

# **Trip Report for Travel to Las Vegas and Phoenix HSAs From May 9<sup>th</sup> to May 13<sup>th</sup>, 2005.**

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## **PURPOSE OF TRIP:**

- ❖ To review January flooding in Nevada (Ursine, Beaver Dam State Park, Caliente, Kershaw-Ryan State Park, Mesquite, Bunkerville, and Overton) and Arizona (Beaver Dam and Littlefield);
- ❖ To visit potential flood hazards prior to peak snowmelt runoff,
- ❖ To visit with USGS prior to peak snowmelt runoff;
- ❖ To discuss implementation of distributed model for Las Vegas Wash;
- ❖ To visit future forecast points (Meadow Valley Wash and Muddy River Basin concerns; Lake Las Vegas concern);
- ❖ To determine or review bank full, minor, moderate, and major flood levels where appropriate; and
- ❖ To provide hydrologic program outreach to Overton and Clark County.
- ❖ Additionally, a visit to Bill Williams River National Wildlife Refuge, Cattail Cove State Park, Lake Havasu City, and Parker Dam was conducted to observe the potential impact if ever large flow releases from Alamo Dam were required. Such releases would require close coordination of statements between these HSAs with perhaps further assistance from the RFC.

**CONTACTS:** Sergeant Michael T. Dailey, Las Vegas Metropolitan Police Department, Overton  
Timothy E. Sutko, Senior Hydrologist, Clark County Regional Flood Control District  
Jon W. Wilson, USGS, Las Vegas Office

## **MONDAY MAY 9<sup>TH</sup> --- FIELD OBSERVATIONS AND DISCUSSIONS**

### **1) Meadow Valley Wash (MVW) nr Caliente (MVYN2)**

Driving to this site we stopped at the Highway 93 Bridge over MVW at the south-end of town. Here we estimated the flow to be 240 cfs. Between town and the gage, it was obvious that the local road 319 had received extensive flooding and damage. The site of the gage location had been washed out and therefore the USGS has moved the site downstream to a former location with approximately the same drainage area. Staff gage was reading 5.1 feet at new location at 1300.  
USGS Webpage reports 4.01 feet at 6.5 cfs for same time.  
Current rating has 0 flow at 3.49 feet.  
Current bank full stage is 13.0 feet.  
Current unofficial flood stage is 15.0 feet.

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<sup>1</sup> Bill Reed was accompanied by Barry Pierce on May 9<sup>th</sup> and by Barry Pierce and Tom Zickus on May 10<sup>th</sup> thru May 13<sup>th</sup>.

## 2) **Kershaw-Ryan State Park**

This State Park is upstream of the gage, MVYN2. The wash that runs out of the park has received recent stabilization in the form of gabions near the park entrance. The wash is likely not a large contributor to MVW flood flows; however, the park and Kershaw Canyon have had a history of flash floods. See <http://parks.nv.gov/kr.htm>.

## 3) **Caliente, Nevada**

At the north-end of town we stopped at the confluence of Clover Creek and MVW. During the January 2005 flooding, Clover Creek was a large contributor to MVW flood flows. At the time of the visit, it appeared that Clover Creek was contributing 1/4<sup>th</sup> of the combined flow. Here the combined flow was estimated at 240 cfs, the same as downstream.

## 4) **Beaver Dam Wash State Park**

Schroeder Dam was breached on April 6, 2005 due to flood damage and public safety concerns. Prior to breaching, the reservoir was 15-acres. We observed damage to the day use area above the former dam site. We also visited the area below the former dam. Beaver Dam Wash flows through a scenic canyon at the park. The park is located in a remote area at the end of a very long dirt road and is described as "Nevada's most primitive and rustic park." See <http://parks.nv.gov/bd.htm>.

## 5) **Beaver Dam Wash nr Enterprise, UT (BDWU1) SLC HSA**

This gage is located downstream of the park beyond the Utah-Nevada state border. We did not visit the gage since we did not want to trespass on private property because we had not received prior permission to do so. The USGS Cedar City office currently maintains this gage.

USGS Webpage reports 7.36 feet at 32 cfs at 1600.

Current rating has 0 flow at 5.53 feet.

Current unofficial bank full stage is 9.7 feet.

Current unofficial flood stage is 10.9 feet.

## 6) **Meadow Valley Wash at Eagle Canyon nr Ursine (MVEN2)**

This gage is downstream of Spring Valley State park and upstream of Ursine. At the time of our visit, approximately 1900, the stream was almost flowing over the road and had been recently doing so within the last few days.

Staff gage was reading 6.2 feet at time of visit and was about 1.5 feet below top of road.

