

04-09-0817R
05-09-0913F

**LOWER DUCK CREEK
LETTER OF MAP REVISION**

550.039

April 2005

Prepared for:

**Clark County Regional Flood Control District
600 South Grand Central Parkway, Suite 300
Las Vegas, Nevada 89106-4511
Phone: (702) 455-3139
Fax: (702) 455-3870**

Prepared by:

**G. C. Wallace, Inc.
1555 South Rainbow Boulevard
Las Vegas, NV 89146
Phone: (702) 804-2000
Fax: (702) 804-2297**

04-09-0817R
05-09-0913F
RFCD



G. C. WALLACE, INC.
Engineers • Planners • Surveyors



G. C. WALLACE, PE/SE, PLS
JAMES A. DUDDLESTEN, PE
MICHAEL D. ROSS, PE
CHRISTOPHER W. ANDERSON, PE
CALVIN L. BLACK, PE, PLS
E. ROBERT PETERSON
SCOTT R. PLUMMER, PE
BENJAMIN C. SMITH, PE
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RICKEY D. HUNSAKER, PE, LC
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JEFF W. STAYTON, PE
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WILLIAM J. MEYER, PE
RIMAH I. NAZZAL, PE/SE
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BRADFORD G. ROCKWELL, PE
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S. TRACY STRATTON
GRANT Y. TOKUMI, PE
KEVIN L. TOMLINSON, PE
JERRY TSUNETA
F. EDUARDO VILLALOBOS, PE/SE
PAUL J. VILLALUZ, PE
KEVIN W. WALLACE, PLS
STEPHEN L. WEATHERMAN, PE
DEBRA M. YAMACHIKA, PE
RICK D.J. YORO, PE

AFFILIATE OFFICE IN
SACRAMENTO, CA

550.039

April 13, 2005

Mr. Sacha Tohme, CFM – LOMR Depot
Revisions Coordinator - Nevada
FEMA Depot
Michael Baker Jr., Inc.
3601 Eisenhower Avenue, Suite 600
Alexandria, Virginia 22304

Subject: Letter of Map Revision (LOMR) for Lower Duck Creek

Dear Mr. Tohme:

G. C. Wallace, Inc. (GCW) has been contracted by the Clark County Regional Flood Control District (CCRFCD) to complete a request for Letter of Map Revision (LOMR) for the Lower Duck Creek in Clark County and Henderson, Nevada. The study area consists of three (3) channel reaches:

1. Duck Creek from Emerald Avenue to Confluence.
2. Lower Pittman Wash from US 95 to Confluence.
3. Duck Creek from Confluence to Broadbent Boulevard.

The affected Community Panels are Numbers 32003C 2583 E and 32003C 2585 E, both dated August 8, 2003. See Figures 1 and 2 for the location of the project. The following items supporting this LOMR request are attached:

- ♦ A check in the amount of \$3,800.⁰⁰ made payable to the National Flood Insurance Program
- ♦ Effective FIRM (Figure 3)
- ♦ Proposed FIRM revisions (Figure 4)
- ♦ CLOMR approval letter
- ♦ FEMA Forms
- ♦ Site investigation photographs and location map (Exhibit 1)
- ♦ Operation and Maintenance Plan
- ♦ Electronic files

The Lower Duck Creek Conditional Letter of Map Revision (CLOMR) (Case No. 04-09-0817R) was approved in August 2004 based on HEC-RAS models that correspond to the design drawings for the Lower Pittman Channel, Duck Creek Channel Phase 2 and Phase 3B. Note that the information used to support the approved CLOMR is still current and per our discussions was not resubmitted for this LOMR. A site investigation confirmed that the channel improvements and flood control structures were built in substantial



G. C. WALLACE, INC.

Engineers • Planners • Surveyors

FEMA Depot

Attention: LOMR Depot

April 13, 2005

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550.039

conformance with these drawings. Therefore, based on these observations, I certify that the channel improvements and flood control structures have been constructed according to the intent of the design drawings. If you have any questions or need additional information, please do not hesitate to contact me at (702) 804-2000.

Sincerely,

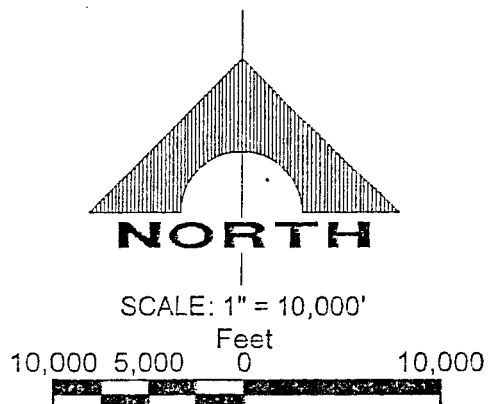
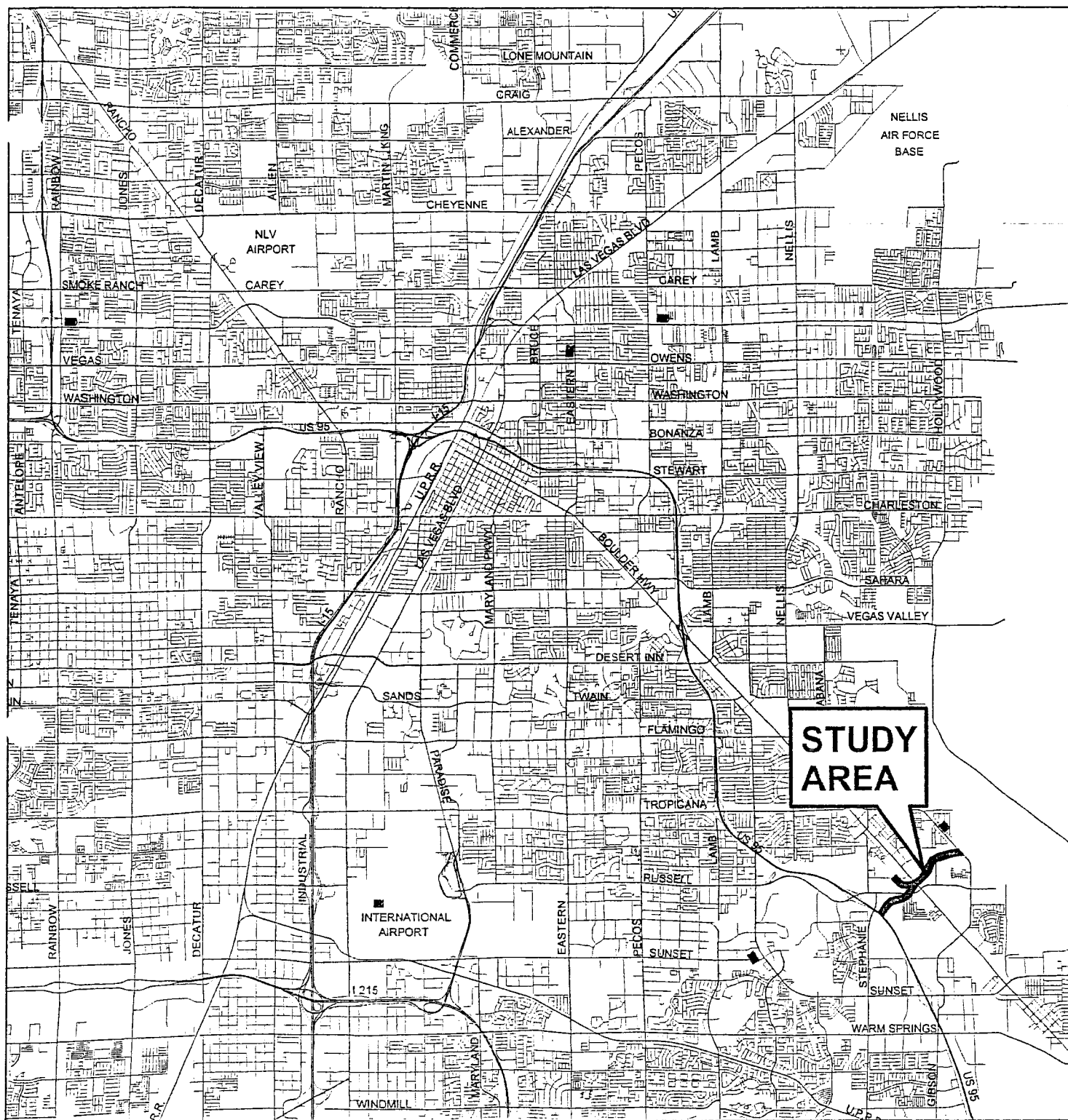
G. C. WALLACE, INC.

