (ft)	* 52.87	* 52.87 * 52.87 *
* Crit W.S. (ft)	* 1870.61	* Flow Area (sq ft)	*	* 30.95 * *
* E.G. Slope (ft/ft)	*0.072375	* Area (sq ft)	*	* 30.95 * *
* Q Total (cfs)	* 893.00	* Flow (cfs)	*	* 893.00 * *
* Top Width (ft)	* 25.00	* Top Width (ft)	*	* 25.00 * *
* Vel Total (ft/s)	* 28.85	* Avg. Vel. (ft/s)	*	* 28.85 * *
* Max Chl Dpth (ft)	* 1.24	* Hydr. Depth (ft)	*	* 1.24 * *
* Conv. Total (cfs)	* 3319.4	* Conv. (cfs)	*	* 3319.4 * *
* Length Wtd. (ft)	* 52.87	* Wetted Per. (ft)	*	* 27.48 * *
* Min Ch El (ft)	* 1867.21	* Shear (lb/sq ft)	*	* 5.09 * *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 146.85 * *
* Frctn Loss (ft)	* 3.27	* Cum Volume (acre-ft)	*	* 2.75 * *
* C & E Loss (ft)	* 0.15	* Cum SA (acres)	*	* 0.24 * *

Warning: The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning: The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1010

INPUT
Description: Sta 15+47.13 Drake Channel - VTN Plans - add 2.31'
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-14.5	1876.93	-14.5	1862.93	10.5	1862.93	10.5	1876.93

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val
-14.5	.015	-14.5	.015	10.5	.015

Bank Sta: Left Right Lengths: Left Channel Right Coeff Contr. Expan.
-14.5 10.5 47.13 47.13 47.13 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

* E.G. Elev (ft)	* 1874.83	* Element	* Left OB	* Channel * Right OB *
* Vel Head (ft)	* 0.14	* Wt. n-Val.	*	* 0.015 * *
* W.S. Elev (ft)	* 1874.69	* Reach Len. (ft)	* 47.13	* 47.13 * 47.13 *
* Crit W.S. (ft)	* 1866.33	* Flow Area (sq ft)	*	* 293.87 * *
* E.G. Slope (ft/ft)	*0.000085	* Area (sq ft)	*	* 293.87 * *
* Q Total (cfs)	* 893.00	* Flow (cfs)	*	* 893.00 * *
* Top Width (ft)	* 25.00	* Top Width (ft)	*	* 25.00 * *
* Vel Total (ft/s)	* 3.04	* Avg. Vel. (ft/s)	*	* 3.04 * *
* Max Chl Dpth (ft)	* 11.75	* Hydr. Depth (ft)	*	* 11.75 * *
* Conv. Total (cfs)	* 96739.3	* Conv. (cfs)	*	* 96739.3 * *
* Length Wtd. (ft)	* 47.13	* Wetted Per. (ft)	*	* 48.51 * *
* Min Ch El (ft)	* 1862.93	* Shear (lb/sq ft)	*	* 0.03 * *
* Alpha	* 1.00	* Stream Power (lb/ft s)	*	* 0.10 * *
* Frctn Loss (ft)	* 0.00	* Cum Volume (acre-ft)	*	* 2.55 * *
* C & E Loss (ft)	* 0.00	* Cum SA (acres)	*	* 0.21 * *

Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

CROSS SECTION

RIVER: Drake Channel
REACH: C-1 to 9000 ft E RS: 1009

INPUT
Description: Sta 15+00 Drake Channel - VTN Plans -add 2.31 '
Station Elevation Data num= 4

Sta	Elev	Sta	Elev	Sta	Elev	Sta	Elev
-14.5	1876.88	-14.5	1862.88	10.5	1862.88	10.5	1876.88

Manning's n Values num= 3

Sta	n Val	Sta	n Val	Sta	n Val

```
   -14.5    .015   -14.5    .015    10.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -14.5    10.5                50       50       50              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)         * 1874.82  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.14  * Wt. n-Val.             *          *    0.015 *          *
* W.S. Elev (ft)         * 1874.68  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         *         * Flow Area (sq ft)      *          *  295.04  *          *
* E.G. Slope (ft/ft)     *0.000084  * Area (sq ft)           *          *  893.00  *          *
* Q Total (cfs)          *  893.00  * Flow (cfs)             *          *  893.00  *          *
* Top Width (ft)         *   25.00  * Top Width (ft)         *          *   25.00  *          *
* Vel Total (ft/s)       *    3.03  * Avg. Vel. (ft/s)       *          *    3.03  *          *
* Max Chl Dpth (ft)      *   11.80  * Hydr. Depth (ft)       *          *   11.80  *          *
* Conv. Total (cfs)      * 97257.8  * Conv. (cfs)           *          * 97257.8  *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)       *          *   48.60  *          *
* Min Ch El (ft)         * 1862.88  * Shear (lb/sq ft)      *          *    0.03  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.10  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)   *          *    2.24  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    0.19  *          *
**********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1008

INPUT
Description: Sta 14+50 Drake Channel - VTN Plans - add 2.31'
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -14.5 1876.83    -14.5 1862.83     10.5 1862.83     10.5 1876.83

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
**************************************************
   -14.5     .015    -14.5     .015     10.5     .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -14.5    10.5                50       50       50              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)         * 1874.82  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.14  * Wt. n-Val.             *          *    0.015 *          *
* W.S. Elev (ft)         * 1874.68  * Reach Len. (ft)        *   50.00  *   50.00  *   50.00  *
* Crit W.S. (ft)         *         * Flow Area (sq ft)      *          *  296.20  *          *
* E.G. Slope (ft/ft)     *0.000083  * Area (sq ft)           *          *  296.20  *          *
* Q Total (cfs)          *  893.00  * Flow (cfs)             *          *  893.00  *          *
* Top Width (ft)         *   25.00  * Top Width (ft)         *          *   25.00  *          *
* Vel Total (ft/s)       *    3.01  * Avg. Vel. (ft/s)       *          *    3.01  *          *
* Max Chl Dpth (ft)      *   11.85  * Hydr. Depth (ft)       *          *   11.85  *          *
* Conv. Total (cfs)      * 97774.1  * Conv. (cfs)           *          * 97774.1  *          *
* Length Wtd. (ft)       *   50.00  * Wetted Per. (ft)       *          *   48.70  *          *
* Min Ch El (ft)         * 1862.83  * Shear (lb/sq ft)      *          *    0.03  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.10  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)   *          *    1.90  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    0.16  *          *
**********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1007

INPUT
Description: Sta 14+00 Drake Channel - VTN Plans  - add 2.31 '
Sta 14+00
                Drake Channel
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -14.5 1876.78    -14.5 1862.78     10.5 1862.78     10.5 1876.78

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
**************************************************
   -14.5     .015    -14.5     .015     10.5     .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -14.5    10.5                39       39       39              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)         * 1874.82  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.14  * Wt. n-Val.             *          *    0.015 *          *
* W.S. Elev (ft)         * 1874.68  * Reach Len. (ft)        *   39.00  *   39.00  *   39.00  *
* Crit W.S. (ft)         *         * Flow Area (sq ft)      *          *  297.37  *          *
* E.G. Slope (ft/ft)     *0.000083  * Area (sq ft)           *          *  297.37  *          *
* Q Total (cfs)          *  893.00  * Flow (cfs)             *          *  893.00  *          *
* Top Width (ft)         *   25.00  * Top Width (ft)         *          *   25.00  *          *
* Vel Total (ft/s)       *    3.00  * Avg. Vel. (ft/s)       *          *    3.00  *          *
* Max Chl Dpth (ft)      *   11.89  * Hydr. Depth (ft)       *          *   11.89  *          *
* Conv. Total (cfs)      * 98289.5  * Conv. (cfs)           *          * 98289.5  *          *
* Length Wtd. (ft)       *   39.00  * Wetted Per. (ft)       *          *   48.79  *          *
* Min Ch El (ft)         * 1862.78  * Shear (lb/sq ft)      *          *    0.03  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.09  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)   *          *    1.56  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    0.13  *          *
**********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1006

INPUT
Description: Sta 13+61 Drake Channel - VTN Plans - add 2.31'
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -14.5 1876.74    -14.5 1862.74     10.5 1862.74     10.5 1876.74

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
**************************************************
   -14.5     .015    -14.5     .015     10.5     .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
          -14.5    10.5                .1       .1       .1              .1      .3

CROSS SECTION OUTPUT  Profile #PF 1
**********************************************************************************************
* E.G. Elev (ft)         * 1874.81  * Element                 *  Left OB *  Channel * Right OB *
* Vel Head (ft)          *    0.14  * Wt. n-Val.             *          *    0.015 *          *
* W.S. Elev (ft)         * 1874.67  * Reach Len. (ft)        *    0.10  *    0.10  *    0.10  *
* Crit W.S. (ft)         *         * Flow Area (sq ft)      *          *  298.30  *          *
* E.G. Slope (ft/ft)     *0.000082  * Area (sq ft)           *          *  298.30  *          *
* Q Total (cfs)          *  893.00  * Flow (cfs)             *          *  893.00  *          *
* Top Width (ft)         *   25.00  * Top Width (ft)         *          *   25.00  *          *
* Vel Total (ft/s)       *    2.99  * Avg. Vel. (ft/s)       *          *    2.99  *          *
* Max Chl Dpth (ft)      *   11.93  * Hydr. Depth (ft)       *          *   11.93  *          *
* Conv. Total (cfs)      * 98705.1  * Conv. (cfs)           *          * 98705.1  *          *
* Length Wtd. (ft)       *    0.10  * Wetted Per. (ft)       *          *   48.86  *          *
* Min Ch El (ft)         * 1862.74  * Shear (lb/sq ft)      *          *    0.03  *          *
* Alpha                  *    1.00  * Stream Power (lb/ft s) *          *    0.09  *          *
* Frctn Loss (ft)        *    0.00  * Cum Volume (acre-ft)   *          *    1.29  *          *
* C & E Loss (ft)        *    0.00  * Cum SA (acres)         *          *    0.11  *          *
**********************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1005

INPUT
Description: Sta 13+61 Drake Channel - VTN Plans - add 2.31'
Station Elevation Data    num=      4
     Sta     Elev      Sta     Elev      Sta     Elev      Sta     Elev
**********************************************************************
   -14.5 1876.74    -14.5 1862.74     10.5 1862.74     10.5 1877.24

Manning's n Values        num=      3
     Sta    n Val      Sta    n Val      Sta    n Val
```

```
*************************************************
   -14.5    .015   -14.5    .015    10.5    .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -14.5    10.5              12.06      11    9.94          .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)        * 1874.81  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.14  * Wt. n-Val.           *          *    0.015  *          *
* W.S. Elev (ft)        * 1874.67  * Reach Len. (ft)       *   12.06  *   11.00  *    9.94  *
* Crit W.S. (ft)        *         * Flow Area (sq ft)      *          *  298.30  *          *
* E.G. Slope (ft/ft)    *0.000082  * Area (sq ft)          *          *  298.30  *          *
* Q Total (cfs)         *  893.00  * Flow (cfs)            *          *  893.00  *          *
* Top Width (ft)        *   25.00  * Top Width (ft)        *          *   25.00  *          *
* Vel Total (ft/s)      *    2.99  * Avg. Vel. (ft/s)      *          *    2.99  *          *
* Max Chl Dpth (ft)     *   11.93  * Hydr. Depth (ft)      *          *   11.93  *          *
* Conv. Total (cfs)     * 98705.1  * Conv. (cfs)           *          * 98705.1  *          *
* Length Wtd. (ft)      *   11.00  * Wetted Per. (ft)      *          *   48.86  *          *
* Min Ch El (ft)        * 1862.74  * Shear (lb/sq ft)     *          *    0.03  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.09  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *          *    1.29  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *          *    0.11  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1004

INPUT
Description: Sta 13+50 Drake Channel - VTN Plans- add 2.31'
Station Elevation Data    num=      4
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
*************************************************************************
   -12.5 1876.68   -12.5 1862.68    12.5 1862.68    12.5 1877.18

Manning's n Values          num=      3
     Sta    n Val     Sta    n Val     Sta    n Val
*************************************************
   -12.5     .015   -12.5     .015    12.5     .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -12.5    12.5             109.44     100   90.56          .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)        * 1874.81  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.14  * Wt. n-Val.           *          *    0.015  *          *
* W.S. Elev (ft)        * 1874.67  * Reach Len. (ft)       *  109.44  *  100.00  *   90.56  *
* Crit W.S. (ft)        *         * Flow Area (sq ft)      *          *  299.80  *          *
* E.G. Slope (ft/ft)    *0.000081  * Area (sq ft)          *          *  299.80  *          *
* Q Total (cfs)         *  893.00  * Flow (cfs)            *          *  893.00  *          *
* Top Width (ft)        *   25.00  * Top Width (ft)        *          *   25.00  *          *
* Vel Total (ft/s)      *    2.98  * Avg. Vel. (ft/s)      *          *    2.98  *          *
* Max Chl Dpth (ft)     *   11.99  * Hydr. Depth (ft)      *          *   11.99  *          *
* Conv. Total (cfs)     * 99371.7  * Conv. (cfs)           *          * 99371.7  *          *
* Length Wtd. (ft)      *  100.00  * Wetted Per. (ft)      *          *   48.98  *          *
* Min Ch El (ft)        * 1862.68  * Shear (lb/sq ft)     *          *    0.03  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.09  *          *
* Frctn Loss (ft)       *    0.01  * Cum Volume (acre-ft)  *          *    1.21  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *          *    0.10  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1003

INPUT
Description: Sta 12+50 Drake Channel - VTN Plan - add 2.31 '
Station Elevation Data    num=      4
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
*************************************************************************
   -12.5 1876.63   -12.5 1862.63    12.5 1862.63    12.5 1877.13

Manning's n Values          num=      3
     Sta    n Val     Sta    n Val     Sta    n Val
*************************************************
   -12.5     .015   -12.5     .015    12.5     .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -12.5    12.5              54.72      50   45.12          .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)        * 1874.80  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.14  * Wt. n-Val.           *          *    0.015  *          *
* W.S. Elev (ft)        * 1874.67  * Reach Len. (ft)       *   54.72  *   50.00  *   45.12  *
* Crit W.S. (ft)        *         * Flow Area (sq ft)      *          *  300.87  *          *
* E.G. Slope (ft/ft)    *0.000080  * Area (sq ft)          *          *  300.87  *          *
* Q Total (cfs)         *  893.00  * Flow (cfs)            *          *  893.00  *          *
* Top Width (ft)        *   25.00  * Top Width (ft)        *          *   25.00  *          *
* Vel Total (ft/s)      *    2.97  * Avg. Vel. (ft/s)      *          *    2.97  *          *
* Max Chl Dpth (ft)     *   12.03  * Hydr. Depth (ft)      *          *   12.03  *          *
* Conv. Total (cfs)     * 99846.4  * Conv. (cfs)           *          * 99846.4  *          *
* Length Wtd. (ft)      *   50.00  * Wetted Per. (ft)      *          *   49.07  *          *
* Min Ch El (ft)        * 1862.63  * Shear (lb/sq ft)     *          *    0.03  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.09  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *          *    0.52  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *          *    0.04  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1002

INPUT
Description: Sta 12+00 Drake Channel - VTN Plans - add 2.31'
Station Elevation Data    num=      4
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
*************************************************************************
   -12.5 1876.58   -12.5 1862.58    12.5 1862.58    12.5 1877.08

Manning's n Values          num=      3
     Sta    n Val     Sta    n Val     Sta    n Val
*************************************************
   -12.5     .015   -12.5     .015    12.5     .015

Bank Sta: Left   Right    Lengths: Left Channel   Right     Coeff Contr.   Expan.
         -12.5    12.5              28.1   25.64   23.17          .1        .3

CROSS SECTION OUTPUT  Profile #PF 1
*****************************************************************************************************
* E.G. Elev (ft)        * 1874.80  * Element               *  Left OB *  Channel * Right OB *
* Vel Head (ft)         *    0.14  * Wt. n-Val.           *          *    0.015  *          *
* W.S. Elev (ft)        * 1874.66  * Reach Len. (ft)       *   28.10  *   25.64  *   23.17  *
* Crit W.S. (ft)        *         * Flow Area (sq ft)      *          *  302.04  *          *
* E.G. Slope (ft/ft)    *0.000079  * Area (sq ft)          *          *  302.04  *          *
* Q Total (cfs)         *  893.00  * Flow (cfs)            *          *  893.00  *          *
* Top Width (ft)        *   25.00  * Top Width (ft)        *          *   25.00  *          *
* Vel Total (ft/s)      *    2.96  * Avg. Vel. (ft/s)      *          *    2.96  *          *
* Max Chl Dpth (ft)     *   12.08  * Hydr. Depth (ft)      *          *   12.08  *          *
* Conv. Total (cfs)     *100366.3  * Conv. (cfs)           *          *100366.3  *          *
* Length Wtd. (ft)      *   25.64  * Wetted Per. (ft)      *          *   49.16  *          *
* Min Ch El (ft)        * 1862.58  * Shear (lb/sq ft)     *          *    0.03  *          *
* Alpha                 *    1.00  * Stream Power (lb/ft s) *          *    0.09  *          *
* Frctn Loss (ft)       *    0.00  * Cum Volume (acre-ft)  *          *    0.18  *          *
* C & E Loss (ft)       *    0.00  * Cum SA (acres)        *          *    0.01  *          *
*****************************************************************************************************

CROSS SECTION


RIVER: Drake Channel
REACH: C-1 to 9000 ft E   RS: 1001

INPUT
Description: Sta 11+74.36 Drake Channel - VTN Plans - add 2.31'
Station Elevation Data    num=      4
     Sta     Elev     Sta     Elev     Sta     Elev     Sta     Elev
*************************************************************************
   -12.5 1876.55   -12.5 1862.55    12.5 1862.55    12.5 1877.05

Manning's n Values          num=      3
     Sta    n Val     Sta    n Val     Sta    n Val
*************************************************
```

-12.5 .015 -12.5 .015 12.5 .015

Bank Sta: Left Right Coeff Contr. Expan.
-12.5 12.5 .1 .3

CROSS SECTION OUTPUT Profile #PF 1

E.G. Elev (ft)	1874.80	Element	Left OB	Channel	Right OB
Vel Head (ft)	0.14	Wt. n-Val.		0.015	
W.S. Elev (ft)	1874.66	Reach Len. (ft)			
Crit W.S. (ft)	1865.95	Flow Area (sq ft)		302.75	
E.G. Slope (ft/ft)	0.000079	Area (sq ft)		302.75	
Q Total (cfs)	893.00	Flow (cfs)		893.00	
Top Width (ft)	25.00	Top Width (ft)		25.00	
Vel Total (ft/s)	2.95	Avg. Vel. (ft/s)		2.95	
Max Chl Dpth (ft)	12.11	Hydr. Depth (ft)		12.11	
Conv. Total (cfs)	100681.4	Conv. (cfs)		100681.4	
Length Wtd. (ft)		Wetted Per. (ft)		49.22	
Min Ch El (ft)	1862.55	Shear (lb/sq ft)		0.03	
Alpha	1.00	Stream Power (lb/ft s)		0.09	
Frctn Loss (ft)		Cum Volume (acre-ft)			
C & E Loss (ft)		Cum SA (acres)			

SUMMARY OF MANNING'S N VALUES

River:Drake Channel

Reach	River Sta.	n1	n2	n3
C-1 to 9000 ft E	1328	.03	.03	.03
C-1 to 9000 ft E	1327	.03	.03	.03
C-1 to 9000 ft E	1326	.03	.03	.03
C-1 to 9000 ft E	1325	.03	.03	.03
C-1 to 9000 ft E	1324	.03	.03	.03
C-1 to 9000 ft E	1323	.03	.03	.03
C-1 to 9000 ft E	1322	.03	.03	.03
C-1 to 9000 ft E	1321	.04	.04	.04
C-1 to 9000 ft E	1320	.028	.028	.028
C-1 to 9000 ft E	1319	.028	.028	.028
C-1 to 9000 ft E	1318	.028	.028	.028
C-1 to 9000 ft E	1317	.04	.04	.04
C-1 to 9000 ft E	1316	.028	.028	.028
C-1 to 9000 ft E	1315	.028	.028	.028
C-1 to 9000 ft E	1314	.028	.028	.028
C-1 to 9000 ft E	1313	.028	.03	.028
C-1 to 9000 ft E	1312	.03	.03	.03
C-1 to 9000 ft E	1311	.03	.03	.03
C-1 to 9000 ft E	1310	.03	.03	.03
C-1 to 9000 ft E	1309	.03	.03	.03
C-1 to 9000 ft E	1308	.03	.03	.03
C-1 to 9000 ft E	1307	.03	.03	.03
C-1 to 9000 ft E	1306	.03	.03	.03
C-1 to 9000 ft E	1305	.04	.04	.04
C-1 to 9000 ft E	1304	.028	.028	.028
C-1 to 9000 ft E	1303	.028	.028	.028
C-1 to 9000 ft E	1302	.028	.028	.028
C-1 to 9000 ft E	1301	.04	.04	.04
C-1 to 9000 ft E	1300	.028	.028	.028
C-1 to 9000 ft E	1299	.028	.028	.028
C-1 to 9000 ft E	1298	.028	.028	.028
C-1 to 9000 ft E	1297	.028	.03	.028
C-1 to 9000 ft E	1296	.03	.03	.03
C-1 to 9000 ft E	1295	.03	.03	.03
C-1 to 9000 ft E	1294	.03	.03	.03
C-1 to 9000 ft E	1293	.03	.03	.03
C-1 to 9000 ft E	1292	.03	.03	.03
C-1 to 9000 ft E	1291	.03	.03	.03
C-1 to 9000 ft E	1290	.03	.03	.03
C-1 to 9000 ft E	1289	.04	.04	.04
C-1 to 9000 ft E	1288	.028	.028	.028
C-1 to 9000 ft E	1287	.028	.028	.028
C-1 to 9000 ft E	1286	.028	.028	.028
C-1 to 9000 ft E	1285	.04	.04	.04
C-1 to 9000 ft E	1284	.028	.028	.028
C-1 to 9000 ft E	1283	.028	.028	.028
C-1 to 9000 ft E	1282	.028	.028	.028
C-1 to 9000 ft E	1281	.028	.03	.028
C-1 to 9000 ft E	1280	.03	.03	.03
C-1 to 9000 ft E	1279	.03	.03	.03
C-1 to 9000 ft E	1278	.03	.03	.03
C-1 to 9000 ft E	1277	.03	.03	.03
C-1 to 9000 ft E	1276	.03	.03	.03
C-1 to 9000 ft E	1275	.03	.03	.03
C-1 to 9000 ft E	1274	.03	.03	.03
C-1 to 9000 ft E	1273	.04	.04	.04
C-1 to 9000 ft E	1272	.028	.028	.028
C-1 to 9000 ft E	1271	.028	.028	.028
C-1 to 9000 ft E	1270	.028	.028	.028
C-1 to 9000 ft E	1269	.04	.04	.04
C-1 to 9000 ft E	1268	.028	.028	.028
C-1 to 9000 ft E	1267	.028	.028	.028
C-1 to 9000 ft E	1266	.028	.028	.028
C-1 to 9000 ft E	1265	.028	.03	.028
C-1 to 9000 ft E	1264	.03	.03	.03
C-1 to 9000 ft E	1263	.03	.03	.03
C-1 to 9000 ft E	1262	.03	.03	.03
C-1 to 9000 ft E	1261	.03	.03	.03
C-1 to 9000 ft E	1260	.03	.03	.03
C-1 to 9000 ft E	1259	.03	.03	.03
C-1 to 9000 ft E	1258	.03	.03	.03
C-1 to 9000 ft E	1257	.04	.04	.04
C-1 to 9000 ft E	1256	.028	.028	.028
C-1 to 9000 ft E	1255	.028	.028	.028
C-1 to 9000 ft E	1254	.028	.028	.028
C-1 to 9000 ft E	1253	.04	.04	.04
C-1 to 9000 ft E	1252	.028	.028	.028
C-1 to 9000 ft E	1251	.028	.028	.028
C-1 to 9000 ft E	1250	.028	.028	.028
C-1 to 9000 ft E	1249	.028	.03	.028
C-1 to 9000 ft E	1248	.03	.03	.03
C-1 to 9000 ft E	1247	.03	.03	.03
C-1 to 9000 ft E	1246	.03	.03	.03
C-1 to 9000 ft E	1245	.03	.03	.03
C-1 to 9000 ft E	1244	.03	.03	.03
C-1 to 9000 ft E	1243	.03	.03	.03
C-1 to 9000 ft E	1242	.03	.03	.03
C-1 to 9000 ft E	1241	.03	.03	.03
C-1 to 9000 ft E	1240	.04	.04	.04
C-1 to 9000 ft E	1239	.028	.028	.028
C-1 to 9000 ft E	1238	.028	.028	.028
C-1 to 9000 ft E	1237	.028	.028	.028
C-1 to 9000 ft E	1236	.04	.04	.04
C-1 to 9000 ft E	1235	.028	.028	.028
C-1 to 9000 ft E	1234	.028	.028	.028
C-1 to 9000 ft E	1233	.028	.028	.028
C-1 to 9000 ft E	1232	.028	.03	.028
C-1 to 9000 ft E	1231	.03	.03	.03
C-1 to 9000 ft E	1230	.03	.03	.03
C-1 to 9000 ft E	1229	.03	.03	.03
C-1 to 9000 ft E	1228	.03	.03	.03
C-1 to 9000 ft E	1227	.03	.03	.03
C-1 to 9000 ft E	1226	.03	.03	.03
C-1 to 9000 ft E	1225	.03	.03	.03
C-1 to 9000 ft E	1224	.04	.04	.04
C-1 to 9000 ft E	1223	.028	.028	.028
C-1 to 9000 ft E	1222	.028	.028	.028
C-1 to 9000 ft E	1221	.028	.028	.028
C-1 to 9000 ft E	1220	.04	.04	.04
C-1 to 9000 ft E	1219	.028	.028	.028
C-1 to 9000 ft E	1218	.028	.028	.028
C-1 to 9000 ft E	1217	.028	.028	.028
C-1 to 9000 ft E	1216	.028	.03	.028
C-1 to 9000 ft E	1215	.03	.03	.03
C-1 to 9000 ft E	1214	.03	.03	.03
C-1 to 9000 ft E	1212	.03	.03	.03
C-1 to 9000 ft E	1211	.03	.03	.03
C-1 to 9000 ft E	1210	.03	.03	.03
C-1 to 9000 ft E	1209	.03	.03	.03
C-1 to 9000 ft E	1208	.03	.03	.03
C-1 to 9000 ft E	1207	.04	.04	.04
C-1 to 9000 ft E	1206	.028	.028	.028
C-1 to 9000 ft E	1205	.028	.028	.028
C-1 to 9000 ft E	1204	.028	.028	.028
C-1 to 9000 ft E	1203	.04	.04	.04
C-1 to 9000 ft E	1202	.028	.028	.028
C-1 to 9000 ft E	1201	.028	.028	.028
C-1 to 9000 ft E	1200	.03	.03	.03
C-1 to 9000 ft E	1199	.028	.03	.028

