

RAINFALL EVENT REPORT

August 9-10, 1997

prepared by

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Localized severe thunderstorms typical of the summer rainy season in the Southwest caused flash flooding that the Las Vegas Valley has not experienced in years. While heavy rainfall was experienced in Las Vegas and North Las Vegas on the evening of August 9, the worst conditions occurred in the Boulder City and Henderson areas on August 10. Rain gage data collected by the District indicates that this latter storm approached or exceeded the 100-year rainfall event in some locations. There was one death attributed to the runoff from this storm.

On Saturday, August 9, rainfall in the Las Vegas Valley began around 5:00 pm. While approximately 2 inches of rain was recorded by three District rain gages on the westside of Las Vegas, the worst problems in that area appeared to have been wind related. Newspaper accounts reported that the wind snapped a number of power poles in the West Charleston Blvd and Buffalo Drive area causing large power outages in the northwest part of the Valley. The largest rainfall depths were recorded in the North and Northeast portions of the Valley as this storm moved across that area. Rainfall depths in excess of one inch were recorded at Floyd Lamb State Park and near Craig Rd and Highland Dr. At this latter location, 0.94" of the total 1.10" occurred within 15 minutes. Staff with the City of Las Vegas reported that a few roads were closed for a short period of time as a result of the rainfall on the westside of the Valley. These closures included the Charleston Underpass, Western/Wall, Western/Wyoming, Commerce/Utah, and Valley View north of Sahara Ave. City of North Las Vegas staff reported that large amounts of sediment and runoff resulted in the closure of Losee Rd between Craig Rd and Lone Mountain Rd, as well as Craig Rd between Lawrence St and Losee Rd.

Water level gages on the Las Vegas Wash at Lake Mead Blvd and near Sahara Ave indicated that the runoff in the Wash was approximately four feet deep as a result of this brief rainfall. The US Geological Survey's preliminary estimate of this flow is 3100 cfs. Up to 10 acre feet of runoff were detained in the Confluence Detention Basin near Nellis AFB, and 25 acre-feet in the Oakey Detention Basin.

During this event, District staff contacted City of North Las Vegas personnel to advise them of the intense rainfall and potential for street flooding. Staff also attempted to contact personnel at Lake Las Vegas to advise them of the potential for large flows impacting that development. Unable to contact more than the Lake Las Vegas answering service, District staff contacted City of Henderson staff to advise them of the situation.

Water level gages located at the Oakey Detention Basin, Carey/Lake Mead Detention Basin and on the Las Vegas Wash at Lamb Blvd did not function correctly during this event. Steps are being taken to

identify and correct these problems.

On Sunday, August 10, a line of severe thunderstorms moved through the Henderson and Boulder City area in the early afternoon. Four District rain gages in that area reported in excess of two inches of rainfall during this event, most of it in less than one hour. The rain gage at the Mission Hills Detention Basin reported 2.24" during this storm; 1.26" of this total occurred within 15 minutes. The rain gage on Black Mtn between Boulder City and Henderson reported a total of 2.83" of which 2.56" fell within one hour. A bucket survey by the National Weather Service indicated that between three to four inches of rain may have fallen in areas below the Mission Hills Detention Basin. It is apparent that this storm approached or exceeded a 100-year event at some locations.

As would be expected from a storm of this magnitude, there was a significant volume of runoff, erosion and property damage. In Boulder City, there was an estimated \$350,000 in damages to uninsured private properties, and \$1.85 million to public facilities. Henderson estimates that it suffered at least \$3.6 million in damage to public facilities. Most of the public facilities damaged were roadways, drainage systems and park areas. Both of these municipalities declared themselves to be in states of emergency owing the extent of damages incurred.

The runoff from this storm forced the closure of a number of roadways in the Henderson and Boulder City area, including US-95 and Boulder Highway south of Sunset Dr. Most of the roadways were cleared of debris and open to traffic by the following morning.

Flood control facilities in Henderson generally functioned as designed and lessened the impacts of the storm to a large degree. The newly completed Western Interceptor captured a significant amount of flow emanating from the hills south of Henderson and diverted it into the Mission Hills Detention Basin. That detention basin detained approximately 100 acre-feet of runoff. A similar volume of runoff was detained by the Equestrian Detention Basin. Both of these detention basins discharge into the C-1 Channel system which was flowing at or near capacity for most of its length. While that channel system suffered a significant amount of scour in the unlined sections, the lined sections appeared to have held up well. One notable exception occurred immediately above Lake Mead Dr where a few of the channel's concrete side panels were damaged.

In Boulder City, the Public Works Department reported that many of the City's streets were impassible during the rainfall and some suffered loss of pavement as a result of the flooding. The intense rainfall and subsequent runoff caused severe erosion throughout the area. The transport and deposition of debris to inlet and intake structures severely impacted the effectiveness of drainage facilities.

The detention basin in the vicinity of St. Jude's Boy's Ranch was filled by runoff to within three feet of its spillway. The box culvert under US-93 into Hemenway Channel clogged with debris and there was minor erosion along the Channel to Lake Mountain Dr. From Lake Mountain Dr to the end of the Channel, a reach of approximately two miles, the erosion was much more severe, being three to five feet deep and up to 20 feet wide. This severe erosion occurred to the unlined bank portions of the Channel that bordered the lined low-flow channel bottom. The intake structure to the Ville Dr detention basin

clogged with debris, resulting in only up to one foot of storm flow entering that basin. Instead of entering the detention basin, the flow crossed over Ville Dr and deposited approximately one foot of sediment in Hemenway Park. Flow exiting the Park ran down the shoulders of Ville Dr causing extensive erosion and the loss of gas, sewer and water lines located in the Ville Dr right-of-way. Severe damage due to both erosion and sediment deposition was suffered at the Ville Dr basin ballfields. A small detention basin north of Aaron Way was completely filled and flow exited the basin via the spillway into Aaron Way. The debris load in this basin caused the collapse of the intake structure. The east half of Pacifica Way at the downstream end of the Hemenway Channel system was lost to erosion.

Storm flow also exceeded the capacity of the Buchanan Channel at three street crossings and caused damage to the street pavement as well as extensive erosion damage along the westside of Buchanan Dr. While the Georgia Channel generally functioned as designed, it also suffered significant erosion downstream from its confluence with the Buchanan Channel. In the West Airport area, flow off of Black Mtn caused sufficient damage to three mobile homes that they were condemned, and resulted in the loss of 40 feet of retaining wall at the mobile home park.

The news media reports included the account of one death in Henderson during this event when a man stepped into rapidly moving water in the street, was swept off of his feet and under a vehicle where he drowned. There were other accounts of successful rescues of people who attempted to drive through flood flows.

Attached to this report are summaries of the rainfall and runoff data collected by the District.

Clark County Regional Flood Control District
August 9, 1997 Rainfall Totals (inches)

Station ID	4029	4049	4054	4059	4069	4109	4114	4154
08/09/97								
1830	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1815	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00
1800	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1745	0.12	0.04	0.00	0.00	0.00	0.04	0.00	0.00
1730	0.00	0.00	0.00	0.00	0.00	0.59	0.04	0.28
1715	0.04	0.00	0.00	0.12	0.28	0.24	0.43	0.63
1700	0.00	0.20	0.00	0.94	0.35	0.00	0.08	0.00
1645	0.12	0.35	0.08	0.00	0.04	0.00	0.00	0.00
1630	0.16	0.20	0.28	0.04	0.00	0.00	0.00	0.00
1615	0.08	0.16	0.04	0.00	0.00	0.00	0.00	0.00
1600	0.16	0.00	0.08	0.00	0.00	0.00	0.00	0.00
1545	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS:	0.79	1.14	0.47	1.10	0.67	0.87	0.55	0.91

All times are Pacific Standard Time

- 4029** Kyle Canyon Detention Basin
- 4049** Tule Springs State Park
- 4054** Lone Mountain Drive and Hualapai Way
- 4059** ¼ mile N of Craig Road near Highland Drive
- 4069** Craig Road at Losee Road
- 4109** near Hollywood Blvd entrance to Nellis AFB
- 4114** Las Vegas Blvd North, ¼ mile E of Lamb Blvd
- 4154** Confluence Detention Basin

Clark County Regional Flood Control District
August 10, 1997 Rainfall totals (inches)

Station ID	4754	4764	4774	4784	4789	4794	4854
08/10/97							
1700	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1645	0.00	0.00	0.04	0.00	0.00	0.00	0.00
1630	0.00	0.04	0.00	0.00	0.04	0.00	0.00
1615	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1600	0.00	0.08	0.00	0.16	0.08	0.00	0.00
1545	0.00	0.00	0.00	0.04	0.00	0.00	0.16
1530	0.04	0.04	0.00	0.00	0.00	0.00	0.00
1515	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1500	0.04	0.00	0.08	0.08	0.00	0.04	0.00
1445	0.12	0.04	0.04	0.16	0.12	0.20	0.08
1430	0.12	0.12	0.00	0.16	0.00	0.08	0.00
1415	0.04	0.04	0.31	0.24	0.04	0.08	0.00
1400	0.04	0.00	0.16	0.08	0.00	0.00	0.00
1345	0.04	0.04	0.12	0.20	0.00	0.08	0.00
1330	0.08	0.00	0.04	0.24	0.00	0.16	0.00
1315	0.00	0.00	0.04	0.08	0.00	0.00	0.00
1300	0.16	0.04	0.04	0.08	0.35	0.12	0.28
1245	0.00	0.04	0.00	0.00	0.00	0.00	0.75
123	0.00	0.00	0.00	0.08	0.00	0.00	1.02
1215	0.12	0.16	0.00	0.00	1.10	0.20	0.51
1200	0.35	1.26	0.00	0.20	0.31	0.35	0.04
1145	0.16	0.28	0.08	0.47	0.08	0.24	0.00
1130	0.04	0.08	0.12	0.08	0.04	0.00	0.00
1115	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1100	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTALS:	1.34	2.24	1.06	2.32	2.17	1.54	2.83

All times are Pacific Standard Time

- 4754** Equestrian Detention Basin – near Equestrian Drive and Magic Way
- 4764** Mission Hills Detention Basin – near Foothills Drive and College Way
- 4774** TIMET – on Timet industrial complex
- 4784** C-1 Channel below Drake Channel
- 4789** East Henderson 2 – near Equestrian Drive and Foothill Drive
- 4794** East Henderson 1 – 3 miles E of Boulder Highway and Lake Mead Drive
- 4854** Boulder City – on BC communications site 1 ¼ miles NW of Boulder City