Michael J. Ludwig, P.E.
Project Manager
Flood Control Division

MJL:jj

Enc.

cc: Kevin Eubanks, CCRFCD
Denis Cederburg, CCPW
Dave Betley, CCDDS
Curt Chandler, COH
Calvin L. Black, GCW
Jerry E. Pruitt, GCW



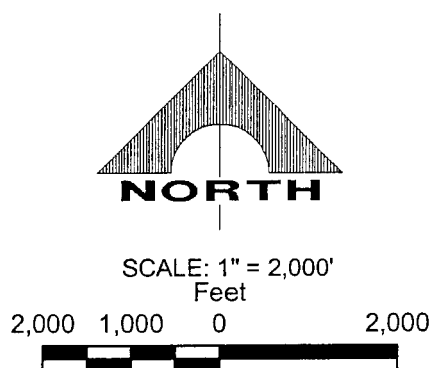
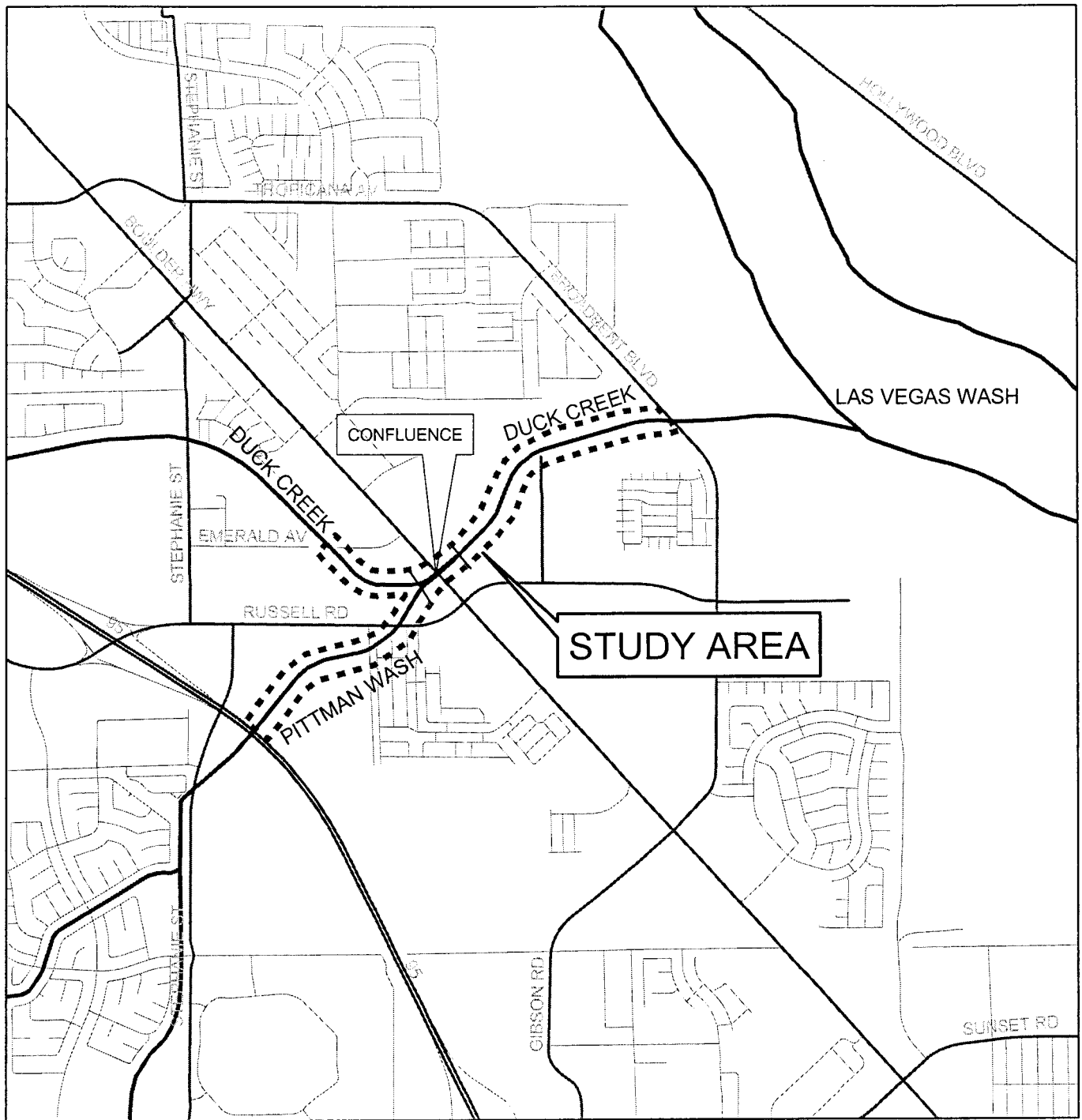
LOWER DUCK CREEK LOMR

FIGURE 1

VICINITY MAP



G.C. WALLACE, INC.
Engineers/Planners/Surveyors 1555 SOUTH RAINBOW BLVD., LAS VEGAS, NEVADA 89145



