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Bog Hot Valley

(updated 2012)

Geologic setting: Bog Hot Valley is located along a major fault lineament between Soldier Meadows Hot Springs and Oregon (figure; Hose and Taylor, 1974). This lineament can be seen on the geologic map of Nevada from N30-35°E (Stewart and Carlson, 1978), a distance of >105 km. Hose and Taylor (1974) believe the lineament may have been a large fault through early Tertiary terrain. Any tectonism that occurred after the Oligocene and Miocene volcanic rocks were deposited resulted in modest displacement, manifested in the volcanic cover.

Geothermal features: Geothermal anomalies are reported along the lineament's western branch in the vicinity of Bog Hot Valley, McGee Mountain, and Gridley Lake. Hulen (1983) suggested that geothermal fluid flow is controlled by the intersection of the northeast-striking Basin and Range fault with an older, northwest-striking normal fault system.

Bog Hot Springs: Bog Hot Springs in Secs. 7 and 18, T46N, R28E have been used since the turn of the century for stock watering and irrigation of 1.6 km^2 of wild hay. Also, they are presently used for domestic water and hot mineral baths on the Bog Hot Springs Ranch (Peterson and Hoover, 1977). The springs reportedly discharge up to 3800 L/min, and may be associated with an active fault zone (Sinclair, 1962c). The highest surface temperature reported is 55°C (Sanders and Miles, 1974), and estimates of the reservoir temperature from chemical geothermometers are about 108°C, although the springs may be a mixed water system.

Leasing information:

N/A

Baltazor Hot Springs: Baltazor Hot Springs are located in Sec. 13, T46N, R28E at the north end of Continental Lake, adjacent to the Pueblo Mountains range-front fault (Hose and Taylor, 1974). Baltazor Hot Springs are reported to be at or near boiling (93-98°C; Mariner et al., 1974; Hulen, 1983), and small amounts of travertine and siliceous sinter are present. Hulen (1983) reported that

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the springs are presently precipitating silica, an indication of reservoir temperatures exceeding 180ºC. Nehring and Mariner (1979, p. 486) estimated a reservoir temperature of 152°C.

Earth Power Production Company explored the geothermal potential of Baltazor Hot Springs and McGee Mountain in the 1970s and 80s by drilling geothermal test wells. One such well was 45-14 (SW¼ Section 14, T46N, R28E), a 771 m hole drilled in 1982 (Barton and Purkey, 1993, p. 13; Blackett et al., 1986). The deepest test well was 1109 m with a maximum temperature of 120ºC (GeothermEx, 2004), which penetrated 430 m of pre-Tertiary schist and metavolcanics (Hulen, 1979). Thermal-gradient data are reported by Earth Power Production Co. (1977, 1979a, 1980a), and geophysical investigations by Edquist (1981).

Leasing information: As of 2009, Magma Energy Corp. leased more than 6500 acres near Baltazor Hot Springs (Shevenell et al., 2011). No known work completed recently on the property.

Denio: A warm well (20.5°C) has been measured within the town of Denio. Multiple gradient wells are located between the town and Pueblo Mountains to the west, outlining a large thermal anomaly.

Leasing information:

N/A

McGee Mountain: Intermittent fumarolic activity and hydrothermal alteration led Phillips Petroleum and Earth Power Resources (1977, 1979a, 1980a) to examine McGee Mountain in the 1970s and 1980s. The maximum gradient temperature was 97.7ºC at 91 m (GeothermEx, 2004). Subsequent drilling reached ~120ºC at 120m depths, and springs and wells down the hydrologic gradient have geothermometer temperatures exceeding 200ºC. Steam and warm water are reported along the McGee Mountain range-front fault, which may extend as far northeast as Bog Hot Springs (Hose and Taylor, 1974).

Historically, the area has been referred to as the Painted Hills thermal area (Hulen, 1979). An early core hole, probably in the vicinity of the Painted Hills mercury mine (SW¼ Sec. 23, T45N, R27E), was reported to have 55°C water at 61 m (Wendell, 1970, p. 95, 98, 109). A thermal groundwater anomaly is centered on the mine and the adjacent fault, reaching ~5 km in diameter (Edquist, 1981).

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Trexler, Koenig, Flynn, et al. (1981; Table E2) reported that springs in the McGee Mountain area are cold (10°C) and the core hole may no longer exist.

Leasing information: Caldera Geothermal, which leases 1280 acres at McGee Mountain, plans a gravity and hydroprobe survey of the area followed by temperature gradient drilling in 2010. Caldera received a $1.6m DOE grant to perform work on the property, and in 2010 Caldera completed a gravity and hydroprobe survey of the area. Temperature gradient drilling is scheduled for the spring of 2011.

Gridley Lake Springs: Gridley Lake Springs has geothermometer estimates between 116ºC (quartz; Fournier, 1981) and 200ºC (Ca-Na-K; Fournier, 1981), and surface measurements up to 40ºC. The data was compiled by Trexler et al. (1979) from a 1954 analysis.

Leasing information:

N/A

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