

**SANTA CRUZ RIVER AT SR 84**  
**FCD GAGE ID# 0788**

**STATION DESCRIPTION**

**LOCATION** – The gage is located in Pinal County between Stanfield and Casa Grande. The gaging equipment is located on the left bank on the downstream side of the SR 84 bridge over the Santa Cruz River, approximately one mile east of the Francisco Grande Hotel. Latitude N 32° 52' 47", Longitude W 111° 49' 43". Located in the SW1/4 SE1/4 SE1/4 S21 T6S R5E in the Casa Grande West 7.5-minute quadrangle.

**ESTABLISHMENT** – The gage was established March 16, 1994.

**DRAINAGE AREA** – Undetermined

**GAGE** – The gage is a pressure transducer type instrument located on the center pier of the highway bridge. The PT diaphragm elevation is -0.05 feet gage height, levels of April 30, 2003.

There are three staff gages at this location. The center staff gage is on the opposite face of the pier with the transducer and crest-stage gages. This staff gage reads directly in gage height. A staff gage is located on the downstream face of a pier near the east bank. Add 2.3 feet to staff readings to get gage height. A staff gage is located on the downstream face of a pier near the west bank. Add 2.2 feet to staff readings to get gage height. All levels are from April 30, 2003.

There are two crest gages at this location, located near the pressure transducer. The lower crest gage has a pin elevation of 1.01 feet gage height and the upper crest gage has a pin elevation of 4.95 feet gage height, both levels of April 30, 2003.

**ZERO GAGE HEIGHT** - Zero gage height is defined as 1,344.07 feet NGVD29. It is defined as the zero point on the painted staff gage on the center pier near the transducer and crest-stage gages. Elevation is based on the ADOT brass cap, RM-1.

**HISTORY** – No known history prior to gage establishment. The Flood Control District of Maricopa County established the station March 16, 1994. The original gage datum was defined using PZF from a September 1, 1994 survey as 0.0 feet gage datum. Two four-foot crest stage gages were installed on July 23, 1997. The gage datum was redefined to correspond with the painted staff gage (white with black numbers incremented in tenths) after the August 20, 1997 survey. The new datum was applied to the gage record beginning with Water Year 1997. The new datum is 2.56 feet lower than the previous datum through end of Water Year 1996. Slope area survey markers were installed and

surveyed May 18, 2000. The slope area reach is approximately 800 feet downstream from the gage. Gage elevations and datum were surveyed and verified on April 30, 2003.

**REFERENCE MARKS** –

RM1 – is an ADOT brass cap near the center of the upstream side of the SR 84 bridge. Elevation of 1,356.29 feet NGVD29 is stamped on the cap. Gage height elevation is 12.22 feet, levels of April 30, 2003.

RM2 – is the concrete at the base of pier on the downstream side of the bridge that the PT, CSGs and staff gage are mounted. Elevation –0.11 feet gage height, levels of August 20, 1997.

RM-SNTRZ is a FCD brass cap located just to the west of the station standpipe. Elevation 11.33 feet gage height or 1,355.40 feet NGVD29, levels of April 30, 2003.

RP1 is the concrete ground directly in front of the PT. Elevation -0.13 feet gage height, levels of April 30, 2003.

RP2 is the lower downstream anchor bolt for the lower crest-stage gage. Elevation 2.04 feet gage height, levels of April 30, 2003.

**CHANNEL AND CONTROL** – The channel is earthen lined both upstream and downstream of the gage. There are levees on both banks up and downstream. Vegetation in the channel may impact flows by varying the roughness during events. Vegetation was moderate up to about 2 feet as observed April 27, 2011.

The control for this site is relatively insensitive and is channel control through the range of stages until the bridge becomes impacted at high stages.

**RATING** – The current rating is Rating #3 developed by T. W. Lehman for Water Year 1997. A datum change occurred and was applied to WY1997. Rating #2 was developed by R. W. Cruff in 1995 to include two indirect discharge measurements to the original rating. The original rating was developed by T. M. Donaldson following installation of the gage. This rating was done using an HEC-2 model of surveyed cross sections for a step backwater analysis.

**DISCHARGE MEASUREMENTS** – Low flows could be measured directly by wading downstream of the bridge. The channel becomes straight following the bend just downstream of the gage. A slope area reach is monumented approximately 800 feet downstream from the bridge.

Three slope-area cross sections are located at this site. The slope area reach is approximately 800 feet downstream from the gage in the channel beyond the initial curve following the bridge.

Cross section one is located approximately 800 feet downstream of the bridge. XS1LB is a 3/4-inch rebar painted white on the left bank. Elevation 8.94 feet gage height, levels of May 18, 2000. XS1RB is a 3/4-inch rebar painted white on the right bank. Elevation 7.60 feet gage height, levels of May 18, 2000.

Cross section two is located approximately 210 feet downstream from cross section one. XS2LB is a 3/4-inch rebar painted white on the left bank. Elevation 8.22 feet gage height, levels of May 18, 2000. XS2RB is a 3/4-inch rebar painted white on the right bank. Elevation 6.83 feet gage height, levels of May 18, 2000.

Cross section three is located approximately 170 feet downstream from cross section two. XS3LB is a 3/4-inch rebar painted white on the left bank. Elevation 7.87 feet gage height, levels of May 18, 2000. XS3RB is a 3/4-inch rebar painted white on the right bank. Elevation 6.83 feet gage height, levels of May 18, 2000.

**POINT OF ZERO FLOW** – The PZF was found to be –1.63 feet gage height, levels of August 20, 1997.

**FLOODS** – Two slope area measurements in 1995 indicate that a flood of 2,500 cfs at 5.04 feet gage height occurred at an unknown date. The other measurement had a peak discharge of 360 cfs at 2.52 feet gage height on January 7, 1995.

**REGULATION** – There are several small diversions upstream that incidentally regulate flows.

**DIVERSIONS** – There are several small diversions upstream that provide stock tanks and to a lesser extent, irrigation.

**ACCURACY** – Fair

**JUSTIFICATION** – Monitor significant flows into the Gila River below Maricopa Road for better estimation of impacts on Holly Acres area of the lower Gila River upstream of Estrella Parkway.

**UPDATE** - July 20, 2011  
D E Gardner