LOWER DUCK CREEK LOMR

FIGURE 2

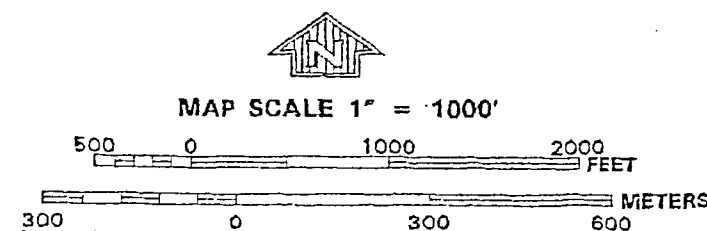
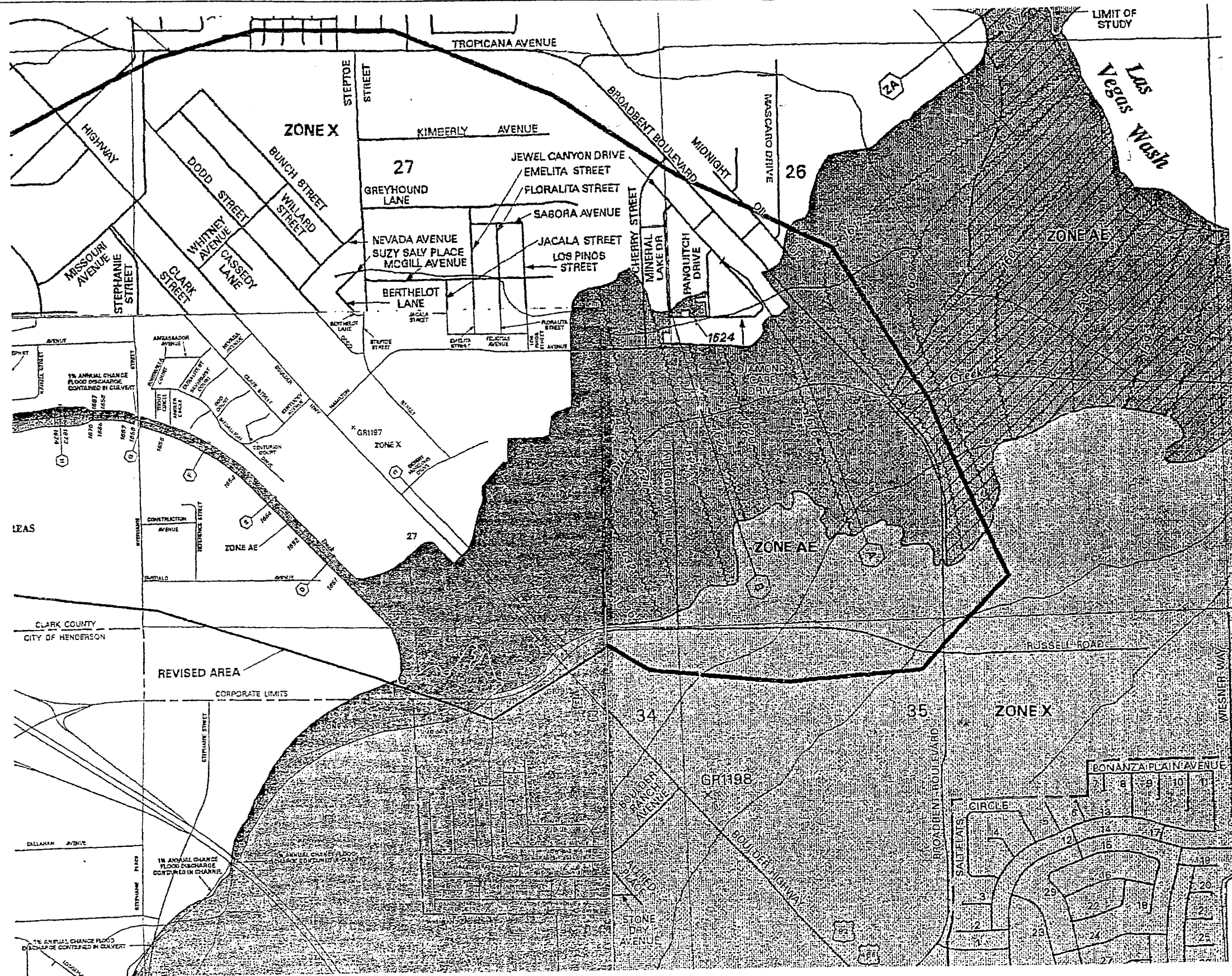
LOCATION MAP



G.C. WALLACE, INC.
Engineers/Planners/Surveyors

1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146

G:\550-039\dwg\fig\GISFIG-2



PANEL 2583E

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

PANEL 2583 OF 4090
SEE MAP INDEX FOR FIRM PANEL LAYOUT

CONTAINS:
CLARK COUNTY, UNINCORPORATED AREAS
HENDERSON, CITY OF

AUG 13 2003

MAP NUMBER:
32003C2583E

MAP REVISED:
SEPTEMBER 27, 2002

Federal Emergency Management Agency

PANEL 2585E

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

PANEL 2585 OF 4090
SEE MAP INDEX FOR FIRM PANEL LAYOUT

CONTAINS:
CLARK COUNTY, UNINCORPORATED AREAS
HENDERSON, CITY OF

AUG 13 2003

MAP NUMBER:
32003C2585E

MAP REVISED:
SEPTEMBER 27, 2002

Federal Emergency Management Agency

LOWER DUCK CREEK LOMR

FIGURE 3
EFFECTIVE FIRM



Federal Emergency Management Agency

Washington, D.C. 20472

AUG 09 2004

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

The Honorable James B. Gibson
Mayor, City of Henderson
240 Water Street, Fourth Floor
Henderson, NV 89009-5050

IN REPLY REFER TO:
Case No.: 04-09-0817R
Community: City of Henderson, NV
Community No.: 320005

104

Dear Mayor Gibson:

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) and Flood Insurance Study (FIS) report for Clark County, Nevada and Incorporated Areas (the effective FIRM and FIS report for your community), in accordance with Part 65 of the National Flood Insurance Program (NFIP) regulations. In a letter dated March 4, 2004, Mr. Michael J. Ludwig, P.E., Project Engineer, G. C. Wallace, Inc., requested that FEMA evaluate the effects that proposed channelization along Duck Creek and Pittman Wash would have on the flood hazard information shown on the effective FIRM. The proposed project also will consist of placement of fill, modifications to the Boulder Highway bridge over Duck Creek, construction of a box culvert along Duck Creek at Broadbent Boulevard, construction of box culverts along Pittman Wash at Park Lane and New Beginnings Drive, and modifications to the box culvert along Pittman Wash at Russell Road. The proposed project will extend along Duck Creek from just downstream of Broadbent Boulevard to just downstream of Emerald Avenue and along Pittman Wash from the confluence with Duck Creek to just downstream of U.S. Highway 95 (US95).

All data required to complete our review of this request for a Conditional Letter of Map Revision (CLOMR) were submitted with letters from Mr. Kevin Eubanks, P.E., CFM, Assistant General Manager, Clark County Regional Flood Control District, and Mr. Ludwig.

Because this revision request also affects the unincorporated areas of 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 corrected effective HEC-RAS hydraulic computer model, dated April 23, 2004, was 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 "L-1624 Improvement Plans for Duck Creek Channel - Phase 2, from Emerald Avenue to 610-Foot East Boulder Avenue/New Beginnings Drive to Boulder Highway," dated December 2, 2002; "Lower Pittman Channel, US95 to New Beginnings Drive," dated September 3, 2002; "Improvement Plans for Duck Creek Channel - Phase 3B, from Broadbent Boulevard to Boulder Highway," dated February 2, 2004; and "Improvement Plans for Broadbent Boulevard, Box Culvert at Duck Creek," dated November 25, 2002, all prepared by G. C. Wallace, Inc., and the data listed below are received, a revision to the FIRM would be warranted.

As a result of the proposed project, the width of the Special Flood Hazard Area (SFHA), the area that would be inundated by the flood having a 1-percent chance of being equaled or exceeded in any given year (base flood), along Pittman Wash will decrease compared to the effective SFHA width from approximately 450 feet upstream of Russell Road to just downstream of US95. The maximum decrease in SFHA width, approximately 380 feet, will occur approximately 950 feet upstream of Russell Road. The entire base flood will be contained in the proposed channel along Pittman Wash.

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, which were used in processing this request, 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 September 1, 2002, 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 \$3,800 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. The payment must be forwarded to the following address:

Federal Emergency Management Agency
 Fee-Charge System Administrator
 P.O. Box 3173
 Merrifield, VA 22116-3173

- As-built plans, certified by a registered professional engineer, of all proposed project elements
- Community acknowledgment of the map revision request

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

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 culverts 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, Federal Insurance and Mitigation Division of FEMA in Oakland, California, at (510) 627-7103. 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,



Max H. Yuan, P.E., Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate

For: Doug Bellomo, P.E., CFM, Acting Chief
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate

Enclosures

cc: The Honorable Chip Maxfield, P.E.
Chair, Clark County Board
of Commissioners

Mr. Curt Chandler, P.E.
Land Development Manager
City of Henderson

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

Mr. David Betley, P.E.
Principal Engineer
Civil Engineering Division
Department of Public Works
Clark County

Mr. Michael J. Ludwig, P.E.
Project Engineer
G. C. Wallace, Inc.



Federal Emergency Management Agency

Washington, D.C. 20472

AUG 09 2004

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

The Honorable Chip Maxfield, P.E.
Chair, Clark County Board
of Commissioners
500 South Grand Central Parkway
Las Vegas, NV 89155

IN REPLY REFER TO:
Case No.: 04-09-0817R
Community: Clark County, NV
Community No.: 320003

104

Dear Mr. Maxfield:

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, in accordance with Part 65 of the National Flood Insurance Program (NFIP) regulations. In a letter dated March 4, 2004, Mr. Michael J. Ludwig, P.E., Project Engineer, G. C. Wallace, Inc., requested that FEMA evaluate the effects that proposed channelization along Duck Creek and Pittman Wash would have on the flood hazard information shown on the effective FIRM. The proposed project also will consist of modifications to the Boulder Highway bridge over Duck Creek, construction of a box culvert along Duck Creek at Broadbent Boulevard, construction of box culverts along Pittman Wash at Park Lane and New Beginnings Drive, and modifications to the box culvert along Pittman Wash at Russell Road. The proposed project will extend along Duck Creek from Broadbent Boulevard to Emerald Avenue and along Pittman Wash from the confluence with Duck Creek to just downstream of U.S. Highway 95.