C-1 to 9000 ft E	1198	*	.03*	.03*	.03*
C-1 to 9000 ft E	1197	*	.03*	.03*	.03*
C-1 to 9000 ft E	1196	*	.03*	.03*	.03*
C-1 to 9000 ft E	1195	*	.03*	.03*	.03*
C-1 to 9000 ft E	1194	*	.03*	.03*	.03*
C-1 to 9000 ft E	1193	*	.03*	.03*	.03*
C-1 to 9000 ft E	1192	*	.03*	.03*	.03*
C-1 to 9000 ft E	1191	*	.03*	.03*	.03*
C-1 to 9000 ft E	1190	*	.04*	.04*	.04*
C-1 to 9000 ft E	1189	*	.028*	.028*	.028*
C-1 to 9000 ft E	1188	*	.028*	.028*	.028*
C-1 to 9000 ft E	1187	*	.028*	.028*	.028*
C-1 to 9000 ft E	1186	*	.04*	.04*	.04*
C-1 to 9000 ft E	1185	*	.028*	.028*	.028*
C-1 to 9000 ft E	1184	*	.028*	.028*	.028*
C-1 to 9000 ft E	1183	*	.028*	.028*	.028*
C-1 to 9000 ft E	1182	*	.028*	.03*	.028*
C-1 to 9000 ft E	1181	*	.03*	.03*	.03*
C-1 to 9000 ft E	1180	*	.03*	.03*	.03*
C-1 to 9000 ft E	1179	*	.03*	.03*	.03*
C-1 to 9000 ft E	1178	*	.03*	.03*	.03*
C-1 to 9000 ft E	1177	*	.03*	.03*	.03*
C-1 to 9000 ft E	1176	*	.03*	.03*	.03*
C-1 to 9000 ft E	1175	*	.03*	.03*	.03*
C-1 to 9000 ft E	1174	*	.03*	.03*	.03*
C-1 to 9000 ft E	1173	*	.04*	.04*	.04*
C-1 to 9000 ft E	1172	*	.028*	.028*	.028*
C-1 to 9000 ft E	1171	*	.028*	.028*	.028*
C-1 to 9000 ft E	1170	*	.028*	.028*	.028*
C-1 to 9000 ft E	1169	*	.04*	.04*	.04*
C-1 to 9000 ft E	1168	*	.028*	.028*	.028*
C-1 to 9000 ft E	1167	*	.028*	.028*	.028*
C-1 to 9000 ft E	1166	*	.028*	.028*	.028*
C-1 to 9000 ft E	1165	*	.028*	.03*	.028*
C-1 to 9000 ft E	1164	*	.03*	.03*	.03*
C-1 to 9000 ft E	1163	*	.03*	.03*	.03*
C-1 to 9000 ft E	1162	*	.03*	.03*	.03*
C-1 to 9000 ft E	1161	*	.03*	.03*	.03*
C-1 to 9000 ft E	1160	*	.03*	.03*	.03*
C-1 to 9000 ft E	1159	*	.03*	.03*	.03*
C-1 to 9000 ft E	1158	*	.04*	.04*	.04*
C-1 to 9000 ft E	1157	*	.028*	.028*	.028*
C-1 to 9000 ft E	1156	*	.028*	.028*	.028*
C-1 to 9000 ft E	1155	*	.028*	.028*	.028*
C-1 to 9000 ft E	1154	*	.04*	.04*	.04*
C-1 to 9000 ft E	1153	*	.028*	.028*	.028*
C-1 to 9000 ft E	1152	*	.028*	.028*	.028*
C-1 to 9000 ft E	1151	*	.028*	.028*	.028*
C-1 to 9000 ft E	1150	*	.028*	.03*	.028*
C-1 to 9000 ft E	1149	*	.03*	.03*	.03*
C-1 to 9000 ft E	1148	*	.03*	.03*	.03*
C-1 to 9000 ft E	1147	*	.03*	.03*	.03*
C-1 to 9000 ft E	1146	*	.03*	.03*	.03*
C-1 to 9000 ft E	1145	*	.03*	.03*	.03*
C-1 to 9000 ft E	1144	*	.03*	.03*	.03*
C-1 to 9000 ft E	1143	*	.04*	.04*	.04*
C-1 to 9000 ft E	1142	*	.028*	.028*	.028*
C-1 to 9000 ft E	1141	*	.028*	.028*	.028*
C-1 to 9000 ft E	1140	*	.028*	.028*	.028*
C-1 to 9000 ft E	1139	*	.04*	.04*	.04*
C-1 to 9000 ft E	1138	*	.028*	.028*	.028*
C-1 to 9000 ft E	1137	*	.028*	.028*	.028*
C-1 to 9000 ft E	1136	*	.028*	.028*	.028*
C-1 to 9000 ft E	1135	*	.028*	.03*	.028*
C-1 to 9000 ft E	1134	*	.03*	.03*	.03*
C-1 to 9000 ft E	1133	*	.03*	.03*	.03*
C-1 to 9000 ft E	1132	*	.03*	.03*	.03*
C-1 to 9000 ft E	1131	*	.03*	.03*	.03*
C-1 to 9000 ft E	1130	*	.03*	.03*	.03*
C-1 to 9000 ft E	1129	*	.03*	.03*	.03*
C-1 to 9000 ft E	1128	*	.04*	.04*	.04*
C-1 to 9000 ft E	1127	*	.028*	.028*	.028*
C-1 to 9000 ft E	1126	*	.028*	.028*	.028*
C-1 to 9000 ft E	1125	*	.028*	.028*	.028*
C-1 to 9000 ft E	1124	*	.04*	.04*	.04*
C-1 to 9000 ft E	1123	*	.028*	.028*	.028*
C-1 to 9000 ft E	1122	*	.028*	.028*	.028*
C-1 to 9000 ft E	1121	*	.03*	.03*	.03*
C-1 to 9000 ft E	1120	*	.028*	.03*	.028*
C-1 to 9000 ft E	1119	*	.03*	.03*	.03*
C-1 to 9000 ft E	1118	*	.03*	.03*	.03*
C-1 to 9000 ft E	1117	*	.03*	.03*	.03*
C-1 to 9000 ft E	1116	*	.03*	.03*	.03*
C-1 to 9000 ft E	1115	*	.03*	.03*	.03*
C-1 to 9000 ft E	1114	*	.03*	.03*	.03*
C-1 to 9000 ft E	1113	*	.03*	.03*	.03*
C-1 to 9000 ft E	1112	*	.03*	.03*	.03*
C-1 to 9000 ft E	1111	*	.04*	.04*	.04*
C-1 to 9000 ft E	1110	*	.028*	.028*	.028*
C-1 to 9000 ft E	1109	*	.028*	.028*	.028*
C-1 to 9000 ft E	1108	*	.028*	.028*	.028*
C-1 to 9000 ft E	1107	*	.04*	.04*	.04*
C-1 to 9000 ft E	1106	*	.028*	.028*	.028*
C-1 to 9000 ft E	1105	*	.028*	.028*	.028*
C-1 to 9000 ft E	1104	*	.028*	.028*	.028*
C-1 to 9000 ft E	1103	*	.028*	.03*	.028*
C-1 to 9000 ft E	1102	*	.03*	.03*	.03*
C-1 to 9000 ft E	1101	*	.03*	.03*	.03*
C-1 to 9000 ft E	1100	*	.03*	.03*	.03*
C-1 to 9000 ft E	1099	*	.03*	.03*	.03*
C-1 to 9000 ft E	1098	*	.03*	.03*	.03*
C-1 to 9000 ft E	1097	*	.03*	.03*	.03*
C-1 to 9000 ft E	1096	*	.04*	.04*	.04*
C-1 to 9000 ft E	1095	*	.028*	.028*	.028*
C-1 to 9000 ft E	1094	*	.028*	.028*	.028*
C-1 to 9000 ft E	1093	*	.028*	.028*	.028*
C-1 to 9000 ft E	1092	*	.04*	.04*	.04*
C-1 to 9000 ft E	1091	*	.028*	.028*	.028*
C-1 to 9000 ft E	1090	*	.028*	.028*	.028*
C-1 to 9000 ft E	1089	*	.028*	.028*	.028*
C-1 to 9000 ft E	1088	*	.028*	.03*	.028*
C-1 to 9000 ft E	1087	*	.03*	.03*	.03*
C-1 to 9000 ft E	1086	*	.03*	.03*	.03*
C-1 to 9000 ft E	1085	*	.03*	.03*	.03*
C-1 to 9000 ft E	1084	*	.03*	.03*	.03*
C-1 to 9000 ft E	1083	*	.03*	.03*	.03*
C-1 to 9000 ft E	1082	*	.03*	.03*	.03*
C-1 to 9000 ft E	1081	*	.04*	.04*	.04*
C-1 to 9000 ft E	1080	*	.028*	.028*	.028*
C-1 to 9000 ft E	1079	*	.028*	.028*	.028*
C-1 to 9000 ft E	1078	*	.028*	.028*	.028*
C-1 to 9000 ft E	1077	*	.04*	.04*	.04*
C-1 to 9000 ft E	1076	*	.028*	.028*	.028*
C-1 to 9000 ft E	1075	*	.028*	.028*	.028*
C-1 to 9000 ft E	1074	*	.028*	.028*	.028*
C-1 to 9000 ft E	1073	*	.028*	.03*	.028*
C-1 to 9000 ft E	1072	*	.03*	.03*	.03*
C-1 to 9000 ft E	1071	*	.03*	.03*	.03*
C-1 to 9000 ft E	1070	*	.03*	.03*	.03*
C-1 to 9000 ft E	1069	*	.03*	.03*	.03*
C-1 to 9000 ft E	1068	*	.03*	.03*	.03*
C-1 to 9000 ft E	1067	*	.03*	.03*	.03*
C-1 to 9000 ft E	1066	*	.04*	.04*	.04*
C-1 to 9000 ft E	1065	*	.028*	.028*	.028*
C-1 to 9000 ft E	1064	*	.028*	.028*	.028*
C-1 to 9000 ft E	1063	*	.028*	.028*	.028*
C-1 to 9000 ft E	1062	*	.04*	.04*	.04*
C-1 to 9000 ft E	1061	*	.028*	.028*	.028*
C-1 to 9000 ft E	1060	*	.028*	.028*	.028*
C-1 to 9000 ft E	1059	*	.028*	.028*	.028*
C-1 to 9000 ft E	1058	*	.028*	.028*	.028*
C-1 to 9000 ft E	1057	*	.028*	.03*	.028*
C-1 to 9000 ft E	1056	*	.03*	.03*	.03*
C-1 to 9000 ft E	1055	*	.03*	.03*	.03*
C-1 to 9000 ft E	1054	*	.03*	.03*	.03*
C-1 to 9000 ft E	1053	*	.03*	.03*	.03*
C-1 to 9000 ft E	1052	*	.028*	.028*	.028*
C-1 to 9000 ft E	1051	*	.028*	.028*	.028*
C-1 to 9000 ft E	1050	*	.028*	.028*	.028*
C-1 to 9000 ft E	1049	*	.03*	.03*	.03*
C-1 to 9000 ft E	1048	*	.03*	.03*	.03*
C-1 to 9000 ft E	1047	*	.015*	.015*	.015*
C-1 to 9000 ft E	1046.5	*Culvert	*	*	*
C-1 to 9000 ft E	1046	*	.03*	.03*	.03*
C-1 to 9000 ft E	1045	*	.03*	.03*	.03*
C-1 to 9000 ft E	1044	*	.03*	.03*	.03*
C-1 to 9000 ft E	1043	*	.03*	.03*	.03*
C-1 to 9000 ft E	1042	*	.015*	.015*	.015*
C-1 to 9000 ft E	1041	*	.015*	.015*	.015*
C-1 to 9000 ft E	1040	*	.015*	.015*	.015*
C-1 to 9000 ft E	1039	*	.015*	.015*	.015*

C-1 to 9000 ft E	1038	.015	.015	.015
C-1 to 9000 ft E	1037	.015	.015	.015
C-1 to 9000 ft E	1036	.015	.015	.015
C-1 to 9000 ft E	1035	.015	.015	.015
C-1 to 9000 ft E	1034	.015	.015	.015
C-1 to 9000 ft E	1033	.015	.015	.015
C-1 to 9000 ft E	1032	.015	.015	.015
C-1 to 9000 ft E	1031	.015	.015	.015
C-1 to 9000 ft E	1030	.015	.015	.015
C-1 to 9000 ft E	1029	.015	.015	.015
C-1 to 9000 ft E	1028	.015	.015	.015
C-1 to 9000 ft E	1027	.015	.015	.015
C-1 to 9000 ft E	1026	.015	.015	.015
C-1 to 9000 ft E	1025	.015	.015	.015
C-1 to 9000 ft E	1024	.015	.015	.015
C-1 to 9000 ft E	1023	.015	.015	.015
C-1 to 9000 ft E	1022	.015	.015	.015
C-1 to 9000 ft E	1021	.015	.015	.015
C-1 to 9000 ft E	1020	.015	.015	.015
C-1 to 9000 ft E	1019	.015	.015	.015
C-1 to 9000 ft E	1018	.015	.015	.015
C-1 to 9000 ft E	1017	.015	.015	.015
C-1 to 9000 ft E	1016	.015	.015	.015
C-1 to 9000 ft E	1015	.015	.015	.015
C-1 to 9000 ft E	1014	.015	.015	.015
C-1 to 9000 ft E	1013	.015	.015	.015
C-1 to 9000 ft E	1012	.015	.015	.015
C-1 to 9000 ft E	1011	.015	.015	.015
C-1 to 9000 ft E	1010	.015	.015	.015
C-1 to 9000 ft E	1009	.015	.015	.015
C-1 to 9000 ft E	1008	.015	.015	.015
C-1 to 9000 ft E	1007	.015	.015	.015
C-1 to 9000 ft E	1006	.015	.015	.015
C-1 to 9000 ft E	1005	.015	.015	.015
C-1 to 9000 ft E	1004	.015	.015	.015
C-1 to 9000 ft E	1003	.015	.015	.015
C-1 to 9000 ft E	1002	.015	.015	.015
C-1 to 9000 ft E	1001	.015	.015	.015

SUMMARY OF REACH LENGTHS

River: Drake Channel

Reach	River Sta.	Left	Channel	Right
C-1 to 9000 ft E	1328	50	50	50
C-1 to 9000 ft E	1327	50	50	50
C-1 to 9000 ft E	1326	50	50	50
C-1 to 9000 ft E	1325	50	50	50
C-1 to 9000 ft E	1324	50	50	50
C-1 to 9000 ft E	1323	50	50	50
C-1 to 9000 ft E	1322	13	13	13
C-1 to 9000 ft E	1321	6	6	6
C-1 to 9000 ft E	1320	.1	.1	.1
C-1 to 9000 ft E	1319	6	6	6
C-1 to 9000 ft E	1318	.1	.1	.1
C-1 to 9000 ft E	1317	19	19	19
C-1 to 9000 ft E	1316	6	6	6
C-1 to 9000 ft E	1315	.1	.1	.1
C-1 to 9000 ft E	1314	24	24	24
C-1 to 9000 ft E	1313	12	12	12
C-1 to 9000 ft E	1312	14	14	14
C-1 to 9000 ft E	1311	50	50	50
C-1 to 9000 ft E	1310	50	50	50
C-1 to 9000 ft E	1309	50	50	50
C-1 to 9000 ft E	1308	50	50	50
C-1 to 9000 ft E	1307	50	50	50
C-1 to 9000 ft E	1306	13	13	13
C-1 to 9000 ft E	1305	6	6	6
C-1 to 9000 ft E	1304	.1	.1	.1
C-1 to 9000 ft E	1303	6	6	6
C-1 to 9000 ft E	1302	.1	.1	.1
C-1 to 9000 ft E	1301	19	19	19
C-1 to 9000 ft E	1300	6	6	6
C-1 to 9000 ft E	1299	.1	.1	.1
C-1 to 9000 ft E	1298	24	24	24
C-1 to 9000 ft E	1297	12	12	12
C-1 to 9000 ft E	1296	14	14	14
C-1 to 9000 ft E	1295	50	50	50
C-1 to 9000 ft E	1294	50	50	50
C-1 to 9000 ft E	1293	50	50	50
C-1 to 9000 ft E	1292	50	50	50
C-1 to 9000 ft E	1291	50	50	50
C-1 to 9000 ft E	1290	13	13	13
C-1 to 9000 ft E	1289	6	6	6
C-1 to 9000 ft E	1288	.1	.1	.1
C-1 to 9000 ft E	1287	6	6	6
C-1 to 9000 ft E	1286	.1	.1	.1
C-1 to 9000 ft E	1285	19	19	19
C-1 to 9000 ft E	1284	6	6	6
C-1 to 9000 ft E	1283	.1	.1	.1
C-1 to 9000 ft E	1282	24	24	24
C-1 to 9000 ft E	1281	12	12	12
C-1 to 9000 ft E	1280	14	14	14
C-1 to 9000 ft E	1279	50	50	50
C-1 to 9000 ft E	1278	50	50	50
C-1 to 9000 ft E	1277	50	50	50
C-1 to 9000 ft E	1276	50	50	50
C-1 to 9000 ft E	1275	50	50	50
C-1 to 9000 ft E	1274	13	13	13
C-1 to 9000 ft E	1273	6	6	6
C-1 to 9000 ft E	1272	.1	.1	.1
C-1 to 9000 ft E	1271	6	6	6
C-1 to 9000 ft E	1270	.1	.1	.1
C-1 to 9000 ft E	1269	19	19	19
C-1 to 9000 ft E	1268	6	6	6
C-1 to 9000 ft E	1267	.1	.1	.1
C-1 to 9000 ft E	1266	24	24	24
C-1 to 9000 ft E	1265	12	12	12
C-1 to 9000 ft E	1264	14	14	14
C-1 to 9000 ft E	1263	50	50	50
C-1 to 9000 ft E	1262	50	50	50
C-1 to 9000 ft E	1261	50	50	50
C-1 to 9000 ft E	1260	50	50	50
C-1 to 9000 ft E	1259	50	50	50
C-1 to 9000 ft E	1258	13	13	13
C-1 to 9000 ft E	1257	6	6	6
C-1 to 9000 ft E	1256	.1	.1	.1
C-1 to 9000 ft E	1255	6	6	6
C-1 to 9000 ft E	1254	.1	.1	.1
C-1 to 9000 ft E	1253	19	19	19
C-1 to 9000 ft E	1252	6	6	6
C-1 to 9000 ft E	1251	.1	.1	.1
C-1 to 9000 ft E	1250	24	24	24
C-1 to 9000 ft E	1249	12	12	12
C-1 to 9000 ft E	1248	14	14	14
C-1 to 9000 ft E	1247	50	50	50
C-1 to 9000 ft E	1246	50	50	50
C-1 to 9000 ft E	1245	50	50	50
C-1 to 9000 ft E	1244	50	50	50
C-1 to 9000 ft E	1243	50	50	50
C-1 to 9000 ft E	1242	50	50	50
C-1 to 9000 ft E	1241	13	13	13
C-1 to 9000 ft E	1240	6	6	6
C-1 to 9000 ft E	1239	.1	.1	.1
C-1 to 9000 ft E	1238	6	6	6
C-1 to 9000 ft E	1237	.1	.1	.1
C-1 to 9000 ft E	1236	19	19	19
C-1 to 9000 ft E	1235	6	6	6
C-1 to 9000 ft E	1234	.1	.1	.1
C-1 to 9000 ft E	1233	24	24	24
C-1 to 9000 ft E	1232	12	12	12
C-1 to 9000 ft E	1231	14	14	14
C-1 to 9000 ft E	1230	50	50	50
C-1 to 9000 ft E	1229	50	50	50
C-1 to 9000 ft E	1228	50	50	50
C-1 to 9000 ft E	1227	50	50	50
C-1 to 9000 ft E	1226	50	50	50
C-1 to 9000 ft E	1225	13	13	13
C-1 to 9000 ft E	1224	6	6	6
C-1 to 9000 ft E	1223	.1	.1	.1
C-1 to 9000 ft E	1222	6	6	6
C-1 to 9000 ft E	1221	.1	.1	.1
C-1 to 9000 ft E	1220	19	19	19
C-1 to 9000 ft E	1219	6	6	6
C-1 to 9000 ft E	1218	.1	.1	.1
C-1 to 9000 ft E	1217	24	24	24
C-1 to 9000 ft E	1216	12	12	12

C-1 to 9000 ft E	1215	*	14*	14*	14*
C-1 to 9000 ft E	1214	*	50*	50*	50*
C-1 to 9000 ft E	1212	*	50*	50*	50*
C-1 to 9000 ft E	1211	*	50*	50*	50*
C-1 to 9000 ft E	1210	*	50*	50*	50*
C-1 to 9000 ft E	1209	*	50*	50*	50*
C-1 to 9000 ft E	1208	*	13*	13*	13*
C-1 to 9000 ft E	1207	*	6*	6*	6*
C-1 to 9000 ft E	1206	*	.1*	.1*	.1*
C-1 to 9000 ft E	1205	*	6*	6*	6*
C-1 to 9000 ft E	1204	*	.1*	.1*	.1*
C-1 to 9000 ft E	1203	*	19*	19*	19*
C-1 to 9000 ft E	1202	*	6*	6*	6*
C-1 to 9000 ft E	1201	*	.1*	.1*	.1*
C-1 to 9000 ft E	1200	*	24*	24*	24*
C-1 to 9000 ft E	1199	*	12*	12*	12*
C-1 to 9000 ft E	1198	*	14*	14*	14*
C-1 to 9000 ft E	1197	*	50*	50*	50*
C-1 to 9000 ft E	1196	*	50*	50*	50*
C-1 to 9000 ft E	1195	*	50*	50*	50*
C-1 to 9000 ft E	1194	*	50*	50*	50*
C-1 to 9000 ft E	1193	*	50*	50*	50*
C-1 to 9000 ft E	1192	*	50*	50*	50*
C-1 to 9000 ft E	1191	*	13*	13*	13*
C-1 to 9000 ft E	1190	*	6*	6*	6*
C-1 to 9000 ft E	1189	*	.1*	.1*	.1*
C-1 to 9000 ft E	1188	*	6*	6*	6*
C-1 to 9000 ft E	1187	*	.1*	.1*	.1*
C-1 to 9000 ft E	1186	*	19*	19*	19*
C-1 to 9000 ft E	1185	*	6*	6*	6*
C-1 to 9000 ft E	1184	*	.1*	.1*	.1*
C-1 to 9000 ft E	1183	*	24*	24*	24*
C-1 to 9000 ft E	1182	*	12*	12*	12*
C-1 to 9000 ft E	1181	*	14*	14*	14*
C-1 to 9000 ft E	1180	*	50*	50*	50*
C-1 to 9000 ft E	1179	*	50*	50*	50*
C-1 to 9000 ft E	1178	*	50*	50*	50*
C-1 to 9000 ft E	1177	*	50*	50*	50*
C-1 to 9000 ft E	1176	*	50*	50*	50*
C-1 to 9000 ft E	1175	*	50*	50*	50*
C-1 to 9000 ft E	1174	*	13*	13*	13*
C-1 to 9000 ft E	1173	*	6*	6*	6*
C-1 to 9000 ft E	1172	*	.1*	.1*	.1*
C-1 to 9000 ft E	1171	*	6*	6*	6*
C-1 to 9000 ft E	1170	*	.1*	.1*	.1*
C-1 to 9000 ft E	1169	*	19*	19*	19*
C-1 to 9000 ft E	1168	*	6*	6*	6*
C-1 to 9000 ft E	1167	*	.1*	.1*	.1*
C-1 to 9000 ft E	1166	*	24*	24*	24*
C-1 to 9000 ft E	1165	*	12*	12*	12*
C-1 to 9000 ft E	1164	*	14*	14*	14*
C-1 to 9000 ft E	1163	*	50*	50*	50*
C-1 to 9000 ft E	1162	*	50*	50*	50*
C-1 to 9000 ft E	1161	*	50*	50*	50*
C-1 to 9000 ft E	1160	*	50*	50*	50*
C-1 to 9000 ft E	1159	*	13*	13*	13*
C-1 to 9000 ft E	1158	*	6*	6*	6*
C-1 to 9000 ft E	1157	*	.1*	.1*	.1*
C-1 to 9000 ft E	1156	*	6*	6*	6*
C-1 to 9000 ft E	1155	*	.1*	.1*	.1*
C-1 to 9000 ft E	1154	*	19*	19*	19*
C-1 to 9000 ft E	1153	*	6*	6*	6*
C-1 to 9000 ft E	1152	*	.1*	.1*	.1*
C-1 to 9000 ft E	1151	*	24*	24*	24*
C-1 to 9000 ft E	1150	*	12*	12*	12*
C-1 to 9000 ft E	1149	*	14*	14*	14*
C-1 to 9000 ft E	1148	*	50*	50*	50*
C-1 to 9000 ft E	1147	*	50*	50*	50*
C-1 to 9000 ft E	1146	*	50*	50*	50*
C-1 to 9000 ft E	1145	*	50*	50*	50*
C-1 to 9000 ft E	1144	*	13*	13*	13*
C-1 to 9000 ft E	1143	*	6*	6*	6*
C-1 to 9000 ft E	1142	*	.1*	.1*	.1*
C-1 to 9000 ft E	1141	*	6*	6*	6*
C-1 to 9000 ft E	1140	*	.1*	.1*	.1*
C-1 to 9000 ft E	1139	*	19*	19*	19*
C-1 to 9000 ft E	1138	*	6*	6*	6*
C-1 to 9000 ft E	1137	*	.1*	.1*	.1*
C-1 to 9000 ft E	1136	*	24*	24*	24*
C-1 to 9000 ft E	1135	*	12*	12*	12*
C-1 to 9000 ft E	1134	*	14*	14*	14*
C-1 to 9000 ft E	1133	*	50*	50*	50*
C-1 to 9000 ft E	1132	*	50*	50*	50*
C-1 to 9000 ft E	1131	*	50*	50*	50*
C-1 to 9000 ft E	1130	*	50*	50*	50*
C-1 to 9000 ft E	1129	*	13*	13*	13*
C-1 to 9000 ft E	1128	*	6*	6*	6*
C-1 to 9000 ft E	1127	*	.1*	.1*	.1*
C-1 to 9000 ft E	1126	*	6*	6*	6*
C-1 to 9000 ft E	1125	*	.1*	.1*	.1*
C-1 to 9000 ft E	1124	*	19*	19*	19*
C-1 to 9000 ft E	1123	*	6*	6*	6*
C-1 to 9000 ft E	1122	*	.1*	.1*	.1*
C-1 to 9000 ft E	1121	*	24*	24*	24*
C-1 to 9000 ft E	1120	*	12*	12*	12*
C-1 to 9000 ft E	1119	*	14*	14*	14*
C-1 to 9000 ft E	1118	*	50*	50*	50*
C-1 to 9000 ft E	1117	*	50*	50*	50*
C-1 to 9000 ft E	1116	*	50*	50*	50*
C-1 to 9000 ft E	1115	*	50*	50*	50*
C-1 to 9000 ft E	1114	*	50*	50*	50*
C-1 to 9000 ft E	1113	*	50*	50*	50*
C-1 to 9000 ft E	1112	*	13*	13*	13*
C-1 to 9000 ft E	1111	*	6*	6*	6*
C-1 to 9000 ft E	1110	*	.1*	.1*	.1*
C-1 to 9000 ft E	1109	*	6*	6*	6*
C-1 to 9000 ft E	1108	*	.1*	.1*	.1*
C-1 to 9000 ft E	1107	*	19*	19*	19*
C-1 to 9000 ft E	1106	*	6*	6*	6*
C-1 to 9000 ft E	1105	*	.1*	.1*	.1*
C-1 to 9000 ft E	1104	*	24*	24*	24*
C-1 to 9000 ft E	1103	*	12*	12*	12*
C-1 to 9000 ft E	1102	*	14*	14*	14*
C-1 to 9000 ft E	1101	*	50*	50*	50*
C-1 to 9000 ft E	1100	*	50*	50*	50*
C-1 to 9000 ft E	1099	*	50*	50*	50*
C-1 to 9000 ft E	1098	*	50*	50*	50*
C-1 to 9000 ft E	1097	*	13*	13*	13*
C-1 to 9000 ft E	1096	*	6*	6*	6*
C-1 to 9000 ft E	1095	*	.1*	.1*	.1*
C-1 to 9000 ft E	1094	*	6*	6*	6*
C-1 to 9000 ft E	1093	*	.1*	.1*	.1*
C-1 to 9000 ft E	1092	*	19*	19*	19*
C-1 to 9000 ft E	1091	*	6*	6*	6*
C-1 to 9000 ft E	1090	*	.1*	.1*	.1*
C-1 to 9000 ft E	1089	*	24*	24*	24*
C-1 to 9000 ft E	1088	*	12*	12*	12*
C-1 to 9000 ft E	1087	*	14*	14*	14*
C-1 to 9000 ft E	1086	*	50*	50*	50*
C-1 to 9000 ft E	1085	*	50*	50*	50*
C-1 to 9000 ft E	1084	*	50*	50*	50*
C-1 to 9000 ft E	1083	*	50*	50*	50*
C-1 to 9000 ft E	1082	*	13*	13*	13*
C-1 to 9000 ft E	1081	*	6*	6*	6*
C-1 to 9000 ft E	1080	*	.1*	.1*	.1*
C-1 to 9000 ft E	1079	*	6*	6*	6*
C-1 to 9000 ft E	1078	*	.1*	.1*	.1*
C-1 to 9000 ft E	1077	*	19*	19*	19*
C-1 to 9000 ft E	1076	*	6*	6*	6*
C-1 to 9000 ft E	1075	*	.1*	.1*	.1*
C-1 to 9000 ft E	1074	*	24*	24*	24*
C-1 to 9000 ft E	1073	*	12*	12*	12*
C-1 to 9000 ft E	1072	*	14*	14*	14*
C-1 to 9000 ft E	1071	*	50*	50*	50*
C-1 to 9000 ft E	1070	*	50*	50*	50*
C-1 to 9000 ft E	1069	*	50*	50*	50*
C-1 to 9000 ft E	1068	*	50*	50*	50*
C-1 to 9000 ft E	1067	*	13*	13*	13*
C-1 to 9000 ft E	1066	*	6*	6*	6*
C-1 to 9000 ft E	1065	*	.1*	.1*	.1*
C-1 to 9000 ft E	1064	*	6*	6*	6*
C-1 to 9000 ft E	1063	*	.1*	.1*	.1*
C-1 to 9000 ft E	1062	*	19*	19*	19*
C-1 to 9000 ft E	1061	*	6*	6*	6*
C-1 to 9000 ft E	1060	*	.1*	.1*	.1*
C-1 to 9000 ft E	1059	*	24*	24*	24*
C-1 to 9000 ft E	1058	*	12*	12*	12*
C-1 to 9000 ft E	1057	*	14*	14*	14*
C-1 to 9000 ft E	1056	*	50*	50*	50*
C-1 to 9000 ft E	1055	*	50*	50*	50*
C-1 to 9000 ft E	1054	*	50*	50*	50*

C-1 to 9000 ft E	1053	*	67*	67*	67*
C-1 to 9000 ft E	1052	*	.1*	.1*	.1*
C-1 to 9000 ft E	1051	*	6*	6*	6*
C-1 to 9000 ft E	1050	*	.1*	.1*	.1*
C-1 to 9000 ft E	1049	*	27*	27*	27*
C-1 to 9000 ft E	1048	*	43*	43*	43*
C-1 to 9000 ft E	1047	*	92*	92*	92*
C-1 to 9000 ft E	1046.5	*culvert	*	*	*
C-1 to 9000 ft E	1046	*	62.18*	62.18*	62.18*
C-1 to 9000 ft E	1045	*	70*	70*	70*
C-1 to 9000 ft E	1044	*	69.6*	69.6*	69.6*
C-1 to 9000 ft E	1043	*	101.21*	101.21*	101.21*
C-1 to 9000 ft E	1042	*	79.19*	79.19*	79.19*
C-1 to 9000 ft E	1041	*	100*	100*	100*
C-1 to 9000 ft E	1040	*	100*	100*	100*
C-1 to 9000 ft E	1039	*	100*	100*	100*
C-1 to 9000 ft E	1038	*	100*	100*	100*
C-1 to 9000 ft E	1037	*	100*	100*	100*
C-1 to 9000 ft E	1036	*	100*	100*	100*
C-1 to 9000 ft E	1035	*	42.69*	42.69*	42.69*
C-1 to 9000 ft E	1034	*	57.31*	57.31*	57.31*
C-1 to 9000 ft E	1033	*	100*	100*	100*
C-1 to 9000 ft E	1032	*	100*	100*	100*
C-1 to 9000 ft E	1031	*	105.3*	105.3*	105.3*
C-1 to 9000 ft E	1030	*	39.39*	39.39*	39.39*
C-1 to 9000 ft E	1029	*	58.7*	58.7*	58.7*
C-1 to 9000 ft E	1028	*	67.6*	67.7*	67.7*
C-1 to 9000 ft E	1027	*	32.3*	32.3*	32.3*
C-1 to 9000 ft E	1026	*	50*	50*	50*
C-1 to 9000 ft E	1025	*	50*	50*	50*
C-1 to 9000 ft E	1024	*	50*	50*	50*
C-1 to 9000 ft E	1023	*	50*	50*	50*
C-1 to 9000 ft E	1022	*	50*	50*	50*
C-1 to 9000 ft E	1021	*	50*	50*	50*
C-1 to 9000 ft E	1020	*	58.82*	58.82*	58.82*
C-1 to 9000 ft E	1019	*	.1*	.1*	.1*
C-1 to 9000 ft E	1018	*	50*	50*	50*
C-1 to 9000 ft E	1017	*	50*	50*	50*
C-1 to 9000 ft E	1016	*	50*	50*	50*
C-1 to 9000 ft E	1015	*	50*	50*	50*
C-1 to 9000 ft E	1014	*	50*	50*	50*
C-1 to 9000 ft E	1013	*	50*	50*	50*
C-1 to 9000 ft E	1012	*	50*	50*	50*
C-1 to 9000 ft E	1011	*	52.87*	52.87*	52.87*
C-1 to 9000 ft E	1010	*	47.13*	47.13*	47.13*
C-1 to 9000 ft E	1009	*	50*	50*	50*
C-1 to 9000 ft E	1008	*	50*	50*	50*
C-1 to 9000 ft E	1007	*	39*	39*	39*
C-1 to 9000 ft E	1006	*	.1*	.1*	.1*
C-1 to 9000 ft E	1005	*	12.06*	11*	9.94*
C-1 to 9000 ft E	1004	*	109.44*	100*	90.56*
C-1 to 9000 ft E	1003	*	54.72*	50*	45.12*
C-1 to 9000 ft E	1002	*	28.1*	25.64*	23.17*
C-1 to 9000 ft E	1001	*	*	*	*

SUMMARY OF CONTRACTION AND EXPANSION COEFFICIENTS
River: Drake Channel

Reach	River Sta.	Contr.	Expan.
C-1 to 9000 ft E	1328	.1	.3
C-1 to 9000 ft E	1327	.1	.3
C-1 to 9000 ft E	1326	.1	.3
C-1 to 9000 ft E	1325	.1	.3
C-1 to 9000 ft E	1324	.1	.3
C-1 to 9000 ft E	1323	.1	.3
C-1 to 9000 ft E	1322	.1	.3
C-1 to 9000 ft E	1321	.1	.3
C-1 to 9000 ft E	1320	.1	.3
C-1 to 9000 ft E	1319	.1	.3
C-1 to 9000 ft E	1318	.1	.3
C-1 to 9000 ft E	1317	.1	.3
C-1 to 9000 ft E	1316	.1	.3
C-1 to 9000 ft E	1315	.1	.3
C-1 to 9000 ft E	1314	.1	.3
C-1 to 9000 ft E	1313	.1	.3
C-1 to 9000 ft E	1312	.1	.3
C-1 to 9000 ft E	1311	.1	.3
C-1 to 9000 ft E	1310	.1	.3
C-1 to 9000 ft E	1309	.1	.3
C-1 to 9000 ft E	1308	.1	.3
C-1 to 9000 ft E	1307	.1	.3
C-1 to 9000 ft E	1306	.1	.3
C-1 to 9000 ft E	1305	.1	.3
C-1 to 9000 ft E	1304	.1	.3
C-1 to 9000 ft E	1303	.1	.3
C-1 to 9000 ft E	1302	.1	.3
C-1 to 9000 ft E	1301	.1	.3
C-1 to 9000 ft E	1300	.1	.3
C-1 to 9000 ft E	1299	.1	.3
C-1 to 9000 ft E	1298	.1	.3
C-1 to 9000 ft E	1297	.1	.3
C-1 to 9000 ft E	1296	.1	.3
C-1 to 9000 ft E	1295	.1	.3
C-1 to 9000 ft E	1294	.1	.3
C-1 to 9000 ft E	1293	.1	.3
C-1 to 9000 ft E	1292	.1	.3
C-1 to 9000 ft E	1291	.1	.3
C-1 to 9000 ft E	1290	.1	.3
C-1 to 9000 ft E	1289	.1	.3
C-1 to 9000 ft E	1288	.1	.3
C-1 to 9000 ft E	1287	.1	.3
C-1 to 9000 ft E	1286	.1	.3
C-1 to 9000 ft E	1285	.1	.3
C-1 to 9000 ft E	1284	.1	.3
C-1 to 9000 ft E	1283	.1	.3
C-1 to 9000 ft E	1282	.1	.3
C-1 to 9000 ft E	1281	.1	.3
C-1 to 9000 ft E	1280	.1	.3
C-1 to 9000 ft E	1279	.1	.3
C-1 to 9000 ft E	1278	.1	.3
C-1 to 9000 ft E	1277	.1	.3
C-1 to 9000 ft E	1276	.1	.3
C-1 to 9000 ft E	1275	.1	.3
C-1 to 9000 ft E	1274	.1	.3
C-1 to 9000 ft E	1273	.1	.3
C-1 to 9000 ft E	1272	.1	.3
C-1 to 9000 ft E	1271	.1	.3
C-1 to 9000 ft E	1270	.1	.3
C-1 to 9000 ft E	1269	.1	.3
C-1 to 9000 ft E	1268	.1	.3
C-1 to 9000 ft E	1267	.1	.3
C-1 to 9000 ft E	1266	.1	.3
C-1 to 9000 ft E	1265	.1	.3
C-1 to 9000 ft E	1264	.1	.3
C-1 to 9000 ft E	1263	.1	.3
C-1 to 9000 ft E	1262	.1	.3
C-1 to 9000 ft E	1261	.1	.3
C-1 to 9000 ft E	1260	.1	.3
C-1 to 9000 ft E	1259	.1	.3
C-1 to 9000 ft E	1258	.1	.3
C-1 to 9000 ft E	1257	.1	.3
C-1 to 9000 ft E	1256	.1	.3
C-1 to 9000 ft E	1255	.1	.3
C-1 to 9000 ft E	1254	.1	.3
C-1 to 9000 ft E	1253	.1	.3
C-1 to 9000 ft E	1252	.1	.3
C-1 to 9000 ft E	1251	.1	.3
C-1 to 9000 ft E	1250	.1	.3
C-1 to 9000 ft E	1249	.1	.3
C-1 to 9000 ft E	1248	.1	.3
C-1 to 9000 ft E	1247	.1	.3
C-1 to 9000 ft E	1246	.1	.3
C-1 to 9000 ft E	1245	.1	.3
C-1 to 9000 ft E	1244	.1	.3
C-1 to 9000 ft E	1243	.1	.3
C-1 to 9000 ft E	1242	.1	.3
C-1 to 9000 ft E	1241	.1	.3
C-1 to 9000 ft E	1240	.1	.3
C-1 to 9000 ft E	1239	.1	.3
C-1 to 9000 ft E	1238	.1	.3
C-1 to 9000 ft E	1237	.1	.3
C-1 to 9000 ft E	1236	.1	.3
C-1 to 9000 ft E	1235	.1	.3
C-1 to 9000 ft E	1234	.1	.3
C-1 to 9000 ft E	1233	.1	.3
C-1 to 9000 ft E	1232	.1	.3

C-1 to 9000 ft E 1231 * .1* .3*
C-1 to 9000 ft E 1230 * .1* .3*
C-1 to 9000 ft E 1229 * .1* .3*
C-1 to 9000 ft E 1228 * .1* .3*
C-1 to 9000 ft E 1227 * .1* .3*
C-1 to 9000 ft E 1226 * .1* .3*
C-1 to 9000 ft E 1225 * .1* .3*
C-1 to 9000 ft E 1224 * .1* .3*
C-1 to 9000 ft E 1223 * .1* .3*
C-1 to 9000 ft E 1222 * .1* .3*
C-1 to 9000 ft E 1221 * .1* .3*
C-1 to 9000 ft E 1220 * .1* .3*
C-1 to 9000 ft E 1219 * .1* .3*
C-1 to 9000 ft E 1218 * .1* .3*
C-1 to 9000 ft E 1217 * .1* .3*
C-1 to 9000 ft E 1216 * .1* .3*
C-1 to 9000 ft E 1215 * .1* .3*
C-1 to 9000 ft E 1214 * .1* .3*
C-1 to 9000 ft E 1212 * .1* .3*
C-1 to 9000 ft E 1211 * .1* .3*
C-1 to 9000 ft E 1210 * .1* .3*
C-1 to 9000 ft E 1209 * .1* .3*
C-1 to 9000 ft E 1208 * .1* .3*
C-1 to 9000 ft E 1207 * .1* .3*
C-1 to 9000 ft E 1206 * .1* .3*
C-1 to 9000 ft E 1205 * .1* .3*
C-1 to 9000 ft E 1204 * .1* .3*
C-1 to 9000 ft E 1203 * .1* .3*
C-1 to 9000 ft E 1202 * .1* .3*
C-1 to 9000 ft E 1201 * .1* .3*
C-1 to 9000 ft E 1200 * .1* .3*
C-1 to 9000 ft E 1199 * .1* .3*
C-1 to 9000 ft E 1198 * .1* .3*
C-1 to 9000 ft E 1197 * .1* .3*
C-1 to 9000 ft E 1196 * .1* .3*
C-1 to 9000 ft E 1195 * .1* .3*
C-1 to 9000 ft E 1194 * .1* .3*
C-1 to 9000 ft E 1193 * .1* .3*
C-1 to 9000 ft E 1192 * .1* .3*
C-1 to 9000 ft E 1191 * .1* .3*
C-1 to 9000 ft E 1190 * .1* .3*
C-1 to 9000 ft E 1189 * .1* .3*
C-1 to 9000 ft E 1188 * .1* .3*
C-1 to 9000 ft E 1187 * .1* .3*
C-1 to 9000 ft E 1186 * .1* .3*
C-1 to 9000 ft E 1185 * .1* .3*
C-1 to 9000 ft E 1184 * .1* .3*
C-1 to 9000 ft E 1183 * .1* .3*
C-1 to 9000 ft E 1182 * .1* .3*
C-1 to 9000 ft E 1181 * .1* .3*
C-1 to 9000 ft E 1180 * .1* .3*
C-1 to 9000 ft E 1179 * .1* .3*
C-1 to 9000 ft E 1178 * .1* .3*
C-1 to 9000 ft E 1177 * .1* .3*
C-1 to 9000 ft E 1176 * .1* .3*
C-1 to 9000 ft E 1175 * .1* .3*
C-1 to 9000 ft E 1174 * .1* .3*
C-1 to 9000 ft E 1173 * .1* .3*
C-1 to 9000 ft E 1172 * .1* .3*
C-1 to 9000 ft E 1171 * .1* .3*
C-1 to 9000 ft E 1170 * .1* .3*
C-1 to 9000 ft E 1169 * .1* .3*
C-1 to 9000 ft E 1168 * .1* .3*
C-1 to 9000 ft E 1167 * .1* .3*
C-1 to 9000 ft E 1166 * .1* .3*
C-1 to 9000 ft E 1165 * .1* .3*
C-1 to 9000 ft E 1164 * .1* .3*
C-1 to 9000 ft E 1163 * .1* .3*
C-1 to 9000 ft E 1162 * .1* .3*
C-1 to 9000 ft E 1161 * .1* .3*
C-1 to 9000 ft E 1160 * .1* .3*
C-1 to 9000 ft E 1159 * .1* .3*
C-1 to 9000 ft E 1158 * .1* .3*
C-1 to 9000 ft E 1157 * .1* .3*
C-1 to 9000 ft E 1156 * .1* .3*
C-1 to 9000 ft E 1155 * .1* .3*
C-1 to 9000 ft E 1154 * .1* .3*
C-1 to 9000 ft E 1153 * .1* .3*
C-1 to 9000 ft E 1152 * .1* .3*
C-1 to 9000 ft E 1151 * .1* .3*
C-1 to 9000 ft E 1150 * .1* .3*
C-1 to 9000 ft E 1149 * .1* .3*
C-1 to 9000 ft E 1148 * .1* .3*
C-1 to 9000 ft E 1147 * .1* .3*
C-1 to 9000 ft E 1146 * .1* .3*
C-1 to 9000 ft E 1145 * .1* .3*
C-1 to 9000 ft E 1144 * .1* .3*
C-1 to 9000 ft E 1143 * .1* .3*
C-1 to 9000 ft E 1142 * .1* .3*
C-1 to 9000 ft E 1141 * .1* .3*
C-1 to 9000 ft E 1140 * .1* .3*
C-1 to 9000 ft E 1139 * .1* .3*
C-1 to 9000 ft E 1138 * .1* .3*
C-1 to 9000 ft E 1137 * .1* .3*
C-1 to 9000 ft E 1136 * .1* .3*
C-1 to 9000 ft E 1135 * .1* .3*
C-1 to 9000 ft E 1134 * .1* .3*
C-1 to 9000 ft E 1133 * .1* .3*
C-1 to 9000 ft E 1132 * .1* .3*
C-1 to 9000 ft E 1131 * .1* .3*
C-1 to 9000 ft E 1130 * .1* .3*
C-1 to 9000 ft E 1129 * .1* .3*
C-1 to 9000 ft E 1128 * .1* .3*
C-1 to 9000 ft E 1127 * .1* .3*
C-1 to 9000 ft E 1126 * .1* .3*
C-1 to 9000 ft E 1125 * .1* .3*
C-1 to 9000 ft E 1124 * .1* .3*
C-1 to 9000 ft E 1123 * .1* .3*
C-1 to 9000 ft E 1122 * .1* .3*
C-1 to 9000 ft E 1121 * .1* .3*
C-1 to 9000 ft E 1120 * .1* .3*
C-1 to 9000 ft E 1119 * .1* .3*
C-1 to 9000 ft E 1118 * .1* .3*
C-1 to 9000 ft E 1117 * .1* .3*
C-1 to 9000 ft E 1116 * .1* .3*
C-1 to 9000 ft E 1115 * .1* .3*
C-1 to 9000 ft E 1114 * .1* .3*
C-1 to 9000 ft E 1113 * .1* .3*
C-1 to 9000 ft E 1112 * .1* .3*
C-1 to 9000 ft E 1111 * .1* .3*
C-1 to 9000 ft E 1110 * .1* .3*
C-1 to 9000 ft E 1109 * .1* .3*
C-1 to 9000 ft E 1108 * .1* .3*
C-1 to 9000 ft E 1107 * .1* .3*
C-1 to 9000 ft E 1106 * .1* .3*
C-1 to 9000 ft E 1105 * .1* .3*
C-1 to 9000 ft E 1104 * .1* .3*
C-1 to 9000 ft E 1103 * .1* .3*
C-1 to 9000 ft E 1102 * .1* .3*
C-1 to 9000 ft E 1101 * .1* .3*
C-1 to 9000 ft E 1100 * .1* .3*
C-1 to 9000 ft E 1099 * .1* .3*
C-1 to 9000 ft E 1098 * .1* .3*
C-1 to 9000 ft E 1097 * .1* .3*
C-1 to 9000 ft E 1096 * .1* .3*
C-1 to 9000 ft E 1095 * .1* .3*
C-1 to 9000 ft E 1094 * .1* .3*
C-1 to 9000 ft E 1093 * .1* .3*
C-1 to 9000 ft E 1092 * .1* .3*
C-1 to 9000 ft E 1091 * .1* .3*
C-1 to 9000 ft E 1090 * .1* .3*
C-1 to 9000 ft E 1089 * .1* .3*
C-1 to 9000 ft E 1088 * .1* .3*
C-1 to 9000 ft E 1087 * .1* .3*
C-1 to 9000 ft E 1086 * .1* .3*
C-1 to 9000 ft E 1085 * .1* .3*
C-1 to 9000 ft E 1084 * .1* .3*
C-1 to 9000 ft E 1083 * .1* .3*
C-1 to 9000 ft E 1082 * .1* .3*
C-1 to 9000 ft E 1081 * .1* .3*
C-1 to 9000 ft E 1080 * .1* .3*
C-1 to 9000 ft E 1079 * .1* .3*
C-1 to 9000 ft E 1078 * .1* .3*
C-1 to 9000 ft E 1077 * .1* .3*
C-1 to 9000 ft E 1076 * .1* .3*
C-1 to 9000 ft E 1075 * .1* .3*
C-1 to 9000 ft E 1074 * .1* .3*
C-1 to 9000 ft E 1073 * .1* .3*
C-1 to 9000 ft E 1072 * .1* .3*
C-1 to 9000 ft E 1071 * .1* .3*
C-1 to 9000 ft E 1070 * .1* .3*

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*C-1 to 9000 ft E*    1069     *        .1*        .3*
*C-1 to 9000 ft E*    1068     *        .1*        .3*
*C-1 to 9000 ft E*    1067     *        .1*        .3*
*C-1 to 9000 ft E*    1066     *        .1*        .3*
*C-1 to 9000 ft E*    1065     *        .1*        .3*
*C-1 to 9000 ft E*    1064     *        .1*        .3*
*C-1 to 9000 ft E*    1063     *        .1*        .3*
*C-1 to 9000 ft E*    1062     *        .1*        .3*
*C-1 to 9000 ft E*    1061     *        .1*        .3*
*C-1 to 9000 ft E*    1060     *        .1*        .3*
*C-1 to 9000 ft E*    1059     *        .1*        .3*
*C-1 to 9000 ft E*    1058     *        .1*        .3*
*C-1 to 9000 ft E*    1057     *        .1*        .3*
*C-1 to 9000 ft E*    1056     *        .1*        .3*
*C-1 to 9000 ft E*    1055     *        .1*        .3*
*C-1 to 9000 ft E*    1054     *        .1*        .3*
*C-1 to 9000 ft E*    1053     *        .1*        .3*
*C-1 to 9000 ft E*    1052     *        .1*        .3*
*C-1 to 9000 ft E*    1051     *        .1*        .3*
*C-1 to 9000 ft E*    1050     *        .1*        .3*
*C-1 to 9000 ft E*    1049     *        .1*        .3*
*C-1 to 9000 ft E*    1048     *        .1*        .3*
*C-1 to 9000 ft E*    1047     *        .1*        .3*
*C-1 to 9000 ft E*    1046.5   *Culvert  *          *
*C-1 to 9000 ft E*    1046     *        .1*        .3*
*C-1 to 9000 ft E*    1045     *        .1*        .3*
*C-1 to 9000 ft E*    1044     *        .1*        .3*
*C-1 to 9000 ft E*    1043     *        .1*        .3*
*C-1 to 9000 ft E*    1042     *        .1*        .3*
*C-1 to 9000 ft E*    1041     *        .1*        .3*
*C-1 to 9000 ft E*    1040     *        .1*        .3*
*C-1 to 9000 ft E*    1039     *        .1*        .3*
*C-1 to 9000 ft E*    1038     *        .1*        .3*
*C-1 to 9000 ft E*    1037     *        .1*        .3*
*C-1 to 9000 ft E*    1036     *        .1*        .3*
*C-1 to 9000 ft E*    1035     *        .1*        .3*
*C-1 to 9000 ft E*    1034     *        .1*        .3*
*C-1 to 9000 ft E*    1033     *        .1*        .3*
*C-1 to 9000 ft E*    1032     *        .1*        .3*
*C-1 to 9000 ft E*    1031     *        .1*        .3*
*C-1 to 9000 ft E*    1030     *        .1*        .3*
*C-1 to 9000 ft E*    1029     *        .1*        .3*
*C-1 to 9000 ft E*    1028     *        .1*        .3*
*C-1 to 9000 ft E*    1027     *        .1*        .3*
*C-1 to 9000 ft E*    1026     *        .1*        .3*
*C-1 to 9000 ft E*    1025     *        .1*        .3*
*C-1 to 9000 ft E*    1024     *        .1*        .3*
*C-1 to 9000 ft E*    1023     *        .1*        .3*
*C-1 to 9000 ft E*    1022     *        .1*        .3*
*C-1 to 9000 ft E*    1021     *        .1*        .3*
*C-1 to 9000 ft E*    1020     *        .1*        .3*
*C-1 to 9000 ft E*    1019     *        .1*        .3*
*C-1 to 9000 ft E*    1018     *        .1*        .3*
*C-1 to 9000 ft E*    1017     *        .1*        .3*
*C-1 to 9000 ft E*    1016     *        .1*        .3*
*C-1 to 9000 ft E*    1015     *        .1*        .3*
*C-1 to 9000 ft E*    1014     *        .1*        .3*
*C-1 to 9000 ft E*    1013     *        .1*        .3*
*C-1 to 9000 ft E*    1012     *        .1*        .3*
*C-1 to 9000 ft E*    1011     *        .1*        .3*
*C-1 to 9000 ft E*    1010     *        .1*        .3*
*C-1 to 9000 ft E*    1009     *        .1*        .3*
*C-1 to 9000 ft E*    1008     *        .1*        .3*
*C-1 to 9000 ft E*    1007     *        .1*        .3*
*C-1 to 9000 ft E*    1006     *        .1*        .3*
*C-1 to 9000 ft E*    1005     *        .1*        .3*
*C-1 to 9000 ft E*    1004     *        .1*        .3*
*C-1 to 9000 ft E*    1003     *        .1*        .3*
*C-1 to 9000 ft E*    1002     *        .1*        .3*
*C-1 to 9000 ft E*    1001     *        .1*        .3*
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Profile Output Table - Standard Table 1

