

**WHITLOW RANCH DAM
FCD GAGE ID# 63307**

STATION DESCRIPTION

LOCATION – The dam is located in Pinal County approximately 20 miles east of Apache Junction and 11 miles west of Superior. The dam is upstream of Queen Valley on Queen Creek. Latitude N 33° 17' 57", Longitude W 111° 16' 13". Located in the NW1/4 NW1/4 SE1/4 S36 T1S R10E in the Florence Junction 7.5-minute quadrangle.

ESTABLISHMENT – The District established gaging on January 8, 1998. The COE collected stage data at the dam since it was completed in 1960.

DRAINAGE AREA – 143.5 mi²

GAGE – The gage is a non-submersible pressure transducer set up as a float gage. The orifice elevation was found to be at 11.73 feet gage height, levels of January 24, 2019.

There are 25 staff gages on the upstream side of the dam. They display in feet above mean sea level elevation with the zero being the invert of the inlet at elevation 2,056.000 feet M.S.L. A table at the end of this document lists the elevation conversions to gage height and NAVD88.

There are no crest gages at this location.

ZERO GAGE HEIGHT – Zero gage height is defined as the invert of the inlet at the principal outlet. In terms of the staff gages at the dam it is equivalent to 2,056.000 feet M.S.L. It is also equivalent to 2,057.750 feet NAVD88.

HISTORY – The dam was completed on August 18, 1960. The District began gaging with the outlet on January 8, 1998. The gage was originally a float gage. The current gage is a non-submersible pressure transducer. The base value was set in M.S.L. when the gage was a float. The non-submersible PT base value is in gage height.

REFERENCE MARKS –

BM-RP-1 is Corps of Engineers brass cap monument located to the left of the top of the structure near the access road on the rock slope of the hill. It is at elevation 147.007 feet gage height and 2,204.757 feet NAVD88, levels of January 23, 2019.

RM-1 is a pin located in a 4-inch capped pipe near station 7+15. It is at elevation 142.133 feet gage height and 2,199.883 feet NAVD88, levels of January 23, 2019.

RM-2 is a rebar on top of the dam to the right of the station house. It is at elevation 143.11 feet gage height and 2,200.861 feet NAVD88, levels of January 23, 2019.

RM-3 is a chiseled 'X' on the left side of the upstream headwall at the principal outlet. It is at elevation 15.066 feet gage height and 2,072.816 feet NAVD88, levels of January 23, 2019.

RP-1 is a chiseled 'X' on a concrete pad in front of the station house. It is at elevation 143.119 feet gage height and 2,200.869 feet NAVD88, levels of January 23, 2019.

RP-2 is the top of a fence girder near RM-3 on the left side of the principal outlet. It is at elevation 16.120 feet gage height and 2,073.870 feet NAVD88, levels of January 23, 2019.

CHANNEL AND CONTROL – The principal outlet is a 66-inch concrete pipe that passes under the dam, and is 700 feet in length. There is an emergency spillway located well north of the main structure.

PRINCIPAL OUTLET / EMERGENCY SPILLWAY – The principal outlet consists of an intake tower and a culvert pipe. The intake tower is 22 feet wide, 16 feet long and 20 feet high. The surface area of the openings in the tower equal 337 square feet. The elevation of the invert of the inlet is 0.000 feet gage height, or 2,056.0 feet M.S.L. and 2,057.750 feet NAVD88, levels of January 23, 2019. From the design, the elevation of the invert of the outlet is -6.0 feet gage height, or 2,050.0 feet M.S.L., and 2,051.750 feet NAVD88. The length of the outlet culvert is given as 700 feet from the design.

The emergency spillway is located approximately 4,000 feet north of the main dam. The spillway is a broad crested weir with a 345 foot crest length. The elevation of the spillway crest was found to be at 2,167.750 feet NAVD88 by RTK levels of January 23, 2019. It is equivalent to 110.000 feet gage height.

The top of dam elevation is given as 143.0 feet gage height. A level survey of January 23, 2019 confirmed this.

RATING – The current discharge rating is Rating #1 and is taken from the design manual for the dam.

The current capacity rating is Rating #1 and is taken from the design manual for the dam.

DISCHARGE MEASUREMENTS – Not practical given the outlet works.

POINT OF ZERO FLOW – The PZF for the principal outlet is 0.000 feet gage height at the invert of the inlet to the outlet. The PZF for the emergency spillway is at 110.400 feet gage height, levels of January 23, 2019.

FLOODS / SIGNIFICANT IMPOUNDMENTS – Peak recorded by the FCDMC gage was on February 12, 2005 with a peak stage of 58.2 feet and 6,965 acre-feet.

REGULATION – Whitlow Ranch Dam regulates natural flows of Queen Creek.

DIVERSIONS – There are diversions from the water that passes through the dam on a continual basis.

ACCURACY – Fair to good

JUSTIFICATION – Monitor levels at the dam for public safety

UPDATE – December 13, 2023
D E Gardner

STAFF GAGE INFORMATION

Staff Range In M.S.L.	Surveyed Elevation	Actual M.S.L. Elevation	Actual NAVD88 Elevation	Actual Gage Height Elevation	Deviation from expected Gage Height
2060 – 2075	2071.00	2070.45	2072.20	14.45	-0.55
2075 – 2080	2078.00	2077.56	2079.31	21.56	-0.44
2080 – 2085	2082.00	2081.71	2083.46	25.71	-0.29
2085 – 2090	2087.00	2086.68	2088.43	30.68	-0.32
2090 – 2095	2092.00	2091.65	2093.40	35.65	-0.35
2095 – 2100	2097.00	2096.99	2098.74	40.99	-0.01
2100 – 2105	2102.00	2102.11	2103.86	46.11	0.11
2105 – 2110	2107.00	2107.07	2108.82	51.07	0.07
2110 – 2115	2112.00	2112.05	2113.80	56.05	0.05
2115 – 2120	2117.00	2117.09	2118.84	61.09	0.09
2120 – 2125	2122.00	2122.10	2123.85	66.10	0.10
2125 – 2130	2127.00	2127.11	2128.86	71.11	0.11
2130 – 2135	2132.00	2131.98	2133.73	75.98	-0.02
2135 – 2140	2137.00	2136.92	2138.67	80.92	-0.08
2140 – 2145	2142.00	2142.18	2143.93	86.18	0.18
2145 – 2150	2147.00	2147.17	2148.92	91.17	0.17
2150 – 2155	2152.00	2152.19	2153.94	96.19	0.19
2155 – 2160	2157.00	2157.04	2158.79	101.04	0.04
2160 – 2165	2163.00	2163.09	2164.84	107.09	0.09
2165 – 2170	2168.00	2168.17	2169.92	112.17	0.17
2170 – 2175	2172.00	2172.16	2173.91	116.16	0.16
2175 – 2180	2177.00	2177.21	2178.96	121.21	0.21
2180 – 2185	2182.00	2182.19	2183.94	126.19	0.19
2185 – 2190	2186.00	2186.17	2187.92	130.17	0.17
2190 – 2195	2192.00	2192.24	2193.99	136.24	0.24