All data required to complete our review of this request for a Conditional Letter of Map Revision (CLOMR) were submitted with letters from Mr. Kevin Eubanks, P.E., CFM, Assistant General Manager, Clark County Regional Flood Control District, and Mr. Ludwig.

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 corrected effective HEC-RAS hydraulic computer model, dated April 23, 2004, was 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 "L-1624 Improvement Plans for Duck Creek Channel - Phase 2, from Emerald Avenue to 610-Foot East Boulder Avenue/New Beginnings Drive to Boulder Highway," dated December 2, 2002; "Lower Pittman Channel, US95 to New Beginnings Drive," dated September 3, 2002; "Improvement Plans for Duck Creek Channel - Phase 3B, from Broadbent Boulevard to Boulder Highway," dated February 2, 2004; and "Improvement Plans for Broadbent Boulevard, Box Culvert at Duck Creek," dated November 25, 2002, all prepared by G. C. Wallace, Inc., and the data listed below are received, a revision to the FIRM would be warranted.

As a result of the proposed channelization, placement of fill, and culverts and the modifications to existing culverts, the elevations of the flood having a 1-percent chance of being equaled or exceeded in any given

year (base flood) for Duck Creek will decrease compared to the effective Base Flood Elevations (BFEs) from Broadbent Boulevard to Emerald Avenue. The maximum decrease in BFE, 8.7 feet, will occur just downstream of Boulder Highway. The width of the Special Flood Hazard Area (SFHA), the area that would be inundated by the base flood, along Duck Creek will decrease compared to the effective SFHA width from Broadbent Boulevard to Emerald Avenue. The maximum decrease in SFHA width, approximately 3,000 feet, will occur approximately 2,000 feet upstream of Broadbent Boulevard.

As a result of the proposed project, the width of the SFHA along Pittman Wash will decrease compared to the effective SFHA width from the confluence with Duck Creek to approximately 450 feet upstream of Russell Road. The maximum decrease in SFHA width, approximately 500 feet, will occur approximately 150 feet upstream of Russell Road. The entire base flood will be contained in the proposed channels along both Duck Creek and Pittman Wash.

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, which were used in processing this request, 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.

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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 September 1, 2002, 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 \$3,800 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. The payment must be forwarded to the following address:

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Fee-Charge System Administrator
P.O. Box 3173
Merrifield, VA 22116-3173

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

- Community acknowledgment of the map revision request

After receiving appropriate documentation to show that the project has been completed, FEMA will initiate a revision to the FIRM. Because the BFEs along Duck Creek would change as a result of the project, a 90-day appeal period would be initiated, during which community officials and interested persons may appeal the revised BFEs based on scientific or technical data.

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 culverts 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, Federal Insurance and Mitigation Division of FEMA in Oakland, California, at (510) 627-7103. 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,



Max H. Yuan, P.E., Project Engineer
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate

For: Doug Bellomo, P.E., CFM, Acting Chief
Hazard Identification Section
Mitigation Division
Emergency Preparedness
and Response Directorate

Enclosures

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

Mr. David Betley, P.E.
Principal Engineer
Civil Engineering Division
Department of Public Works
Clark County

Mr. Curt Chandler, P.E.
Land Development Manager
City of Henderson

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

Mr. Michael J. Ludwig, P.E.
Project Engineer
G. C. Wallace, Inc.

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	City of Katy	TX	480301	0005D	02/08/83
480287	Harris County	TX	48201C	0220G	09/28/90
32003	Clark County	NV	32003C	2583E	08/13/03
32003	Clark County	NV	32003C	2585E	08/13/03

2. Flooding Source: Duck Creek and Pittman Wash

3. Project Name/Identifier: Lower Duck Creek LOMR

4. FEMA zone designations affected: A, AE, X (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?

☒ YesFee amount: \$3,800.00☐ No, Attach ExplanationPlease see the FEMA Web site at http://www.fema.gov/fhm/fm_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: Kevin Eubanks, P.E.; Ass't. General Mgr.

Company: Clark Co. Regional Flood Control Dist.

Mailing Address:

600 S. Grand Central Prkwy.; Ste. 300
Las Vegas, NV 89106-4511Daytime Telephone No.:
(702) 455-3139Fax No.:
(702) 455-3870

E-Mail Address: keubanks@ccrfd.org

Signature of Requester (required):



Date:

4/19/05

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: Denis Cederburg, P.E. - CCPW - Mgr., Design Engineering

Telephone No.:
(702) 455-6064

Community Name: Clark County, Nevada

Community Official's Signature (required):



Date:

4-11-05

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: Michael J. Ludwig, P.E.

License No.: 16045 (Nevada)

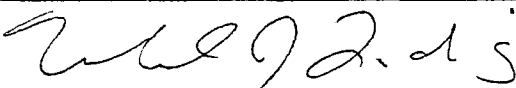
Expiration Date:
12/31/05

Company Name: G. C. WALLACE, INC.

Telephone No.: (702) 804-2000

Fax No.:
(702) 804-2297

Signature:



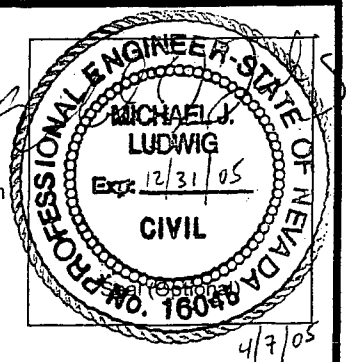
Date:

4/7/05

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

Form Name and (Number)**Required if ...**

- | | |
|--|---|
| <input type="checkbox"/> Riverine Hydrology and Hydraulics Form (Form 2) | New or revised discharges or water-surface elevations |
| <input type="checkbox"/> Riverine Structures Form (Form 3) | Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam |
| <input type="checkbox"/> Coastal Analysis Form (Form 4) | New or revised coastal elevations |
| <input type="checkbox"/> Coastal Structures Form (Form 5) | Addition/revision of coastal structure |
| <input type="checkbox"/> Alluvial Fan Flooding Form (Form 6) | Flood control measures on alluvial fans |



**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	City of Katy	TX	480301	0005D	02/08/83
480287	Harris County	TX	48201C	0220G	09/28/90
32003	Clark County	NV	32003C	2583E	08/13/03
32003	Clark County	NV	32003C	2585E	08/13/03

2. Flooding Source: Duck Creek and Pittman Wash

3. Project Name/Identifier: Lower Duck Creek LOMR

4. FEMA zone designations affected: A, AE, X (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 \$3,800.00

☐ No, Attach Explanation

Please see the FEMA Web site at http://www.fema.gov/fhm/fhm_fees.shtml 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: Kevin Eubanks, P.E., Asst. General Mgr.

Company: Clark Co. Regional Flood Control Dist.

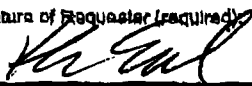
Mailing Address:
900 S. Grand Central Pkwy., Suite 300
Las Vegas, NV 89106-4511

Daytime Telephone No.:
(702) 458-3139

Fax No.:
(702) 458-3870

E-Mail Address: keubanks@ccrfd.org

Signature of Requester (required):



Date:

4/13/05

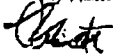
As the community official responsible for floodplain management, I hereby acknowledge that we have received and reviewed this Letter of Map Revision (LOMR) or conditional LOMR request. Based upon the community's review, we find the completed or proposed project meets or is designed to meet all of the 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, P.E., Land Development Manager

Telephone No.:
(702) 267-3020

Community Name: Henderson

Community Official's Signature (required):




Date:

4-12-05

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: Michael J. Ludwig, P.E.