Reach	River Sta	Profile	Q Total (cfs)	Min Ch El (ft)	W.S. Elev (ft)	Crit W.S. (ft)	E.G. Elev (ft)	E.G. Slope (ft/ft)	Vel Chnl (ft/s)	Flow Area (sq ft)	Top Width (ft)	Froude # Chl
C-1 to 9000 ft E	1328	PF 1	1.10	2114.81	2117.23	2114.88	2117.23	0.000000	0.03	34.09	18.16	0.00
C-1 to 9000 ft E	1327	PF 1	1.10	2114.71	2117.23		2117.23	0.000000	0.02	53.06	26.09	0.00
C-1 to 9000 ft E	1326	PF 1	1.10	2114.61	2117.23		2117.23	0.000000	0.02	68.79	31.49	0.00
C-1 to 9000 ft E	1325	PF 1	1.10	2114.51	2117.23		2117.23	0.000000	0.01	91.01	38.89	0.00
C-1 to 9000 ft E	1324	PF 1	1.10	2114.41	2117.23		2117.23	0.000000	0.01	111.85	45.29	0.00
C-1 to 9000 ft E	1323	PF 1	1.10	2114.31	2117.23		2117.23	0.000000	0.01	133.92	51.69	0.00
C-1 to 9000 ft E	1322	PF 1	1.10	2114.21	2117.23		2117.23	0.000000	0.01	151.20	56.09	0.00
C-1 to 9000 ft E	1321	PF 1	1.10	2114.18	2117.23		2117.23	0.000000	0.01	171.37	62.32	0.00
C-1 to 9000 ft E	1320	PF 1	1.10	2114.17	2117.23		2117.23	0.000000	0.01	171.96	62.34	0.00
C-1 to 9000 ft E	1319	PF 1	1.10	2117.17	2117.23		2117.23	0.002134	0.37	2.97	50.42	0.27
C-1 to 9000 ft E	1318	PF 1	1.10	2117.16	2117.18	2117.18	2117.20	0.045018	0.93	1.19	50.17	1.06
C-1 to 9000 ft E	1317	PF 1	1.10	2114.16	2114.23	2114.19	2114.23	0.002883	0.33	3.35	50.27	0.22
C-1 to 9000 ft E	1316	PF 1	1.10	2114.12	2114.18		2114.18	0.002198	0.37	2.94	50.23	0.27
C-1 to 9000 ft E	1315	PF 1	1.10	2114.11	2114.14	2114.14	2114.15	0.032479	0.84	1.31	50.10	0.92
C-1 to 9000 ft E	1314	PF 1	1.10	2104.11	2106.53	2104.18	2106.53	0.000000	0.03	35.94	19.69	0.00
C-1 to 9000 ft E	1313	PF 1	1.10	2104.06	2106.53		2106.53	0.000000	0.02	49.33	24.92	0.00
C-1 to 9000 ft E	1312	PF 1	1.10	2104.04	2106.53		2106.53	0.000000	0.02	49.82	24.99	0.00
C-1 to 9000 ft E	1311	PF 1	1.10	2104.01	2106.53		2106.53	0.000000	0.02	50.54	25.09	0.00
C-1 to 9000 ft E	1310	PF 1	1.10	2103.91	2106.53		2106.53	0.000000	0.01	87.27	38.57	0.00
C-1 to 9000 ft E	1309	PF 1	1.10	2103.81	2106.53		2106.53	0.000000	0.01	91.02	38.89	0.00
C-1 to 9000 ft E	1308	PF 1	1.10	2103.71	2106.53		2106.53	0.000000	0.01	137.26	54.29	0.00
C-1 to 9000 ft E	1307	PF 1	1.10	2103.61	2106.53		2106.53	0.000000	0.01	131.02	50.69	0.00
C-1 to 9000 ft E	1306	PF 1	1.10	2103.51	2106.53		2106.53	0.000000	0.01	154.24	57.09	0.00
C-1 to 9000 ft E	1305	PF 1	1.10	2103.48	2106.53		2106.53	0.000000	0.01	171.38	62.32	0.00
C-1 to 9000 ft E	1304	PF 1	1.10	2103.47	2106.53		2106.53	0.000000	0.01	171.97	62.34	0.00
C-1 to 9000 ft E	1303	PF 1	1.10	2106.47	2106.53		2106.53	0.002076	0.37	2.99	50.45	0.27
C-1 to 9000 ft E	1302	PF 1	1.10	2106.46	2106.49	2106.49	2106.50	0.039340	0.89	1.24	50.19	1.00
C-1 to 9000 ft E	1301	PF 1	1.10	2103.46	2103.53	2103.49	2103.53	0.002919	0.33	3.34	50.27	0.23
C-1 to 9000 ft E	1300	PF 1	1.10	2103.42	2103.48		2103.48	0.002198	0.37	2.94	50.23	0.27
C-1 to 9000 ft E	1299	PF 1	1.10	2103.41	2103.44	2103.44	2103.45	0.032479	0.84	1.31	50.10	0.92
C-1 to 9000 ft E	1298	PF 1	1.10	2093.41	2095.83	2093.48	2095.83	0.000000	0.03	35.92	19.68	0.00
C-1 to 9000 ft E	1297	PF 1	1.10	2093.36	2095.83		2095.83	0.000000	0.03	36.87	19.85	0.00
C-1 to 9000 ft E	1296	PF 1	1.10	2093.34	2095.83		2095.83	0.000000	0.03	37.25	19.92	0.00
C-1 to 9000 ft E	1295	PF 1	1.10	2093.31	2095.83		2095.83	0.000000	0.03	37.83	20.02	0.00
C-1 to 9000 ft E	1294	PF 1	1.10	2093.21	2095.83		2095.83	0.000000	0.02	71.38	32.48	0.00
C-1 to 9000 ft E	1293	PF 1	1.10	2093.11	2095.83		2095.83	0.000000	0.01	90.97	38.88	0.00
C-1 to 9000 ft E	1292	PF 1	1.10	2093.01	2095.83		2095.83	0.000000	0.01	111.80	45.28	0.00
C-1 to 9000 ft E	1291	PF 1	1.10	2092.91	2095.83		2095.83	0.000000	0.01	130.95	50.68	0.00
C-1 to 9000 ft E	1290	PF 1	1.10	2092.81	2095.83		2095.83	0.000000	0.01	154.16	57.08	0.00
C-1 to 9000 ft E	1289	PF 1	1.10	2092.77	2095.83		2095.83	0.000000	0.01	171.91	62.35	0.00
C-1 to 9000 ft E	1288	PF 1	1.10	2092.77	2095.83		2095.83	0.000000	0.01	171.91	62.35	0.00
C-1 to 9000 ft E	1287	PF 1	1.10	2095.77	2095.83		2095.83	0.002288	0.38	2.90	50.41	0.28
C-1 to 9000 ft E	1286	PF 1	1.10	2095.76	2095.80	2095.80	2095.80	0.011004	0.61	1.81	50.25	0.56
C-1 to 9000 ft E	1285	PF 1	1.10	2092.76	2092.83	2092.79	2092.83	0.002814	0.33	3.38	50.27	0.22
C-1 to 9000 ft E	1284	PF 1	1.10	2092.72	2092.78		2092.78	0.002461	0.39	2.84	50.23	0.29
C-1 to 9000 ft E	1283	PF 1	1.10	2092.71	2092.74	2092.74	2092.75	0.016971	0.69	1.59	50.13	0.69
C-1 to 9000 ft E	1282	PF 1	1.10	2082.71	2085.13	2082.78	2085.13	0.000000	0.03	35.94	19.69	0.00
C-1 to 9000 ft E	1281	PF 1	1.10	2082.66	2085.13		2085.13	0.000000	0.03	36.90	19.86	0.00
C-1 to 9000 ft E	1280	PF 1	1.10	2082.64	2085.13		2085.13	0.000000	0.03	37.28	19.93	0.00
C-1 to 9000 ft E	1279	PF 1	1.10	2082.52	2085.13		2085.13	0.000000	0.02	52.74	25.39	0.00
C-1 to 9000 ft E	1278	PF 1	1.10	2082.44	2085.13		2085.13	0.000000	0.01	76.33	33.71	0.00
C-1 to 9000 ft E	1277	PF 1	1.10	2082.35	2085.13		2085.13	0.000000	0.01	93.28	39.07	0.00
C-1 to 9000 ft E	1276	PF 1	1.10	2082.27	2085.13		2085.13	0.000000	0.01	113.61	45.41	0.00
C-1 to 9000 ft E	1275	PF 1	1.10	2082.18	2085.13		2085.13	0.000000	0.01	132.49	50.77	0.00
C-1 to 9000 ft E	1274	PF 1	1.10	2082.09	2085.13		2085.13	0.000000	0.01	155.33	57.14	0.00
C-1 to 9000 ft E	1273	PF 1	1.10	2082.08	2085.13		2085.13	0.000000	0.01	171.46	62.38	0.00
C-1 to 9000 ft E	1272	PF 1	1.10	2082.07	2085.13		2085.13	0.000000	0.01	172.06	62.40	0.00
C-1 to 9000 ft E	1271	PF 1	1.10	2085.07	2085.13		2085.13	0.002134	0.37	2.97	50.43	0.27
C-1 to 9000 ft E	1270	PF 1	1.10	2085.06	2085.09	2085.09	2085.10	0.034564	0.86	1.28	50.18	0.94
C-1 to 9000 ft E	1269	PF 1	1.10	2082.06	2082.12	2082.09	2082.12	0.004303	0.37	2.97	50.24	0.27
C-1 to 9000 ft E	1268	PF 1	1.10	2082.01	2082.07		2082.08	0.001749	0.35	3.15	50.25	0.25
C-1 to 9000 ft E	1267	PF 1	1.10	2082.01	2082.04	2082.04	2082.05	0.030534	0.83	1.33	50.11	0.89
C-1 to 9000 ft E	1266	PF 1	1.10	2072.01	2074.43	2072.08	2074.43	0.000000	0.03	35.94	19.69	0.00
C-1 to 9000 ft E	1265	PF 1	1.10	2071.96	2074.43		2074.43	0.000000	0.02	51.80	25.92	0.00
C-1 to 9000 ft E	1264	PF 1	1.10	2071.94	2074.43		2074.43	0.000000	0.02	52.30	25.98	0.00
C-1 to 9000 ft E	1263	PF 1	1.10	2071.91	2074.43		2074.43	0.000000	0.02	53.06	26.09	0.00
C-1 to 9000 ft E	1262	PF 1	1.10	2071.81	2074.43		2074.43	0.000000	0.02	71.41	32.49	0.00
C-1 to 9000 ft E	1261	PF 1	1.10	2071.71	2074.43		2074.43	0.000000	0.01	93.75	39.89	0.00
C-1 to 9000 ft E	1260	PF 1	1.10	2071.61	2074.43		2074.43	0.000000	0.01	111.84	45.29	0.00
C-1 to 9000 ft E	1259	PF 1	1.10	2071.51	2074.43		2074.43	0.000000	0.01	131.00	50.69	0.00
C-1 to 9000 ft E	1258	PF 1	1.10	2071.41	2074.43		2074.43	0.000000	0.01	154.23	57.09	0.00
C-1 to 9000 ft E	1257	PF 1	1.10	2071.38	2074.43		2074.43	0.000000	0.01	168.46	60.41	0.00
C-1 to 9000 ft E	1256	PF 1	1.10	2071.37	2074.43		2074.43	0.000000	0.01	171.95	62.34	0.00
C-1 to 9000 ft E	1255	PF 1	1.10	2074.37	2074.43		2074.43	0.002164	0.37	2.95	50.43	0.27
C-1 to 9000 ft E	1254	PF 1	1.10	2074.36	2074.39	2074.39	2074.40	0.033488	0.85	1.30	50.19	0.93
C-1 to 9000 ft E	1253	PF 1	1.10	2071.37	2072.73	2071.40	2072.73	0.000000	0.02	71.41	55.47	0.00
C-1 to 9000 ft E	1252	PF 1	1.10	2071.41	2072.73		2072.73	0.000000	0.02	69.43	55.34	0.00
C-1 to 9000 ft E	1251	PF 1	255.00	2071.31	2072.23	2072.23	2072.67	0.012168	5.37	47.50	53.66	1.01
C-1 to 9000 ft E	1250	PF 1	255.00	2061.31	2062.18	2063.62	2071.84	0.332368	24.94	10.23	13.48	5.05
C-1 to 9000 ft E	1249	PF 1	255.00	2061.26	2065.00	2063.16	2065.14	0.001023	3.03	84.09	30.00	0.32
C-1 to 9000 ft E	1248	PF 1	255.00	2061.24	2064.99		2065.13	0.001016	3.03	84.30	30.01	0.32
C-1 to 9000 ft E	1247	PF 1	255.00	2061.21	2064.97		2065.11	0.001000	3.01	84.76	30.05	0.32
C-1 to 9000 ft E	1246	PF 1	255.00	2061.11	2064.99		2065.06	0.000476	2.21	115.26	37.50	0.22
C-1 to 9000 ft E	1245	PF 1	255.00	2061.01	2064.98		2065.04	0.000350	1.95	130.61	40.86	0.19

* C-1 to 9000 ft E * 1244	* PF 1	* 255.00 *	2060.91 *	2064.97 *		*	2065.02 *	0.000233 *	1.65 *	154.95 *	46.26 *	0.16 *
* C-1 to 9000 ft E * 1243	* PF 1	* 255.00 *	2060.81 *	2064.97 *		*	2065.00 *	0.000162 *	1.41 *	180.31 *	51.65 *	0.13 *
* C-1 to 9000 ft E * 1242	* PF 1	* 255.00 *	2060.71 *	2064.97 *		*	2064.99 *	0.000111 *	1.21 *	211.03 *	58.04 *	0.11 *
* C-1 to 9000 ft E * 1241	* PF 1	* 255.00 *	2060.61 *	2064.97 *		*	2064.99 *	0.000087 *	1.09 *	234.17 *	62.44 *	0.10 *
* C-1 to 9000 ft E * 1240	* PF 1	* 255.00 *	2060.58 *	2064.97 *		*	2064.99 *	0.000151 *	1.08 *	235.82 *	62.49 *	0.10 *
* C-1 to 9000 ft E * 1239	* PF 1	* 255.00 *	2060.56 *	2064.97 *		*	2064.99 *	0.000059 *	0.98 *	259.76 *	67.81 *	0.09 *
* C-1 to 9000 ft E * 1238	* PF 1	* 255.00 *	2063.56 *	2064.70 *		*	2064.96 *	0.005704 *	4.13 *	61.80 *	58.87 *	0.71 *
* C-1 to 9000 ft E * 1237	* PF 1	* 255.00 *	2063.56 *	2064.47 *	2064.47 *	*	2064.90 *	0.012234 *	5.25 *	48.54 *	57.08 *	1.00 *
* C-1 to 9000 ft E * 1236	* PF 1	* 255.00 *	2060.56 *	2060.89 *	2061.48 *	*	2064.57 *	0.779286 *	15.40 *	16.56 *	51.32 *	4.78 *
* C-1 to 9000 ft E * 1235	* PF 1	* 255.00 *	2060.57 *	2061.21 *	2061.44 *	*	2062.02 *	0.032118 *	7.24 *	35.23 *	52.75 *	1.56 *
* C-1 to 9000 ft E * 1234	* PF 1	* 255.00 *	2060.51 *	2061.43 *	2061.43 *	*	2061.87 *	0.012188 *	5.37 *	47.48 *	53.67 *	1.01 *
* C-1 to 9000 ft E * 1233	* PF 1	* 255.00 *	2050.51 *	2051.38 *	2052.82 *	*	2061.04 *	0.332368 *	24.94 *	10.23 *	13.48 *	5.05 *
* C-1 to 9000 ft E * 1232	* PF 1	* 255.00 *	2050.46 *	2054.27 *	2052.36 *	*	2054.41 *	0.000949 *	2.95 *	86.39 *	30.31 *	0.31 *
* C-1 to 9000 ft E * 1231	* PF 1	* 255.00 *	2050.44 *	2054.26 *		*	2054.40 *	0.000941 *	2.94 *	86.62 *	30.32 *	0.31 *
* C-1 to 9000 ft E * 1230	* PF 1	* 255.00 *	2050.41 *	2054.25 *		*	2054.38 *	0.000926 *	2.93 *	87.11 *	30.36 *	0.30 *
* C-1 to 9000 ft E * 1229	* PF 1	* 255.00 *	2050.31 *	2054.26 *		*	2054.33 *	0.000443 *	2.16 *	118.19 *	37.81 *	0.22 *
* C-1 to 9000 ft E * 1228	* PF 1	* 255.00 *	2050.21 *	2054.26 *		*	2054.31 *	0.000266 *	1.74 *	146.34 *	44.21 *	0.17 *
* C-1 to 9000 ft E * 1227	* PF 1	* 255.00 *	2050.11 *	2054.26 *		*	2054.30 *	0.000172 *	1.45 *	175.66 *	50.61 *	0.14 *
* C-1 to 9000 ft E * 1226	* PF 1	* 255.00 *	2050.01 *	2054.26 *		*	2054.29 *	0.000123 *	1.26 *	201.92 *	56.00 *	0.12 *
* C-1 to 9000 ft E * 1225	* PF 1	* 255.00 *	2049.91 *	2054.26 *		*	2054.28 *	0.000087 *	1.09 *	233.60 *	62.40 *	0.10 *
* C-1 to 9000 ft E * 1224	* PF 1	* 255.00 *	2049.87 *	2054.26 *		*	2054.28 *	0.000151 *	1.08 *	235.82 *	62.47 *	0.10 *
* C-1 to 9000 ft E * 1223	* PF 1	* 255.00 *	2049.86 *	2054.26 *		*	2054.28 *	0.000060 *	0.98 *	259.31 *	67.86 *	0.09 *
* C-1 to 9000 ft E * 1222	* PF 1	* 255.00 *	2052.86 *	2053.99 *		*	2054.25 *	0.005706 *	4.09 *	62.35 *	60.24 *	0.71 *
* C-1 to 9000 ft E * 1221	* PF 1	* 255.00 *	2052.86 *	2053.76 *	2053.76 *	*	2054.19 *	0.012365 *	5.23 *	48.73 *	58.16 *	1.01 *
* C-1 to 9000 ft E * 1220	* PF 1	* 255.00 *	2049.86 *	2050.19 *	2050.78 *	*	2053.86 *	0.775368 *	15.37 *	16.59 *	51.33 *	4.77 *
* C-1 to 9000 ft E * 1219	* PF 1	* 255.00 *	2049.91 *	2050.61 *	2050.83 *	*	2051.39 *	0.030154 *	7.10 *	35.94 *	52.86 *	1.52 *
* C-1 to 9000 ft E * 1218	* PF 1	* 255.00 *	2049.81 *	2050.64 *	2050.73 *	*	2051.19 *	0.017340 *	5.99 *	42.59 *	53.32 *	1.18 *
* C-1 to 9000 ft E * 1217	* PF 1	* 255.00 *	2039.81 *	2040.68 *	2042.12 *	*	2050.28 *	0.329328 *	24.86 *	10.26 *	13.49 *	5.03 *
* C-1 to 9000 ft E * 1216	* PF 1	* 255.00 *	2039.76 *	2043.66 *	2041.66 *	*	2043.78 *	0.000875 *	2.87 *	88.93 *	30.64 *	0.30 *
* C-1 to 9000 ft E * 1215	* PF 1	* 255.00 *	2039.74 *	2043.65 *		*	2043.77 *	0.000867 *	2.86 *	89.19 *	30.66 *	0.30 *
* C-1 to 9000 ft E * 1214	* PF 1	* 255.00 *	2039.71 *	2043.64 *		*	2043.76 *	0.000853 *	2.84 *	89.71 *	30.70 *	0.29 *
* C-1 to 9000 ft E * 1212	* PF 1	* 255.00 *	2039.61 *	2043.60 *		*	2043.72 *	0.000807 *	2.79 *	91.39 *	30.84 *	0.29 *
* C-1 to 9000 ft E * 1211	* PF 1	* 255.00 *	2039.51 *	2043.45 *		*	2043.66 *	0.001559 *	3.65 *	69.81 *	25.46 *	0.39 *
* C-1 to 9000 ft E * 1210	* PF 1	* 255.00 *	2039.41 *	2043.55 *		*	2043.58 *	0.000173 *	1.45 *	175.39 *	50.72 *	0.14 *
* C-1 to 9000 ft E * 1209	* PF 1	* 255.00 *	2039.31 *	2043.55 *		*	2043.57 *	0.000119 *	1.24 *	205.12 *	56.77 *	0.12 *
* C-1 to 9000 ft E * 1208	* PF 1	* 255.00 *	2039.21 *	2043.55 *		*	2043.57 *	0.000088 *	1.10 *	232.85 *	62.35 *	0.10 *
* C-1 to 9000 ft E * 1207	* PF 1	* 255.00 *	2039.18 *	2043.55 *		*	2043.57 *	0.000153 *	1.09 *	234.48 *	62.40 *	0.10 *
* C-1 to 9000 ft E * 1206	* PF 1	* 255.00 *	2039.17 *	2043.55 *		*	2043.56 *	0.000059 *	0.96 *	265.63 *	71.32 *	0.09 *
* C-1 to 9000 ft E * 1205	* PF 1	* 255.00 *	2042.17 *	2043.28 *		*	2043.54 *	0.006076 *	4.12 *	61.90 *	62.04 *	0.73 *
* C-1 to 9000 ft E * 1204	* PF 1	* 255.00 *	2042.16 *	2043.06 *	2043.06 *	*	2043.47 *	0.012365 *	5.18 *	49.25 *	59.74 *	1.00 *
* C-1 to 9000 ft E * 1203	* PF 1	* 255.00 *	2039.16 *	2039.49 *	2040.08 *	*	2043.15 *	0.776537 *	15.35 *	16.61 *	51.59 *	4.77 *
* C-1 to 9000 ft E * 1202	* PF 1	* 255.00 *	2039.12 *	2039.81 *	2040.04 *	*	2040.61 *	0.031942 *	7.20 *	35.43 *	53.31 *	1.56 *
* C-1 to 9000 ft E * 1201	* PF 1	* 255.00 *	2039.11 *	2040.03 *	2040.03 *	*	2040.47 *	0.012145 *	5.34 *	47.77 *	54.41 *	1.00 *
* C-1 to 9000 ft E * 1200	* PF 1	* 255.00 *	2029.11 *	2029.70 *	2030.95 *	*	2039.53 *	0.578649 *	25.16 *	10.14 *	18.29 *	5.96 *
* C-1 to 9000 ft E * 1199	* PF 1	* 255.00 *	2029.06 *	2032.69 *	2030.96 *	*	2032.84 *	0.001142 *	3.15 *	80.86 *	29.57 *	0.34 *
* C-1 to 9000 ft E * 1198	* PF 1	* 255.00 *	2029.04 *	2032.68 *		*	2032.83 *	0.001136 *	3.15 *	81.01 *	29.57 *	0.34 *
* C-1 to 9000 ft E * 1197	* PF 1	* 255.00 *	2029.01 *	2032.66 *		*	2032.81 *	0.001119 *	3.13 *	81.41 *	29.60 *	0.33 *
* C-1 to 9000 ft E * 1196	* PF 1	* 255.00 *	2028.91 *	2032.67 *		*	2032.75 *	0.000576 *	2.38 *	107.10 *	36.03 *	0.24 *
* C-1 to 9000 ft E * 1195	* PF 1	* 255.00 *	2028.81 *	2032.66 *		*	2032.72 *	0.000362 *	1.96 *	129.89 *	41.41 *	0.20 *
* C-1 to 9000 ft E * 1194	* PF 1	* 255.00 *	2028.71 *	2032.66 *		*	2032.70 *	0.000257 *	1.70 *	149.65 *	45.79 *	0.17 *
* C-1 to 9000 ft E * 1193	* PF 1	* 255.00 *	2028.61 *	2032.66 *		*	2032.68 *	0.000179 *	1.46 *	174.57 *	51.19 *	0.14 *
* C-1 to 9000 ft E * 1192	* PF 1	* 255.00 *	2028.51 *	2032.65 *		*	2032.68 *	0.000128 *	1.27 *	200.13 *	56.58 *	0.12 *
* C-1 to 9000 ft E * 1191	* PF 1	* 255.00 *	2028.41 *	2032.65 *		*	2032.67 *	0.000095 *	1.12 *	227.38 *	62.18 *	0.10 *
* C-1 to 9000 ft E * 1190	* PF 1	* 255.00 *	2028.38 *	2032.65 *		*	2032.67 *	0.000165 *	1.11 *	229.03 *	62.23 *	0.10 *
* C-1 to 9000 ft E * 1189	* PF 1	* 255.00 *	2028.37 *	2032.66 *		*	2032.67 *	0.000060 *	0.95 *	268.08 *	74.46 *	0.09 *
* C-1 to 9000 ft E * 1188	* PF 1	* 255.00 *	2031.37 *	2032.41 *		*	2032.65 *	0.005974 *	3.89 *	65.53 *	70.70 *	0.71 *
* C-1 to 9000 ft E * 1187	* PF 1	* 255.00 *	2031.36 *	2032.20 *	2032.20 *	*	2032.58 *	0.012788 *	4.96 *	51.43 *	68.34 *	1.01 *
* C-1 to 9000 ft E * 1186	* PF 1	* 255.00 *	2028.36 *	2028.69 *	2029.27 *	*	2032.26 *	0.750432 *	15.16 *	16.82 *	51.94 *	4.69 *
* C-1 to 9000 ft E * 1185	* PF 1	* 255.00 *	2028.31 *	2029.00 *	2029.22 *	*	2029.79 *	0.031208 *	7.11 *	35.85 *	54.01 *	1.54 *
* C-1 to 9000 ft E * 1184	* PF 1	* 255.00 *	2028.31 *	2029.22 *	2029.22 *	*	2029.66 *	0.012167 *	5.31 *	48.03 *	55.31 *	1.00 *
* C-1 to 9000 ft E * 1183	* PF 1	* 255.00 *	2018.31 *	2018.87 *	2020.08 *	*	2028.71 *	0.539809 *	25.18 *	10.13 *	19.25 *	6.12 *
* C-1 to 9000 ft E * 1182	* PF 1	* 255.00 *	2018.25 *	2021.99 *	2019.74 *	*	2022.07 *	0.000499 *	2.23 *	114.25 *	38.12 *	0.23 *
* C-1 to 9000 ft E * 1181	* PF 1	* 255.00 *	2018.23 *	2021.98 *		*	2022.06 *	0.000492 *	2.22 *	114.75 *	38.16 *	0.23 *
* C-1 to 9000 ft E * 1180	* PF 1	* 255.00 *	2018.21 *	2021.98 *		*	2022.05 *	0.000486 *	2.21 *	115.23 *	38.19 *	0.22 *
* C-1 to 9000 ft E * 1179	* PF 1	* 255.00 *	2018.11 *	2021.96 *		*	2022.03 *	0.000453 *	2.16 *	118.02 *	38.38 *	0.22 *
* C-1 to 9000 ft E * 1178	* PF 1	* 255.00 *	2018.01 *	2021.96 *		*	2022.00 *	0.000274 *	1.75 *	145.55 *	44.78 *	0.17 *
* C-1 to 9000 ft E * 1177	* PF 1	* 255.00 *	2017.91 *	2021.96 *		*	2021.99 *	0.000170 *	1.43 *	178.38 *	52.18 *	0.14 *
* C-1 to 9000 ft E * 1176	* PF 1	* 255.00 *	2017.81 *	2021.96 *		*	2021.98 *	0.000112 *	1.20 *	212.63 *	59.58 *	0.11 *
* C-1 to 9000 ft E * 1175	* PF 1	* 255.00 *	2017.71 *	2021.95 *		*	2021.97 *	0.000084 *	1.06 *	239.74 *	64.98 *	0.10 *
* C-1 to 9000 ft E * 1174	* PF 1	* 255.00 *	2017.61 *	2021.95 *		*	2021.97 *	0.000067 *	0.97 *	263.52 *	69.25 *	0.09 *
* C-1 to 9000 ft E * 1173	* PF 1	* 255.00 *	2017.61 *	2021.95 *		*	2021.97 *	0.000119 *	0.97 *	263.44 *	69.25 *	0.09 *
* C-1 to 9000 ft E * 1172	* PF 1	* 255.00 *	2017.57 *	2021.95 *		*	2021.97 *	0.000060 *	0.98 *	259.63 *	68.45 *	0.09 *
* C-1 to 9000 ft E * 1171	* PF 1	* 255.00 *	2020.57 *	2021.68 *	2021.47 *	*	2021.94 *	0.006024 *	4.11 *	61.99 *	61.91 *	0.72 *
* C-1 to 9000 ft E * 1170	* PF 1	* 255.00 *	2020.56 *	2021.46 *	2021.46 *	*	2021.88 *	0.012388 *	5.19 *	49.17 *	59.59 *	1.01 *
* C-1 to 9000 ft E * 1169	* PF 1	* 255.00 *	2017.57 *	2017.90 *	2018.49 *	*	2021.55 *	0.769210 *	15.33 *	16.63 *	51.39 *	4.75 *
* C-1 to 9000 ft E * 1168	* PF 1	* 255.00 *	2017.52 *	2019.20 *	2018.44 *	*	2019.33 *	0.001618 *	2.88 *	88.68 *	55.75 *	0.40 *
* C-1 to 9000 ft E * 1167	* PF 1	* 371.00 *	2017.51 *	2018.69 *	2018.69 *	*	2019.26 *	0.011266 *	6.07 *	61.15 *	54.02 *	1.00 *
* C-1 to 9000 ft E * 1166	* PF 1	* 371.00 *	2008.31 *	2009.55 *	2011.17 *	*	2018.42 *	0.203483 *	23.90 *	15.52 *	14.97 *	4.14 *
* C-1 to 9000 ft E * 1165	* PF 1	* 371.00 *	2008.26 *	2012.55 *	2010.50 *	*	2012.73 *	0.000156 *	3.37 *	110.01 *	34.25 *	0.33 *
* C-1 to 9000 ft E * 1164	* PF 1	* 371.00 *	2008.24 *	2012.54 *		*	2012.72 *	0.000050 *	3.37 *	110.21 *	34.25 *	0.33 *
* C-1 to 9000 ft E * 1163	* PF 1	* 371.00 *	2008.21 *	2012.53 *		*	2012.70 *	0.001036 *	3.35 *	110.67 *	34.27 *	0.33 *
* C-1 to 9000 ft E * 1162	* PF 1	* 371.00 *	2008.11 *	2012.54 *		*	2012.64 *	0.000533 *	2.55 *	145.68 *	41.73 *	0.24 *
* C-1 to 9000 ft E * 1161	* PF 1	* 371.00 *	2008.01 *	2012.55 *		*	2012.61 *	0.000333 *	2.09 *	177.17 *	48.14 *	0.19 *
* C-1 to 9000 ft E * 1160	* PF 1	* 371.00 *	2007.91 *	2012.55 *		*	2012.59 *	0.000212 *	1.73 *	214.56 *	55.55 *	0.16 *
* C-1 to 9000 ft E * 1159	* PF 1	* 371.00 *	2007.81 *	2012.55 *		*	2012.58 *	0.000143 *	1.46 *	253.33 *	62.95 *	0.13 *
* C-1 to 9000 ft E * 1158	* PF 1	* 371.00 *	2008.61 *	2012.53 *		*	2012.58 *	0.000480 *	1.79 *	206.94 *	61.69 *	0.17 *
* C-1 to 9000 ft E * 1157	* PF 1	* 371.00 *	2007.77 *	2012.54 *		*	2012.57 *	0.000101 *	1.36 *	272.98 *	64.46 *	0.12 *
* C-1 to 9000 ft E * 1156	* PF 1	* 371.00 *	2010.77 *	2012.17 *	2011.93 *	*	2012.54 *	0.006024 *	4.86 *	76.39 *	59.25 *	0.75 *
* C-1 to 9000 ft E * 1155	* PF 1	* 371.00 *	2010.76 *	2011.92 *	2011.92 *	*	2012.47 *	0.011362 *	5.94 *	62.43 *	57.64 *	1.01 *
* C-1 to 9000 ft E * 1154	* PF 1	* 371.00 *	2007.76 *	2008.22 *	2008.94 *	*	2012.13 *	0.525240 *	15.87 *	23.38 *	51.40 *	4.15 *
* C-1 to 9000 ft E * 1153	* PF 1	* 371.00 *	2007.71 *	2008.56 *	2008.89 *	*	2009.68 *	0.033306 *	8.48 *	43.73 *	52.86 *	1.64 *
* C-1 to 9000 ft E * 1152	* PF 1	* 371.00 *	2007.71 *	2008.89 *	2008.89 *	*	2009.46 *	0.011260 *	6.07 *	61.11 *	53.95 *	1.01 *
* C-1 to 9000 ft E * 1151	* PF 1	* 371.00 *	1998.51 *	1999.75 *	2001.37 *	*	2008.62 *	0.203483 *	23.90 *	15.52 *	14.97 *	4.14 *
* C-1 to 9000 ft E * 1150	* PF 1	* 371.00 *	1998.46 *	2002.73 *	2000.84 *	*	2002.94 *	0.001316 *	3.69 *	100.52 *	32.13 *	0.37 *
* C-1 to 9000 ft E * 1149	* PF 1	* 371.00 *	1998.44 *	2002.71 *		*	2002.92 *	0.001312 *	3.69 *	100.60 *	32.12 *	0.37 *
* C-1 to 9000 ft E * 1148	* PF 1	* 371.00 *	1998.41 *	2002.69 *		*	2002.90 *	0.001299 *	3.68 *	100.92 *	32.13 *	0.37 *
* C-1 to 9000 ft E * 1147	* PF 1	* 371.00 *	1998.31 *	2002.74 *		*	2002.83 *	0.000500 *	2.48 *	149.77 *	42.70 *	0.23 *
* C-1 to 9000 ft E * 1146	* PF 1	* 371.00 *	1998.21 *	2002.73 *		*	2002.80 *	0.000336 *	2.10 *	176.61 *	48.09 *	0.19 *
* C-1 to 9000 ft E * 1145	* PF 1	* 371.00 *	1998.11 *	2002.73 *		*	2002.78 *	0.000237 *	1.81 *	204.45 *	53.48 *	0.16 *
* C-1 to 9000 ft E * 1144	* PF 1	* 371.00 *	1998.01 *	2002.74 *		*	2002.77 *	0.000138 *	1.44 *	257.31 *	63.90 *	0.13 *
* C-1 to 9000 ft E * 1143	* PF 1	* 371.00 *	1997.98 *	2002.73 *		*	2002.77 *	0.000241 *	1.43 *	258.87 *	63.92 *	0.13 *
* C-1 to 9000 ft E * 1142	* PF 1	* 371.00 *	1997.97 *	2002.74 *		*	2002.76 *	0.000102 *	1.36 *	273.10 *	64.63 *	0.12 *
* C-1 to 9000 ft E * 1141	* PF 1	* 371.00 *	2000.97 *	2002.37 *	2002.13 *	*	2002.73 *	0.006036 *	4.84 *	76.61 *	59.78 *	0.75 *
* C-1 to 9000 ft E * 1140	* PF 1	* 371.00 *	2000.96 *	2002.12 *	2002.12 *	*	2002.66 *	0.011304 *	5.92 *	62.72 *	58.10 *	1.00 *
* C-1 to 9000 ft E * 1139	* PF 1	* 371.00 *	1997.97 *	1998.43 *	1999.15 *	*	2002.33 *	0.522352 *	15.84 *	23.42 *	51.42 *	4.14 *
* C-1 to 9000 ft E * 1138	* PF 1	* 371.00 *	1997.92 *	1998.77 *	1999.10 *	*	1999.89 *	0.033150 *	8.47 *	43.79 *	52.86 *	1.64 *
* C-1 to 9000 ft E * 1137	* PF 1	* 371.00 *	1997.91 *	1999.09 *	1999.09 *	*	1999.66 *	0.011166 *	6.06 *	61.27 *	53.95 *	1.00 *
* C-1 to 9000 ft E * 1136	* PF 1	* 371.00 *	1988.71 *	1989.95 *	1991.57 *	*	1998.82 *	0.203483 *	23.90 *	15.52 *	14.97 *	4.14 *
* C-1 to 9000 ft E * 1135	* PF 1	* 371.00 *	1988.66 *	1992.87 *	1990.97 *	*	1993.07 *	0.001253 *	3.60 *	102.96 *	32.97 *	0.36 *
* C-1 to 9000 ft E * 1134	* PF 1	* 371.00 *	1988.64 *	1992.85 *		*	1993.05 *	0.001248 *	3.60 *	103.07 *	32.96 *	0.36 *
* C-1 to 9000 ft E * 1133	* PF 1	* 371.00 *	1988.61 *	1992.83 *		*	1993.03 *	0.001235 *	3.59 *	103.42 *	32.97 *	0.36 *
* C-1 to 9000 ft E * 1132	* PF 1	* 371.00 *	1988.51 *	1992.89 *		*	1992.96 *	0.000370 *	2.16 *	172.03 *	48.51 *	0.20 *
* C-1 to 9000 ft E * 1131	* PF 1	* 371.00 *	1988.41 *	1992.88 *		*	1992.95 *	0.000347 *	2.11 *	175.70 *	48.68 *	0.20 *
* C-1 to 9000 ft E * 1130	* PF 1	* 371.00 *	1988.31 *	1992.87 *		*	1992.93 *	0.000246 *	1.83 *	202.32 *	53.66 *	0.17 *
* C-1 to 9000 ft E * 1129	* PF 1	* 371.00 *	1988.21 *	1992.88 *		*	1992.91 *	0.000144 *	1.46 *	254.90 *	64.21 *	0.13 *
* C-1 to 9000 ft E * 1128	* PF 1	* 371.00 *	1988.17 *	1992.88 *		*	1992.91 *	0.000194 *	1.27 *	292.61 *	74.71 *	0.11 *
* C-1 to 9000 ft E * 1127	* PF 1	* 371.00 *	1988.16 *	1992.88 *		*	1992.91 *	0.000095 *	1.27 *	293.18 *	74.71 *	0.11 *
* C-1 to 9000 ft E * 1126	* PF 1	* 371.00 *	1991.16 *	1992.55 *	1992.30 *	*	1992.88 *	0.005760 *	4.56 *	81.36 *	67.32 *	0.73 *
* C-1 to 9000 ft E * 1125	* PF 1	* 371.00 *	1991.16 *	1992.30 *	1992.30 *	*	1992.81 *	0.011523 *	5.73 *	64.78 *	64.09 *	1.00 *
* C-1 to 9000 ft E * 1124	* PF 1	* 371.00 *	1988.16 *	1988.62 *	1989.33 *	*	1992.47 *	0.518252 *	15.75 *	23.56 *	51.98 *	4.12 *
* C-1 to 9000 ft E * 1123	* PF 1	* 371.00 *	1988.16 *	1989.02 *	1989.33 *	*	1990.08 *	0.052009 *	8.25 *	44.95 *	55.19 *	1.61 *
* C-1 to 9000 ft E * 1122	* PF 1	* 371.00 *	1988.11 *	1989.24 *	1989.28 *	*	1989.83 *	0.012789 *	6.19 *	59.93 *	56.88 *	1.06 *
* C-1 to 9000 ft E * 1121	* PF 1	* 371.00 *	1978.11 *	1978.71 *	1980.00 *	*	1988.87 *	0.568536 *	25.58 *	14.50 *	25.28 *	5.95 *
* C-1 to 9000 ft E * 1120	* PF 1	* 371.00 *	1978.06 *	1982.16 *	1979.95 *	*	1982.29 *	0.000759 *	2.90 *	128.15 *	39.57 *	0.28 *
* C-1 to 9000 ft E * 1119	* PF 1	* 371.00 *	1978.04 *	1982.15 *		*	1982.28 *	0.000752 *	2.89 *	128.56 *	39.59 *	0.28 *
* C-1 to 9000 ft E * 1118	* PF 1	* 371.00 *	1978.01 *	1982.14 *		*	1982.27 *	0.000739 *	2.87 *	129.30 *	39.64 *	0.28 *
* C-1 to 9000 ft E * 1117	* PF 1	* 371.00 *	1977.91 *	1982.11 *		*	1982.23 *	0.000699 *	2.82 *	131.71 *	39.78 *	0.27 *
* C-1 to 9000 ft E * 1116	* PF 1	* 371.00 *	1977.81 *	1982.10 *		*	1982.19 *	0.000458 *	2.36 *	157.08 *	45.17 *	0.22 *
* C-1 to 9000 ft E * 1115	* PF 1	* 371.00 *	1977.71 *	1982.11 *		*	1982.16 *	0.000283 *	1.93 *	192.51 *	52.58 *	0.18 *
* C-1 to 9000 ft E * 1114	* PF 1	* 371.00 *	1977.61 *	1982.11 *		*	1982.15 *	0.000196 *	1.65 *	224.70 *	58.98 *	0.15 *
* C-1 to 9000 ft E * 1113	* PF 1	* 371.00 *	1977.51 *	1982.11 *		*	1982.14 *	0.000135 *	1.41 *	262.78 *	66.38 *	0.13 *
* C-1 to 9000 ft E * 1112	* PF 1	* 371.00 *	1977.41 *	1982.10 *		*	1982.13 *	0.000119 *	1.35 *	274.91 *	67.22 *	0.12 *
* C-1 to 9000 ft E * 1111	* PF 1	* 371.00 *	1977.37 *	1982.10 *		*	1982.13 *	0.000231 *	1.36 *	273.77 *	70.86 *	0.12 *
* C-1 to 9000 ft E * 1110	* PF 1	* 371.00 *	1977.37 *	1982.10 *		*	1982.13 *	0.000113 *	1.36 *	273.70 *	70.85 *	0.12 *
* C-1 to 9000 ft E * 1109	* PF 1	* 371.00 *	1980.37 *	1981.77 *		*	1982.10 *	0.005738 *	4.61 *	80.47 *	65.25 *	0.73 *
* C-1 to 9000 ft E * 1108	* PF 1	* 371.00 *	1980.37 *	1981.51 *	1981.51 *	*	1982.03 *	0.011526 *	5.78 *	64.15 *	62.51 *	1.01 *
* C-1 to 9000 ft E * 1107	* PF 1	* 371.00 *	1977.37 *	1977.83 *	1978.55 *	*	1981.69 *	0.554725 *	15.78 *	23.53 *	51.49 *	4.11 *
* C-1 to 9000 ft E * 1106	* PF 1	* 371.00 *	1977.31 *	1978.16 *	1978.49 *	*	1979.28 *	0.032900 *	8.46 *	43.86 *	52.71 *	1.63 *
* C-1 to 9000 ft E * 1105	* PF 1	* 371.00 *	1977.31 *	1978.49 *	1978.49 *	*	1979.06 *	0.011214 *	6.07 *	61.14 *	53.74 *	1.00 *
* C-1 to 9000 ft E * 1104	* PF 1	* 516.00 *	1968.11 *	1969.77 *	1971.55 *	*	1978.27 *	0.141746 *	23.39 *	22.06 *	16.63 *	3.58 *
* C-1 to 9000 ft E * 1103	* PF 1	* 516.00 *	1967.96 *	1971.79 *	1970.23 *	*	1972.95 *	0.000755 *	3.17 *	162.80 *	43.41 *	0.29 *
* C-1 to 9000 ft E * 1102	* PF 1	* 516.00 *	1967.94 *	1972.78 *		*	1972.94 *	0.000746 *	3.16 *	163.21 *	43.42 *	0.29 *
* C-1 to 9000 ft E * 1101	* PF 1	* 516.00 *	1967.91 *	1972.77 *		*	1972.93 *	0.000736 *	3.15 *	163.96 *	43.45 *	0.29 *
* C-1 to 9000 ft E * 1100	* PF 1	* 516.00 *	1967.91 *	1972.73 *		*	1972.89 *	0.000759 *	3.18 *	162.18 *	43.28 *	0.29 *
* C-1 to 9000 ft E * 1099	* PF 1	* 516.00 *	1967.81 *	1972.74 *		*	1972.84 *	0.000479 *	2.63 *	196.31 *	49.70 *	0.23 *
* C-1 to 9000 ft E * 1098	* PF 1	* 516.00 *	1967.71 *	1972.74 *		*	1972.82 *	0.000323 *	2.23 *	231.55 *	56.11 *	0.19 *
* C-1 to 9000 ft E * 1097	* PF 1	* 516.00 *	1967.61 *	1972.74 *		*	1972.80 *	0.000209 *	1.85 *	278.45 *	64.53 *	0.16 *
* C-1 to 9000 ft E * 1096	* PF 1	* 516.00 *	1967.59 *	1972.74 *		*	1972.79 *	0.000312 *	1.75 *	295.21 *	64.59 *	0.14 *
* C-1 to 9000 ft E * 1095	* PF 1	* 516.00 *	1967.58 *	1972.74 *		*	1972.79 *	0.000152 *	1.74 *	295.71 *	64.59 *	0.14 *
* C-1 to 9000 ft E * 1094	* PF 1	* 516.00 *	1970.58 *	1972.26 *	1972.02 *	*	1972.75 *	0.006318 *	5.59 *	92.35 *	59.96 *	0.79 *
* C-1 to 9000 ft E * 1093	* PF 1	* 516.00 *	1970.56 *	1972.00 *	1972.00 *	*	1972.68 *	0.010610 *	6.60 *	78.23 *	58.48 *	1.01 *
* C-1 to 9000 ft E * 1092	* PF 1	* 516.00 *	1967.56 *	1970.75 *	1969.03 *	*	1970.89 *	0.001582 *	2.97 *	173.89 *	58.99 *	0.30 *
* C-1 to 9000 ft E * 1091	* PF 1	* 516.00 *	1967.51 *	1970.73 *		*	1970.87 *	0.000747 *	2.93 *	176.10 *	59.27 *	0.30 *
* C-1 to 9000 ft E * 1090	* PF 1	* 516.00 *	1967.51 *	1969.86 *	1969.86 *	*	1970.78 *	0.009758 *	7.67 *	67.27 *	37.15 *	1.00 *
* C-1 to 9000 ft E * 1089	* PF 1	* 516.00 *	1958.31 *	1959.86 *	1961.75 *	*	1969.87 *	0.179401 *	25.38 *	20.33 *	16.21 *	3.99 *
* C-1 to 9000 ft E * 1088	* PF 1	* 516.00 *	1958.26 *	1962.95 *	1960.91 *	*	1963.20 *	0.001341 *	4.01 *	128.54 *	36.83 *	0.38 *
* C-1 to 9000 ft E *

