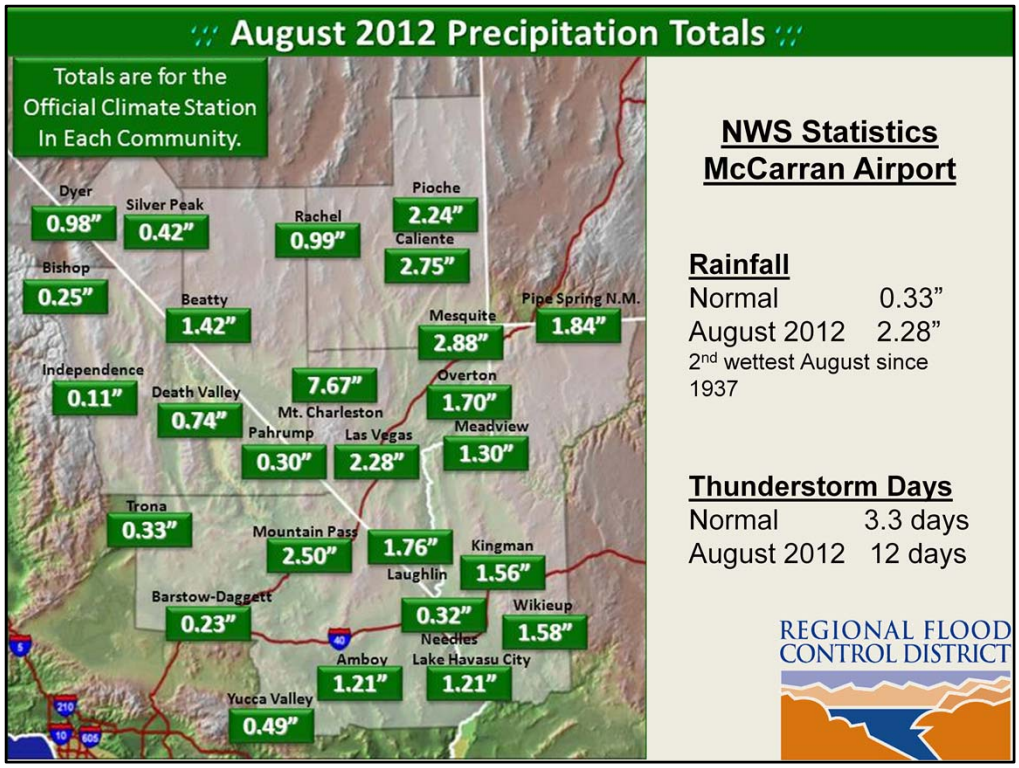

August 22, 2012



Clark County and all of Southern Nevada have seen a very active summer rainy season. There have been several isolated but significant rainfall events in July and August in addition to the August 22 event. The total rainfall measured by the National Weather Service for the month of August is 7x the normal monthly rainfall total for August. August 2012 was the 2nd wettest August in Ls Vegas since the NWS began keeping records 75 years ago in 1937.

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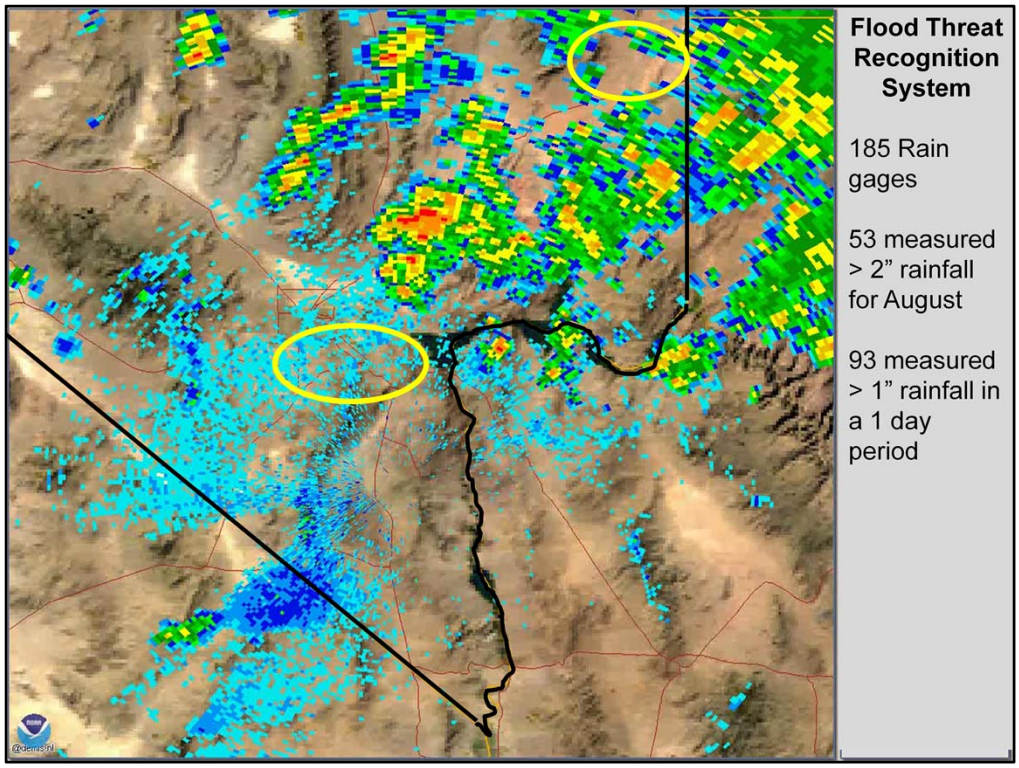

The rainfall data collected by the NWS is supported by the data from the District's Flood Threat Recognition System. We operate and maintain 185 rain gages located throughout the Clark County Area. 53 of these gages reported receiving more than 2" of rainfall during the month of August. There were 93 instances of FTRS gages measuring more than 1" in a day.

This video presents the weather radar loop for the late evening of August 21 through the afternoon of August 22. The two yellow ovals identify the location of Mesquite and the far south portion of the Las Vegas Valley that saw the most rain on August 22.

Notable, at the end of the radar loop, are the large intense cells that missed the Las Vegas Valley to the south.

August 22, 2012 Storm

- Mesquite
  - 13 FTRS rain gages measured more than 1.5” (over +5 hours)
  - 10 gages measured more than 2”
  - All three detention basins captured 6-8’ of runoff
  - No significant damage to public/private property

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If we focus on the august 22 storm in the Mesquite area, 13 of the District’s FTRS gages measured more than 1.5” of rain, generally within a 5 hour period. Ten of the gages measured more than 2” of rain in that period. Each of the detention basins in Mesquite (Jim Wilson (aka, Town Wash), Abbott Wash and Pulsipher Wash) functioned to capture runoff and significantly reduce the impacts downstream. It was reported to the District that one house had some flooding when runoff from hillside at the back of the property entered the residence and resulted in the need to replace some sheet rock.

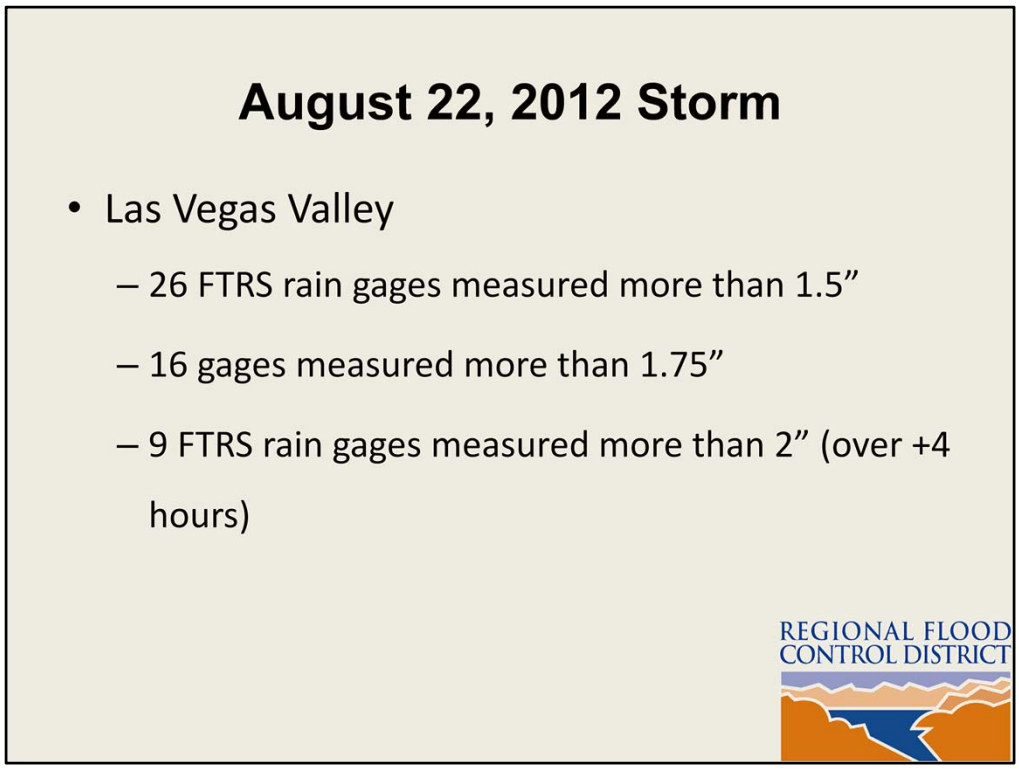
Here are a few photos of the aftermath of this storm. Jim Wilson (aka Town Wash) DB impounded 8.5 feet of runoff.

Pulsipher Wash DB captured 6.5 feet of runoff

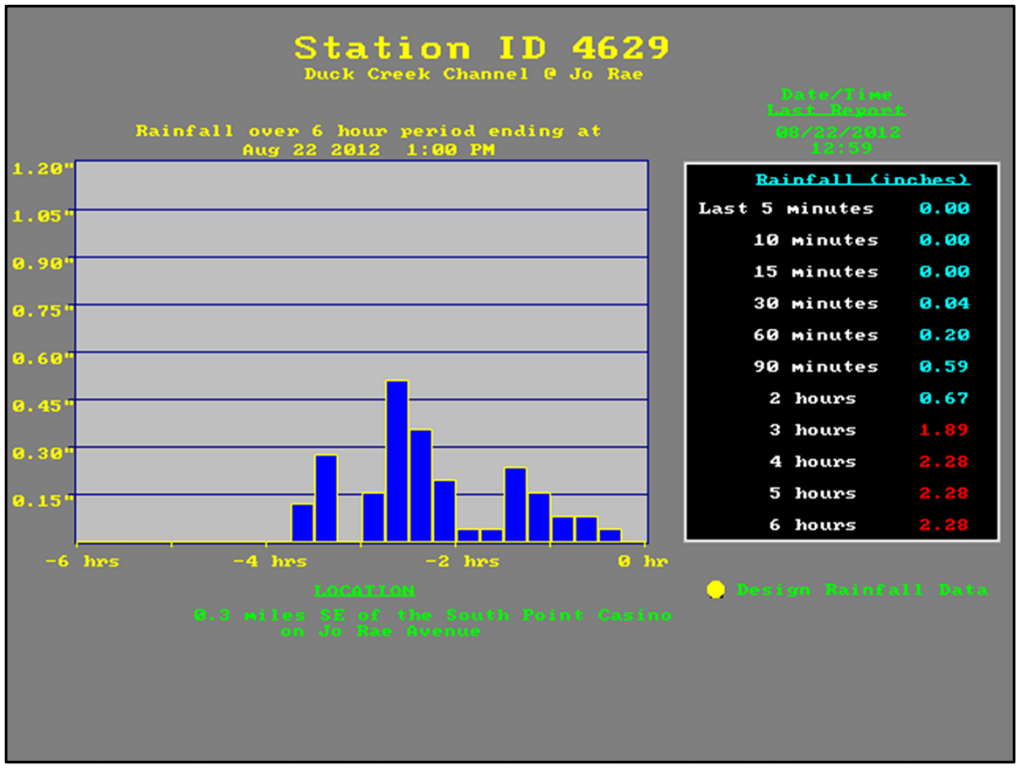
Damages in Mesquite were mostly limited to erosion of landscaped areas…

And clean-up of soils in the roadways.

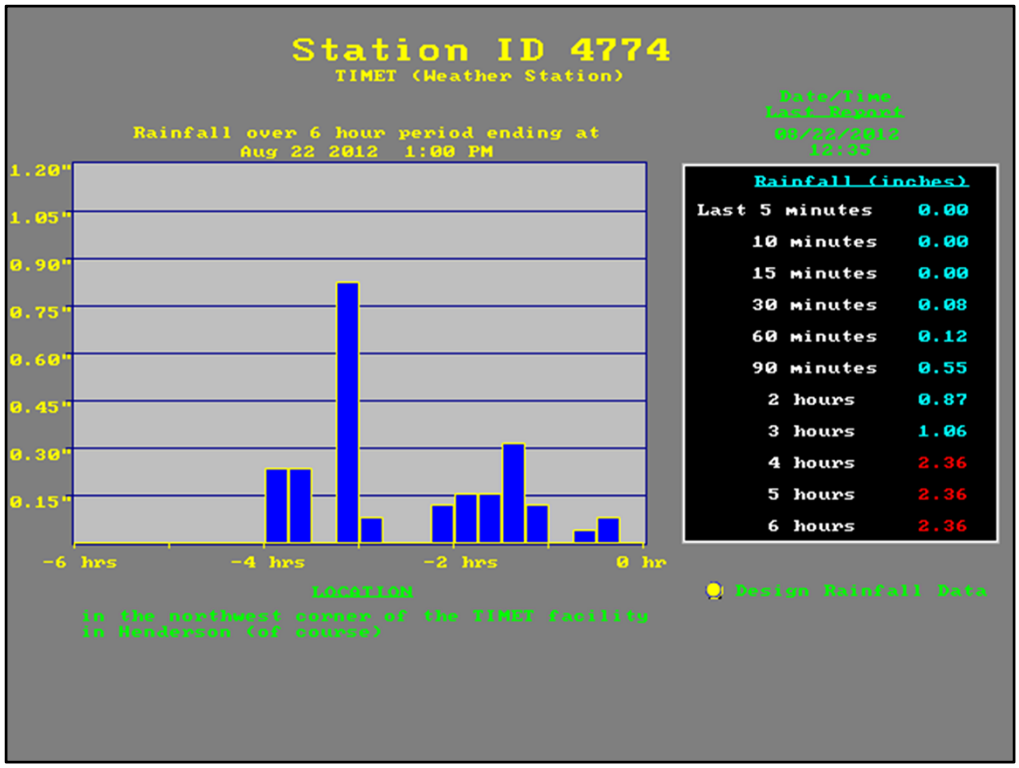
These reuse water lines were not in service at the time of the storm, but clearly they were damaged.



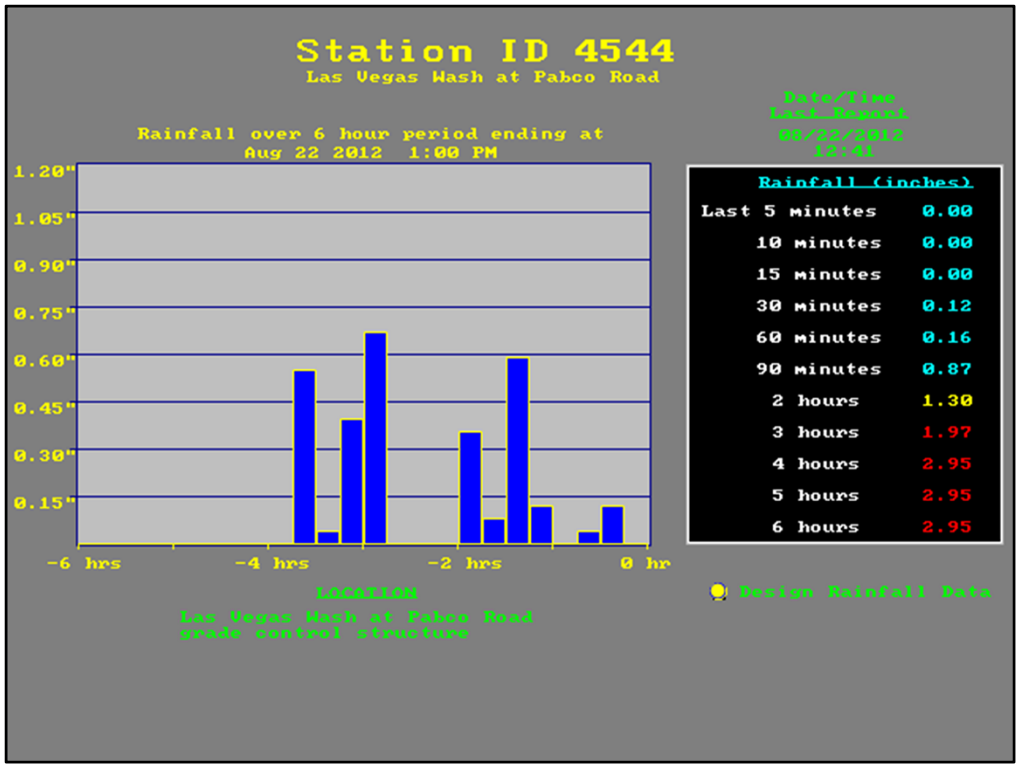
In the Las Vegas Valley, most areas saw at least 0.50” of rain on 8/22/12. Twenty-six of the District’s rain gages measured more than 1.5” of rain that day – 9 of those gages measured more than 2”. One gage, Las Vegas Wash at Pabco Road, measured 3.15” over the course of the day. However, most of the rain, particularly in the Henderson and south Valley area, fell within a 4 hour period.



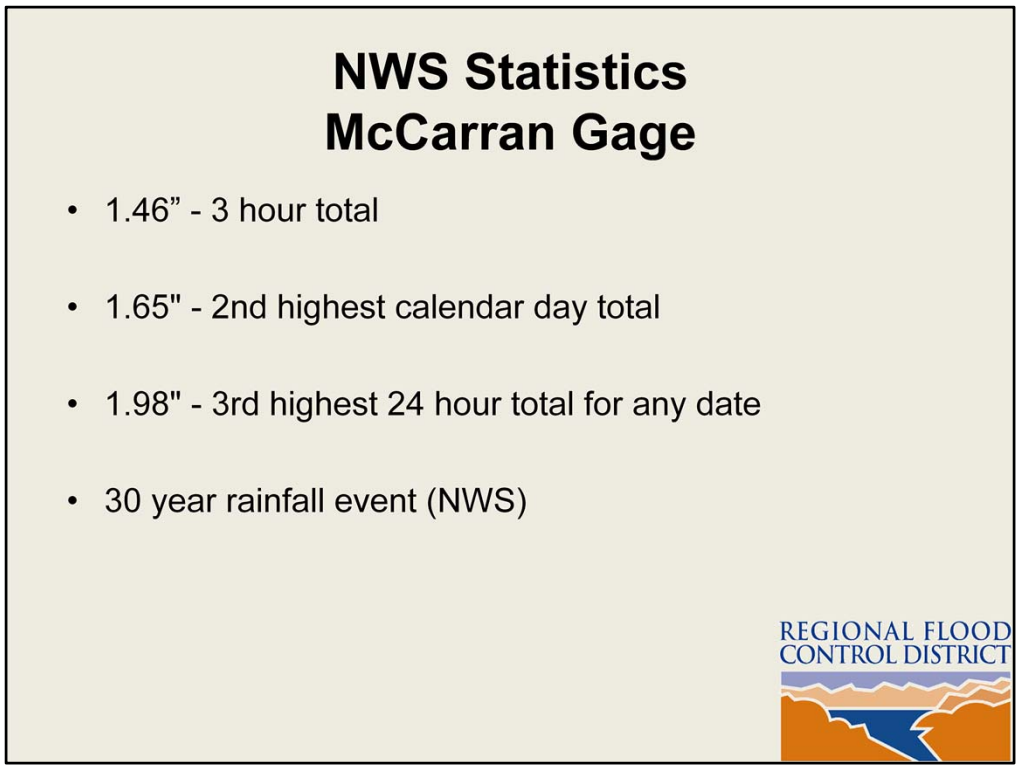
Here are a couple of slides to demonstrate the rainfall intensities during this event. Each vertical bar represents the rainfall during a 15-minute period. This was not particularly intense rainfall, but more than 2" rain fell in less than 4 hours.



Again, more than 2" rain in less than 4 hours. The peak rainfall collected in 15 minute is 0.83" – intense, but only 10-25 year return interval by the District's adopted standard.



Once again, not particularly intense, but nearly 3” or rain in 4 hours. The combination of a large volume of rain over a large area resulted in significant runoff.



This information is from the official NWS rain gage at McCarran airport where they measured 1.65” for the day, 1.46” of which fell within a 3-hour period. This was a 30 year rainfall based on statistics specific to the NWS rain gage at McCarran Airport. Many of the District’s FTRS gages measured considerably more than what was measured at McCarran. This is not unexpected as rainfall varies and is not uniform over an area.

Flooding and Damages

- Numerous instances of road closures due to flooding and/or debris on roadways
- Limited damages to private properties and public facilities
- Several water rescues
- One death
- Flood control infra-structure functioned as designed

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It is staff's understanding that "water rescues" were assisting stranded motorists whose vehicles stalled in flooded intersections, not "swift water" rescues.

August 22, 2012 Storm

Detention Basins

	Max Depth	Volume
Lower Duck Creek	8 feet	260 Aft
Duck Creek Railroad	5.3 feet	150 Aft
Upper Flamingo	5.7 feet	130 Aft
Tropicana	24 feet	110 Aft
Pittman East	13 feet	90 Aft
Pioneer	18 feet	90 Aft

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Here is some representative information on how the detention basins functioned. The Regional detention basins captured runoff from upstream areas and released the water at greatly reduced rates. Each of these volumes represents 20-25% of the storage capacities of these detention basins.

August 22, 2012 Storm

Channel Flow

	Max Depth	Discharge (est)
Pittman Wash at Stephanie	5.3 feet	5500 cfs
Duck Creek near Broadbent	5 feet	10300 cfs
Flamingo Wash at Nellis	3.3 feet	3420 cfs
Las Vegas Wash		
at Sahara (Desert Rose GC)	5.3 feet	3600 cfs
at Rainbow Garden Weir	5 feet	7870 cfs

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These discharges are ***estimates*** developed by the District and/or USGS and are subject to change. All of these flows are within the design capacity of the channels.

MPU flow
Pittman Wash at Stephanie 7480 cfs
Duck Creek at Broadbent 11,400 cfs
Flamingo at Nellis 11,000 cfs
Peak flow of record
Las Vegas Wash near Sahara 8100 cfs (7/8/99)
Las Vegas Wash at Lake Las Vegas 17,000 cfs (7/8/99)

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Las Vegas Wash at Charleston Blvd.

This is part of the project area that is being addressed in the Las Vegas Wash Sloan Channel to Cedar Avenue project. In June 2012 the Board approved Resolution 12-5 which set aside $35M for the design and construction of this project.
Channel is 90 feet wide
Channel depth is 12 feet
Discharge estimate is 3600 cfs; MPU flow rate is 14,400 cfs.
While it appears that the channel has adequate capacity at this flow rate, there is a 51" sanitary sewer pipe hanging from the bottom of the bridge.

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Flamingo Wash on the downstream (east) side of Eastern
Note that there is more flow in the two outs..de cells than there is in the middle three cells…

And here is the reason for that. Flow lifted a portion of the concrete approach to the Eastern Avenue culvert and partially blocked three of the cells. Fortunately there was no other damage that resulted from this blockage as the National Golf Course is on the upstream side of Eastern.

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The recently completed Flamingo Wash project that extends from Eastern Avenue to Nellis Blvd functioned well and flows were 2 – 3 feet deep throughout this reach. Flow during this event was approximately 3400 cfs.

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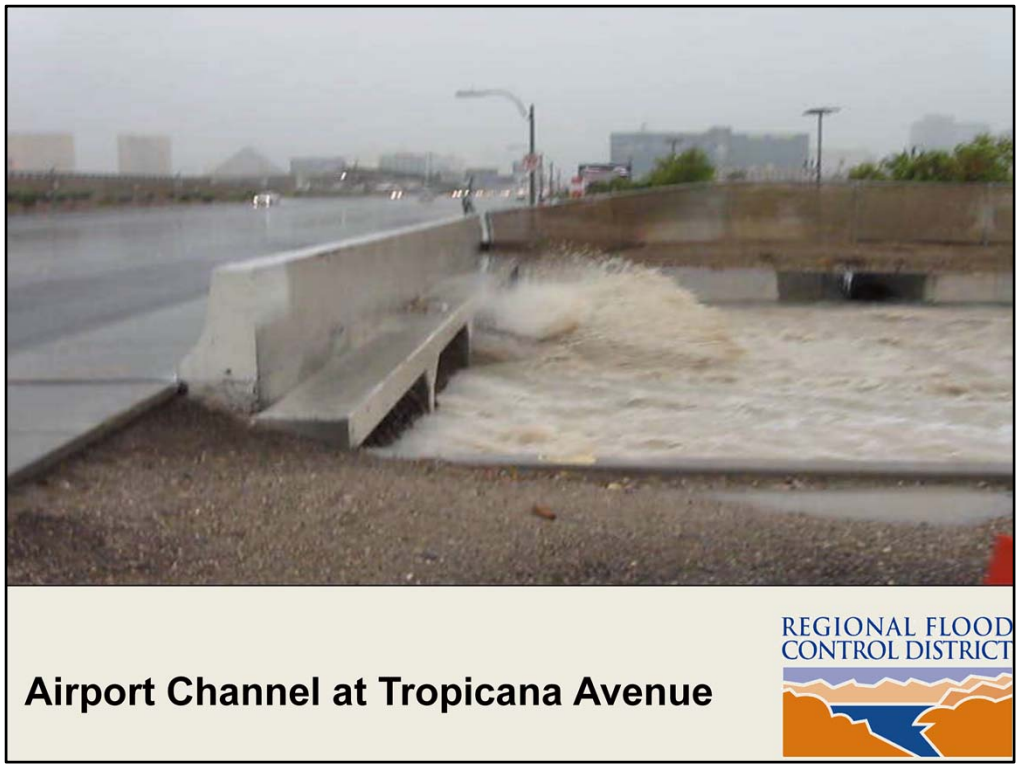

This channel is 18 feet wide and 5 feet deep. Even though this channel has a very mild slope (less than 0.5%) you can still see how quickly it flows and **how much energy** the flood flows contain.

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This video was shot just north of Galleria Drive. The channel is roughly 30 feet wide and 8 feet deep.
Flow is 5 1/4 feet deep
Discharge estimate is 5,500 cfs
Velocity estimate is 25+ fps (nearly 20 mph)

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This video was shot by staff with the US Geological Survey, one of the District's partners.
The channel is roughly 120 feet wide and 8 1/2 feet deep
Flow is 5 feet deep
Discharge estimate is 10,300 cfs
Velocity estimate is 20+ fps (15 mph)
Again it is clearly evident how much energy flood flows possess and how dangerous they are.

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And finally, from Boulder City this rescue video. The water appears to be 4-6 inches deep and the young man said he could not stand up in it so he sat in the channel hoping someone would happen along to help him. Fortunately help came in the form of Boulder City Public Works staff and a couple of good Samaritans who happened to be there - some 30 feet before he would have gone down the energy dissipater/drop structure.

We have made a copy of the presentation available on our FTP site for any who are interested.

Thank you - I would be happy to try to address any questions that you might have.