License No.: 18046 (Nevada)

Expiration Date:
12/31/08

Company Name: G. C. WALLACE, INC.

Telephone No.: (702) 804-2000

Fax No.:
(702) 804-2297

Signature:



Date:

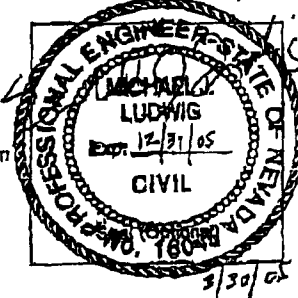
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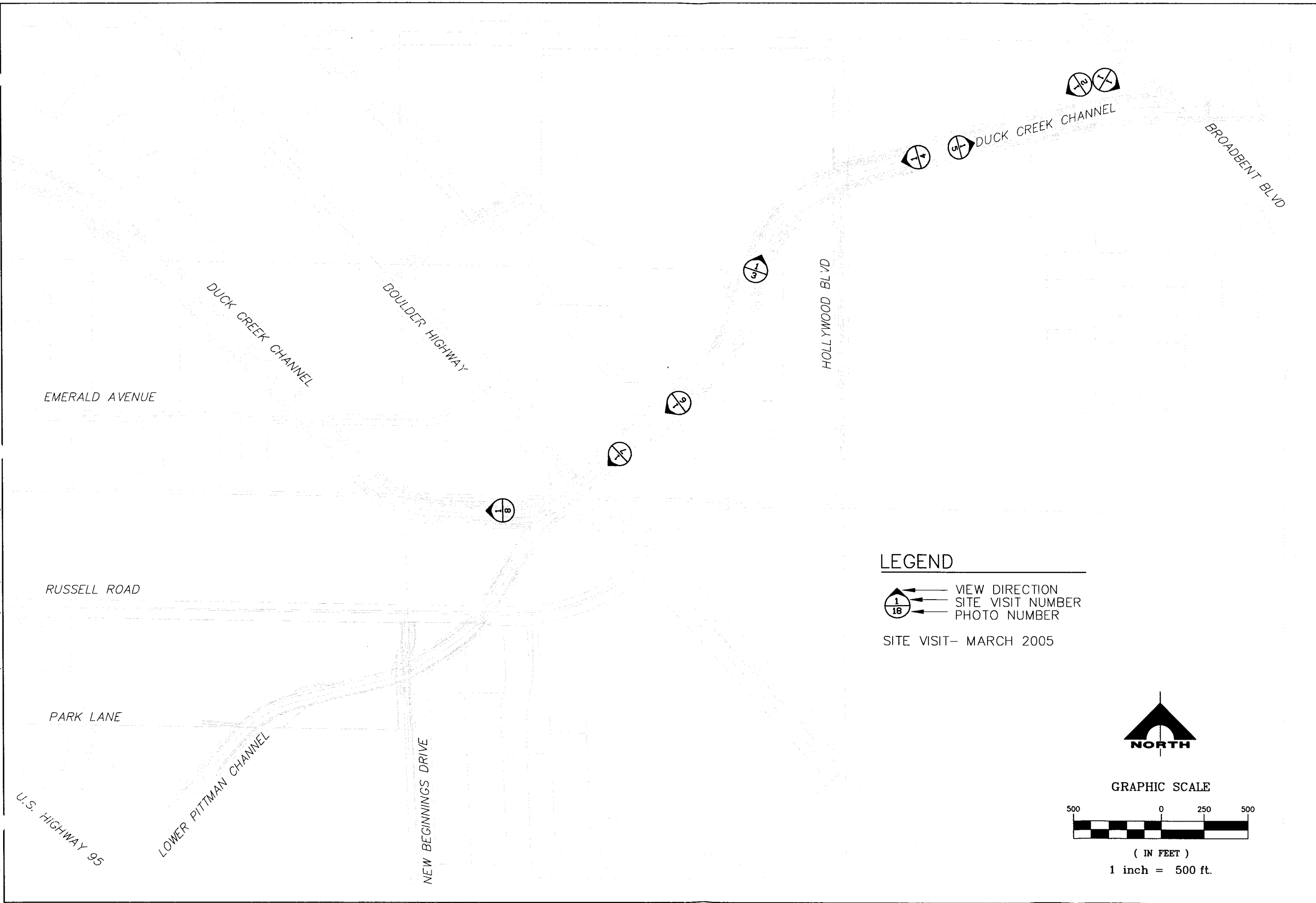
Ensure the forms that are appropriate to your revision request are included in your submittal.

Form Name and (Number)

Required if...

- | | |
|--|---|
| <input type="checkbox"/> Riverine Hydrology and Hydraulics Form (Form 2) | New or revised discharges or water-surface elevations |
| <input type="checkbox"/> Riverine Structures Form (Form 3) | Channel is modified, addition/revision of bridge/culverts, addition/revision of levee/floodwall, addition/revision of dam |
| <input type="checkbox"/> Coastal Analysis Form (Form 4) | New or revised coastal elevations |
| <input type="checkbox"/> Coastal Structures Form (Form 5) | Addition/revision of coastal structure |
| <input type="checkbox"/> Alluvial Fan Flooding Form (Form 6) | Flood control measures on alluvial fans |





DESIGN DRAWING LOCATION EXHIBIT

LOWER DUCK CREEK LOMR

EXHIBIT 1

PHOTO LOCATION MAP

SHEET

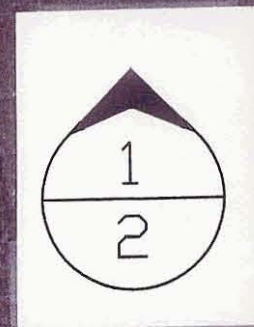
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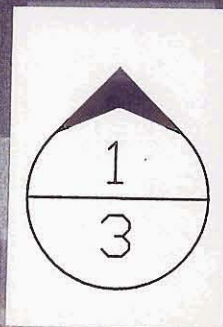
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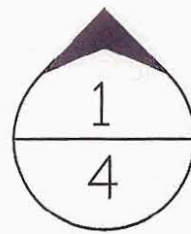