Reach	River Sta	Profile	E.G. Elev (ft)	W.S. Elev (ft)	Vel Head (ft)	Frctn Loss (ft)	C & E Loss (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Top Width (ft)
C-1 to 9000 ft E	1082	PF 1	516.00	1957.81	1962.93		1962.99	0.000251	2.01	257.25	60.48	0.17
C-1 to 9000 ft E	1081	PF 1	516.00	1957.77	1962.94		1962.98	0.000293	1.68	306.60	68.61	0.14
C-1 to 9000 ft E	1080	PF 1	516.00	1957.76	1962.94		1962.98	0.000143	1.68	307.15	68.62	0.14
C-1 to 9000 ft E	1079	PF 1	516.00	1960.76	1962.49	1962.20	1962.94	0.005716	5.40	95.47	60.50	0.76
C-1 to 9000 ft E	1078	PF 1	516.00	1960.76	1962.20	1962.20	1962.87	0.010589	6.58	78.38	58.76	1.00
C-1 to 9000 ft E	1077	PF 1	516.00	1957.76	1958.38	1959.22	1962.52	0.381069	16.33	31.59	52.22	3.70
C-1 to 9000 ft E	1076	PF 1	516.00	1957.71	1958.74	1959.17	1960.19	0.033787	9.66	53.42	53.68	1.71
C-1 to 9000 ft E	1075	PF 1	516.00	1957.71	1950.11	1959.17	1959.88	0.012213	7.04	73.29	54.99	1.07
C-1 to 9000 ft E	1074	PF 1	516.00	1948.51	1950.14	1951.95	1959.06	0.152029	23.97	21.53	16.50	3.70
C-1 to 9000 ft E	1073	PF 1	516.00	1948.46	1953.13	1951.27	1953.43	0.001633	4.35	118.52	34.74	0.42
C-1 to 9000 ft E	1072	PF 1	516.00	1948.44	1953.11		1953.41	0.001634	4.36	118.47	34.72	0.42
C-1 to 9000 ft E	1071	PF 1	516.00	1948.41	1953.09		1953.38	0.001626	4.35	118.64	34.71	0.41
C-1 to 9000 ft E	1070	PF 1	516.00	1948.31	1953.14		1953.29	0.000704	3.08	167.40	44.32	0.28
C-1 to 9000 ft E	1069	PF 1	516.00	1948.21	1953.14		1953.25	0.000478	2.63	196.48	49.72	0.23
C-1 to 9000 ft E	1068	PF 1	516.00	1948.11	1953.14		1953.22	0.000326	2.22	232.93	57.59	0.19
C-1 to 9000 ft E	1067	PF 1	516.00	1948.01	1953.15		1953.20	0.000200	1.82	283.89	65.54	0.15
C-1 to 9000 ft E	1066	PF 1	516.00	1947.97	1953.15		1953.19	0.000280	1.63	316.72	72.28	0.14
C-1 to 9000 ft E	1065	PF 1	516.00	1947.97	1953.15		1953.19	0.000137	1.63	316.63	72.27	0.14
C-1 to 9000 ft E	1064	PF 1	516.00	1950.97	1952.70	1952.41	1953.15	0.005721	5.40	95.57	60.71	0.76
C-1 to 9000 ft E	1063	PF 1	516.00	1950.97	1952.41	1952.41	1953.08	0.010569	6.57	78.52	58.94	1.00
C-1 to 9000 ft E	1062	PF 1	516.00	1947.96	1948.58	1949.41	1952.73	0.386277	16.36	31.55	52.64	3.72
C-1 to 9000 ft E	1061	PF 1	516.00	1947.91	1948.94	1949.37	1950.38	0.034006	9.64	53.54	54.32	1.71
C-1 to 9000 ft E	1060	PF 1	516.00	1947.91	1949.30	1949.37	1950.07	0.012256	7.01	73.58	55.78	1.08
C-1 to 9000 ft E	1059	PF 1	516.00	1938.71	1940.31	1942.11	1949.24	0.155517	23.98	21.52	16.82	3.74
C-1 to 9000 ft E	1058	PF 1	516.00	1938.66	1944.51	1941.75	1944.71	0.000794	3.57	144.61	36.46	0.32
C-1 to 9000 ft E	1057	PF 1	516.00	1938.64	1944.50		1944.70	0.000905	3.56	144.90	36.47	0.31
C-1 to 9000 ft E	1056	PF 1	516.00	1938.61	1944.50		1944.68	0.000836	3.42	150.88	38.26	0.30
C-1 to 9000 ft E	1055	PF 1	516.00	1938.51	1944.49		1944.63	0.000577	2.98	173.29	40.93	0.26
C-1 to 9000 ft E	1054	PF 1	516.00	1938.41	1944.50		1944.60	0.000365	2.47	208.71	46.54	0.21
C-1 to 9000 ft E	1053	PF 1	516.00	1938.32	1944.48		1944.58	0.000355	2.52	205.02	42.58	0.20
C-1 to 9000 ft E	1052	PF 1	516.00	1938.19	1944.46		1944.55	0.000279	2.41	214.19	44.29	0.19
C-1 to 9000 ft E	1051	PF 1	516.00	1941.19	1943.80	1943.45	1944.49	0.005782	6.67	77.34	35.23	0.79
C-1 to 9000 ft E	1050	PF 1	516.00	1941.19	1943.45	1943.45	1944.42	0.009542	7.90	65.32	33.73	1.00
C-1 to 9000 ft E	1049	PF 1	516.00	1942.85	1944.50	1940.49	1943.04	0.000941	3.51	146.80	39.06	0.32
C-1 to 9000 ft E	1048	PF 1	516.00	1938.13	1942.89		1942.99	0.000512	2.64	195.76	52.32	0.24
C-1 to 9000 ft E	1047	PF 1	516.00	1938.10	1942.67	1940.40	1942.96	0.000254	4.35	118.76	57.28	0.36
C-1 to 9000 ft E	1046.5	Culvert										
C-1 to 9000 ft E	1046	PF 1	516.00	1937.20	1940.34	1939.52	1940.96	0.004717	6.32	81.69	26.00	0.63
C-1 to 9000 ft E	1045	PF 1	781.00	1936.00	1938.92	1938.92	1940.39	0.011972	9.73	80.24	27.50	1.00
C-1 to 9000 ft E	1044	PF 1	781.00	1935.00	1936.38	1937.11	1938.83	0.045220	12.56	62.19	45.00	1.88
C-1 to 9000 ft E	1043	PF 1	781.00	1933.65	1935.93	1935.93	1937.07	0.011547	8.57	91.09	40.00	1.00
C-1 to 9000 ft E	1042	PF 1	781.00	1928.70	1930.37	1931.70	1935.22	0.018921	17.69	44.16	27.65	2.47
C-1 to 9000 ft E	1041	PF 1	781.00	1926.60	1928.19	1929.60	1933.55	0.022125	18.59	42.01	27.54	2.65
C-1 to 9000 ft E	1040	PF 1	781.00	1923.60	1925.11	1926.59	1931.09	0.026243	19.62	39.80	27.43	2.87
C-1 to 9000 ft E	1039	PF 1	781.00	1921.60	1923.19	1924.58	1928.48	0.022018	18.47	42.43	27.99	2.65
C-1 to 9000 ft E	1038	PF 1	781.00	1918.60	1920.10	1921.59	1926.02	0.026198	19.52	40.00	27.85	2.87
C-1 to 9000 ft E	1037	PF 1	781.00	1915.53	1917.00	1918.51	1923.25	0.028518	20.07	38.91	27.72	2.99
C-1 to 9000 ft E	1036	PF 1	781.00	1912.60	1914.06	1915.58	1920.38	0.028934	20.16	38.73	27.72	3.01
C-1 to 9000 ft E	1035	PF 1	781.00	1908.15	1909.54	1911.19	1917.02	0.036520	21.95	35.58	26.70	3.35
C-1 to 9000 ft E	1034	PF 1	781.00	1906.69	1908.57	1910.10	1915.54	0.029074	21.49	36.34	23.22	3.03
C-1 to 9000 ft E	1033	PF 1	781.00	1905.11	1906.80	1908.52	1913.86	0.028360	21.32	36.63	23.25	2.99
C-1 to 9000 ft E	1032	PF 1	781.00	1903.12	1905.02	1906.63	1911.07	0.021963	19.74	39.56	22.94	2.65
C-1 to 9000 ft E	1031	PF 1	781.00	1901.60	1903.50	1904.93	1908.76	0.019682	18.41	42.43	27.02	2.59
C-1 to 9000 ft E	1030	PF 1	893.00	1900.26	1902.57	1903.86	1906.83	0.012819	16.57	53.90	29.03	2.14
C-1 to 9000 ft E	1029	PF 1	893.00	1899.42	1903.04	1904.00	1906.14	0.006295	14.12	63.25	24.48	1.55
C-1 to 9000 ft E	1028	PF 1	893.00	1898.55	1900.64	1902.02	1905.42	0.015207	17.56	50.87	28.37	2.31
C-1 to 9000 ft E	1027	PF 1	893.00	1896.54	1899.98	1901.43	1904.54	0.009731	17.15	52.06	20.31	1.89
C-1 to 9000 ft E	1026	PF 1	893.00	1895.60	1898.86	1900.49	1904.13	0.011884	18.43	48.46	19.77	2.07
C-1 to 9000 ft E	1025	PF 1	893.00	1893.40	1896.34	1898.29	1903.25	0.017364	21.10	42.32	18.81	2.48
C-1 to 9000 ft E	1024	PF 1	893.00	1892.20	1895.09	1897.09	1902.32	0.018509	21.59	41.37	18.66	2.55
C-1 to 9000 ft E	1023	PF 1	893.00	1890.60	1893.39	1895.49	1901.28	0.020889	22.53	39.63	18.38	2.70
C-1 to 9000 ft E	1022	PF 1	893.00	1889.70	1892.52	1894.59	1900.19	0.020071	22.22	40.20	18.47	2.65
C-1 to 9000 ft E	1021	PF 1	893.00	1888.80	1891.65	1893.69	1899.15	0.019477	21.98	40.63	18.54	2.62
C-1 to 9000 ft E	1020	PF 1	893.00	1887.90	1890.76	1892.79	1898.15	0.019058	21.81	40.94	18.59	2.59
C-1 to 9000 ft E	1019	PF 1	893.00	1886.51	1889.34	1891.39	1896.98	0.019993	22.18	40.26	18.49	2.65
C-1 to 9000 ft E	1018	PF 1	893.00	1886.51	1889.34	1891.39	1896.98	0.019993	22.18	40.26	18.49	2.65
C-1 to 9000 ft E	1017	PF 1	893.00	1885.49	1887.64	1889.72	1895.81	0.024968	22.93	38.94	18.65	2.80
C-1 to 9000 ft E	1016	PF 1	893.00	1884.45	1885.99	1887.85	1894.31	0.035755	23.15	38.58	25.00	3.28
C-1 to 9000 ft E	1015	PF 1	893.00	1883.41	1885.05	1886.81	1892.41	0.029384	21.76	41.03	25.00	2.99
C-1 to 9000 ft E	1014	PF 1	893.00	1879.36	1880.80	1882.76	1890.39	0.044855	24.85	35.93	25.00	3.65
C-1 to 9000 ft E	1013	PF 1	893.00	1876.65	1878.71	1878.71	1887.73	0.056527	26.71	33.43	25.00	4.07
C-1 to 9000 ft E	1012	PF 1	893.00	1872.04	1873.36	1875.44	1884.79	0.059469	27.14	32.90	25.00	4.17
C-1 to 9000 ft E	1011	PF 1	893.00	1867.21	1868.45	1870.61	1881.37	0.072375	28.85	30.95	25.00	4.57
C-1 to 9000 ft E	1010	PF 1	893.00	1862.93	1874.69	1866.33	1874.83	0.000085	3.04	293.87	25.00	0.16
C-1 to 9000 ft E	1009	PF 1	893.00	1862.88	1874.68		1874.82	0.000084	3.03	295.04	25.00	0.16
C-1 to 9000 ft E	1008	PF 1	893.00	1862.83	1874.68		1874.82	0.000083	3.01	296.20	25.00	0.15
C-1 to 9000 ft E	1007	PF 1	893.00	1862.78	1874.68		1874.82	0.000083	3.00	297.37	25.00	0.15
C-1 to 9000 ft E	1006	PF 1	893.00	1862.74	1874.67		1874.81	0.000082	2.99	298.30	25.00	0.15
C-1 to 9000 ft E	1005	PF 1	893.00	1862.74	1874.67		1874.81	0.000082	2.99	298.30	25.00	0.15
C-1 to 9000 ft E	1004	PF 1	893.00	1862.68	1874.67		1874.81	0.000081	2.98	299.80	25.00	0.15
C-1 to 9000 ft E	1003	PF 1	893.00	1862.63	1874.67		1874.80	0.000080	2.97	300.87	25.00	0.15
C-1 to 9000 ft E	1002	PF 1	893.00	1862.58	1874.66		1874.80	0.000079	2.96	302.04	25.00	0.15
C-1 to 9000 ft E	1001	PF 1	893.00	1862.55	1874.66	1865.95	1874.80	0.000079	2.95	302.75	25.00	0.15