USGS Webpage reports 6.36 feet at 131 cfs for same time.

Current rating has 0 flow at 3.21 feet.

Current bank full stage is 7.0 feet.

Current unofficial flood stage is 8.5 feet.

Note: If 3/4<sup>th</sup> of the estimated flow at MVYN2 is from MVEN2 then the travel time is 17 hours (USGS reports flow at MVEN2 as 181 cfs at 2000 05/08/2005). If the distance is 40 miles, then the average velocity would be 40 divided by 17 times 1.466667 = 3.45 feet/sec. Higher flows would travel faster; and lower flows, due to the braided paths through several fields may travel significantly slower.

## 7) **Spring Valley State Park (dam)**

The dam seemed to be operating such that the inflow we observed here above the dam--in the vicinity of the Stone Cabin Museum--was equal to the flow we observed below at MVEN2. The 59-acre reservoir is known as Eagle Valley Reservoir and was full at the time of our visit. See <http://parks.nv.gov/sv.htm>.

## 8) **Ursine, Nevada**

The town is located along MVW and at least one property was still sandbagged. The road into town from the north was closed due to prior flooding. The road from the south was open.

**9) Echo Canyon State Park (another dam)**

This reservoir downstream of Ursine on MVW is reported as 65-acres. Once again, it appeared that inflow was equal to outflow. See <http://parks.nv.gov/ec.htm>.

**TUESDAY MAY 10<sup>TH</sup> --- FIELD OBSERVATIONS AND DISCUSSIONS**

**10) Flamingo Wash at Decatur Blvd (FWDN2)**

This wash was dry at time of our visit. The wash at this site disappears in to three 10x10 ft culverts. Forecasts are provided by CBRFC for this site (1 hour time step).

Current rating has 0 flow at 9.9 feet.

Current bank full stage is 19.8 feet.

Current unofficial flood stage is 26.7 feet.

Minor, Moderate, and Major Flood stages were all estimated to be the same at 16 feet above 0 flow, i.e., a stage of 25.9 feet. This is in close agreement with current unofficial flood stage.

**11) GOWAN Detention Basin Outlet (GOWN2)**

This location was also dry at the time of our visit.

Forecasts are provided by CBRFC for this site (1 hour time step).

Current rating has 0 flow at 9.88 feet.

Current bank full stage is 13.0 feet.

Current unofficial flood stage is 14.5 feet.

Minor, Moderate, and Major Flood stages were all estimated at 24 ft.

Action stage was estimated at 17 feet.

Given the capacity of the box culvert and channel at this location it is likely that they will never be exceeded in the immediate vicinity of the gage; and therefore, it is recommended that the lower stages (current) continue to be used.

**12) Las Vegas Wash at Craig Rd (LVCN2)**

Again the channel was dry at the time of our visit. This is an ALERT gage located at a discontinued USGS gaging site (aka North Las Vegas Detention Basin Outlet at Craig Road).

Forecasts are **not** provided by CBRFC for this site.

Current rating has 0 flow at 0 feet.

Current bank full stage is 9.0 feet.

Current unofficial flood stage is 11.0 feet.

Minor, Moderate, and Major Flood stages were all estimated at 14 ft.

Action stage was estimated at 12 feet.

Given the capacity of the box culvert and channel at this location it is likely that they will never be exceeded in the immediate vicinity of the gage.

**13) Sloan Channel at Charleston Blvd (SCCN2)**

This location was flowing at the time of our visit.

Forecasts are provided by CBRFC for this site (1 hour time step).

Current rating has 0 flow at 10.02 feet.

Current bank full stage is 13.7 feet.

Current unofficial flood stage is 14.4 feet.

Minor, Moderate, and Major Flood stages were all estimated at 17 ft.

Action stage was estimated at 15 feet.

It is recommended that the current numbers be raised to the new estimated levels.

**14) Las Vegas Wash below Flamingo Wash (LWCN2) on golf course**

This location was flowing at the time of our visit.

Forecasts are provided by CBRFC for this site (1 hour time step).

Current rating has 1 cfs flow at 16.92 feet.

Current bank full stage is 24.2 feet.

Current unofficial flood stage is 27.9 feet.

These values may be reasonable since the gage is located at the downstream edge of a golf course.

However, suggest that the bank full be lowered to 23 feet and the unofficial flood stage be lowered to 27 feet.

**15) Las Vegas Wash at Sahara Ave (SAHN2) on golf course**

This location was flowing at the time of our visit.

Forecasts are provided by CBRFC for this site (1 hour time step).

Current rating has 0 flow at 7.75 feet.

Current bank full stage is 13.0 feet.