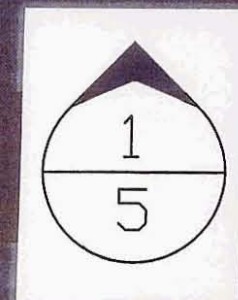
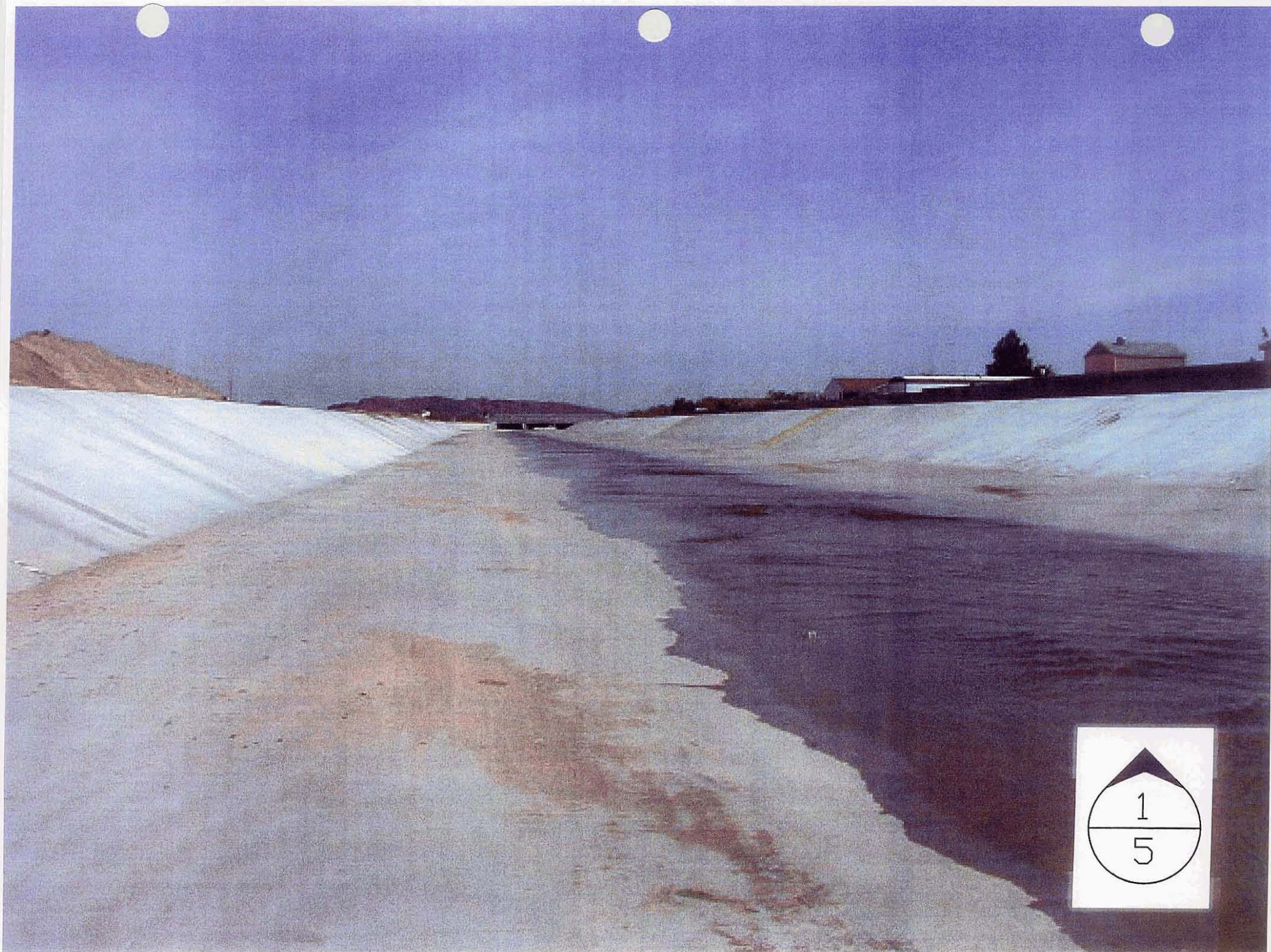
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299



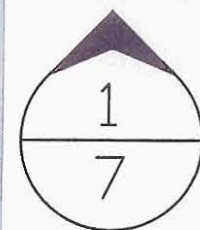


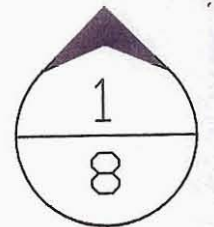




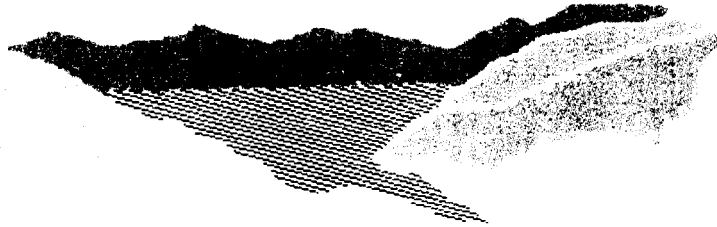








C L A R K C O U N T Y
REGIONAL FLOOD CONTROL DISTRICT



OPERATIONS AND MAINTENANCE MANUAL

*Adopted
January 13, 2005*

**CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT**

**OPERATIONS AND MAINTENANCE
MANUAL**

**GALE WM. FRASER, II, P.E.
GENERAL MANAGER / CHIEF ENGINEER**

The Operations and Maintenance Manual has been updated in accordance with Regional Flood Control District Board action on January 13, 2005. The Board adopted amendments to Sections 2.20, Chapter 3, 3.20, 4.11, 4.12, 4.22, 4.23, 4.24, 4.25, 4.26, 4.27, 4.34, Performance Standard No. 80, Performance Standard No. 85, 4.35, 4.42, 4.43, 5.12, Appendix A, Exhibit A, and updated forms and charts. Appendix B was deleted in its entirety. Appendix C was amended and renamed as 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**

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**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 reimbursed 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 reimbursement 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, and 2005.

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. 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 reimbursed 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 reimbursement 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.)

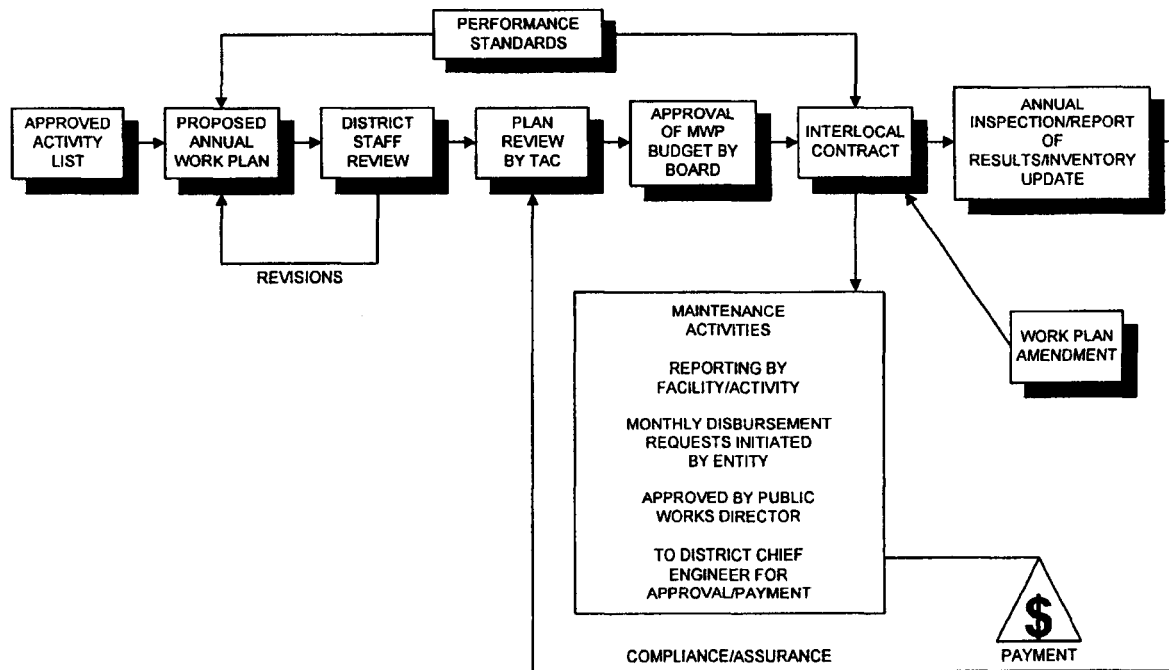
The District has authorized funding to assist the member entities with major drainageway maintenance in accordance with the priorities listed below:

- 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 reimbursements 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 reimbursement 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 reimbursement 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 reimbursable. 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 reimbursement 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 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.

ENTITY: _____

**REGIONAL FLOOD CONTROL DISTRICT
MAINTENANCE WORK PROGRAM - FISCAL YEAR 20XX-XX**

☐ **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 Dm											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 reimbursed 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					
	15 Repair Lined Channel					
	21 Provide/Maintain Dust Control					
	30 Erosion Repair					
	40 Vegetation Control - Chemical					
	45 Vegetation Control - Mechanical					
	50 Maintain Access Road					
	60 Repair Inlet/Outlet Structures					
	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 reimbursed 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, reimbursement and 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 reimbursement 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 #: _____
Facility Name: _____
MP Facility ID: _____

Entity: _____
Fiscal Year: _____
Date Prepared: _____

ACTIVITY		Monthly Distribution of Time (in hours)												Total Per Activity
No.	Description	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	
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 05	NAME INSPECT CHANNELS	DATE 01/13/05
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 Maintenance Supervisor		LIMITS ON WORK
PERFORMANCE CRITERIA Perform complete inspection of channels on an annual basis and after major storm events.		