Profile Output Table - Standard Table 2

Reach	River Sta	Profile	E.G. Elev (ft)	W.S. Elev (ft)	Vel Head (ft)	Frctn Loss (ft)	C & E Loss (ft)	Q Left (cfs)	Q Channel (cfs)	Q Right (cfs)	Top Width (ft)
C-1 to 9000 ft E	1328	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		18.16
C-1 to 9000 ft E	1327	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		26.09
C-1 to 9000 ft E	1326	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		31.49
C-1 to 9000 ft E	1325	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		38.89
C-1 to 9000 ft E	1324	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		45.29
C-1 to 9000 ft E	1323	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		51.69
C-1 to 9000 ft E	1322	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		56.09
C-1 to 9000 ft E	1321	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		62.32
C-1 to 9000 ft E	1320	PF 1	2117.23	2117.23	0.00	0.00	0.00		1.10		62.34
C-1 to 9000 ft E	1319	PF 1	2117.23	2117.23	0.00	0.03	0.00		1.10		50.42
C-1 to 9000 ft E	1318	PF 1	2117.20	2117.18	0.01	0.00	0.00		1.10		50.17
C-1 to 9000 ft E	1317	PF 1	2114.23	2114.23	0.00	0.05	0.00		1.10		50.27
C-1 to 9000 ft E	1316	PF 1	2114.18	2114.18	0.00	0.03	0.00		1.10		50.23
C-1 to 9000 ft E	1315	PF 1	2114.15	2114.14	0.01	0.00	0.00		1.10		50.10
C-1 to 9000 ft E	1314	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		19.69
C-1 to 9000 ft E	1313	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		24.92
C-1 to 9000 ft E	1312	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		24.99
C-1 to 9000 ft E	1311	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		25.09
C-1 to 9000 ft E	1310	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		38.57
C-1 to 9000 ft E	1309	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		38.89
C-1 to 9000 ft E	1308	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		54.29
C-1 to 9000 ft E	1307	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		50.69
C-1 to 9000 ft E	1306	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		57.09
C-1 to 9000 ft E	1305	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		62.32
C-1 to 9000 ft E	1304	PF 1	2106.53	2106.53	0.00	0.00	0.00		1.10		62.34
C-1 to 9000 ft E	1303	PF 1	2106.53	2106.53	0.00	0.03	0.00		1.10		50.45
C-1 to 9000 ft E	1302	PF 1	2106.50	2106.49	0.01	0.00	0.00		1.10		50.19
C-1 to 9000 ft E	1301	PF 1	2103.53	2103.53	0.00	0.05	0.00		1.10		50.27
C-1 to 9000 ft E	1300	PF 1	2103.48	2103.48	0.00	0.03	0.00		1.10		50.23
C-1 to 9000 ft E	1299	PF 1	2103.45	2103.44	0.01	0.00	0.00		1.10		50.10
C-1 to 9000 ft E	1298	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		19.68
C-1 to 9000 ft E	1297	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		19.85
C-1 to 9000 ft E	1296	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		19.92
C-1 to 9000 ft E	1295	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		20.02
C-1 to 9000 ft E	1294	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		32.48
C-1 to 9000 ft E	1293	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		38.88
C-1 to 9000 ft E	1292	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		45.28
C-1 to 9000 ft E	1291	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		50.68
C-1 to 9000 ft E	1290	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		57.08
C-1 to 9000 ft E	1289	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		62.35
C-1 to 9000 ft E	1288	PF 1	2095.83	2095.83	0.00	0.00	0.00		1.10		62.35
C-1 to 9000 ft E	1287	PF 1	2095.83	2095.83	0.00	0.03	0.00		1.10		50.41
C-1 to 9000 ft E	1286	PF 1	2095.80	2095.80	0.01	0.00	0.00		1.10		50.25
C-1 to 9000 ft E	1285	PF 1	2092.83	2092.83	0.00	0.05	0.00		1.10		50.27
C-1 to 9000 ft E	1284	PF 1	2092.78	2092.78	0.00	0.03	0.00		1.10		50.23
C-1 to 9000 ft E	1283	PF 1	2092.75	2092.74	0.01	0.00	0.00		1.10		50.13
C-1 to 9000 ft E	1282	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		19.69
C-1 to 9000 ft E	1281	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		19.86
C-1 to 9000 ft E	1280	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		19.93
C-1 to 9000 ft E	1279	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		25.39
C-1 to 9000 ft E	1278	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		33.71
C-1 to 9000 ft E	1277	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		39.07
C-1 to 9000 ft E	1276	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		45.41
C-1 to 9000 ft E	1275	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		50.77
C-1 to 9000 ft E	1274	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		57.14
C-1 to 9000 ft E	1273	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		62.38
C-1 to 9000 ft E	1272	PF 1	2085.13	2085.13	0.00	0.00	0.00		1.10		62.40
C-1 to 9000 ft E	1271	PF 1	2085.13	2085.13	0.00	0.03	0.00		1.10		50.43
C-1 to 9000 ft E	1270	PF 1	2085.10	2085.09	0.01	0.00	0.00		1.10		50.18
C-1 to 9000 ft E	1269	PF 1	2082.12	2082.12	0.00	0.05	0.00		1.10		50.24
C-1 to 9000 ft E	1268	PF 1	2082.08	2082.07	0.00	0.03	0.00		1.10		50.25
C-1 to 9000 ft E	1267	PF 1	2082.05	2082.04	0.01	0.00	0.00		1.10		50.11
C-1 to 9000 ft E	1266	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		19.69
C-1 to 9000 ft E	1265	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		25.92
C-1 to 9000 ft E	1264	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		25.98
C-1 to 9000 ft E	1263	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		26.09
C-1 to 9000 ft E	1262	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		32.49
C-1 to 9000 ft E	1261	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		39.89
C-1 to 9000 ft E	1260	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		45.29
C-1 to 9000 ft E	1259	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		50.69
C-1 to 9000 ft E	1258	PF 1	2074.43	2074.43	0.00	0.00	0.00		1.10		57.09

C-1 to 9000 ft E	1257	PF 1	2074.43	2074.43	0.00	0.00	0.00	0.00	1.10	60.41
C-1 to 9000 ft E	1256	PF 1	2074.43	2074.43	0.00	0.00	0.00	0.00	1.10	62.34
C-1 to 9000 ft E	1255	PF 1	2074.43	2074.43	0.00	0.03	0.00	0.00	1.10	50.43
C-1 to 9000 ft E	1254	PF 1	2074.40	2074.39	0.01	0.00	0.00	0.00	1.10	50.19
C-1 to 9000 ft E	1253	PF 1	2072.73	2072.73	0.00	0.00	0.00	0.00	1.10	55.47
C-1 to 9000 ft E	1252	PF 1	2072.73	2072.73	0.00	0.01	0.00	0.04	1.10	55.34
C-1 to 9000 ft E	1251	PF 1	2072.67	2072.23	0.45	0.00	0.06	0.00	255.00	53.66
C-1 to 9000 ft E	1250	PF 1	2071.84	2062.18	9.66	0.00	0.91	0.00	255.00	13.48
C-1 to 9000 ft E	1249	PF 1	2065.14	2065.00	0.14	0.01	0.00	0.00	255.00	30.00
C-1 to 9000 ft E	1248	PF 1	2065.13	2064.99	0.14	0.01	0.00	0.00	255.00	30.01
C-1 to 9000 ft E	1247	PF 1	2065.11	2064.97	0.14	0.03	0.02	0.00	255.00	30.05
C-1 to 9000 ft E	1246	PF 1	2065.06	2064.99	0.08	0.02	0.01	0.00	255.00	37.50
C-1 to 9000 ft E	1245	PF 1	2065.04	2064.98	0.06	0.01	0.01	0.00	255.00	40.86
C-1 to 9000 ft E	1244	PF 1	2065.02	2064.97	0.04	0.01	0.00	0.00	255.00	46.26
C-1 to 9000 ft E	1243	PF 1	2065.00	2064.97	0.03	0.01	0.00	0.00	255.00	51.65
C-1 to 9000 ft E	1242	PF 1	2064.99	2064.97	0.02	0.00	0.00	0.00	255.00	58.04
C-1 to 9000 ft E	1241	PF 1	2064.99	2064.97	0.02	0.00	0.00	0.00	255.00	62.44
C-1 to 9000 ft E	1240	PF 1	2064.99	2064.97	0.02	0.00	0.00	0.00	255.00	62.49
C-1 to 9000 ft E	1239	PF 1	2064.99	2064.97	0.01	0.00	0.02	0.00	255.00	67.81
C-1 to 9000 ft E	1238	PF 1	2064.96	2064.70	0.26	0.05	0.02	0.00	255.00	58.87
C-1 to 9000 ft E	1237	PF 1	2064.90	2064.47	0.43	0.00	0.06	0.00	255.00	57.08
C-1 to 9000 ft E	1236	PF 1	2064.57	2060.89	3.68	0.00	0.33	0.00	255.00	51.32
C-1 to 9000 ft E	1235	PF 1	2062.02	2061.21	0.81	1.69	0.86	0.00	255.00	52.75
C-1 to 9000 ft E	1234	PF 1	2061.87	2061.43	0.45	0.00	0.06	0.00	255.00	53.67
C-1 to 9000 ft E	1233	PF 1	2061.04	2051.38	9.66	0.00	0.91	0.00	255.00	13.48
C-1 to 9000 ft E	1232	PF 1	2054.41	2054.27	0.14	0.01	0.60	0.00	255.00	30.31
C-1 to 9000 ft E	1231	PF 1	2054.40	2054.26	0.13	0.01	0.00	0.00	255.00	30.32
C-1 to 9000 ft E	1230	PF 1	2054.38	2054.25	0.13	0.03	0.02	0.00	255.00	30.36
C-1 to 9000 ft E	1229	PF 1	2054.33	2054.26	0.07	0.02	0.01	0.00	255.00	37.81
C-1 to 9000 ft E	1228	PF 1	2054.31	2054.26	0.05	0.01	0.00	0.00	255.00	44.21
C-1 to 9000 ft E	1227	PF 1	2054.30	2054.26	0.03	0.01	0.00	0.00	255.00	50.61
C-1 to 9000 ft E	1226	PF 1	2054.29	2054.26	0.02	0.01	0.00	0.00	255.00	56.00
C-1 to 9000 ft E	1225	PF 1	2054.28	2054.26	0.02	0.00	0.00	0.00	255.00	62.40
C-1 to 9000 ft E	1224	PF 1	2054.28	2054.26	0.02	0.00	0.00	0.00	255.00	62.47
C-1 to 9000 ft E	1223	PF 1	2054.28	2054.26	0.02	0.00	0.00	0.02	255.00	67.86
C-1 to 9000 ft E	1222	PF 1	2054.25	2053.99	0.26	0.05	0.02	0.00	255.00	60.24
C-1 to 9000 ft E	1221	PF 1	2054.19	2053.76	0.43	0.00	0.07	0.00	255.00	58.16
C-1 to 9000 ft E	1220	PF 1	2053.86	2050.19	3.67	0.00	0.32	0.00	255.00	51.33
C-1 to 9000 ft E	1219	PF 1	2051.39	2050.61	0.78	1.60	0.87	0.00	255.00	52.86
C-1 to 9000 ft E	1218	PF 1	2051.19	2050.64	0.56	0.13	0.07	0.00	255.00	53.32
C-1 to 9000 ft E	1217	PF 1	2050.28	2040.68	9.60	0.00	0.90	0.00	255.00	13.49
C-1 to 9000 ft E	1216	PF 1	2043.78	2043.66	0.13	0.01	0.00	0.00	255.00	30.64
C-1 to 9000 ft E	1215	PF 1	2043.77	2043.65	0.13	0.01	0.00	0.00	255.00	30.66
C-1 to 9000 ft E	1214	PF 1	2043.76	2043.64	0.13	0.04	0.00	0.00	255.00	30.70
C-1 to 9000 ft E	1212	PF 1	2043.72	2043.60	0.12	0.05	0.01	0.00	255.00	30.84
C-1 to 9000 ft E	1211	PF 1	2043.66	2043.45	0.21	0.02	0.05	0.00	255.00	21.46
C-1 to 9000 ft E	1210	PF 1	2043.58	2043.55	0.03	0.01	0.00	0.00	255.00	50.72
C-1 to 9000 ft E	1209	PF 1	2043.57	2043.55	0.02	0.01	0.00	0.00	255.00	56.77
C-1 to 9000 ft E	1208	PF 1	2043.57	2043.55	0.02	0.00	0.00	0.00	255.00	62.35
C-1 to 9000 ft E	1207	PF 1	2043.57	2043.55	0.02	0.00	0.00	0.00	255.00	62.40
C-1 to 9000 ft E	1206	PF 1	2043.56	2043.55	0.01	0.00	0.00	0.02	255.00	67.32
C-1 to 9000 ft E	1205	PF 1	2043.54	2043.28	0.26	0.05	0.02	0.00	255.00	62.04
C-1 to 9000 ft E	1204	PF 1	2043.47	2043.06	0.42	0.00	0.06	0.00	255.00	59.74
C-1 to 9000 ft E	1203	PF 1	2043.15	2039.49	3.66	0.00	0.32	0.00	255.00	51.59
C-1 to 9000 ft E	1202	PF 1	2040.61	2039.81	0.80	1.68	0.86	0.00	255.00	53.31
C-1 to 9000 ft E	1201	PF 1	2040.47	2040.03	0.44	0.00	0.09	0.00	255.00	54.41
C-1 to 9000 ft E	1200	PF 1	2039.53	2029.70	9.83	0.00	0.94	0.00	255.00	18.29
C-1 to 9000 ft E	1199	PF 1	2032.84	2032.69	0.15	0.01	0.00	0.00	255.00	29.57
C-1 to 9000 ft E	1198	PF 1	2032.83	2032.68	0.15	0.02	0.00	0.00	255.00	29.57
C-1 to 9000 ft E	1197	PF 1	2032.81	2032.66	0.15	0.04	0.02	0.00	255.00	29.60
C-1 to 9000 ft E	1196	PF 1	2032.75	2032.67	0.09	0.02	0.01	0.00	255.00	36.03
C-1 to 9000 ft E	1195	PF 1	2032.72	2032.66	0.06	0.02	0.00	0.00	255.00	41.41
C-1 to 9000 ft E	1194	PF 1	2032.70	2032.66	0.05	0.01	0.00	0.00	255.00	45.79
C-1 to 9000 ft E	1193	PF 1	2032.69	2032.66	0.03	0.01	0.00	0.00	255.00	51.19
C-1 to 9000 ft E	1192	PF 1	2032.68	2032.65	0.03	0.01	0.00	0.00	255.00	56.58
C-1 to 9000 ft E	1191	PF 1	2032.67	2032.65	0.02	0.00	0.00	0.00	255.00	62.18
C-1 to 9000 ft E	1190	PF 1	2032.67	2032.65	0.02	0.00	0.00	0.00	255.00	62.23
C-1 to 9000 ft E	1189	PF 1	2032.67	2032.66	0.01	0.00	0.02	0.00	255.00	74.46
C-1 to 9000 ft E	1188	PF 1	2032.65	2032.41	0.24	0.05	0.01	0.00	255.00	70.70
C-1 to 9000 ft E	1187	PF 1	2032.58	2032.20	0.38	0.00	0.05	0.00	255.00	68.34
C-1 to 9000 ft E	1186	PF 1	2032.26	2028.69	3.57	0.00	0.32	0.00	255.00	51.94
C-1 to 9000 ft E	1185	PF 1	2029.79	2029.00	0.79	1.64	0.83	0.00	255.00	54.01
C-1 to 9000 ft E	1184	PF 1	2029.66	2029.22	0.44	0.00	0.09	0.00	255.00	55.31
C-1 to 9000 ft E	1183	PF 1	2028.71	2018.87	9.85	0.00	0.94	0.00	255.00	19.25
C-1 to 9000 ft E	1182	PF 1	2022.07	2021.99	0.08	0.01	0.00	0.00	255.00	38.12
C-1 to 9000 ft E	1181	PF 1	2022.06	2021.98	0.08	0.01	0.00	0.00	255.00	38.16
C-1 to 9000 ft E	1180	PF 1	2022.05	2021.98	0.08	0.02	0.00	0.00	255.00	38.19
C-1 to 9000 ft E	1179	PF 1	2022.03	2021.96	0.07	0.02	0.01	0.00	255.00	38.38
C-1 to 9000 ft E	1178	PF 1	2022.00	2021.96	0.05	0.01	0.00	0.00	255.00	44.78
C-1 to 9000 ft E	1177	PF 1	2021.99	2021.96	0.03	0.01	0.00	0.00	255.00	52.18
C-1 to 9000 ft E	1176	PF 1	2021.98	2021.96	0.02	0.00	0.00	0.00	255.00	59.58
C-1 to 9000 ft E	1175	PF 1	2021.97	2021.95	0.02	0.00	0.00	0.00	255.00	64.98
C-1 to 9000 ft E	1174	PF 1	2021.97	2021.95	0.01	0.00	0.00	0.00	255.00	69.25
C-1 to 9000 ft E	1173	PF 1	2021.97	2021.95	0.01	0.00	0.00	0.00	255.00	69.25
C-1 to 9000 ft E	1172	PF 1	2021.97	2021.95	0.01	0.00	0.02	0.00	255.00	68.45
C-1 to 9000 ft E	1171	PF 1	2021.94	2021.68	0.26	0.05	0.02	0.00	255.00	61.91
C-1 to 9000 ft E	1170	PF 1	2021.88	2021.46	0.42	0.00	0.09	0.00	255.00	59.59
C-1 to 9000 ft E	1169	PF 1	2021.55	2017.90	3.65	0.00	0.32	0.00	255.00	51.39
C-1 to 9000 ft E	1168	PF 1	2019.33	2019.20	0.13	0.02	0.04	0.00	255.00	55.75
C-1 to 9000 ft E	1167	PF 1	2019.26	2018.69	0.57	0.00	0.06	0.00	371.00	54.02
C-1 to 9000 ft E	1166	PF 1	2018.42	2009.55	8.87	0.00	0.83	0.00	371.00	14.97
C-1 to 9000 ft E	1165	PF 1	2012.73	2012.55	0.18	0.01	0.00	0.00	371.00	34.25
C-1 to 9000 ft E	1164	PF 1	2012.72	2012.54	0.18	0.01	0.00	0.00	371.00	34.25
C-1 to 9000 ft E	1163	PF 1	2012.70	2012.53	0.17	0.04	0.02	0.00	371.00	34.27
C-1 to 9000 ft E	1162	PF 1	2012.64	2012.54	0.10	0.02	0.01	0.00	371.00	41.73
C-1 to 9000 ft E	1161	PF 1	2012.61	2012.55	0.07	0.01	0.01	0.00	371.00	48.14
C-1 to 9000 ft E	1160	PF 1	2012.59	2012.55	0.05	0.01	0.00	0.00	371.00	55.55
C-1 to 9000 ft E	1159	PF 1	2012.58	2012.55	0.03	0.00	0.00	0.00	371.00	62.95
C-1 to 9000 ft E	1158	PF 1	2012.58	2012.53	0.05	0.00	0.01	0.00	371.00	61.69
C-1 to 9000 ft E	1157	PF 1	2012.57	2012.54	0.03	0.00	0.03	0.00	371.00	64.46
C-1 to 9000 ft E	1156	PF 1	2012.54	2012.17	0.37	0.05	0.02	0.00	371.00	59.25
C-1 to 9000 ft E	1155	PF 1	2012.47	2011.92	0.55	0.00	0.07	0.00	371.00	57.64
C-1 to 9000 ft E	1154	PF 1	2012.13	2008.22	3.91	0.00	0.34	0.00	371.00	51.40
C-1 to 9000 ft E	1153	PF 1	2009.68	2008.36	1.12	1.62	0.84	0.00	371.00	52.86
C-1 to 9000 ft E	1152	PF 1	2009.46	2008.89	0.57	0.00	0.06	0.00	371.00	53.95
C-1 to 9000 ft E	1151	PF 1	2008.62	1999.75	8.87	0.00	0.83	0.00	371.00	14.97
C-1 to 9000 ft E	1150	PF 1	2002.94	2002.73	0.21	0.02	0.00	0.00	371.00	32.13
C-1 to 9000 ft E	1149	PF 1	2002.92	2002.71	0.21	0.02	0.00	0.00	371.00	32.12
C-1 to 9000 ft E	1148	PF 1	2002.90	2002.69	0.21	0.04	0.03	0.00	371.00	32.13
C-1 to 9000 ft E	1147	PF 1	2002.83	2002.74	0.10	0.02	0.01	0.00	371.00	42.70
C-1 to 9000 ft E	1146	PF 1	2002.80	2002.73	0.07	0.01	0.01	0.00	371.00	48.09
C-1 to 9000 ft E	1145	PF 1	2002.78	2002.73	0.05	0.01	0.01	0.00	371.00	53.48
C-1 to 9000 ft E	1144	PF 1	2002.77	2002.74	0.03	0.00	0.00	0.00	371.00	63.90
C-1 to 9000 ft E	1143	PF 1	2002.77	2002.73	0.03	0.00	0.00	0.00	371.00	63.92
C-1 to 9000 ft E	1142	PF 1	2002.76	2002.74	0.03	0.00	0.03	0.00	371.00	64.63
C-1 to 9000 ft E	1141	PF 1	2002.73	2002.37	0.36	0.05	0.02	0.00	371.00	59.78
C-1 to 9000 ft E	1140	PF 1	2002.66	2002.12	0.54	0.00	0.07	0.00	371.00	58.10
C-1 to 9000 ft E	1139	PF 1	2002.33	1998.43	3.90	0.00	0.34	0.00	371.00	51.42
C-1 to 9000 ft E	1138	PF 1	1999.89	1998.77	1.11	1.61	0.83	0.00	371.00	52.86
C-1 to 9000 ft E	1137	PF 1	1999.66	1999.09	0.57	0.00	0.05	0.00	371.00	53.95
C-1 to 9000 ft E	1136	PF 1	1998.87	1989.95	8.87	0.00	0.83	0.00	371.00	14.97
C-1 to 9000 ft E	1135	PF 1	1993.07	1992.87	0.20	0.02	0.00	0.00	371.00	32.97
C-1 to 9000 ft E	1134	PF 1	1993.05	1992.85	0.20	0.02	0.00	0.00	371.00	32.96
C-1 to 9000 ft E	1133	PF 1	1993.03	1992.83	0.20	0.03	0.04	0.00	371.00	32.97
C-1 to 9000 ft E	1132	PF 1	1992.96	1992.89	0.07	0.02	0.02	0.00	371.00	48.51
C-1 to 9000 ft E	1131	PF 1	1992.95	1992.88	0.07	0.01	0.01	0.00	371.00	48.68
C-1 to 9000 ft E	1130	PF 1	1992.93	1992.87	0.05	0.01	0.01	0.00	371.00	53.66
C-1 to 9000 ft E	1129	PF 1	1992.91	1992.88	0.03	0.00	0.00	0.00	371.00	64.21
C-1 to 9000 ft E	1128	PF 1	1992.91	1992.88	0.02	0.00	0.00	0.00	371.00	74.71
C-1 to 9000 ft E	1127	PF 1	1992.91	1992.88	0.02	0.00	0.00	0.03	371.00	74.71
C-1 to 9000 ft E	1126	PF 1	1992.88	1992.55	0.32	0.05	0.02	0.00	371.00	67.32
C-1 to 9000 ft E	1125	PF 1	1992.81	1992.30	0.51	0.00	0.07	0.00	371.00	64.09
C-1 to 9000 ft E	1124	PF 1	1992.47	1988.62	3.85	0.00	0.33	0.00	371.00	51.98
C-1 to 9000 ft E	1123	PF 1	1990.08	1989.02	1.06	1.56	0.84	0.00	371.00	55.19
C-1 to 9000 ft E	1122	PF 1	1989.83	1989.24	0.59	0.11	0.15	0.00	371.00	56.88
C-1 to 9000 ft E	1121	PF 1	1988.87	1978.71	10.16	0.00	0.96	0.00	371.00	25.28
C-1 to 9000 ft E	1120	PF 1	1982.29	1982.16	0.13	0.01	0.00	0.00	371.00	39.57
C-1 to 9000 ft E	1119	PF 1	1982.28	1982.15	0.13	0.01	0.00	0.00	371.00	39.59
C-1 to 9000 ft E	1118	PF 1	1982.27	1982.14	0.13	0.04	0.00	0.00	371.00	39.64
C-1 to 9000 ft E	1117	PF 1	1982.23	1982.11	0.12	0.03	0.01	0.00	371.00	39.78
C-1 to 9000 ft E	1116	PF 1	1982.19	1982.10	0.09	0.02	0.01	0.00	371.00	45.17
C-1 to 9000 ft E	1115	PF 1	1982.16	1982.11	0.06	0.01	0.00	0.00	371.00	52.58
C-1 to 9000 ft E	1114	PF 1	1982.15	1982.11	0.04	0.01	0.00	0.00	371.00	58.98
C-1 to 9000 ft E	1113	PF 1	1982.14	1982.11	0.03	0.01	0.00	0.00	371.00	66.38
C-1 to 9000 ft E	1112	PF 1	1982.13	1982.10	0.03	0.00	0.00	0.00	371.00	67.22
C-1 to 9000 ft E	1111	PF 1	1982.13	1982.10	0.03	0.00	0.00	0.00	371.00	70.86
C-1 to 9000 ft E	1110	PF 1	1982.13	1982.10	0.03	0.00	0.03	0.00	371.00	70.85
C-1 to 9000 ft E	1109	PF 1	1982.10	1981.77	0.33	0.05	0.02	0.00	371.00	65.25
C-1 to 9000 ft E	1108	PF 1	1982.03	1981.51	0.52	0.00	0.06	0.00	371.00	62.51
C-1 to 9000 ft E	1107	PF 1	1981.69	1977.83	3.86	0.00	0.33	0.00	371.00	51.49
C-1 to 9000 ft E	1106	PF 1	1979.28	1978.16	1.11	1.59	0.82	0.00	371.00	52.71
C-1 to 9000 ft E	1105	PF 1	1979.06	1978.49	0.57	0.00	0.00	0.00	371.00	53.74
C-1 to 9000 ft E	1104	PF 1	1978.27	1969.77	8.50	0.00	0.79	0.00	516.00	16.63
C-1 to 9000 ft E	1103	PF 1	1972.95	1972.79	0.16	0.01	0.00	0.00	516.00	43.41
C-1 to 9000 ft E	1102	PF 1	1972.94	1972.78	0.16	0.01	0.00	0.00	516.00	43.42
C-1 to 9000 ft E	1101	PF 1	1972.93	1972.77	0.15	0.04	0.00	0.00	516.00	43.45
C-1 to 9000 ft E	1100	PF 1	1972.89	1972.73	0.16	0.03	0.01	0.00	516.00	43.28
C-1 to 9000 ft E	1099	PF 1	1972.84	1972.74	0.11	0.02	0.01	0.00	516.00	49.70
C-1 to 9000 ft E	1098	PF 1	1972.82	1972.74	0.08	0.01	0.01	0.00	516.00	56.11
C-1 to 9000 ft E	1097	PF 1	1972.80	1972.74	0.05	0.00	0.00	0.00	516.00	64.53
C-1 to 9000 ft E	1096	PF 1	1972.79	1972.74	0.05	0.00	0.00	0.00	516.00	64.59

C-1 to 9000 ft E	1095	PF 1	1972.79	1972.74	0.05	0.00	0.04		516.00		64.59
C-1 to 9000 ft E	1094	PF 1	1972.75	1972.26	0.48	0.05	0.02		516.00		59.96
C-1 to 9000 ft E	1093	PF 1	1972.68	1972.00	0.68	0.00	0.16		516.00		58.48
C-1 to 9000 ft E	1092	PF 1	1970.89	1970.75	0.14	0.02	0.00		516.00		58.99
C-1 to 9000 ft E	1091	PF 1	1970.87	1970.73	0.13	0.01	0.08		516.00		59.27
C-1 to 9000 ft E	1090	PF 1	1970.78	1969.86	0.91	0.00	0.10		516.00		37.15
C-1 to 9000 ft E	1089	PF 1	1969.87	1959.86	10.01	0.00	0.91		516.00		16.21
C-1 to 9000 ft E	1088	PF 1	1963.20	1962.95	0.25	0.02	0.00		516.00		36.83
C-1 to 9000 ft E	1087	PF 1	1963.18	1962.93	0.25	0.02	0.00		516.00		36.82
C-1 to 9000 ft E	1086	PF 1	1963.16	1962.92	0.25	0.05	0.02		516.00		44.82
C-1 to 9000 ft E	1085	PF 1	1963.09	1962.92	0.17	0.03	0.02		516.00		42.24
C-1 to 9000 ft E	1084	PF 1	1963.04	1962.93	0.11	0.02	0.01		516.00		49.50
C-1 to 9000 ft E	1083	PF 1	1963.01	1962.94	0.07	0.01	0.00		516.00		57.61
C-1 to 9000 ft E	1082	PF 1	1962.99	1962.93	0.06	0.00	0.01		516.00		60.48
C-1 to 9000 ft E	1081	PF 1	1962.98	1962.94	0.04	0.00	0.00		516.00		68.61
C-1 to 9000 ft E	1080	PF 1	1962.98	1962.94	0.04	0.00	0.04		516.00		68.62
C-1 to 9000 ft E	1079	PF 1	1962.94	1962.49	0.45	0.05	0.02		516.00		60.50
C-1 to 9000 ft E	1078	PF 1	1962.87	1962.20	0.67	0.00	0.09		516.00		58.76
C-1 to 9000 ft E	1077	PF 1	1962.52	1958.38	4.14	0.00	0.35		516.00		52.22
C-1 to 9000 ft E	1076	PF 1	1960.19	1958.74	1.45	1.52	0.81		516.00		53.68
C-1 to 9000 ft E	1075	PF 1	1959.88	1959.11	0.77	0.10	0.22		516.00		54.99
C-1 to 9000 ft E	1074	PF 1	1959.06	1950.14	8.92	0.00	0.82		516.00		16.50
C-1 to 9000 ft E	1073	PF 1	1953.43	1953.13	0.29	0.02	0.00		516.00		34.74
C-1 to 9000 ft E	1072	PF 1	1953.41	1953.11	0.29	0.02	0.00		516.00		34.72
C-1 to 9000 ft E	1071	PF 1	1953.38	1953.09	0.29	0.05	0.04		516.00		34.71
C-1 to 9000 ft E	1070	PF 1	1953.29	1953.14	0.15	0.03	0.01		516.00		44.32
C-1 to 9000 ft E	1069	PF 1	1953.25	1953.14	0.11	0.02	0.01		516.00		49.72
C-1 to 9000 ft E	1068	PF 1	1953.22	1953.14	0.08	0.01	0.01		516.00		57.59
C-1 to 9000 ft E	1067	PF 1	1953.20	1953.15	0.05	0.00	0.00		516.00		65.54
C-1 to 9000 ft E	1066	PF 1	1953.19	1953.15	0.04	0.00	0.00		516.00		72.28
C-1 to 9000 ft E	1065	PF 1	1953.19	1953.15	0.04	0.00	0.04		516.00		72.27
C-1 to 9000 ft E	1064	PF 1	1953.15	1952.70	0.45	0.05	0.02		516.00		60.71
C-1 to 9000 ft E	1063	PF 1	1953.08	1952.41	0.67	0.00	0.09		516.00		58.94
C-1 to 9000 ft E	1062	PF 1	1952.73	1948.58	4.15	0.00	0.35		516.00		52.64
C-1 to 9000 ft E	1061	PF 1	1950.38	1948.94	1.44	1.54	0.81		516.00		54.32
C-1 to 9000 ft E	1060	PF 1	1950.07	1949.30	0.76	0.10	0.22		516.00		55.78
C-1 to 9000 ft E	1059	PF 1	1949.24	1940.31	8.93	0.00	0.82		516.00		16.82
C-1 to 9000 ft E	1058	PF 1	1944.71	1944.51	0.20	0.01	0.00		516.00		36.46
C-1 to 9000 ft E	1057	PF 1	1944.70	1944.50	0.20	0.01	0.00		516.00		36.47
C-1 to 9000 ft E	1056	PF 1	1944.68	1944.50	0.18	0.03	0.01		516.00		38.26
C-1 to 9000 ft E	1055	PF 1	1944.63	1944.49	0.14	0.02	0.01		516.00		40.93
C-1 to 9000 ft E	1054	PF 1	1944.60	1944.50	0.09	0.02	0.00		516.00		46.54
C-1 to 9000 ft E	1053	PF 1	1944.58	1944.48	0.10	0.02	0.00		516.00		42.58
C-1 to 9000 ft E	1052	PF 1	1944.55	1944.46	0.09	0.00	0.06		516.00		44.29
C-1 to 9000 ft E	1051	PF 1	1944.49	1943.80	0.69	0.04	0.03		516.00		35.23
C-1 to 9000 ft E	1050	PF 1	1944.42	1943.45	0.97	0.00	0.23		516.00		33.73
C-1 to 9000 ft E	1049	PF 1	1943.04	1942.85	0.19	0.02	0.03		516.00		39.06
C-1 to 9000 ft E	1048	PF 1	1942.99	1942.89	0.11	0.02	0.02		516.00		52.32
C-1 to 9000 ft E	1047	PF 1	1942.96	1942.67	0.29				516.00		57.28
C-1 to 9000 ft E	1046.5		Culvert								
C-1 to 9000 ft E	1046	PF 1	1940.96	1940.34	0.62	0.49	0.09		516.00		26.00
C-1 to 9000 ft E	1045	PF 1	1940.39	1938.92	1.47	0.82	0.13		781.00		27.50
C-1 to 9000 ft E	1044	PF 1	1938.83	1936.38	2.45	1.46	0.10		781.00		45.00
C-1 to 9000 ft E	1043	PF 1	1937.07	1935.93	1.14	0.50	0.03		781.00		40.00
C-1 to 9000 ft E	1042	PF 1	1935.22	1930.37	4.86	1.47	0.37		781.00		27.65
C-1 to 9000 ft E	1041	PF 1	1933.55	1928.19	5.37	1.62	0.05		781.00		27.54
C-1 to 9000 ft E	1040	PF 1	1931.09	1925.11	5.98	2.41	0.06		781.00		27.43
C-1 to 9000 ft E	1039	PF 1	1928.48	1923.19	5.30	2.40	0.20		781.00		27.99
C-1 to 9000 ft E	1038	PF 1	1926.02	1920.10	5.92	2.40	0.06		781.00		27.85
C-1 to 9000 ft E	1037	PF 1	1923.25	1917.00	6.26	2.73	0.03		781.00		27.72
C-1 to 9000 ft E	1036	PF 1	1920.38	1914.06	6.31	2.87	0.01		781.00		27.72
C-1 to 9000 ft E	1035	PF 1	1917.02	1909.54	7.48	3.24	0.12		781.00		26.70
C-1 to 9000 ft E	1034	PF 1	1915.54	1908.37	7.17	1.39	0.09		781.00		23.22
C-1 to 9000 ft E	1033	PF 1	1913.86	1906.80	7.06	1.65	0.03		781.00		23.25
C-1 to 9000 ft E	1032	PF 1	1911.07	1905.02	6.05	2.49	0.30		781.00		22.94
C-1 to 9000 ft E	1031	PF 1	1908.76	1903.50	5.26	2.08	0.24		781.00		27.02
C-1 to 9000 ft E	1030	PF 1	1906.83	1902.57	4.26	1.63	0.30		893.00		29.03
C-1 to 9000 ft E	1029	PF 1	1906.14	1903.04	3.10	0.34	0.35		893.00		24.48
C-1 to 9000 ft E	1028	PF 1	1905.42	1900.64	4.79	0.55	0.17		893.00		28.37
C-1 to 9000 ft E	1027	PF 1	1904.54	1899.98	4.57	0.81	0.07		893.00		20.31
C-1 to 9000 ft E	1026	PF 1	1904.13	1898.86	5.27	0.35	0.07		893.00		19.77
C-1 to 9000 ft E	1025	PF 1	1903.25	1896.34	6.91	0.71	0.16		893.00		18.81
C-1 to 9000 ft E	1024	PF 1	1902.32	1895.09	7.24	0.90	0.03		893.00		18.66
C-1 to 9000 ft E	1023	PF 1	1901.28	1893.39	7.89	0.98	0.06		893.00		18.38
C-1 to 9000 ft E	1022	PF 1	1900.19	1892.52	7.66	1.02	0.07		893.00		18.47
C-1 to 9000 ft E	1021	PF 1	1899.15	1891.65	7.50	0.99	0.05		893.00		18.54
C-1 to 9000 ft E	1020	PF 1	1898.15	1890.76	7.39	0.96	0.03		893.00		18.59
C-1 to 9000 ft E	1019	PF 1	1896.98	1889.34	7.64	1.15	0.03		893.00		18.49
C-1 to 9000 ft E	1018	PF 1	1896.98	1889.34	7.64	0.00	0.00		893.00		18.49
C-1 to 9000 ft E	1017	PF 1	1895.81	1887.64	8.17	1.11	0.05		893.00		18.55
C-1 to 9000 ft E	1016	PF 1	1894.31	1885.99	8.32	1.48	0.02		893.00		25.00
C-1 to 9000 ft E	1015	PF 1	1892.41	1885.05	7.35	1.62	0.29		893.00		25.00
C-1 to 9000 ft E	1014	PF 1	1890.39	1880.80	9.59	1.80	0.22		893.00		25.00
C-1 to 9000 ft E	1013	PF 1	1887.73	1876.65	11.08	2.51	0.15		893.00		25.00
C-1 to 9000 ft E	1012	PF 1	1884.79	1873.36	11.44	2.90	0.04		893.00		25.00
C-1 to 9000 ft E	1011	PF 1	1881.37	1868.45	12.93	3.27	0.15		893.00		25.00
C-1 to 9000 ft E	1010	PF 1	1874.83	1874.69	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1009	PF 1	1874.82	1874.68	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1008	PF 1	1874.82	1874.68	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1007	PF 1	1874.82	1874.68	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1006	PF 1	1874.81	1874.67	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1005	PF 1	1874.81	1874.67	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1004	PF 1	1874.81	1874.67	0.14	0.01	0.00		893.00		25.00
C-1 to 9000 ft E	1003	PF 1	1874.80	1874.67	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1002	PF 1	1874.80	1874.66	0.14	0.00	0.00		893.00		25.00
C-1 to 9000 ft E	1001	PF 1	1874.80	1874.66	0.14				893.00		25.00

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ERRORS WARNINGS AND NOTES
Errors Warnings and Notes for Plan : Plan 06

River: Drake Channel Reach: C-1 to 9000 ft E RS: 1328 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1321 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1320 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1319 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1318 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1316 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1315 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1311 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1309 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1305 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1304 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1303 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1302 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated

water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1300 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1299 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1295 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1288 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1287 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1286 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1284 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1283 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1280 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1279 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1273 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1272 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1271 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1270 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1269 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1268 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1267 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1266 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1257 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1256 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1255 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1254 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1252 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1251 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1250 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Program found supercritical flow starting at this cross section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1249 Profile: PF 1
Note: Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1247 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1240 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1239 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1238 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1237 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1236 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Program found supercritical flow starting at this cross section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1235 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1234 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1233 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1232 Profile: PF 1
Note: Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1230 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1224 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1223 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1222 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1221 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1220 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Program found supercritical flow starting at this cross section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1219 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1217 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1216 Profile: PF 1
Note: Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1211 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1207 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1206 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1205 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1204 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1203 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Program found supercritical flow starting at this cross section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1202 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1201 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1200 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1199 Profile: PF 1
Note: Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1190 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1189 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1188 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1187 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1186 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Program found supercritical flow starting at this cross section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1185 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1184 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1183 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1182 Profile: PF 1
Note: Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1172 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1171 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1170 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.

Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1169 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Program found supercritical flow starting at this cross section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1168 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1167 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1166 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Program found supercritical flow starting at this cross section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1165 Profile: PF 1
Note: Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1159 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1158 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1157 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1155 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1154 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Program found supercritical flow starting at this cross section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1153 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1152 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1151 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1150 Profile: PF 1
Note: Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1148 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1143 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1142 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1140 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1139 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Program found supercritical flow starting at this cross section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1138 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1137 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1136 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1135 Profile: PF 1
Note: Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1133 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1128 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1127 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1126 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1125 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1124 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Program found supercritical flow starting at this cross section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1123 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1122 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1121 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1120 Profile: PF 1
Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

River: Drake Channel Reach: C-1 to 9000 ft E RS: 1110 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1109 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1108 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1107 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Program found supercritical flow starting at this cross section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1106 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1105 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1104 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1103 Profile: PF 1
Note: Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1096 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1095 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1093 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1092 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1091 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1090 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1089 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Program found supercritical flow starting at this cross section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1088 Profile: PF 1
Note: Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1081 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1080 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1078 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1077 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Program found supercritical flow starting at this cross section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1076 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1075 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1074 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1073 Profile: PF 1
Note: Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1071 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1065 Profile: PF 1
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1063 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1062 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Note: Program found supercritical flow starting at this cross section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1061 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1060 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program selected the water surface that had the least amount of error between computed and assumed values.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1059 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1058 Profile: PF 1
Note: Hydraulic jump has occurred between this cross section and the previous upstream section.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1052 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1050 Profile: PF 1

Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1047 Profile: PF 1
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1046.5 Profile: PF 1
Note: During the supercritical calculations a hydraulic jump occurred at the outlet of (leaving) the culvert.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1046.5 Profile: PF 1 Culv: Culvert #1
Note: The flow in the culvert is entirely supercritical.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1046 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Note: Multiple critical depths were found at this location. The critical depth with the lowest, valid, energy was used.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1045 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1044 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1043 Profile: PF 1
Warning:The energy equation could not be balanced within the specified number of iterations. The program used critical depth for the water surface and continued on with the calculations.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
Warning:During the standard step iterations, when the assumed water surface was set equal to critical depth, the calculated water surface came back below critical depth. This indicates that there is not a valid subcritical answer. The program defaulted to critical depth.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1042 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1041 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1040 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1039 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1038 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1037 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1036 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1035 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1034 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1033 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1032 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1031 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1030 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1029 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1028 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The conveyance ratio (upstream conveyance divided by downstream conveyance) is less than 0.7 or greater than 1.4. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1026 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1025 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1023 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1022 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1021 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1019 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1017 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1016 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1015 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1014 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1013 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1012 Profile: PF 1
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1011 Profile: PF 1
Warning:The velocity head has changed by more than 0.5 ft (0.15 m). This may indicate the need for additional cross sections.
Warning:The energy loss was greater than 1.0 ft (0.3 m). between the current and previous cross section. This may indicate the need for additional cross sections.
River: Drake Channel Reach: C-1 to 9000 ft E RS: 1010 Profile: PF 1
Note: Hydraulic jump has occurred between this cross section and the previous upstream section.

ELECTRONIC FILES

GRAPHIC SCALE

(IN FEET)
1 inch = 40

DRAKE CHANNEL 80' RW

WINTERSWEET ROAD

SEE DETAIL 2, SHEET

MATCHLINE SEE SHEET PP5

MATCHLINE SEE SHEET PP5

NORTH EDGE OF CHANNEL

SOUTH EDGE OF CHANNEL

WSE

BOTTOM OF CHANNEL

10+00 10+50 11+00 11+50 12+00 12+50 13+00 13+50 14+00 14+50 15+00 15+50 16+00 16+50 17+00 17+50 18+00 18+50 19+00 19+50 20+00 20+50 21+00

1905 1900 1895 1890 1885 1880 1875 1870 1865 1860

REVISIONS

No.	Date		CHKD	APPD

ENGINEER-STATE OF NEVADA
WILLIAM S. WONDERS
CIVIL
No. 9326
PROFESSIONAL

DESIGNED: SCC
DRAWN: KSW
CHECKED: KSW
JOB No: 240351
HORIZ: 1"=40'
VERT: 1"=4'
DATE:

Carter:Burgess

Consultants in Planning, Engineering, Construction Management, and Related Services
6655 Bermuda Road 89119
Las Vegas, Nevada
(702) 938-5400 Fax (702) 938-5454

PROJECT:
CINNAMON RIDGE
BY BEAZER HOMES

DESCRIPTION:
DRAKE CHANNEL PROFILE
STA 10+00 TO STA 21+00

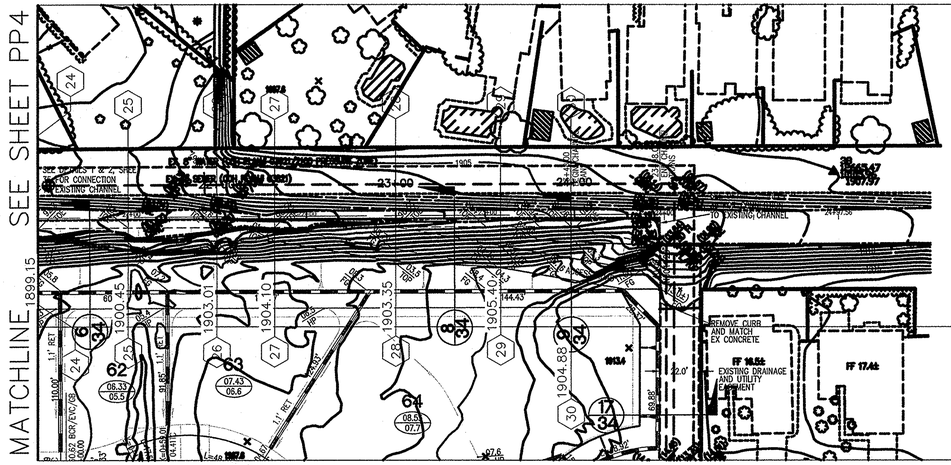
SHEET
PP4
7 OF 10

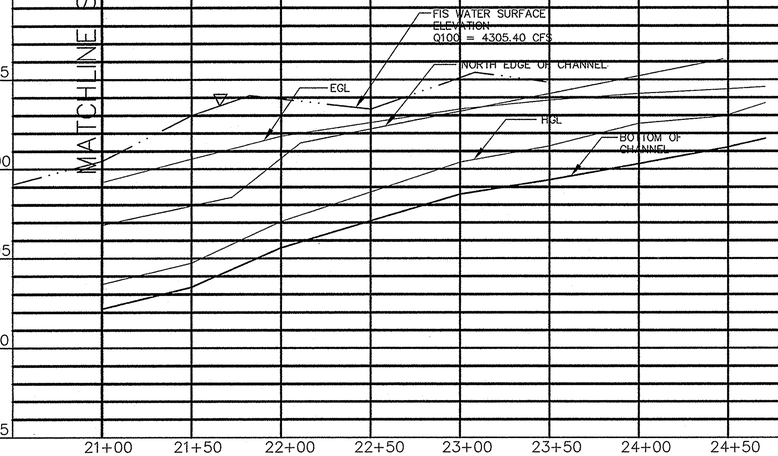
L:\240351\DESIGN\DRAKEPOINTS4.DWG

GRAPHIC SCALE

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.





REVISIONS

No.	Date	CHKD	APPD

ENGINEER—STATE OF NEVADA
WILLIAM S. WONDERS
CIVIL
No. 13397
PROFESSIONAL

DESIGNED: SCC
DRAWN: WSW
CHECKED: WSW
JOB No: 240251
HORIZ: 1"=40'
VERT: 1"=4'
DATE:

Carter::Burgess
Consultants in Planning, Engineering, Construction Management, and Related Services
6655 Bermuda Road
Las Vegas, Nevada 89119
(702) 938-5400 Fax (702) 938-5454

PROJECT:
CINNAMON RIDGE
BY BEAZER HOMES

DESCRIPTION:
DRAKE CHANNEL PROFILE
STA 21+00 TO STA 24+53.03

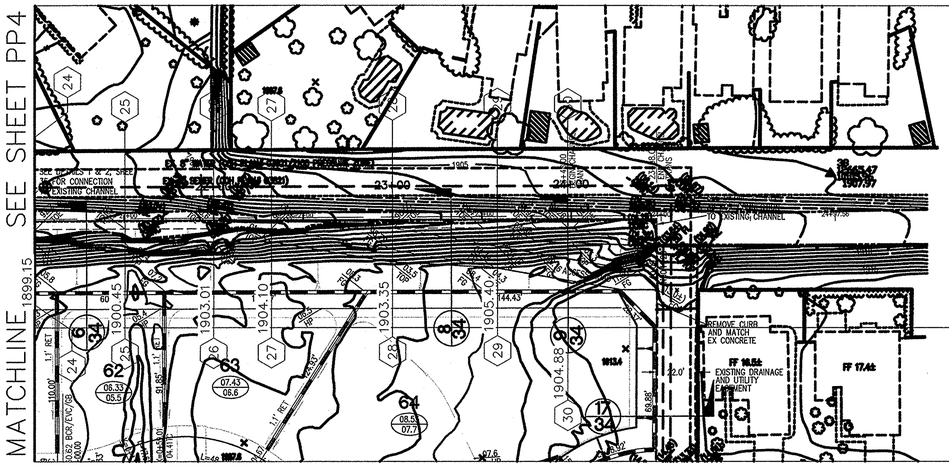
SHEET
PP5
8 OF 10

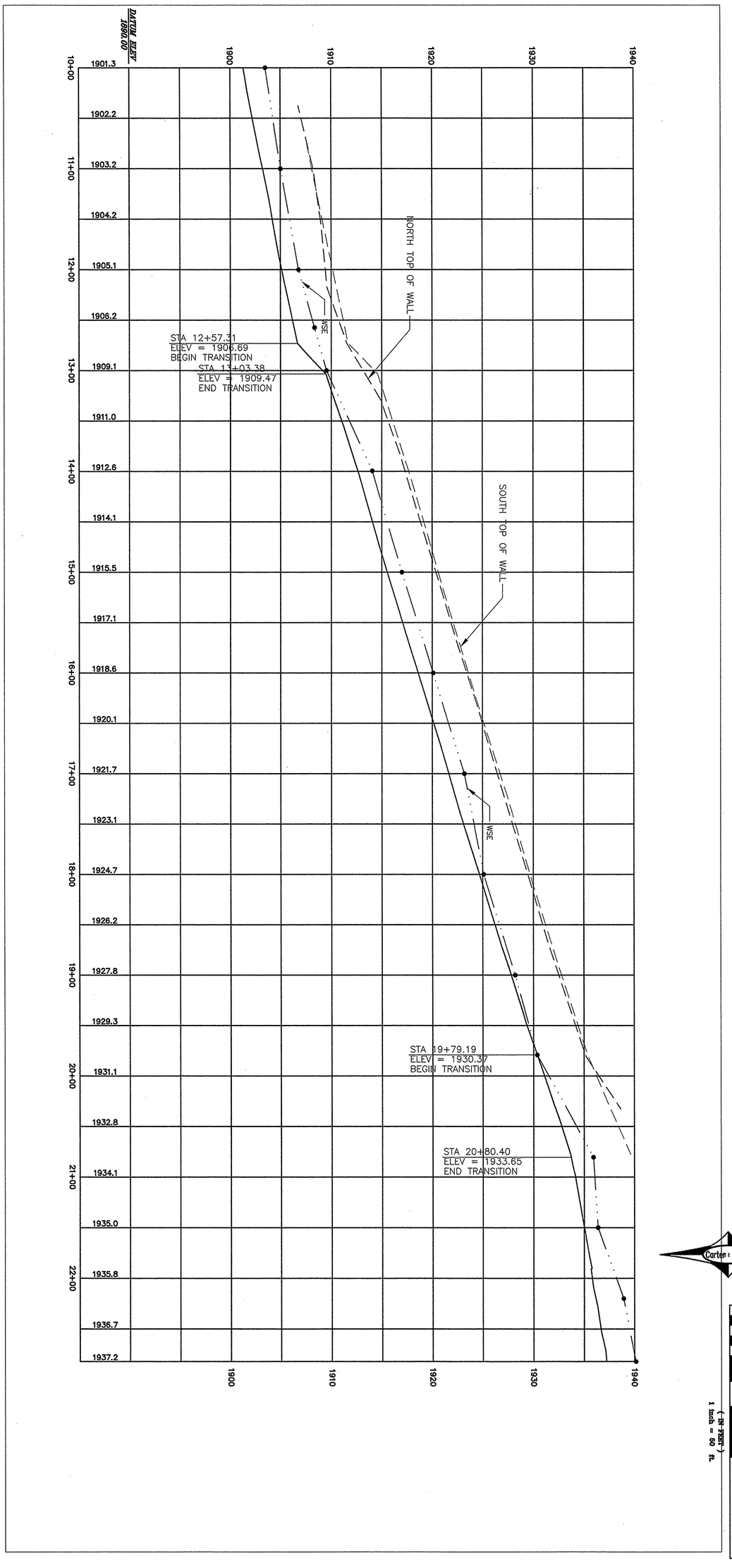
L:\240251\DESIGN\DRAKEPDWT53.DWG

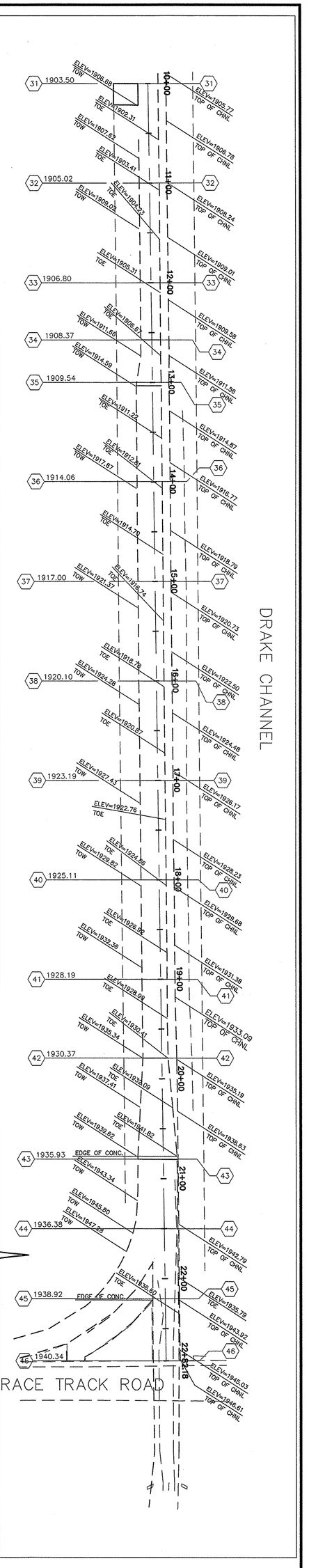
GRAPHIC SCALE

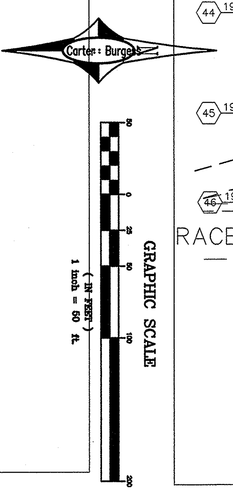
40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.


MATCHLINE SEE SHEET PP4
SEE SHEET PP4 FOR CONNECTION CONSTRUCT CHANNEL
REMOVE CURB AND MATCH EX CONCRETE
EXISTING DRAINAGE AND UTILITY EASEMENT
FF 18.84
FF 17.42
EXISTING CHANNEL
1905
1907.37
1899.15
1900.45
1903.01
1904.10
1903.35
1905.40
1904.88
1913.4
1907.6
1907.7
1907.6
1907.6
1907.6







SHEET 1 OF 1	PROJECT: C-1 CHANNEL SYSTEM FIS RESTUDY	Carter :: Burgess Consultants in Planning, Engineering, Construction Management, and Related Services 6655 Bermuda Road Las Vegas, Nevada 89119 (702) 938-5400 Fax (702) 938-5454	DESIGNED:	REVISIONS	
	DESCRIPTION: DRAKE CHANNEL PLAN AND PROFILE CINNAMON RIDGE TO RACE TRACK ROAD		DRAWN: SCC CHECKED: DBB JOB No: 240482 HORIZ: 50 VERT: 5 DATE: SEPT. 2002	No. / Date / CHKD / APPD	

I:\240482 C1\DESIGN\DRAKEPOINTS4.DWG

RACE TRACK ROAD

RACE TRACK ROAD CROSSING TO BE CONSTRUCTED UNDER SEPARATE CONTRACT

SERVICE ROAD

EASEMENT LINE

2 -- 'A' TYPE GABIONS

3 - 24" X 7 GMP CULVERTS FOR LOW FLOWS

2:1 MAX.

