Site Description

Beatty

(updated 2011)

Geologic setting: Beatty is in the southern Walker Lane, a region dominated by northwest-striking, right-lateral strike-slip faulting (Taylor and Dewey, 2009). The Beatty – Bullfrog Hills – Oasis Valley area may have undergone trans-tensional strain, a deformation pattern associated with geothermal activity, based upon (1) the Bullfrog Hills extensional domain (Maldonado, 1990), (2) the shear strain east-southeast of Oasis Valley (Kreemer, pers. comm.), and (3) the rotational dynamics of Beatty-area fault blocks (Maldonado, 1990). Oasis Valley, parallel the eastern Bullfrog Hills, contains all Beatty-area geothermal springs.

The Bullfrog Hills west of Beatty host two low-angle detachment faults, which separate basal Proterozoic rocks from two younger units: Paleozoic clastics and carbonates, and Miocene volcanics and sediments. The Miocene upper layer underwent major extension between 10 and 8 Ma, evidenced by normal faulting, tilting, and planar rotation of block units. Miocene-era tuffs are sourced from the Timber Mountain – Oasis Valley caldera complex northeast of Bullfrog Hills (Maldonado, 1990).

Geothermal features: The thermal features near Beatty concentrate along the Amargosa River / Oasis Valley corridor, extending 25 km from Beatty to Colson Pond. There are three main spring systems near Beatty: Amargosa Hot Springs, Burrell Hot Springs, and Beatty Mineral Springs. Isolated warm springs north of Beatty indicate the linear extent of the geothermal anomaly, among them warm springs near Earth Dam (temperature unknown) and Colson Pond (22.2°C).

Amargosa Hot Springs / Hicks Hot Springs / Baileys Hot Springs: The highest spring temperatures are found at Amargosa Hot Springs (Sec. 16, T11S, R47E), where springs flow from alluvium near outcrops of silicified, opalized, and moderately argillized welded tuff (Malmberg and Eakin, 1962). The hottest of five springs supplies bathing pools and related facilities. The measured temperature ranges from 42.0 to 43.3°C (see Penfield et al., 2011), and the reservoir temperature is an estimated 136.7±11.5°C (Ca-Na-K; Fournier, 1981) and 111.3±2.3°C (quartz; Fournier, 1981). This spa area has more recently been referred to as Baileys Hot Springs.

Burrell Hot Springs: The name Burrell Hot Springs (Sec. 21, T11S, R47E) has been applied to springs about 1 km south of Amargosa Hot Springs. Mariner et al. (1983) estimated a reservoir temperature of 72ºC (p. 46). The Great Basin Groundwater Geochemical Database (Penfield et al., 2011) records a 38°C spring and a 38.9°C well with geothermometers of 81.4±15.1°C (Ca-Na-K; Fournier, 1981) and 89.8±2.9°C (chalcedony; Fournier, 1981).

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Beatty Mineral Springs / Beatty Springs / Revert Springs: The municipal water supply for Beatty is obtained from Beatty Springs, a group of six springs that issue from alluvium ~1.6 km north of town. The springs are about 24 m higher in elevation than the town and discharge into concrete collection basins which connect to 20-cm city water mains. Reportedly, the springs discharge 450-900 L/min of 23.8°C water (Malmberg and Eakin, 1962). The Great Basin Geochemical Groundwater Database records temperatures from 23.9 to 24.4°C, and geothermometers of 89.5°C (Ca-Na-K; Fournier, 1981) and 88.0°C (chalcedony; Fournier, 1981). These springs are more recently referred to as Revert Springs (SE¼ SW¼ Sec. 5, T12S, R47E) on the Beatty Mountain 7.5-minute Quadrangle map.

Leasing information:

N/A

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