HASSAYAMPA RIVER AT BOX CANYON
FCD GAGE ID# 53507

STATION DESCRIPTION

LOCATION - The gage is located on the right bank of the Hassayampa River in the box canyon area of the river, northwest of Wickenburg. Latitude N34° 02' 42.2", Longitude W112° 42' 36.3". Located in the SW1/4 SE1/4 S07 T8N R4W in the Sam Powell Peak 7.5-minute quadrangle.

ESTABLISHMENT - The gage was installed by the Flood Control District on November 17, 1983 in the abandoned USGS gage stilling well. The USGS had operated a continuous gage at this site from 1946 to 1982.

DRAINAGE AREA - 416 mi^2

GAGE - The gage is a pressure transducer type instrument located in the stilling well on the right bank of the river. The PT diaphragm is at gage height 3.15 feet or 2,241.16 feet NAVD88, levels of November 18, 2021.

There is no useful staff gage at this location.

There are 3 crest gages at this location.

Crest gage #1 is the lower gage. It has a pin elevation of 3.57 feet gage height, levels of November 18, 2021.

Crest gage #2 is the middle gage. It has a pin elevation 8.50 feet gage height, levels of November 18, 2021.

Crest gage #3 is the uppermost gage. It has a pin elevation of 13.00 feet gage height, levels of November 18, 2021.

ZERO GAGE HEIGHT – Zero gage height is defined as 2,238.014 feet NAVD88. It is based on zero being equivalent to zero gage height on a staff gage that no longer exists. All references below are based on that elevation.

HISTORY - The USGS collected annual peaks from this site in Water Years 1925, 1927, 1937, and 1938. The USGS operated a continuous station at this site from May 1946 to September 1982. The Flood Control District established a gage at this site in November 1983. The channel is subject to significant changes during major events. A survey is recommended following major flows, and every two or three years. In 2021 two additional benchmarks were added to allow for RTK base to be setup on site to survey

the channel below. They are located on the top of the right bank about 60 feet above the channel bottom.

REFERENCE MARKS –

RM-HASSBOX - is an FCDMC brass cap high on top of the right bank. It is not tied into gage datum. It is at elevation 2,289.051 feet NAVD88, levels of January 10, 2022, and is equivalent to 51.25 feet gage height. (N: 1108775.53; E: 459649.41)

BM-50535_E is an FCDMC brass cap located on top of the right bank about 25 feet easterly from RM-HASSBOX. It is at elevation 2,292.453 feet NAVD88, levels of January 10, 2022. (N: 1108763.58; E: 459706.47)

BM-50535_N is an FCDMC brass cap located on top of the right bank about 20 feet northerly from RM-HASSBOX. It is at elevation 2,291.035 feet NAVD88, levels of January 10, 2022. (N: 1108797.41; E: 459645.57)

RM-1 (USGS RM-1) is an FCDMC brass tablet located on a rock outcrop on the left bank, approximately 140 feet upstream of the gage cross section. It has been destroyed several times by vandals. It was replaced most recently in November 2021. It is at elevation 6.012 feet gage height and 2,244.026 feet NAVD88, levels of November 18, 2021.

RP-1 – Is the top bolt on concrete, upstream side of gage on the right bank. It is at elevation 8.398 feet gage height and 2,246.412 feet NAVD88, levels of November 18, 2021.

RP2 – Is the bottom bolt on concrete, upstream side of gage on the right bank. It is at elevation 5.584 feet gage height and 2,243.598 feet NAVD88, levels of November 18, 2021.

RP-3 is a bolt located on the stilling well about 2 feet below the middle opening. It is at elevation 4.285 feet gage height, levels of November 18, 2021.

There are nine permanent cross section markers located at and below the gage. Elevations are in gage height.

XS1 - This cross section is at the gage. XS1L is at elevation 9.46 feet gage height and XS1R is at elevation 7.73 feet gage height, levels of October 27, 2020.

XS2 - This cross section is located approximately 106 feet downstream from XS1. XS2L is at elevation 10.43 feet gage height and XS2R is at elevation 8.62 feet gage height, levels of October 27, 2020.

XS3 - This cross section is located approximately 121 feet downstream from XS2. XS3L is at elevation 5.96 feet gage height and XS3R is at elevation 11.51 feet gage height, levels of October 27, 2020.

XS4 - This cross section is located approximately 104 feet downstream from XS3. XS4L is at elevation 7.25 feet gage height and XS4R is at elevation 12.22 feet gage height, levels of October 27, 2020.

XS5 - This cross section is located approximately 135 feet downstream fromXS4. XS5L is at elevation 5.84 feet gage height and XS5R is at elevation 11.17 feet gage height, levels of October 27, 2020.

XS6 - This cross section is located approximately 140 feet downstream from XS5. XS6L is at elevation 6.24 feet gage height and XS6R is at elevation 6.29 feet gage height, levels of October 27, 2020.

XS7 - This cross section is located approximately 97 feet downstream from XS6. XS7L is at elevation 10.43 feet gage height and XS7R is at elevation 11.77 feet gage height, levels of October 27, 2020.

XS8 - This cross section is located approximately 107 feet downstream from XS7. XS8L is at elevation 4.78 feet gage height and XS8R is at elevation 10.64 feet gage height, levels of October 27, 2020.

XS9 - This cross section is located approximately 110 feet downstream from XS8. XS9L is at elevation 16.02 feet gage height and XS9R is at elevation 5.15 feet gage height, levels of October 27, 2020.

CHANNEL AND CONTROL – The channel is mostly straight downstream of the gage for at least 2,000 feet. Both banks are almost vertical with small terrace overbanks before the bank becomes vertical rock.

The control for low flows are distributed among many small rivulets within the main channel. Flows above about 200 cfs will begin to converge into a single flow. Due to heavy off-road traffic and human made diversions, the low flow changes often.

RATING – The current rating is Rating #10 applied for Water Year 2021. The rating was developed recent (October 2020) survey data, using an HEC-RAS model.

DISCHARGE MEASUREMENTS - Low flows can be measured directly by wading. Higher flows can be measured using indirect methods. However, high water marks are often difficult to identify.

POINT OF ZERO FLOW - The PZF is 2.7 feet gage height as of October 27, 2020. Historically, the PZF has changed many times but has tended to remain within a narrow one-foot band between 2 and 3 feet gage height. Only in 1998 and 1999, and now in 2014 has the low point in the channel fallen below 2 feet gage height.

FLOODS – A verified flood of 26,000 cfs and 18.9 feet gage height, occurred on January 21, 2010. A verified flood of 19,000 cfs at 16.15 feet gage height occurred on February 12, 2005. A discharge of 3,800 cfs verified by slope - area occurred on September 26, 1997. The peak discharge of record was recorded by the USGS of 58,000 cfs at 34.6 feet gage height from a slope - area upstream of the gage, September 5, 1970.

REGULATION - Hassayampa Lake regulates approximately 2 square miles of the uppermost part of the watershed.

DIVERSIONS - Several small diversions for irrigation near Wagoner, many miles upstream.

ACCURACY - Fair, subject to large changes in bed conditions.

JUSTIFICATION - Monitor flows in the Hassayampa above Wickenburg and Martinez Creek for flood warning to the town of Wickenburg.

UPDATE - January 11, 2022
D E Gardner