Current unofficial flood stage is 14.1 feet.

The gage is located on a golf course where the channel is unrestrained and more “natural.”

**16) Flamingo Wash at Nellis Blvd (FWNN2)**

This location was flowing at the time of our visit.

Forecasts are provided by CBRFC for this site (1 hour time step).

Current rating has 1 cfs flow at 9.40 feet.

Current bank full stage is 15.4 feet.

Current unofficial flood stage is 16.0 feet.

Minor, Moderate, and Major Flood stages were all estimated at 16 ft.

Action stage was estimated at 14 feet.

It is recommended that the action stage be added to our database.

**17) Las Vegas Wash at Pabco Rd (LVPN2)**

This location was flowing at the time of our visit.

Forecasts are provided by CBRFC for this site (1 hour time step).

Staff gage was reading 6.0 feet at 1600 corresponding to a flow of 233 cfs using current rating.

Flow was estimated as 240 cfs.

USGS Webpage reports 5.75 feet (below their rating) for same time.

Current rating has 100 cfs flow at 5.81 feet.

Current bank full stage is 11.9 feet.

Current unofficial flood stage is 13.5 feet.

**18) Las Vegas Wash abv 3 Kids Wash (KIDN2) proposed official forecast point**

This location was flowing at the time of our visit.

Forecasts are provided by CBRFC for this site (1 hour time step).

USGS Webpage reports 34 feet at 289 cfs for 1800 (approximately time of our visit).

Current rating has 0 flow at 33.36 feet.

Current bank full stage is 37.9 feet.

Current unofficial flood stage is 38.2 feet.

There is some local interest in making this an official forecast point.

**WEDNESDAY MAY 11<sup>TH</sup> --- OVERTON MEETING, FIELD OBSERVATIONS AND DISCUSSIONS**

**19) Meadow Valley Wash nr Rox (MVRN2)**

The flow at this location was estimated at 5 cfs at 1000 but had been higher (estimated at 25 cfs) earlier (overnight). The gage readings are erratic on the USGS webpage. In addition to diurnal flux (daily

diversions), the readings (that are reported from 12 to 17 cfs on 5/11) could have been impacted by recent bulldozer work on Service Road and bankment of nearby railroad that was damaged during January flooding or perhaps the need for temporary impoundment upstream. However, since the readings are still erratic, perhaps the gage has been impacted by sedimentation.

Note at these relatively low flows, the flows here are only about 2 % to 10 % of the flows upstream at Caliente.

Current rating table has 1 cfs at 7.68 feet.

Current bank full stage is 23.5 feet.

Current unofficial flood stage is 26.7 feet.

We estimated minor, moderate and major flood stages to be correspondingly: 14, 17, and 20 feet above 0 flow or roughly 21.5, 24.5, and 27.5 feet.

It is recommended that the unofficial flood stage be lowered to 21.5 feet and bank full stage be lowered to 20 feet.

## **20) Muddy River nr Moapa (MOAN2)**

The flow at this site is spring fed all year round. It is likely because this site is perennial that the river retains the name Muddy River below the confluence with MVW. However, during floods, MVW will likely always be the larger contributor of flow.

Inside electronic reading of stage was 0.78 feet at time of visit.

Staff gage was reading 0.80 feet.

Using current rating table 0.78 feet = 39 cfs and 0.8 = 40 cfs.

0 flow = 0 feet

Current bank full stage is 8.0 feet.

Current unofficial flood stage is 11.0 feet.

These values agreed with field estimates.

## **21) Confluence of Muddy River and Meadow Valley Wash**

As expected, both streams were flowing at the confluence. At the time of our visit, the flows of the streams seemed equal as viewed from the bridge.

## **22) Meeting at Overton**

At Overton we met with Sergeant Michael T. Dailey, Las Vegas Metropolitan Police Department, who is duty stationed in Overton. We discussed local flooding concerns including the low-water crossing of Muddy River and Bunkerville along the Virgin River. Sergeant Daily discussed the method he used to forecast flood flows in January and was very supportive of an official forecast point being established at Muddy River nr Glendale. Also discussed was the need to monitor California Wash. Barry Pierce informed him that Clark County has an ALERT gage on this wash that flows into Muddy River before MVW. Barry also showed him the Clark County Flood Control District Webpage: <http://www.ccrfcd.org> where water level and precipitation data for California Wash can be found.

## **23) Muddy River nr Glendale (MUDN2) proposed official forecast point**

This site was flowing at the time of the visit. Barry will be getting following up with Sgt. Dailey in Overton on what flows cause problems in Overton. Barry also has a case from Nov. 9 2004 with pictures and flows/stages from MUDN2 that will be a good starting point for Minor and Moderate Flooding. During the big event in January, the MUDN2 gage was out. The USGS later estimated flows at between 3000 and 5000 cfs. Major flooding likely lies somewhere in between

Staff gage reading was 6.5 feet on 5/11 at 1400.

Using current rating table 6.5 feet = 27 cfs indicating that at low flows this is a losing reach.

0 flow = 2.0 feet.

Current bank full stage is 20 feet.

Current unofficial flood stage is 26 feet.

#### **24) Bunkerville**

This community is along the banks of the Virgin River and could be impacted by out-of-bank flows. The town is more closely tied to Overton than Mesquite and looks to Overton for information.

#### **25) Virgin River at Mesquite (VMQN2)**

Extensive channel work is being conducted in the vicinity of the bridge. Although a gage is not located at this site, it is planned that a forecast will be provided by CBRFC in the near future. If the rating table for VLTA3 is used to approximate channel geometry at VMQN2 then:

Action stage would be 10 feet or approximately 10,000 cfs;

Bank full would be 13 feet or approximately 20,000 cfs; and

Flood stage would be 18 feet or approximately 40,000 cfs.

These values are similar to those assigned by SLC HSA for Littlefield (VLTA3), which is 10 miles upstream.

#### **26) Virgin River at Littlefield (VLTA3) SLC HSA but VEF CWA**

At the time of our visit, approximately 1600, the gage reported 4.78 feet = 1952 cfs using current rating.

Official Action Stage is 13.0 feet.

Official Bank Full is 13.0 feet.

Official Flood State is 14.0 feet.

#### **27) Beaver Dam Wash (BEAA3) SLC HSA but VEF CWA**

This community received extensive damage during the January flood and the channel has changed.

Current gage configuration does not measure all of the stream flow at low flows such as the flow at the time of our visit, 1730.

Staff gage reading was 8.46 feet corresponding to a flow of 605 cfs using current rating table.

Flow was estimated as similar to Muddy River near Glendale (27 cfs) and flow was way below bank full..

Current 0 flow is 5.14 feet.

Current Bank Full is 8.3 feet.

Current unofficial flood stage is 10.4 feet.

Estimated Bank Full stage to be 12 feet (assuming new rating curve with 8.46 feet = 27 cfs).

Estimated Flood stage to be 13 feet (assuming new rating curve with 8.46 feet = 27 cfs).

### **THURSDAY MAY 12<sup>TH</sup> --- FIELD OBSERVATIONS AND DISCUSSIONS**

#### **28) Lake Havasu City**

Height of lake was approximately 49 feet at the time of our visit. The lake level is closely controlled to prevent damage to lake front properties. Releases from Alamo Lake flow down the Bill Williams River into Lake Havasu created by Parker Dam. Both California and Arizona (CAP) withdrawal water from this lake.

#### **29) Parker Dam**

Flow of Colorado River below dam was approximately 10,000 cfs at the time of our visit.

#### **30) Bill Williams River National Wildlife Refuge**

Here we discussed the somewhat confusing issue of high releases from Alamo Dam. Such flows could cause a rise in Lake Havasu. A dam failure could be devastating if it occurred when both dams were full. Rises in Lake Havasu would first impact National Wildlife Refuge facilities and secondly facilities at Cattail Cove State Park.

#### **31) Cattail Cove State Park**

A quick tour of park waterfront facilities was conducted. Campground is located at approximately 55 feet (6 feet above the lake level).

## **FRIDAY MAY 13<sup>TH</sup> --- USGS AND CLARK COUNTY MEETING**

### **32) USGS and Clark County Regional Flood Control District Meeting**

A meeting was held with Timothy E. Sutko, Senior Hydrologist, Clark County Regional Flood Control District and Jon W. Wilson, USGS, Las Vegas Office at 9:00 am at the local USGS office. It provided an opportunity to discuss NWS plans for flood warnings at several gages, and USGS plans for these gages. For example, it was interesting to learn: 1) that it may be some time before the Virgin River nr Overton (VRON2) gage destroyed during January flooding will be replaced in that the NPS will have to do an EIS prior to their approval and 2) that the USGS Las Vegas office plans to replace satellite telemetry at all of their gages with radio (Alert like) telemetry. The USGS jokingly suggested we would notice the latter change when we stopped receiving data, we suggested we would like to be contacted beforehand. Actually the USGS wanted to insure we would continue to receive data and had planned dual transmissions until we indicated a permanent switch would not impact us. Bill Reed provide an overview of NWS plans using the CBRFC website for illustration of current operations. Everyone thought the meeting was productive and contact numbers were exchanged.