CREW SIZE	WORK METHOD
<ul style="list-style-type: none"> 1 Crew Supervisor 1 TOTAL 	<ol style="list-style-type: none"> 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	
<ul style="list-style-type: none"> 1 Pickup 	
MATERIAL	AVERAGE DAILY PRODUCTION
<ul style="list-style-type: none"> 	8 miles/day
NOTES:	

**PERFORMANCE
STANDARD**

**CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT**

ACTIVITY NUMBER 10	NAME CLEAN & RESHAPE CHANNELS	DATE 01/13/05
DESCRIPTION & PURPOSE Mechanical silt, vegetation, and debris removal, and reshaping of unlined channels to restore adequate flow.		
AUTHORIZED BY Maintenance Supervisor		LIMITS ON WORK
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
<ul style="list-style-type: none"> • 2 Equipment Operators • 1 Truck Driver • .5 Foreman • • 3.5 TOTAL 	<ol style="list-style-type: none"> 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	
<ul style="list-style-type: none"> • 1* 10 Wheel Dump Truck • 1 Scraper • 1 Gradall • 	
MATERIAL	AVERAGE DAILY PRODUCTION
<ul style="list-style-type: none"> • 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 15	NAME REPAIR LINED CHANNELS	DATE 01/13/05
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 Maintenance Supervisor		LIMITS ON WORK
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	WORK METHOD
<ul style="list-style-type: none"> 1 Maintenance Foreman 2 Maintenance Workers 3 TOTAL 	<ol style="list-style-type: none"> Obtain safety equipment, materials, tools necessary for the day's work. Begin applicable safety procedures and/or traffic control. Clean and prepare damaged area. Build and place forms as necessary. Place and finish concrete. Remove forms and back fill. Clean up work site as necessary.
EQUIPMENT	
<ul style="list-style-type: none"> Pickup Flatbed Dump Concrete Mixer 	
MATERIAL	AVERAGE DAILY PRODUCTION
<ul style="list-style-type: none"> Assorted lumber 6-30 bags sacked concrete 3-15 tons concrete gravel mix 2-10 CY ready-mix concrete 	1 Each/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 20	NAME PROVIDE / MAINTAIN EROSION CONTROL	DATE 01/13/05
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 Maintenance Supervisor		LIMITS ON WORK
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
<ul style="list-style-type: none"> 1 Foreman 2 Equipment Operators 2 Maintenance Workers 5 TOTAL 	<ol style="list-style-type: none"> Obtain safety equipment, materials and tools necessary for the day's work. Begin applicable safety procedures and/or traffic control. Shape work area to receive riprap, or other erosion control materials. Place material and grout where applicable. Back fill as necessary. Clean up work site as necessary.
EQUIPMENT	
<ul style="list-style-type: none"> 1 Truck Crane - or - Backhoe 1 Dump Truck 1 Pickup 	
MATERIAL	AVERAGE DAILY PRODUCTION
<ul style="list-style-type: none"> 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 21	NAME PROVIDE / MAINTAIN DUST CONTROL	DATE 01/13/05
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 Maintenance Supervisor		LIMITS ON WORK
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	WORK METHOD
<ul style="list-style-type: none"> 1 Foreman – Part-time 1 Driver 1 Nozzle operator 1 – 2 laborers to protect surrounding area from overspray 4 – 5 TOTAL 	<ol style="list-style-type: none"> Obtain safety equipment, materials and tools necessary for the day's work. Begin applicable safety procedures and/or traffic control. Prepare surface area to receive palliative or other dust control measures with motor grader and compactor if required. Palliative with pre-emergent herbicide requires preparation of soil surface. Apply dust palliative to prepared surface. Clean up work site as necessary.
EQUIPMENT	
<ul style="list-style-type: none"> 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 	
MATERIAL	AVERAGE DAILY PRODUCTION
<ul style="list-style-type: none"> Gravel Dust palliative (i.e. gypsum, fiber mulch) Water source Other alternative dust control measure 	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 25	NAME CLEAN & INSPECT DETENTION/DEBRIS BASINS	DATE 01/13/05
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 Maintenance Supervisor		LIMITS ON WORK
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
<ul style="list-style-type: none"> • 1 Foreman • 3 Equipment Operators • 1 Maintenance Worker • • 5 TOTAL 	<ol style="list-style-type: none"> 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	
<ul style="list-style-type: none"> • 1 Pickup • 1 Loader • 2* Dump Trucks • 	
MATERIAL	AVERAGE DAILY PRODUCTION
<ul style="list-style-type: none"> • 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 30	NAME EROSION REPAIR	DATE 01/13/05
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 Maintenance Supervisor		LIMITS ON WORK
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
<ul style="list-style-type: none"> • 1 Foreman • 2 Maintenance Workers • • • 3 TOTAL 	<ol style="list-style-type: none"> 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	
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 15-30 Tons Select Fill Material • • • 	15 Cubic Yards
NOTES:	

**PERFORMANCE
STANDARD**

**CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT**

ACTIVITY NUMBER 35	NAME FENCE REPAIR	DATE 01/13/05
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 Maintenance Supervisor		LIMITS ON WORK
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
<ul style="list-style-type: none"> 2 Maintenance Workers • • 2 TOTAL 	<ol style="list-style-type: none"> Obtain safety equipment, materials and tools necessary for the day's work. Begin applicable safety procedures and/or traffic control. Perform necessary repairs to: <ul style="list-style-type: none"> • Posts • Fabric • Top rail Clean up work site as necessary.
EQUIPMENT	
<ul style="list-style-type: none"> 1 Fence Truck 1 Concrete Mixer (if needed) • • 	
MATERIAL	AVERAGE DAILY PRODUCTION
<ul style="list-style-type: none"> 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 40	NAME VEGETATION CONTROL - CHEMICAL	DATE 01/13/05
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 Maintenance Supervisor		LIMITS ON WORK
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
<ul style="list-style-type: none"> • 2 Maintenance Workers • • • • 2 TOTAL 	<ol style="list-style-type: none"> 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	
<ul style="list-style-type: none"> • 1 Truck-mounted chemical tank with spray bar and hand sprayer • • 	
MATERIAL	AVERAGE DAILY PRODUCTION
<ul style="list-style-type: none"> • 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 45	NAME VEGETATION CONTROL - MECHANICAL	DATE 01/13/05
DESCRIPTION & PURPOSE The mechanical removal of brush and weeds to maintain detention, debris basins, and channels free of vegetation.		
AUTHORIZED BY Maintenance Supervisor		LIMITS ON WORK
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
<ul style="list-style-type: none"> • 1 Equipment Operator • • • 1 TOTAL 	<ol style="list-style-type: none"> 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	
<ul style="list-style-type: none"> • 1 Mower or Grader • 1 Tilt Trailer (if needed) • 1 Pickup • 	
MATERIAL	AVERAGE DAILY PRODUCTION
<ul style="list-style-type: none"> • • • • 	4 Acres/day
NOTES:	

**PERFORMANCE
STANDARD**

**CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT**

ACTIVITY NUMBER 50	NAME MAINTAIN ACCESS ROADS	DATE 01/13/05
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 Maintenance Supervisor		LIMITS ON WORK
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
<ul style="list-style-type: none"> • 2 Equipment Operators • 1 Maintenance Workers • • 3 TOTAL 	<ol style="list-style-type: none"> 1. Obtain equipment and tools necessary for the day's work. 2. Begin applicable safety procedures and/or traffic control. 3. Grade access roads: <ul style="list-style-type: none"> • 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	
<ul style="list-style-type: none"> • 1 Grader • 0-1 Water Truck • 0-1 Roller • 1 Pickup 	
MATERIAL	AVERAGE DAILY PRODUCTION
<ul style="list-style-type: none"> • 10,000 Gal Water (if needed) • • • 	.5 Mile/day
NOTES:	

