

GILA RIVER AT 116TH AVENUE

FCD GAGE ID #70707

LOCATION – The gage is located in the Gila River on the downstream side of the center pier of the 116th Avenue bridge. The transmitter is located in a metal box on a platform in the center of the bridge directly above the PT. The gage location is immediately below the confluence of the Salt and Gila Rivers. Latitude N33° 23' 24"; Longitude W112° 18' 28". Located in the NW1/4 NW1/4 SE1/4 S36 T1N R1W in the Tolleson 7.5-minute quadrangle.

ESTABLISHMENT – January 21, 1999

DRAINAGE AREA – 42,726 square miles

GAGE – The gage is a pressure transducer type instrument located on the downstream side of the bridge on the center (9th) pier. The transducer elevation is at 0.20 feet gage height, levels of April 26, 2018

There are no known staff gages at this location. A mark was made on the northernmost, downstream pier to establish a painted staff gage in the future.

There are no crest-stage gages at this location.

ZERO GAGE HEIGHT - Zero gage height is defined as the concrete footing of the pier on which the transducer gage is located. It is equivalent to elevation 929.737 feet NAVD88, levels of April 26, 2018.

HISTORY – No previous history at this location. From November 7, 1997 to October 14, 1998 a gage was located on 115th Avenue at the culverts passing beneath 115th Avenue. That gage was removed following completion of the new 116th Ave. bridge. Gaging equipment was installed on the bridge in December 1998 and January 1999. The original transducer line was abandoned and replaced at some unknown time. The elevation changed about a foot lower, as determined in the survey of April 26, 2018.

REFERENCE MARKS –

BM-50707 is an FCDMC brass cap located on top of the right bank about 30 feet downstream of the Avondale Boulevard bridge. It is at elevation 18.677 feet gage height and 948.414 feet NAVD88, levels of April 26, 2018.

BM-2 is an FCDMC brass cap located downstream of the river access ramp, on the right bank. It is at elevation 17.723 feet gage height and 947.460 feet NAVD88, levels of April 26, 2018.

ERM48: Elevation 930.75 feet M.S.L., gage height 3.61 feet. Brass cap in hand hole in center of 115th Avenue. It was not found during the survey of April 26, 2018.

RM-1 is a chiseled 'X' concrete footing of the bridge pier that is below the previous PT conduit. It was found buried during the April 26, 2018 survey and not dug out.

RM-2 is a rebar in the north side of the concrete footing of the transducer pier. It is at elevation 0.805 feet gage height and 930.542 feet NAVD88, levels of April 26, 2018

RM-3 is a rebar in the south side of the concrete footing of the transducer pier. It is at elevation 0.848 feet gage height and 930.585 feet NAVD88, levels of April 26, 2018.

RM-4 is a chiseled 'X' near the top of the concrete access ramp on the right bank. It is at elevation 17.256 feet gage height and 946.993 feet NAVD88, levels of April 26, 2018.

RP-1 is a chiseled 'X' on the southeast corner of the low flow culvert crossing of the abandoned 115th Avenue road crossing upstream of the bridge. It is at elevation 3.540 feet gage height and 933.277 feet NAVD88, levels of April 26, 2018.

RP-2 is a chiseled 'X' on the concrete footing of the northernmost, downstream pier near the right bank. It is at elevation 1.875 feet gage height and 931.612 feet NAVD88, levels of April 26, 2018.

CHANNEL AND CONTROL – This location is just downstream from the confluence of the Salt and Gila Rivers. The river is heavily vegetated with willow, salt cedar, and other large plant material.

There are levees on both the left and right banks of the channel. Control for the channel is influenced by the vegetation. At low flows, a small low flow channel conveys flow. Outside of the low flow channel and until the entire channel is flowing, exact control is unknown.

RATING – The rating, Rating No. 1, is from an HEC-RAS analysis of the channel downstream from the bridge. Discharges are only given in Rating No. 1 up to 100,000 cfs. Somewhere above 100,000 cfs flow begins to flow around the levee in the right bank upstream of the levee. Also, channel roughness is probably underestimated in the multiple profile run used in Rating No. 1 as the RAS model was for the 100-year event. Finally, changes in roughness due to vegetation growth may greatly affect the stage-discharge relation at this station. It is recommended that comparisons be made with

SRP release estimates and the USGS Gila River @ Estrella Parkway station to refine the rating at this site.

DISCHARGE MEASUREMENTS – Bridge measurements are possible but would require a long time and muscle power to winch the weight up and down. It is probably satisfactory to use data from SRP releases and USGS data at Estrella Parkway to refine the rating at this site.

POINT OF ZERO FLOW – Undetermined, but flow occurs below the current transducer level, of perhaps 200 cfs.

FLOODS – The largest flow recorded since installation in 1998 occurred on February 13, 2005 with a peak stage of 9.15 feet gage height and discharge of 49,394 cfs. There have been larger events that passed this site in the past.

ACCURACY – Poor until stage measurements can be obtained for known discharges from SRP releases and Salt River @ Priest and Gila @ Estrella Parkway gage data.

DIVERSIONS - Diversions occur from Granite Reef Dam on the Salt River and from Coolidge Dam on the Gila River. Diversions are used for municipal and agricultural purposes.

REGULATION - Four dams on the Salt River, two dams on the Verde River and at least one dam on the Gila River heavily regulate natural flows in the watershed above this gage location. Small, routine flows in the Gila River at this location are due mainly to irrigation return and effluent from wastewater treatment. Major flows are due mainly to heavy snowfall followed by rainfall producing significant runoff that cannot be contained by the upstream dams.

JUSTIFICATION – Monitor flows in the Gila River for flood warning of Holly Acres area levee. The FIS topographic maps indicate that flow begins around the Holly Acres levee at around 944 ft MSL upstream of the bridge.

UPDATE - October 25, 2023
 ES Thomas