

**LAKE MARGHERITE
FCD GAGE ID# 59007 (4678)**

STATION DESCRIPTION

LOCATION – The gage is located on a tributary wash to Indian Bend Wash, just prior to the tributary wash entering the manmade Lake Marguarite. The gage is on the east side of Hayden Road, approximately one-quarter mile south of Via Linda Road. Latitude 33° 33' 49.5" N, Longitude 111° 53' 59.1" W. Located in the NW1/4 SE1/4 of S36 T3N R4E in the Paradise Valley 7.5-minute USGS quadrangle.

ESTABLISHMENT – The gage was installed November 24, 1997

DRAINAGE AREA – 4.91 square miles, via USGS Streamstats.

GAGE – The gage is a pressure transducer type located on the left side of the left half-moon culvert. The PT diaphragm is at gage height 0.80 feet, levels of February 28, 2019.

There are no staff gages at this location.

There is no crest stage gage at this location.

ZERO GAGE HEIGHT – Zero gage height is defined as the low point of the low flow channel. It is equivalent to 1,320.796 feet NAVD88.

HISTORY – No previous history at this site. Gaging established on November 24, 1997.

REFERENCE MARKS –

BM-LKMRGT is an FCD brass cap located on the right upstream side of the channel and Hayden Road. It is at elevation 11.714 feet gage height and 1,332.510 feet NAVD88, levels of February 28, 2019.

RP-1 is a chiseled 'X' on the right upstream wingwall. It is at elevation 5.750 feet gage height and 1,326.546 feet NAVD88, levels of February 28, 2019.

RP-2 is the lowest downstream bolt securing the end of the transducer gage housing. It is at elevation 1.036 feet gage height, levels of February 28, 2019.

RP-3 is a chiseled 'X' on top of the upstream headwall directly above the low flow channel. It is at elevation 12.624 feet gage height, levels of February 28, 2019.

RP-4 is a chiseled 'X' on the left upstream wingwall. It is at elevation 5.629 feet gage height and 1,326.425 feet NAVD88, levels of February 28, 2019.

CHANNEL AND CONTROL – The two identical arch culverts are the control at this location. The minimum channel elevation occurs in the left culvert, and is at elevation 0.00 feet gage. The channel upstream of the culverts is trapezoidal and grass lined, with numerous older eucalyptus trees, which do not provide much impedance to the flow. The two elliptical arch culverts are 10 feet high by 27.25 feet. The culvert length is 127 feet. The slope of the culverts is 0.0016. The control below 1.5 feet gage height is gravity flow. Above about 1.5 feet gage height, the two culverts begin to be the control.

RATING – The current rating is Rating #2 and was developed from surveyed cross section data from late 2018 following the October 2018 runoff events. Data were used to create an HEC-RAS model that modeled the culvert flows and the transition from grass lined channel to concrete channel. For the upstream channel, its capacity is about 3,600 cfs, which exceeds the predicted 500-year flood event (USGS Streamstats.) The culverts under Hayden Road can pass significantly more water which indicates that Hayden Road would not overtop except under very extreme hydrologic conditions.

Past Rating

The current rating is Rating #1. The rating was developed by R. W. Cruff using two methods. First, the Manning equation was used for depths of 1.5 feet and less. At these depths, the culvert is not yet controlling the flow. Above 1.5 feet, the culverts are controlling, and the HY8 culvert analysis program was used. The final rating curve was drawn to smoothly transition between the two analyses. The analysis is dated December 9, 1997.

DISCHARGE MEASUREMENTS – Low flow discharge measurements could be made upstream of the culverts. Indirect measurements upstream of the gage could be made for higher flows.

POINT OF ZERO FLOW - Gage elevation of 0.00, which is in the left culvert (from the upstream side).

FLOODS – The peak event of 500 cfs and 3.01 feet gage height occurred on October 2, 2018.

REGULATION – None known

DIVERSIONS – The upper watershed is completely intercepted and diverted by the CAP canal.

ACCURACY – Fair

JUSTIFICATION – Monitor flood flows at this location for the Scottsdale Flood Warning System.

UPDATE – July 30, 2019
DE Gardner