**PERFORMANCE
STANDARD**

**CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT**

ACTIVITY NUMBER 55	NAME CLEAN & INSPECT INLET/OUTLET STRUCTURES	DATE 01/13/05
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 Maintenance Supervisor		LIMITS ON WORK
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
<ul style="list-style-type: none"> .25 Foreman 2 Maintenance Workers 2.25 TOTAL 	<ol style="list-style-type: none"> 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	
<ul style="list-style-type: none"> 1 1-Ton Truck 1 Water Tanker (1500 gal) -or- High Pressure Vacuum (Vactor) Appropriate Hand Tools 	
MATERIAL	AVERAGE DAILY PRODUCTION
<ul style="list-style-type: none"> 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 60	NAME REPAIR INLET / OUTLET STRUCTURES	DATE 01/13/05
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 Maintenance Supervisor		LIMITS ON WORK
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
<ul style="list-style-type: none"> • 1 Foreman • 2 Maintenance Workers • • 3 TOTAL 	<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> • 1 Pickup • 1 Compressor w/accessories • • 	
MATERIAL	AVERAGE DAILY PRODUCTION
<ul style="list-style-type: none"> • Concrete • Aggregates • Miscellaneous parts, as required • 	1 Each/day
NOTES:	

**PERFORMANCE
STANDARD**

**CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT**

ACTIVITY NUMBER 65	NAME CLEAN STORM SEWER LINES	DATE 01/13/05
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 Maintenance Supervisor		LIMITS ON WORK
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
<ul style="list-style-type: none"> • 1 Maintenance Foreman • 2 Maintenance Workers • • 3 TOTAL 	<ul style="list-style-type: none"> 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	
<ul style="list-style-type: none"> • 1 Sewer Cleaner • • • 	
MATERIAL	AVERAGE DAILY PRODUCTION
<ul style="list-style-type: none"> • 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 70	NAME STORM SEWER LINE REPAIR	DATE 01/13/05
DESCRIPTION & PURPOSE Excavation and repair of storm sewer lines to eliminate blockages and repair failed pipes.		
AUTHORIZED BY Maintenance Supervisor		LIMITS ON WORK
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
<ul style="list-style-type: none"> 1 Foreman 1 Equipment Operator 2 Maintenance Workers 4 TOTAL 	<ol style="list-style-type: none"> Set up warning signs and traffic control devices. Take necessary measures to control flow -- providing uninterrupted service whenever possible. Cut pavement and/or excavate to the extent required to determine necessary scope of repairs. Remove flow restrictions, as necessary. Back fill and compact in lifts to within 10 inches of surface. Place select material (rock or shell) and compact to within 2 inches of surface* (See Note below.) Coordinate density test and request repaving as required. Remove signs and warning devices. Clean up work site as necessary. Record work accomplishment.
EQUIPMENT	
<ul style="list-style-type: none"> 1 Dump Truck 1 Backhoe/Util Tractor Air Compressor w/accessories Appropriate Hand Tools 	
MATERIAL	AVERAGE DAILY PRODUCTION
<ul style="list-style-type: none"> 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 75	NAME CLEAN / FLUSH CULVERTS & BRIDGES	DATE 01/13/05
DESCRIPTION & PURPOSE Cleaning/flushing of culverts and bridges to remove silt and debris, and eliminate restriction to flow.		
AUTHORIZED BY Maintenance Supervisor		LIMITS ON WORK
PERFORMANCE CRITERIA Plan for all culverts to be cleaned/flushed annually.		

CREW SIZE	WORK METHOD
<ul style="list-style-type: none"> 1 Maintenance Supervisor 1 Maintenance Worker 2 TOTAL 	<ol style="list-style-type: none"> Place signs and safety devices. Locate truck in best working position and as far off roadway as possible. Clean out ends of culvert. Flush culverts until flow is unrestricted. Load excess material/debris into truck for disposal at proper disposal site. Pick up signs and safety devices. Clean up work site as necessary.
EQUIPMENT	
<ul style="list-style-type: none"> 1 1-Ton Dump Truck 1 Water Tanker (1500 gal) -or- High Pressure/Vacuum cleaner/Vactor Safety Equipment Appropriate Hand Tools 	
MATERIAL	AVERAGE DAILY PRODUCTION
<ul style="list-style-type: none"> Water 	5-7 Each/Day
NOTES:	
<ol style="list-style-type: none"> Inform Maintenance Supervisor of any non-cleanable culverts or those that can only be partially cleaned. Avoid damaging downstream property when flushing culverts. Work should be scheduled, whenever possible, in conjunction with annual cleaning of adjacent structures. 	

**PERFORMANCE
STANDARD**

**CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT**

ACTIVITY NUMBER 80	NAME MISCELLANEOUS WORK ACTIVITIES	DATE 01/13/05
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 Maintenance Supervisor		LIMITS ON WORK
PERFORMANCE CRITERIA Plan 8 labor hours per channel mile per year for miscellaneous maintenance work.		

CREW SIZE	WORK METHOD
<ul style="list-style-type: none"> 1 Maintenance Worker . . 1 TOTAL 	<ol style="list-style-type: none"> Obtain safety equipment, materials, and tools necessary for the day's work. Begin applicable safety procedures and/or traffic control. Clean up work site as necessary.
EQUIPMENT	
<ul style="list-style-type: none"> 1 Pickup Hand tools . . 	
MATERIAL	AVERAGE DAILY PRODUCTION
<ul style="list-style-type: none"> 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 85	NAME ENGINEERING	DATE 01/13/05
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 Director of Public Works or designee		LIMITS ON WORK
PERFORMANCE CRITERIA		

CREW SIZE		WORK METHOD
<ul style="list-style-type: none"> N/A TOTAL 	1. As deemed most cost effective.	
EQUIPMENT		
<ul style="list-style-type: none"> N/A 		
MATERIAL		AVERAGE DAILY PRODUCTION
<ul style="list-style-type: none"> 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 reimbursement billings.

Daily Work Activity Report

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. _____

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".

WITNESSETH:

WHEREAS, pursuant to Chapter 543 of the Nevada Revised Statutes, the DISTRICT may approve and fund projects to maintain flood control improvements;

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 provide reimbursement 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. Cost 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

Approved as to Form:

BY: _____
(Insert Chief Deputy District Attorney's Name)
Chief Deputy District Attorney

Date of Council Action: (CITY or COUNTY) OF _____
(or Commission Action)

ATTEST: BY: _____
(Insert Mayor/Board Chairman's Name), Title

(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

*Regional Flood Control District
Operations and Maintenance Manual
Amended January 13, 2005*

Maintenance Work Program Annual Budget

REGIONAL FLOOD CONTROL DISTRICT MAINTENANCE WORK PROGRAM ANNUAL BUDGET - FY 20XX-XX

MWP Facility #: _____
Facility Name: _____
MP Facility ID: _____

Entity: _____
Date Prepared: _____

Force Account/ Contract	Activity	Requested Work Plan Amount (\$)	Amended Work Plan Amount (\$)	Percent Complete	Scheduled Completion Date
	5 Inspect Channels				
	10 Clean & Repair Channels				
	15 Repair Lined Channel				
	20 Provide/Maintain Erosion Control				
	21 Provide/Maintain Dust Control				
	25 Clean & Inspect Drainage Ditches				
	30 Erosion Repair				
	35 Fence Repair				
	40 Vegetation Control - Chemical				
	45 Vegetation Control - Mechanical				
	50 Maintain Access Road				
	55 Clean & Repair Inlet/Outlet Structures				
	60 Repair Inlet/Outlet Structures				
	65 Clean Storm Sewer				
	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: _____