Site Description

Smith Valley

(updated 2010)

Geologic setting: Smith Valley _____ Artesia Lake is the northernmost thermal feature of the eastern Pine Nut Mountains range-front, which extends 16 km from Wellington to Artesia Lake. The range-front contact between alluvium and bedrock is a series of faults (Moore, 1969). Recent faulting is indicated through discordant breaks in slope on some alluvial fans, such as the small fan south of Hinds Hot Springs (Loeltz and Eakin, 1953).

Geothermal features:

Ambassador Well: Warm-water wells and springs are reported near Artesia Lake in Secs. 25, 27, 34, Tl3N, R23E and Sec. 10, Tl2N, R23E. The Ambassador Well is 28°C, 869 m deep and artesian. Measurements of uranium and radium from this well suggest that it penetrates volcanic rocks at depth (Scott and Barker, 1962). No temperature data are available for the Artesia Lake springs, except that they are warm (Moore, 1969, pl. 1).

Hinds Hot Springs / Nevada Hot Springs: The third hottest springs in Lyon County, after Hazen and Wabuska, are found 3 to 6 km SSW of Artesia Lake along the western margin of Smith Valley. These springs are named for J.C. Hinds, the first settler in the north end of Smith Valley. Hinds developed the springs as early as 1860 for agriculture and spa-related uses (Loeltz and Eakin, 1953; Thompson and West, 1881). The spring outflow also turned a water wheel, which powered a rock arrastre for an ore mill (Pioneer Nevada, 1951, p. 96).

The temperatures reported at Hinds are as high as 65°C (L.J. Garside, unpub. data), although cool sulfur water reportedly issues from a spring several hundred feet away. Thermal springs are found along the valley margin, from half a mile south of Hinds Hot Springs to a point due south of the alkali flat. Generally, spring flow is less than 19 L/min and temperatures, less than 21°C (Loeltz and Eakin, 1953). Water from these springs probably rises from depth along a system of faults. Fluoride values for Hinds Hot Springs have been reported at 2.7 and 3.1 ppm. In Smith Valley, water that undergoes little-to-no mixing with thermal waters will have low fluoride content (between 0.2 to 0.4 ppm). High fluoride values are associated with thermal waters along the south and west sides of Smith Valley, presumably along fault planes (Loeltz and Eakin, 1953). The reservoir temperature of Hinds Hot Springs, using the Na-K-Ca geothermometer, is estimated at 86°C, and deposits of travertine are reported (Mariner and others, 1974).

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In the early 1960s, U.S. Steel Corp. drilled three geothermal exploration wells at Hinds Hot Springs. The temperatures encountered in these wells were reportedly lower than the maximum temperatures from nearby springs. Today the water from Hinds Hot Springs is used to irrigate pasture and other salt-tolerant grasses, and to fill a swimming pool near two of the geothermal wells. The third geothermal well is a short distance south of the pool.

Wellington: At least seven water wells near the town of Wellington have encountered warm to hot water at depths of 20 to 61 m. The wells are located in Secs. 2, 11, 12, T10N, R23E. The deepest well (60 m) has a reported temperature of 47°C, with indications that it may become hotter with increased pumping (Loeltz and Eakin, 1953). The water chemistry of this well is similar to Hinds' Hot Springs 16 km to the north, suggesting a common source for the thermal water. Water from the 47°C well is used for a public swimming pool.

Leasing information:

Bibliography: