

RED MTN. FWY. LEVEE AT McDOWELL ROAD
FCD GAGE ID# 80007

STATION DESCRIPTION

LOCATION - The gage is located at the Red Mountain Freeway and McDowell Road in Mesa. Latitude 33° 27' 57.4" North; Longitude 111° 40' 41.9" West. Located in S06 T1N R7E, in the Buckhorn 7.5-minute quadrangle.

ESTABLISHMENT - The gage was installed June 23, 2008.

DRAINAGE AREA – 28.1 mi² at this location.

GAGE - The gage is a pressure transducer type instrument. The PT diaphragm is at gage height 0.35 feet, levels of March 1, 2018. The PT is located on the south side of McDowell Road on the left side of the west culvert.

There is no crest-stage gage at this site.

There is no staff gage at this site.

ZERO GAGE HEIGHT – Zero gage height is at the center of the lower culvert and is the elevation of the pressure transducer. Zero gage height elevation is equal to 1,569.19 feet NAVD 1988.

HISTORY – Gaging established on June 23, 2008 at a newly constructed culvert under McDowell Road. No previous gaging history at this location. This gage was first rated only for flow. However, six years of data indicate that this is more a storage gage, and a volume rating was added in July 2014.

REFERENCE MARKS

BM-6637 is an FCDMC brass cap located between the two pass through culverts. It is at elevation 12.661 feet gage height and 1,581.850 feet NAVD88, levels of March 1, 2018.

RM-1 is a rebar located on the right side of the left culvert wingwall about halfway up. It is at elevation 8.185 feet gage height and 1,577.374 feet NAVD88, levels of March 1, 2018.

RM-2 is a chiseled 'X' on top of the left upstream headwall. It is at elevation 15.884 feet gage height and 1,585.073 feet NAVD88, levels of March 1, 2018.

RM-3 is a chiseled 'X' on top of the right upstream headwall. It is at elevation 19.619 feet gage height and 1,588.808 feet NAVD88, levels of March 1, 2018.

RM-4 is a chiseled 'X' located on the concrete ground in front of the transducer gage as located on March 1, 2018. It is at elevation -0.013 feet gage height and 1,569.176 feet NAVD88, levels of March 1, 2018.

RP-1 is a bolt securing the transducer conduit. It is at elevation 4.085 feet gage height, levels of March 1, 2018.

RP-2 is a chiseled 'X' on the left wingwall of the west culvert. Elevation 7.80 feet gage height, levels of June 23, 2008, and elevation 1,577.02 feet NAVD 1988, levels of February 26, 2009.

RP-3 is the TBM from the February 2009 RTK survey. The mark is a rebar located about 16 feet west of the station tube. Elevation 19.34 feet gage height, or 1,588.56 feet NAVD 1988, levels of February 26, 2009.

CHANNEL AND CONTROL – The site doesn't really convey water as much as it is measure of level at this location. Flow is controlled by the main outlet at north end of the structure.

There are two 14' high by 16' wide culverts that pass water under McDowell Road northward to the principal outlet. The west culvert is lower at elevation 0.0 feet gage height. The east culvert is at elevation 3.92 feet gage height. The west culvert is 240 feet in length and the east culvert is 225 feet in length. Slopes in the culverts are very mild, especially the west culvert where the slope is 0.00022 feet/feet.

Above 12.91 feet gage height, water will spill over the levee onto the Red Mountain Freeway SR202L, verified by RTK survey of February 2009.

Above 14.4 feet gage height, the Spook Hill FRS spillway downstream begins to flow.

The culverts will be the control at about 5 feet and above. Otherwise the lower culvert acts as an open channel. The levee will act as a long weir when water overtops it.

RATING - The current rating is Rating #1, dated June 23, 2008. The discharge rating is directly related to the rating at the principal outlet once a pool forms.

The volumetric rating is the current rating, (#3) for Spookhill FRS gage ID# 74707.

DISCHARGE MEASUREMENTS - Direct measurements would be difficult to obtain except for low stages, and even then, it is difficult due to standing water. Discharge measurements could be made in the outlet channel north of the dam outlet.

POINT OF ZERO FLOW - The PZF is at about 0.0 feet gage height.

FLOODS – There was a large impoundment, about 10% capacity, just after installation of this gage on July 10, 2008.

REGULATION – The road crossings and the levee regulate flows downstream. Inflow from the Signal Butte Floodway is regulated by Signal Butte FRS.

DIVERSIONS - None known

ACCURACY - Fair

JUSTIFICATION - Monitor levels for potential freeway closure by ADOT. ADOT to monitor and make road closures.

UPDATED - February 8, 2024
DE Gardner