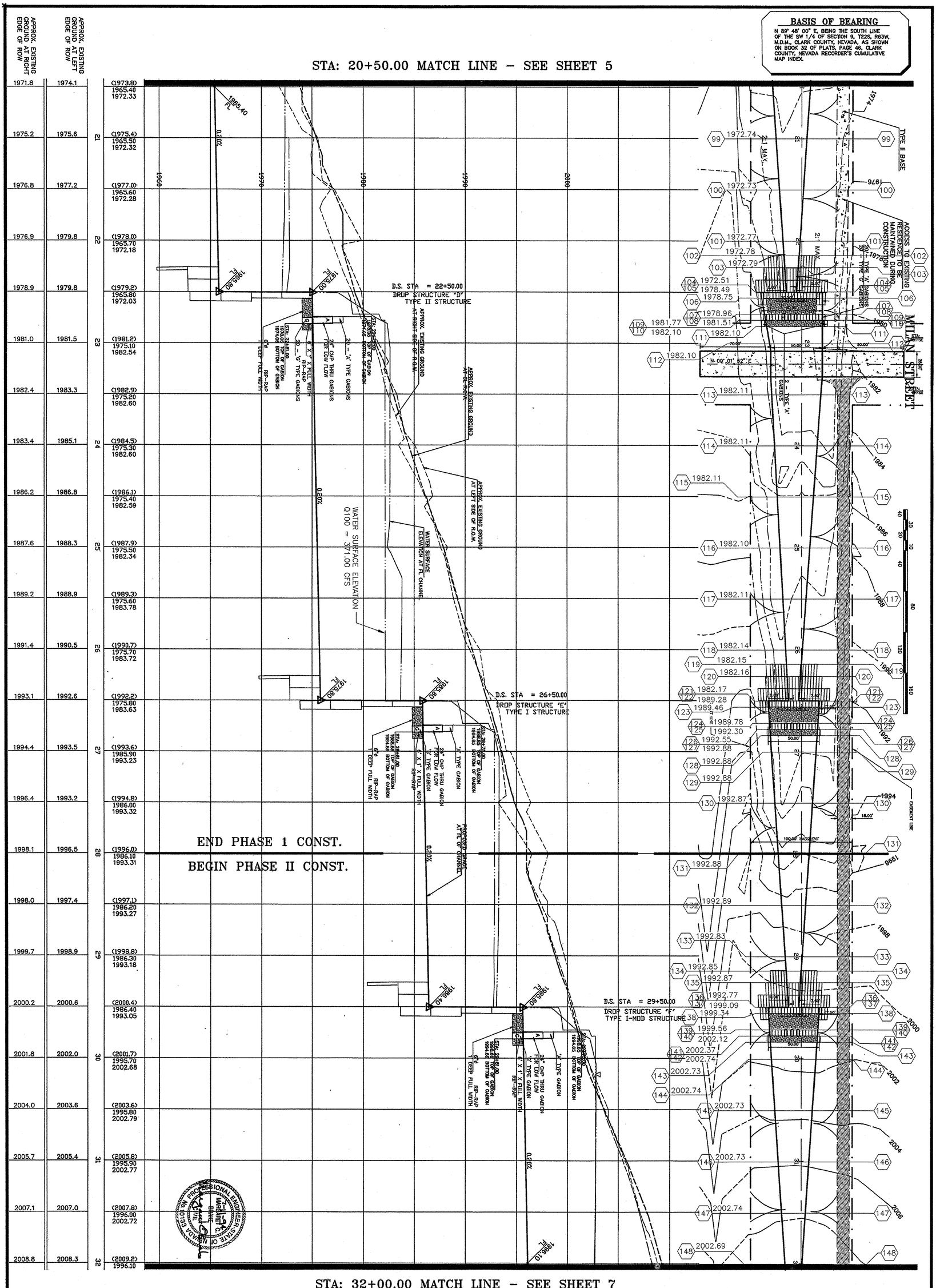
N 89° 48' 00" E

N 00° 01' 53" E (BEAR. USED IN MEAS. & RECORD)

GATE

GATE

GATE



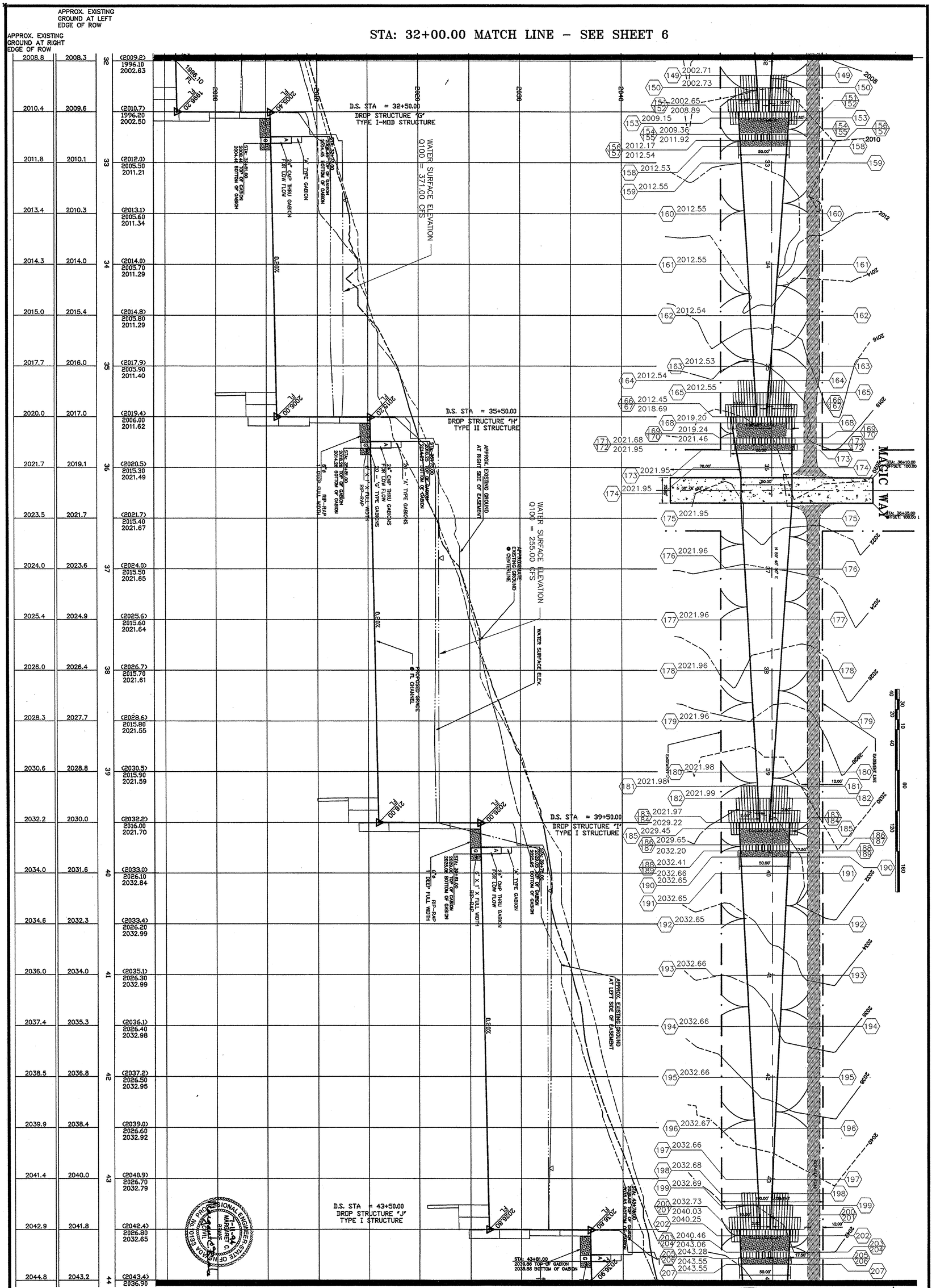
SHEET	SCALE	REV.	DATE	DESCRIPTION	BY	APP'D
6 OF 19	HORIZ. 1"=40'					
	VERT. 1"=4'					
	JOB NO. 70810.2					
	P:\DWGS\DASCO\DT-CHAN.DWG VIEW SHT-6					

IMPROVEMENT PLANS
DRAKE CHANNEL
STA: 20+50.00 - 32+00.00
CITY OF HENDERSON CLARK COUNTY NEVADA

DESIGNED BY: M.B.
DRAWN BY: C.S.S
CHECKED BY: C.G.T.
JUNE 27,1994

SUMMIT™ ENGINEERING CORPORATION
CONSULTING ENGINEERS AND SURVEYORS
3864 SOUTH HIGHLAND, LAS VEGAS, NEVADA 89103
PHONE: (702) 252-3238 FAX: (702) 252-3247

0452



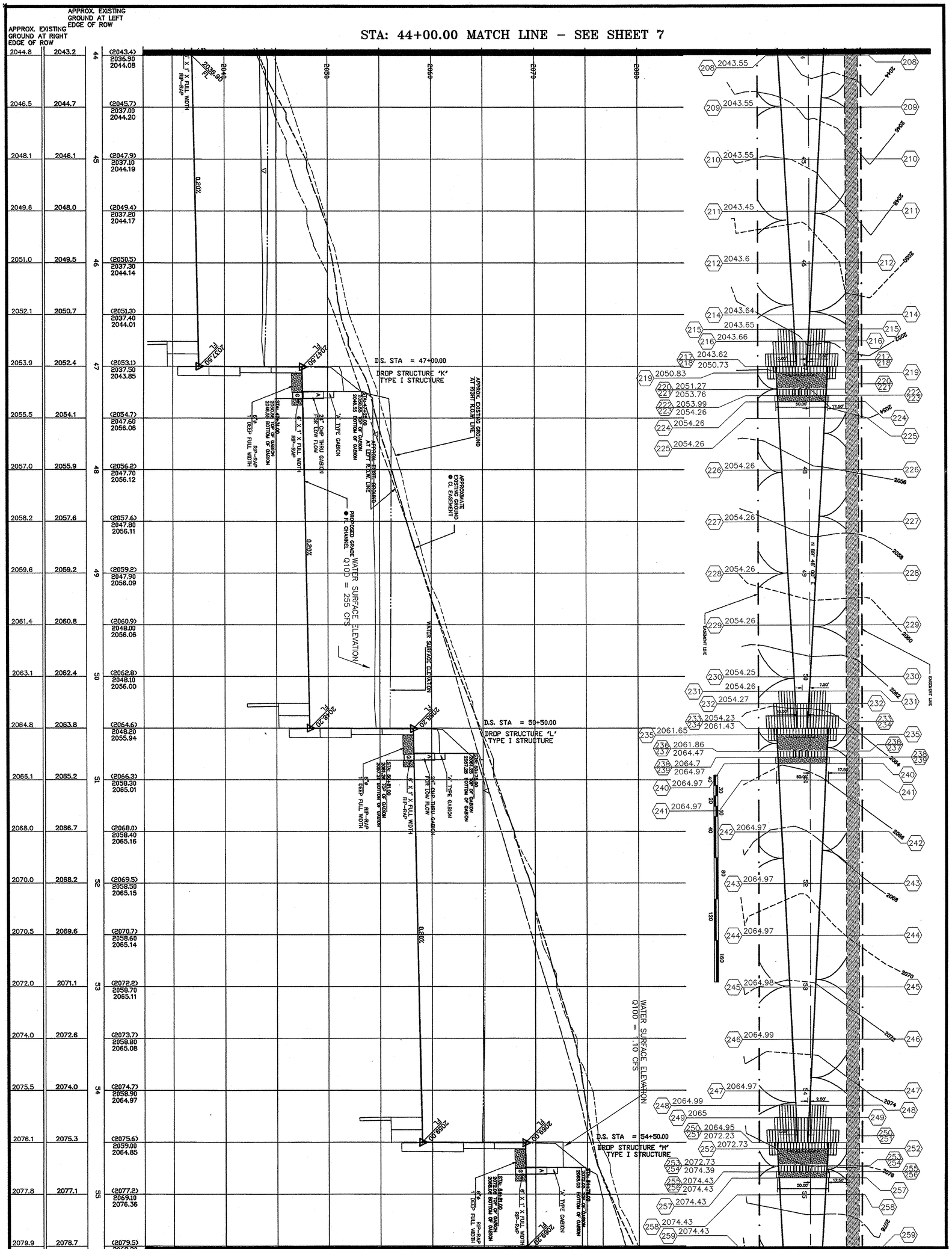
SHEET	SCALE	REV.	DATE	DESCRIPTION	BY	APP'D
7 OF 19	HORIZ. 1"=40'					
	VERT. 1"=4'					
	JOB NO. 70810.2					
	P:\DWGS\DASCO\DRAKTOPO.DWG VIEW SHT-4					

IMPROVEMENT PLANS
DRAKE CHANNEL
STA: 32+00.00 - 44+00.00
CITY OF HENDERSON CLARK COUNTY NEVADA

DESIGNED BY: M.B.	
DRAWN BY: C.S.S	
CHECKED BY: C.G.T.	
JUNE 27,1994	

SUMMIT™ ENGINEERING CORPORATION
CONSULTING ENGINEERS AND SURVEYORS
3663 SOUTH HIGHLAND, LAS VEGAS, NEVADA 89103
PHONE: (702) 252-3238 FAX: (702) 252-3347

25040



BASIS OF BEARING

N 89° 48' 00" E, BEING THE SOUTH LINE OF THE SW 1/4 OF SECTION 9, T22S, R63W, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN ON BOOK 32 OF PLATS, PAGE 46, CLARK COUNTY, NEVADA RECORDER'S CUMULATIVE MAP INDEX.

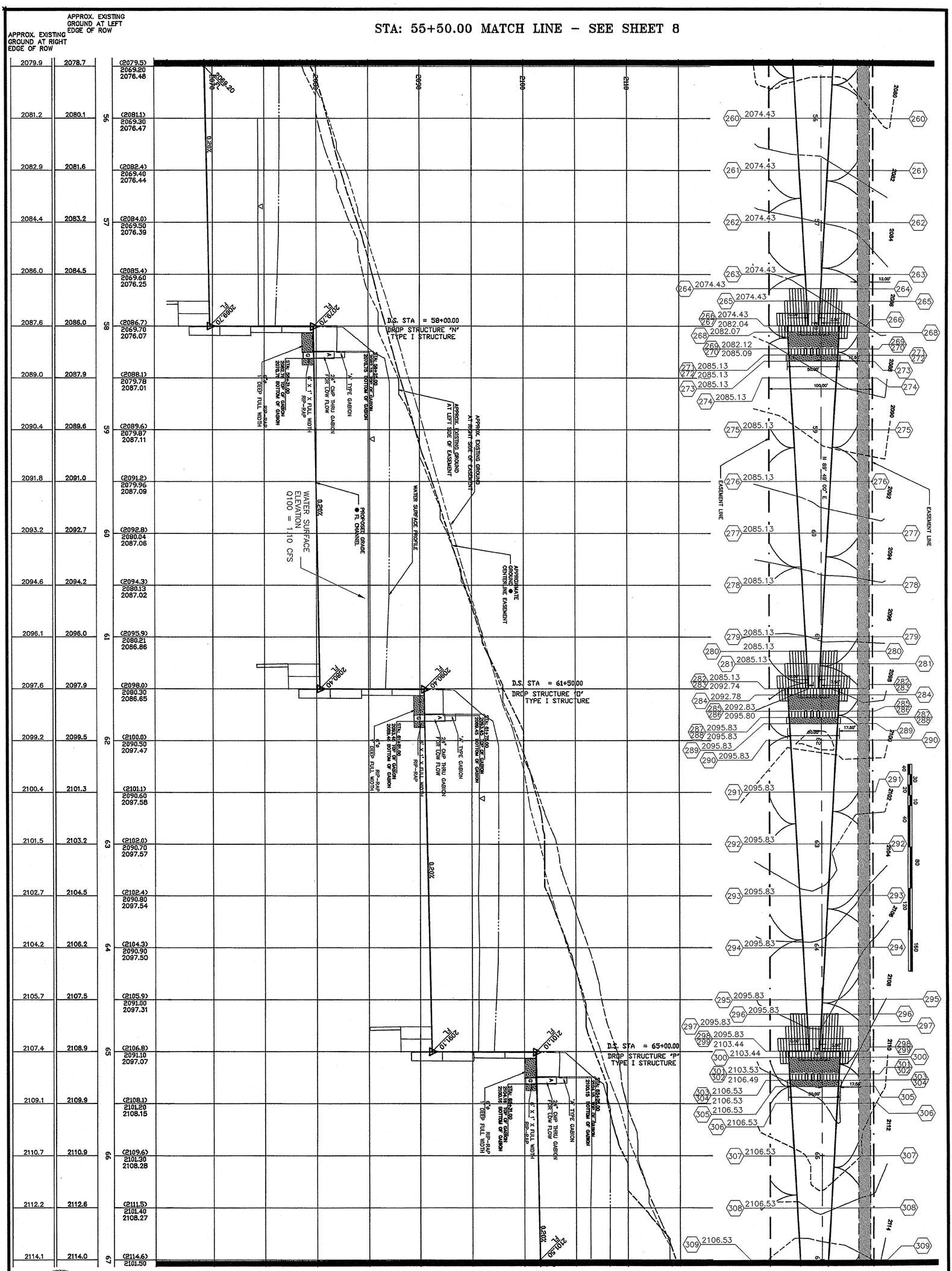
SHEET	SCALE	REV.	DATE	DESCRIPTION	BY	APP'D
8 OF 19	HORIZ. 1"=40'					
	VERT. 1"=4'					
	JOB NO. 70810.2					
	P:\DWGS\DASCO\DT-CHAN.DWG VIEW SHT-8					

IMPROVEMENT PLANS
DRAKE CHANNEL
STA: 44+00.00 - 55+50.00
CITY OF HENDERSON CLARK COUNTY NEVADA

DESIGNED BY: M.B.
DRAWN BY: C.S.S
CHECKED BY: C.G.T.
JUNE 27,1994

SUMMIT™ ENGINEERING CORPORATION
CONSULTING ENGINEERS AND SURVEYORS
3863 SOUTH HIGHLAND, LAS VEGAS, NEVADA 89109
PHONE: (702) 252-3236 FAX: (702) 252-3247

0852



BASIS OF BEARING

N 89° 48' 00" E, BEING THE SOUTH LINE OF THE SW 1/4 OF SECTION 9, T22S, R63W, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN ON BOOK 32 OF PLATS, PAGE 46, CLARK COUNTY, NEVADA RECORDER'S CUMULATIVE MAP INDEX.

SHEET	SCALE	REV.	DATE	DESCRIPTION	BY	APP'D
9 OF 19	HORIZ. 1"=40'					
	VERT. 1"=4'					
	JOB NO. 70810.2					
	P:\DWGS\DASCO\DRAKTOPO.DWG VIEW D-1					

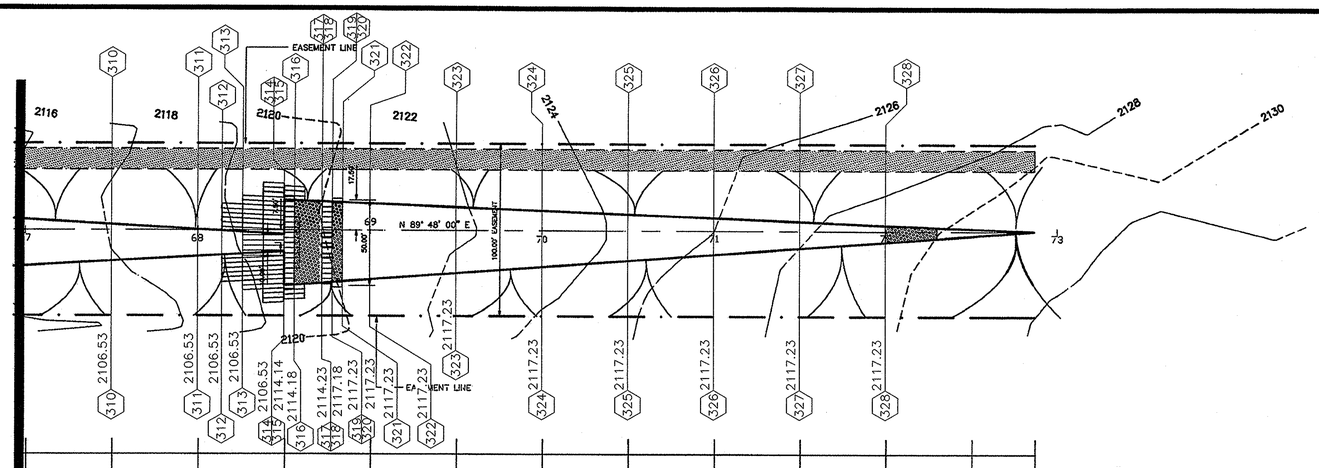
IMPROVEMENT PLANS
DRAKE CHANNEL
STA: 55+50.00 - 67+00.00

CITY OF HENDERSON CLARK COUNTY NEVADA

DESIGNED BY: M.B.
DRAWN BY: C.S.S
CHECKED BY: C.G.T.
JUNE 27,1994

SUMMIT™ ENGINEERING CORPORATION
CONSULTING ENGINEERS AND SURVEYORS
3864 SOUTH HIGHLAND, LAS VEGAS, NEVADA 89103
PHONE: (702) 252-3238 FAX: (702) 252-3247

0452


EASEMENT LINE
N 89° 48' 00" E
100.00' EASEMENT
50.00'
17.50'
2116
2118
2120
2122
2124
2126
2128
2130
67
68
69
70
71
72
73
2106.53
2114.14
2114.18
2114.23
2117.18
2117.23
2117.99
2118.80
2119.03
2119.04
2119.94
2120.94
2121.50
2122.00
2123.10
2124.20
2124.63
2125.01
2126.01
2126.30
2128.01
2128.40
2129.68
2129.27
2130.32
2131.50
2132.56
2133.60
2134.63
2135.65
2136.68
2137.70
2138.73
2139.75
2140.78
2141.80
2142.83
2143.85
2144.88
2145.90
2146.93
2147.95
2148.98
2150.00
2151.03
2152.05
2153.08
2154.10
2155.13
2156.15
2157.18
2158.20
2159.23
2160.25
2161.28
2162.30
2163.33
2164.35
2165.38
2166.40
2167.43
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2169.48
2170.50
2171.53
2172.55
2173.58

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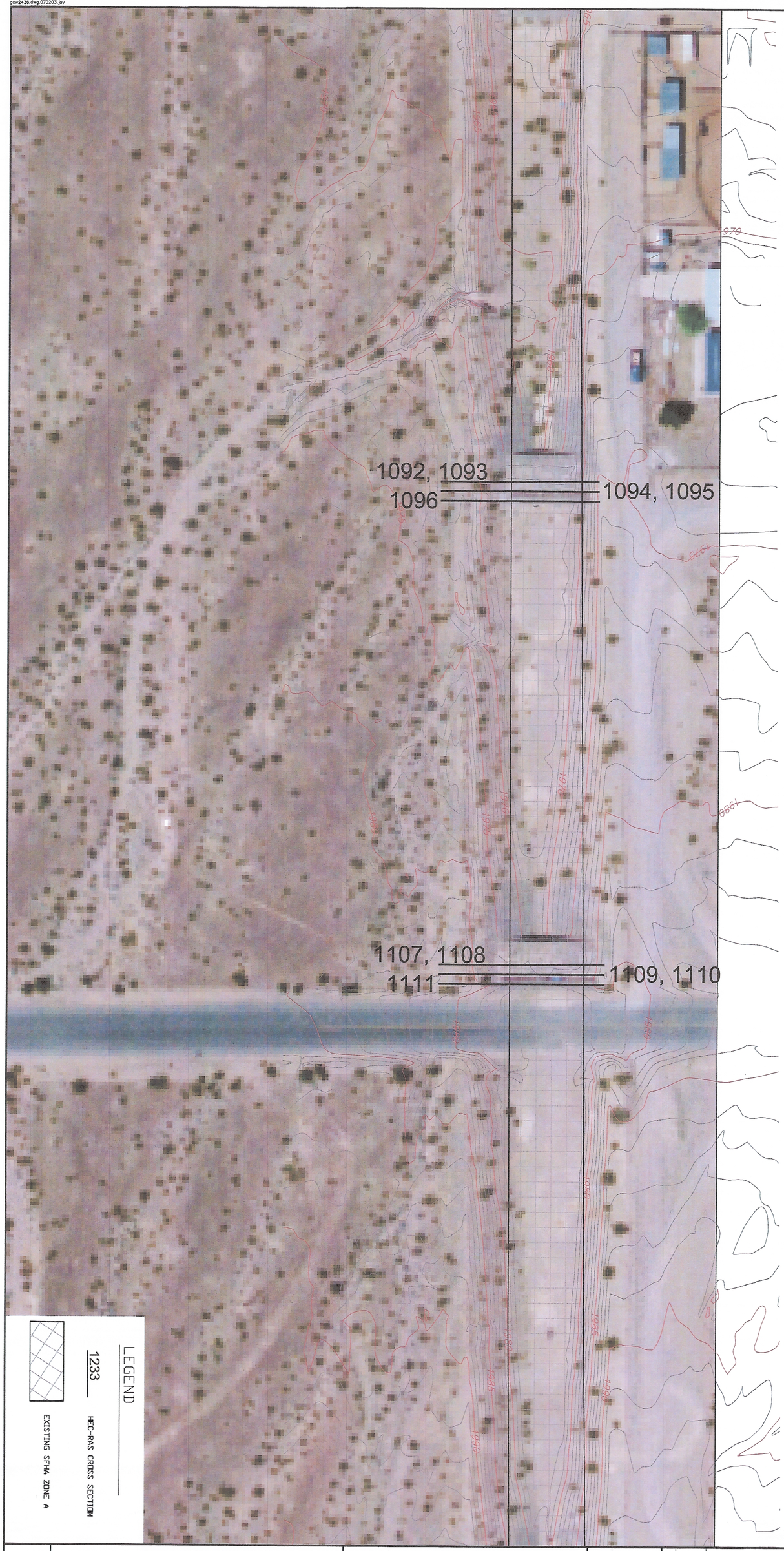


NOTE: ELEVATIONS BASED ON NAVD 88 DATUM

LEGEND

1233 HEC-RAS CROSS SECTION

EXISTING SFHA ZONE A

GRAPHIC SCALE
(IN FEET)
1 inch = 30 ft.
30 0 15 30

NORTH

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

ADDITIONAL TOPO POINTS - DRAKE CHANNEL

DRAWING DR-1 SHT OF SHTS

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

LAS VEGAS · SACRAMENTO · RENO

F:\504-424\Drainage\CLOMR\RTC\workmapdrake3.dwg
David Mueller

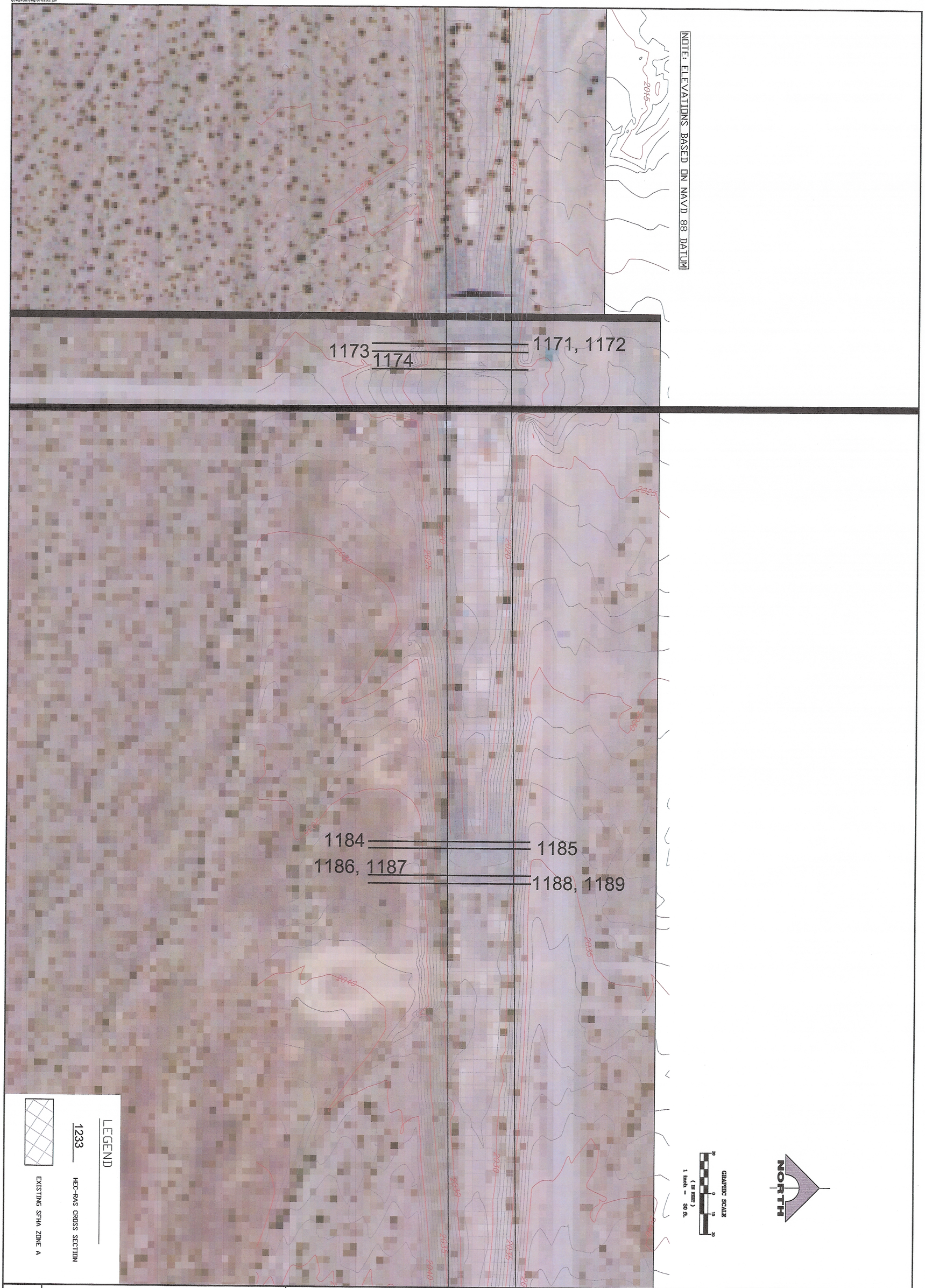
PROJECT NO. 504-424

DESIGN:
DRAWN:
CHECK:
PLOT DATE: 01-29-08
PLOT TIME: 14:08:45

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

DATE:

NOTE: ELEVATIONS BASED ON NAVD 88 DATUM



LEGEND

1233 — HEC-RAS CROSS SECTION

EXISTING SFHA ZONE A

GRAPHIC SCALE
1 inch = 30 ft.
(IN FEET)
30 0 15 30

NORTH

CITY OF HENDERSON

NORTHEAST C-1 DETENTION BASIN CLOMR

ADDITIONAL TOPO POINTS - DRAKE CHANNEL

DRAWING DR-2 SHT OF SHTS

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

LAS VEGAS · SACRAMENTO · RENO

F:\504-424\Drainage\CLOMR\RTC\workmapdrake3.dwg
David Mueller

PROJECT NO. 504-424

DESIGN:
DRAWN:
CHECK:
PLOT DATE: 01-29-08
PLOT TIME: 14:09:12

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

DATE: