

SANTA RITA WATER & MINING COMPANY

In 1874, the discovery of placer gold in the Eastern slopes of the Santa Rita Mountains in what was to become known as the Greaterville Mining District led to a small gold rush the following year. The Greaterville area proved to be the largest and richest placer deposit in Southern Arizona at that time. The miners quickly discovered that water was almost as precious as gold.

Normally they would wash the sand and gravels with water using rockers and pans to separate the gold but the mountain arroyos were generally dry. One of the nearest more reliable water sources was Gardner Canyon. Miners hauled sacks of dirt to the few running streams or carried water to their claims in canvas or goatskin bags packed on the backs of burros (See Figure 1). The rich deposits that could repay these efforts were worked out by 1886 and most miners moved on.



Figure 1. Photo of a picture on a Kentucky Camp Display Board

By 1900, hydraulic mining had become well established in the placer fields of California. In this technique, the ground is excavated by means of high-pressure streams of water and the gold bearing gravels are run into a sluice where the gold was extracted by gravity or amalgamation (See Figure 2). Hydraulic mining could quickly reach deeply buried deposits or move large quantities of gravel to create economies of scale in working low-value deposits. The development of hydraulic mines required significant investments of capital because elaborate water supply systems had to be constructed.



Figure 2. Photo of a picture on a Kentucky Camp Display Board of a typical Hydraulic Mining

A California Mining Engineer named James B. Stetson thought he could solve the water problem. He conceived a grand scheme to channel runoff from the Santa Rita's spring snow melt into a reservoir system that would hold enough water to last 10 months. The water would be brought to Boston Gulch by a series of canals and pipes. There, the water would make it possible to use hydraulic mining to extract gold from ores too poor to mine by other methods. In September 1902, McAneny, Stetson and three other investors formed the Santa Rita Water and Mining Company and built the water system that we can still see

the remnants of today.

Construction of the water system was started in January 1903 and was completed in the fall of 1904. The system collected water from the watersheds of Big Casa Blanca and Gardner Canyons and transported it to Boston Gulch. The total water system is about 8.5 miles in length and consists of a combination of dams, intakes, open ditches (about 5.5 miles), pipes, penstocks, tunnels and valves and depending on the source, cost from \$200,000 \$250,000 to construct. The ditch gradient was about 0.25 per cent or 15 feet per mile. This gradient allowed the water to flow just fast enough to reduce siltation of the ditches and just slow enough to reduce erosion. The ditches passed through two tunnels, a 925-foot tunnel that connected the ditch in Casa Blanca Canyon to the rest of the system and a 300-foot tunnel on Dead Horse Mesa. The whole system was by gravity flow so pipes were used to transport the water across the canyons and up to the next ridge. A 24-inch pipe was used to cross Cave Canyon and a 20-inch pipe from the collector on Dead Horse Mesa across Fish Canyon to the distribution valves above Boston Gulch. Fifteen and 9-inch pipes were also used to distribute water to the working pits. The pipe segments were made of rolled steel sheets that were riveted together to secure the seam. One end of the pipe was compressed so that it would fit into the adjoining segment. The segment interiors were lined with asphalt and the exterior of the pipe was also coated with asphalt to reduce leakage. Indications are that the pipe segments were delivered by rail to the rail siding at Sonoita and then hauled overland to the project. The main distribution line terminated on the ridge just to the West of Boston Gulch where two large gate valves still remain. From these gate valves, water was distributed to the seven placer pits by smaller pipes and hoses. It is estimated that the water pressure at the working placer pits was about 1,000 pounds. A 1-inch pipe also delivered water to a cistern (See Figure 3) located on the ridge between Boston and Kentucky Gulches where it was subsequently distributed to the Kentucky Camp area.



Figure 3. Water Cistern on Ridge between Boston and Kentucky Gulches

In 1904, a limited hydraulic mining operation was started in Boston Gulch (to the west of Kentucky Gulch) to show that the system developed sufficient water pressure and to prove the concept. Phone lines connected Kentucky Camp with the Tent Camp and with the sluice gate and penstock operators to control the release of water into the system. The test ran for about six weeks. The water system evidently worked well as evidenced by the several placer pits that were excavated in the area. The recovery of gold, though, was another story. It is estimated that only about \$2,000 worth of gold was recovered during the test. Before the operation could really get going, James Stetson was killed on May 21, 1905 when he fell from a window of the third floor of the Santa

Rita Hotel in Tucson. He had been consulting with the company's attorney and was scheduled to meet with McAneny and G.R. Comings, another investor, the following day. The cause of the fall has never been determined.

Water System Description: Although the system gathered water from the entire watershed of Big Casa Blanca Canyon, the official start of the system was at Bear Spring where water from the spring flowed into Big Casa Blanca Creek. A diversion dam was created (where the Arizona Trail crosses the creek) that diverted water from the creek into a ditch that followed on a contour around Ditch Mountain. The ditch also collected water runoff from Ditch Mountain. This ditch had periodic sluices (See Figure 4) installed so the water level in the ditch could be controlled. Water from the ditch then flowed through the 925-foot tunnel under the ridge that separated Big Casa Blanca from Gardner Canyon (the spring at the Tunnel exit is called Tunnel Springs). Water exiting the tunnel then flowed into Gardner Creek that had gathered water from the entire Gardner Canyon watershed. A diversion dam a short distance downstream diverted the water from Gardner Creek into another ditch that carried the water around an unnamed hill. This ditch crossed a small ravine where a dam (Stetson's Dam – See Figure 5) was constructed to create a small water storage reservoir. From the dam, the ditch continued around the contour of the hill to the place where the water entered a penstock (see Figure 6) that controlled entry into a 24-inch pipe. The water in the pipe then flowed across Cave Canyon, past the Apache Springs Trailhead (See Figure 7) and then was dumped into another ditch high on the side of Dead Horse Mesa. Water in this ditch then flowed through a 300-foot tunnel (See Figure 8) under a high point on the mesa



Figure 4. Sluice Gate Remains



Figure 5. Stetson's Dam



Figure 6. Penstock

and then around the mesa to another penstock (See Figure 9) where it entered a 20-inch pipe that carried it across Fish Canyon and up to the large terminal valves See Figure 10) on the ridge above Boston Gulch. Water was then distributed to the several hydraulic mining pits by a series of smaller pipes and hoses. A monitor (See Figure 11) was then used to spray the high-pressure water that removed the soil and waste rock to gain access to the mineral bearing ore. The high-pressure water was then used to loosen and concentrate the ore. Since water was still precious, it was reclaimed and used in the ore concentration rockers. The monitor pictured in Figure 11 was one that was originally used in the excavation of the pits in Boston Gulch. It had been removed from Boston Gulch in the early 1980s and was returned for display in Kentucky Camp in 2012. The monitor is now displayed near the Assay House.



Figure 7. Water Pipeline crossing Arroyo above Apache Springs.



Figure 8. Entrance to 300 foot Tunnel on Dead horse Mesa.



Figure 9. Penstock on Dead Horse Mesa with 20-inch Pipe



Figure 10. Terminal Valves on Ridge above Boston Gulch

Compiled in April 1999 by T. Johnson from Forest Service Literature (including Heritage Resources Management Report No. 15), Friends of Kentucky Camp Literature and data researched by Bob Lund, Green Valley Hiking Club. Updated by T. Johnson in May 2014. Photographs by T. Johnson

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Figure 11. Monitor used in the Original Mining Operation in Boston Gulch