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INDEPENDENT REPORT:
GEOTHERMAL RESOURCE
AT THE
MCGEE MOUNTAIN PROSPECT,
HUMBOLDT COUNTY, NEVADA, USA

for

Caldera Geothermal, Inc.

Toronto, Ontario, Canada

by

GeothermEx, Inc.

Richmond, California, USA

1 JULY 2010

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ILLUSTRATIONS

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SUMMARY

Caldera Geothermal Inc. of Toronto, Ontario, Canada (Caldera), through its wholly-owned Nevada subsidiary Geothermal Technical Partners, Inc., holds Federal (BLM) leases for exploration and development rights at the McGee Mountain geothermal energy prospect in northern Humboldt County, Nevada. The leases total about 8,535 acres (13.3 mi^2 or 34.5 km^2) of contiguous holdings, some of which require completion of a payment schedule to an earlier lessee. The project area is reached via unpaved roads that extend from a paved highway five miles to the north. Both the project area and surroundings are uninhabited and treeless.

The area lies at the northwestern margin of the Basin and Range physiographic province in a zone of transition to the volcanic province of the Pacific Northwest. McGee Mountain is a volcanic plateau, about 1,500 ft (450 m) high, with a flat-lying cap of ~14 million-year-old, brittle, silica-rich volcanic rock (rhyolite) that overlies softer fragmental volcanic strata. The generally flat basin to the east of the Mountain is underlain by somewhat younger volcaniclastic sediments. The volcanic materials collectively are expected to overlie an irregular basement topography at depths exceeding ~1,500 ft (the maximum drilled locally), that comprises much older metamorphosed sedimentary and lesser volcanic rocks, both intruded by granites.

Along the eastern flank of McGee Mountain and central within the leasehold is the long-abandoned Painted Hills mercury mine, located within a larger area of hydrothermal alteration, silicified materials and currently steam-heated ground that includes a weak steam vent (fumarole). The hot fluid discharge from depth that occurs in this area may be conducted by one or two steeply-dipping north-trending faults that are mapped locally but may have a relatively small amount of displacement. The presence of the anomaly may be also related to an intersection at depth of faults and/or fractures that may bound the NE and SE sides of McGee Mountain.

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About 20 shallow temperature gradient holes and two deeper slim holes were drilled in and around the prospect area in the late 1970s and early 1980s, and about 12 of these were located within five miles of the mine and fumarole. The temperature gradient depth was 300 ft (90 m), while the slim holes reached 1,500 ft (460 m) and 1,680 ft (512 m). The maximum temperature recorded down hole was 242°F (116°C) at 400 feet (122 m) depth in a slim hole at the mine area. This maximum formed an inversion (temperatures decreased below) that is an expression of subsurface outflow from a zone of up-flow located (probably) to the west. The outflow appears to move towards the SE, as indicated by temperature conditions in other holes and by a cold spring three miles to the SE that is chemically anomalous and could represent cooled geothermal water. The chemistry of this cold spring water is compatible with temperature conditions that are about the same as the maximum-measured 242°F (116°C), but it also allows the possibility that the water has cooled from a deep source at about 375°F (190°C) or higher (with an uncertainty of about ±15°C).

The magnitude of the geothermal resource at McGee Mountain (Painted Hills) has been estimated using a Monte Carlo method applied to estimating heat-in-place. The method relies (along with certain other parameters) on estimates of the area, thickness and average temperature of the resource, but among these, only area has some constraint at this time. Therefore, the estimates used for thickness and temperature have been based on the characteristics of other geothermal resources in Nevada.

Results yield a 90%-probable ("P90") thermal energy-in-place estimate of 87,300 MW_{th}-years (that is, 90% of estimates are higher). We consider this to be a "minimum" likely value. At 50% probability ("P50") the estimate is 134,000 MW_{th}-years.

The recoverable portion of the preceding estimate of energy-in-place has also been estimated and converted into electrical energy, using values of recovery factor, rejection temperature, utilization factor, plant capacity factor and power plant life that are provided. The minimum (90% probable) estimate for generation potential is about 25 MW_e for 30 years (or a total of 750

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MW_e-years) and at 50% probability the estimate is 52 MW_e for 30 years (or a total of 1,560 MW_e-years). These estimates are somewhat larger than a public-domain McGee resource estimate made by GeothermEx in 2004, because a 2-m deep temperature survey by Caldera has established continuance of the thermal anomaly about ½ mile further north than previously documented.

This resource estimate was made without reference to the Caldera property (project area) boundary, but it is likely that the entire magnitude of estimated resource lies within it. The estimate should be regarded with caution because there needs to be subsequent proof of area, thickness, temperature and commercial permeability by means of deep drilling and testing. No heat-in-place estimate of this type should ever be used to determine the final, installed size of a well field and power plant.

Caldera Geothermal Inc. is undertaking continued exploration along the steam-heated zone, over a mile in length. The aforementioned shallow temperature survey and a detailed gravity survey have just been completed. New temperature gradient holes will be drilled later this year and followed in 2011 by two deep slim holes drilled at sites selected to better define the resource at depth. We recommend that this program be undertaken, concurrent with fluids sampling (as may be possible) prior to siting the deep slim holes, and that this work be followed by deep drilling and well testing at commercial production rates.

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1. INTRODUCTION

1.1 Terms of Reference

Caldera Geothermal Inc. of Toronto, Ontario, Canada (Caldera) has commissioned GeothermEx, Inc. of Richmond, California (GeothermEx), to prepare an independent technical report on the McGee Mountain geothermal energy prospect in Humboldt County, Nevada (Figure 1.1.1). Caldera has obtained set of contiguous Federal (BLM) leases in the general prospect area, some of which require completion of a payment schedule by the end of 2011. The leases and related terms are described further in Section 3, using information provided by Caldera. GeothermEx has not independently verified the position and status of these lease holdings.

Exploration for geothermal resources has been conducted in the McGee Mountain area by other entities, and Caldera plans to conduct additional exploration and development work. This is to include further exploratory and assessment drilling, to confirm and define the commercial viability of the resource for electric power generation.

1.2 Purpose

The present report is intended to describe the current status of the McGee Mountain project, to provide an evaluation of the geothermal resource as permitted by available data, and to discuss the plans of Caldera for continued exploration and development work.

1.3 Sources

GeothermEx's description and evaluation of the McGee Mountain project is based on published and unpublished data from several sources. This includes materials provided by Caldera, and information obtained by GeothermEx from other sources, including GeothermEx's own data files. The major categories of information used for the report have included:

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- locations, depths and temperatures measured in boreholes drilled to a maximum depth of 1,680 ft (512 m) specifically for temperature measurement

- regional and local geology

- chemical analyses of ground waters and of hot and warm springs in the greater region of the prospect, and

- a gravity survey and limited information about a resistivity survey.

References to published data sources are provided in section 15.

1.4 Scope

This report is not a "43-101" report as specified by the Toronto Stock Exchange (TSX), but its scope is designed to meet as closely as possible the requirements of such a report and it is organized as closely as possible to address the topic areas specified in those requirements. As noted above, the report has been prepared from existing information compiled from various sources; GeothermEx has not conducted any independent field work in support of this evaluation. However the area was visited by GeothermEx personnel in the late 1970s and the active steam vent in the prospect area was observed at that time. The information used for this evaluation is believed to be accurate. GeothermEx has not independently verified its accuracy, but comments regarding uncertainties in the data are provided.

The evaluation of the geothermal resource includes the following principal components:

- An assessment and synthesis of the geologic setting of the project area, focusing on aspects that are likely to have the most significant impact on the presence and character of geothermal resources (Sections 6 and 7).

- Analysis of the indications of geothermal activity in the area, including indications from geology, geophysics, geochemistry and exploratory drilling (Sections 6 and 7).

- Development of a preliminary conceptual model of the geothermal resource for the purpose of estimating the potential location, extent and characteristics of the resource (Section 7, named herein as Reservoir Type).

- Estimation of the heat in place and potentially recoverable geothermal energy in the project area (Section 11).

- Assessment of current plans for further exploration and development of the project area, with recommendations for these activities (Sections 8 and 14).

Other sections of this report provide descriptions of the leases and conditions in the lease area (Sections 3 and 4); the history of prior exploration (Section 5); a summary of previous drilling in the area (Sections 6 and 9); consideration of adjacent properties (Section 10), and; other relevant data and information (Section 12).

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2. RELIANCE ON EXPERTS / DISCLAIMER

GeothermEx has relied on Caldera, its staff and consultants to provide certain supporting documentation, data, reports and information in preparation of this report. The conclusions and recommendations presented herein are based on information available at the time of this report, supplied by Caldera, its consultants and third party sources. GeothermEx has been aware of the need to detect any errors in or omissions from the data and information provided, but cannot be responsible for undetected errors or omissions that exist. Assumptions and parameters related to the resource evaluation are described in relevant sections of this report.

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3. PROPERTY

3.1 Description and Location

The McGee Mountain project area is located in Humboldt County of northwestern Nevada about 20 miles (32 km) drive to the southwest from the community of Denio on the border with Oregon. As described by Caldera and not confirmed by GeothermEx, the total area of land and accompanying geothermal leases comprising the Caldera leasehold at McGee Mountain is about 8,535.2 acres (13.3 mi^2 or 34.5 km^2) covering thirteen Sections leased from the Federal Bureau of Land Management (BLM) as shown in Figure 3.1.1. The thirteen sections of BLM land in the prospect area are: T44N R27E Sec. 1, 2, 3, 4, and; T45N R27E Sec. 14, 15, 22, 23, 26, 27, 33, 34, 35; and are detailed below.

3.2 Nature and Extent of Title

Caldera describes the nature and extent of title as follows. Geothermal Technical Partners, Inc. (GTP) is a wholly-owned Nevada subsidiary of Caldera.

- BLM lease No. NVN74308 for Sections 22 and 23 (T45N R27E) was a non-competitive lease originally obtained by Earth Power Resources, Inc. ("EPR") and now purchased by GTP, under the terms described below. (1,280.0 acres)
- BLM lease No. NVN74309 for Sections 26, 27, 34, and 35 (T45N R27E) was a non-competitive lease originally obtained by EPR and now purchased by GTP, under the terms described below. (2,586.0 acres)
- BLM lease No. NVN80080 for Sections 1 and 2 (T44N R27E) was a non-competitive lease originally obtained by Amigo Inc., and later purchased by GTP. (1,367.94 acres)
- BLM lease No. NVN85707 for Sections 3 and 4 (T44N R27E); and Section 33 (T45N R27E) was originally obtained by GTP. (2,021.3 acres)
- BLM lease No. NVN86867 for Sections 14 and 15 (T45N R27E) was originally obtained by GTP. (1,280.0 acres)

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Caldera owes EPR royalties on leases NVN74308 and NVN74309, per the following terms provided by Caldera (referred to as "Buyer").

- Pursuant to the Royalty Agreement, Buyer has agreed to pay the Dalo Living Trust, on all of the terms and conditions set forth in the Royalty Agreement, a two percent (2.0%) royalty based on Revenues actually received from the sale of electrical energy generated by Generating Facilities located within the Leased Premises. Also, pursuant to the Royalty Agreement, Buyer has agreed to pay Earth Power Resources, Inc. a one and three quarters percent (1.75%) subordinated Royalty for years 1 through 10 from the Commencement Date of the sale of electrical energy which percentage shall decrease to one (1.0%) beginning in year 11 and thereafter until termination.

- The term of the Royalty Agreement will commence on the Commencement Date and will continue until the earlier to occur of (a) January 1, 2017 or (b) the date on which the sale or generation of electricity or the sale of other Geothermal Substances ceases.

- Neither the Dalo Living Trust or EPR nor any Transferee, nor any successor or assign of either thereof, holds any leasehold interest in the Prospect Area.

- Pursuant to the Royalty Agreement, effective as of the Commencement Date: (a) EPR will have no executive or participating rights whatsoever, including with respect to or in connection with the Leases, the Leased Premises, Buyers other rights, leases and interests in the Prospect Area or the conduct of any Operations; (b) the Dalo Living Trust and EPR's only rights under the Royalty Agreement shall be to receive the Royalty as, when and to the extent provided therein; (c) the Buyer and any Transferees shall have sole and exclusive discretion, determination rights, control over, and liabilities with respect to the development and operation of all activities.

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- This Memorandum and the Royalty Agreement, and all terms hereof and thereof, shall be binding upon and inure to the benefit of the Parties and their respective heirs, administrators, executors, representatives, successors and assigns.

- Reference is hereby made to executed copies of the Royalty Agreement in the possession of the Parties for all of the terms and provisions thereof, and such terms and provisions are incorporated herein and made a part hereof in all respects as though fully set forth herein. This Memorandum is prepared for the purpose of recordation only, and in no way modifies the terms or provisions of the Royalty Agreement. If there is any inconsistency between this Memorandum and the terms or provisions of the Royalty Agreement, the terms and provisions of the Royalty Agreement shall control. This Memorandum may be executed in multiple counterparts, all of which shall constitute one and the same Memorandum.

Additionally, Caldera must make the following remaining payments to EPR to complete the purchase of leases NVN74308 and NVN74309:

- $96,000 by September 25, 2010
- $192,000 by December 31, 2010
- $192,000 by June 30, 2011
- $384,000 by December 31, 2011

GeothermEx has not determined, and Caldera has not provided, information regarding the exact terms of the various leases above with respect to lessee and the BLM. Standard BLM leases usually: (a) are 10-year renewable for another 10 years with certain work requirements and then held by production thereafter, (b) include surface rights of ingress and egress, (c) include rentals on a per acre basis plus a royalty on the sale of electricity generated from geothermal production on the properties, and (d) have royalties structured as 1.75% of gross power sales for the first 10

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years of production and 3.5% of gross power sales for the remainder of the working life of the project.

Caldera reports that mining claims “roughly covering” leases NVN74308 and NVN74309 are held by Redstar Gold Corporation.

We know of no other agreements or encumbrances on any of the properties.

3.3 Location of Known Resources

Surface manifestations of hydrothermal activity occur throughout the leased project area along the eastern front of McGee Mountain (see Figure 3.3.1). In the southeast corner of Section 22 is the abandoned Painted Hills mercury mine, where there is altered ground and a steam vent (“fumarole”) that has a small discharge rate. Although this assessment has not included a site visit, the area was visited by GeothermEx personnel in the late 1970s (C.W. Klein) and the active steam vent was observed at that time. Holes drilled in the vicinity of the mine have encountered elevated temperatures (to 242°F/116°C at 400 feet/ 122 meters), and additional evidence of hydrothermal activity can be seen within the south-central part of the property where an area of siliceous alteration (“opalitized volcaniclastics”) has been defined (Figure 3.3.1). Related bore hole data and descriptions of hot springs in the broad vicinity of the project area are described in Section 6.

3.4 Environmental Issues and Permitting Requirements

The McGee Mountain geothermal project area is located east of the Sheldon National Wildlife Refuge at a minimum distance of 2.2 miles (3.5 kilometers). None of the Caldera properties lies directly adjacent to the Refuge lands and there are no known environmental liabilities on any of the properties.

Permits required to perform work on the properties include approval by the US Bureau of Land Management (BLM) of a Notice of Intent to Perform Exploration Drilling, and permits from the

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Nevada Division of Water Resources for drilling activities. Subsequent permits for production scale well drilling will probably require an Environmental Assessment by the BLM and a FONSI (Finding of No Significant Impact) in the Record of Decision, and further permits from the Nevada Division of Water Resources. Development of the geothermal resources as a power generation system(s) will probably require completion of an Environmental Impact Statement by the BLM and a FONSI in the accompanying Record of Decision, and further permits from the Nevada Division of Water Resources and Humboldt County. Currently the review of the Notice of Intent to Perform Exploration Drilling application is in progress with the BLM, and is expected to be granted in August of 2010.

GeothermEx does not know whether mercury concentrations in soils and/or groundwaters in or near the Painted Hills mine site, and/or mercury contamination as an effect of mining activities, are or potentially could be an issue that would affect geothermal exploration and development activities in the project area.

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4. ACCESSIBILITY, CLIMATE, LOCAL RESOURCES AND PHYSIOGRAPHY

4.1 Accessibility

The McGee Mountain geothermal project area is located in Humboldt County of northwestern Nevada, some 20 miles (32 kilometers) drive to the southwest from the community of Denio on the border with Oregon. Highway 140 (paved) passes about 5 miles north of the prospect, and good-quality dirt/gravel roads on mostly level terrain provide final access. Lesser dirt roads in the area are also generally usable as-is by any four-wheel drive vehicle. Largely due to previous mining operations, there is reasonable-to-good access to the project area, although for drilling rig access some roads may require repairs over short sections and at ditch crossings.

4.2 Climate

The climate of the area is typical of northern Nevada. At Denio, the closest record point, normal daily temperature ranges are about -6.4°C to 4.4°C (20.5°F to 40°F) in January and 13°C to 33.5°C (55.5°F to 92°F) in July, with annual record lows of about 3°C (37.5°F) and annual record highs of about 18.5°C (65.3°F). Average annual precipitation is about 22 cm (8.5 in), and average annual snowfall is about 47cm (18.5 in).

4.3 Infrastructure and Physiography

The area is unpopulated and undeveloped. A few ranch homes (some abandoned) and occasional stock water wells are present in the adjacent valley.

A power line is reportedly located within 26 mi (42 km) of the project area and Caldera reports (without providing detail) that a transmission study previously carried out indicated no problems of this line carrying an additional 30 MW or more. Whether this line is or might be accessible as a power source or for power sales has not been investigated by GeothermEx.

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The valley area on the east side of the prospect and extending eastward is flat to gently rolling topography, locally cut by drainage channels within the valley sediments. Within the property boundaries of the project, the flanks of McGee Mountain rise up from the valley floor approximately 1,000 feet (~300 meters), with the total rise of the mountain from the low-lying center of the valley reaching over 2,000 feet (~600 meters). The area is essentially treeless, its spare plant life comprising grass, sage and other low shrubs.

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5. HISTORY AND STATUS

Geothermal exploration in the area was carried out during the late 1970s and early 1980s at first by Phillips Petroleum and then by Earth Power Corporation (also known as Earth Power Production Company and later changed to Earth Power Resources) and their consultants. This work included geologic mapping, fluids chemistry sampling at regional springs and ground water wells (by GeothermEx for Earth Power in 1977), drilling shallow (~300 ft or ~90 m) temperature gradient holes (Phillips) and drilling two slim holes to ~1,500 ft (457 m) and to 1,680 ft (512 m) (Earth Power). About 20 temperature gradient holes were drilled in the general area, of which nine were drilled within five miles of the mine and fumarole (see Section 6.3).

The Earth Power work is also reported to have included limited geophysical surveys including resistivity, self-potential, gravity and magnetic. Information regarding the gravity and magnetic surveys (if done) has not been seen. A partial description of the resistivity and self-potential surveys is available and suggests that the data obtained were not substantially useful.

More recently, Caldera has: (a) measured temperature 2 meters depth at almost 200 locations within the project area and (b) carried a gravity survey at 250 m spacing (done by Magee Geophysical Services LLC in March 2010). The gravity survey is available as preliminary maps (see Section 6.4).

In 2007, Zonge Geosciences, Inc., on behalf of Redstar Gold Corporation carried out a CSAMT (controlled-source audiomagnetotelluric) resistivity survey in the area in connection with the Redstar mining claims (see Sections 3.2 and 6.4).

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6. GEOLOGIC SETTING

6.1 Regional and Local Geology

McGee Mountain is located near the northwestern margin of the Basin and Range physiographic province, which is broadly characterized by uplifted mountain blocks of older rocks, generally trending N-S, that are separated by down-dropped basins filled with younger sediments. Some of the blocks are true horsts or grabens, faulted on both sides, but many are rotated blocks, faulted on one side only and eroded into north-south-trending ridges steeper on one side than the other. Within this region across northern Nevada there is a tendency for terrestrial heat flow and background temperature gradient in the earth to be higher than the most typical world-wide range of 25°~30°C/km.

The project area itself comprises outcrops of Tertiary volcanic rocks and related sediments, eroded and hydrothermally altered materials. Tertiary volcanics make up McGee Mountain (the project area is located on its eastern flank), which is not a typical horst structure of the Basin and Range Province. Rather, McGee Mountain is essentially a plateau formed by relatively flat-lying volcanic rocks, about 1,500 feet (450 meters) high with respect to the valley to the east and north and relatively flat on top, with steep sides that display horizontal flow structures. The surface of the plateau includes several NNE-trending lineaments (some may be pressure or flow ridges) that may reflect the presence of underlying faults. There are some local landslides on the flank of the Mountain (including a large one about one-half mile south of Painted Hills Mine), and unconsolidated sediments in the basin to the east and north. Parts of the sides of McGee Mountain are fault-bounded, but other parts appear dominantly formed by erosion.

Tertiary volcanic rocks including those of McGee Mountain comprise the surface in several extensive regions of northern Humboldt County and adjacent areas in Oregon. These units include rhyolites, dacites and basalts, with aggregate thicknesses that reach thousands of feet but locally pinch out due to a highly irregular pre-volcanic topography underneath. In some areas

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the Tertiary volcanics have been faulted and tilted steeply by tectonic activity. Other areas (as at McGee Mountain) are relatively flat-lying.

McGee Mountain itself comprises a sequence of easily eroded, poorly sorted and poorly indurated tuffs and tuffaceous sediments that is overlain by an 800~900 ft-thick cap of harder rhyolite and rhyolite flow-breccia that is about 14 million-years-old (Canyon Rhyolite). On the eastern flank of the mountain (along the western edge of the prospect area) the soft sedimentary sequence forms slopes that are covered with talus from the overlying rhyolite.

The lower eastern slopes of McGee Mountain (including the mine, hydrothermal alteration, silica deposition and fumarole) and the valley to the east comprise part of the Thousand Creek Formation, a ~2 million-year-old sequence of volcanic siltstones, sandstones, conglomerates and related materials. Although the Thousand Creek Formation is younger than McGee Mountain, it also lies mostly at lower elevations because in this area the Canyon Rhyolite and part of the underlying tuffs was removed by erosion before the Thousand Creek was deposited.

About six miles north of the prospect area is the southern terminus of a ~1 million-year-old basalt flow. This basalt and all of the other volcanic rocks of the area should be considered too old to be a local heat source for the geothermal system at McGee Mountain. Instead, the thermal anomaly is likely to have formed as a result of deep circulation of meteoric water in a region of elevated crustal heat flow.

It is expected that the Tertiary volcanics of McGee Mountain are underlain at some depth by much older metamorphosed sediments and intrusive materials (granitic rocks), which are likely to comprise the deep reservoir.

Several north-trending, high angle faults have been mapped in the immediate area of the mine (Figures 3.3.1 and 6.1.1), although the horizontal extent of these faults appears to be uncertain. Vertical movement along these faults might seem to be a source of uplift of McGee Mountain relative to the Thousand Creek Formation, but according to Hulen (1979) these faults are sources

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of only “minor disruption.” They nevertheless may historically have been conduits by which steam and earlier hydrothermal solutions reached the surface.

At a larger scale, the heat anomaly may be located in an area where there are intersections between faults of more regional extent that trend NW-SE (to the north), and faults that trend SW-NE (to the south). The topographic shape of the eastern flank of McGee Mountain suggests this. Parts of the flank are indeed mapped as fault-bounded and other parts appear to define lineaments on the two trends (Figure 6.1.1). This setting is general and at this time no specific faults can be identified that are necessarily the locations of fracture permeability at depth.

6.2 Location of Thermal Features

Hydrothermal alteration visible at the surface has been mapped by Caldera along the eastern flank of McGee Mountain, extending down into the alluvium and volcaniclastics along the western side of the valley floor and covering approximately 40% of the lease hold (see Figure 3.3.1). The long abandoned Painted Hills mercury mine located in the northern half of the project area lies within this area of hydrothermal alteration, as well as within the area defined as the shallow steam-heated zone. A large area of silicified geothermal alteration area lies along the range front (see Figures 3.3.1 and 6.1.1). According to Hulen (1979, p.18): “Although the alteration (does) large coincide with a contemporary thermal anomaly, the youngest altered units are of Pliocene age. Quaternary alluvium is unaltered. Alteration in Quaternary landslides is restricted to individual clasts and blocks, and predates slumping.” The fumarole is variously reported to be located along the fault zone area to the north of the mercury mine, or within about 500 ft of hole 1500-1. Both alternatives are within the hydrothermally altered area as well as the shallow steam-heated zone. No hot springs are located within the lease area and immediate surroundings.

Approximately three miles S-SE of the fumarole and mine, and within the project boundary, there is a cold spring area known as “3 Springs” (shown on Figure 3.1.1 and 3.3.1) that may

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represent cooled outflow from the McGee Mountain anomaly. In contrast, it appears that Gridley Lake Warm Spring another mile to the south does not. See Section 6.5.

6.3 Bore Holes and Temperature Gradients

In the 1970s, Earth Power Resources (EPR) drilled about 20 temperature gradient holes to a maximum depth of 300 ft in the general area of McGee Mountain. About 10 of these were sited within five miles of the mine and fumarole. Figures 6.1.1, 6.3.1 and 6.3.2 show the locations of these holes plus two intermediate depth slim holes (ST 1500-1 and -2) that were also drilled by EPR, to depths of ~1,500 feet and 1,680 feet (457 m and 512 m). Figure 6.3.1 was compiled by GeothermEx (2004) from three different sources of public domain data, and due to differences among the sources it includes duplicate entries: about seven wells appear twice at separation distances of 0 to ½ mile. We consider the locations on Figures 6.1.1 and 6.3.2 (compiled by EPR) to be more accurate, as they are corroborated by a map in Hulen (1979) and by other maps that were compiled by EPR in the 1970s.

Figure 6.3.2 shows related down hole temperature profiles. The maximum temperature reported from a shallow gradient hole has been 208°F (98°C) at 279 ft (85 m) in the mine area hole 150. The maximum temperature reported from a slim hole has been 242°F (116°C), at ~400 ft (122 m) depth in near-by hole ST 1500-1. Below that depth, the profile of ST 1500-1 reverses, to isothermal conditions at ~215°F (102°C) near bottom. There are small irregularities in the profile of hole ST 1500-1, and this suggests that the profile was measured before the hole had completely stabilized after drilling.

Hole ST 1500-2, drilled one-half mile east of ST 1500-1, found 200°F (93°C) at total depth 1,680 ft. The temperature profile in hole ST 1500-2 is conductive in nature (*i.e.* it does not show evidence of fluid circulation as does ST 1500-1), but is instead nearly linear with a small increase in slope moving downwards. In the lower-most 180 ft of ST 1500-2, the gradient is about 5.2°F/100 ft (95°C/km). If continued without change, this would place temperatures of

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about 350°F (177°C) at 4,500 ft (1,372 m) depth. Although this is possible, it is general experience that gradients tend to decrease with depth and, as a consequence, temperatures close to 350°F (177°C) probably (not certainly) lie deeper than 5,000 ft (1,524 m) beneath the hole.

Although hole ST 1500-2 lies to the east or north-east of the center of the shallow temperature anomaly (at 300 ft or 91m depth) that is shown on Figure 6.3.1, the position of the hole relative to deeper temperature distribution remains uncertain. In any case, the temperatures in holes ST 1500-1 and -2 do not encourage the idea that a commercial resource close to 350° F (177°C) will be found at depths shallower than several thousand feet at the least.

6.4 Geophysical Surveys

Gravity

Results of Caldera's recent gravity survey (see Section 5) are available as preliminary maps of Complete Bouguer Anomaly at density 2.35 g/cc (a correction of measured gravity that removes effects of local topography and elevation) and of horizontal gravity gradient (which illustrates steepness of the contoured gravity surface).

The Complete Bouguer Anomaly (Figure 6.4.1) shows a strong correlation with topography on McGee Mountain in spite of the topographic correction involved. This is attributed to the higher-density welded tuff/rhyolite on top of the Mountain, overlying lower density Tertiary sediments: gravity is very sensitive to such strong contrasts at the surface/shallow subsurface. Another feature that is probably related to topography is a roundish gravity low that occupies Section 35 to the SE of McGee Mountain; this coincides with the toe region of a large landslide.

In the valley to the northeast of McGee Mountain there is a broad gravity low that is open to the north and probably expresses basement deepening that area, perhaps in a graben formed by faults that trend NW and NE and intersect at the juncture of Sections 23 and 24. In contrast, directly east of McGee Mountain in Sections 25 and 26 the gravity structure is relatively flat and seems

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to express a somewhat shallow, flat-lying basement surface. Further to the east the gravity surface rises again, but gently.

Resistivity

The CSAMT (resistivity) survey for gold exploration in 2007 (see Section 5) was able to "see" down to a depth of about one kilometer. The survey found an elongated, north-south trending resistive zone that coincides essentially with the 2 m – depth heat anomaly (Figure 6.3.3) and (as described by Caldera) with quartz veining and weak pervasive silicification. Surrounding this resistor at least on the east and possibly on the west (survey coverage is incomplete) is a thick (400 – 600 m) conductor. The resistive "core" is probably an expression of resistant silica deposited in a locus of hydrothermal upwelling, and the conductive "mantle" probably expresses a surrounding zone of hydrothermal alteration (likely to be conductive). In the Z-dimension these resistivity structures are vertical and they probably express the effects of hydrothermal fluids moving in a (near-) vertical fault zone that trends north-south at the center of the resistive core. Because it seems likely that the observed resistivity structure started to form (and may have completely formed) in the past, along with the mercury deposit, we think (but do not establish with certainty) that neither the resistive core nor the conductive mantle can be used to quantify the amount of hydrothermal circulation that is still occurring.

6.5 Fluids Chemistry and Chemical Geothermometry

Water chemistry at springs and wells in the greater area of the project is listed in Table 6.5.1. Sample locations 1 – 7 are shown by Figure 6.5.1. Location 6 (3 Springs) is the only one within the leasehold. Bog Hot Spring (samples number 8) is located several miles north of McGee Mtn Spring (location 2) and Balthazor Hot Spring (location 9) lies about 10 miles NNE of the prospect area.

All of the sampled waters are relatively dilute and all but one are dominated by sodium (Na) among the cations and various relative amounts of bicarbonate (Total Alkalinity as HCO_3) and

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sulfate (SO4) among the anions. A Piper Diagram combined with a graph of HCO3 versus SO4 (Figure 6.5.1) shows that 3, 5, 7 and 8 are similar one-to-another and define a trend of mixing with very dilute Na-HCO3 water, but their varied locations suggest that this is due to residence in similar rocks rather than flow from a single common source. The more saline samples 4 and 9 are also similar to one other but from widely separated locations.

The hottest water sampled is Balthazor Hot Springs (80°C; location 9), which is a Na-SO4-HCO3 type that is relatively characteristic of hot springs along the northwest edge of the Basin and Range province and in the lava plateaus to the NW in Oregon and NE California. Maximum chemical temperatures of Balthazor (Table 6.5.1) are about 150°C. There is a sulfate-water oxygen isotope temperature for Balthazor that is no higher, and gases that bubble out with the spring water are dominantly nitrogen (higher temperatures at depth would be likely to yield carbon dioxide).

Bog Hot Spring (sample 8) issues 55°C water at a very high flow rate (enough to severely limit cooling during ascent) and is not surprisingly a very dilute Na-HCO3-SO4 type with chemical temperatures no higher than about 100°C.

The most interesting waters close to the prospect are found at locations 4 (Stock well) and 6 (3 Springs), both of which are cold. As mentioned, the Stock well composition is strikingly similar to Balthazor Hot Spring, although too far from it to be a direct outflow.

3 Springs is the most anomalous. Its discharge temperature is reported as only 54°F (12°C) (mean annual air temperature is about the same), but the discharge rate is only about 2 liters/minute, which allows for considerable cooling if formerly hotter. The water chemistry is Na-mixed anion composition in which chloride (Cl) ion is 177 mg/l, which is about 40% of the anions and much higher than at all the other sources. Silica (SiO_2) is also somewhat elevated at 98 mg/l (other cold springs in the area rarely contain more than 55~60 mg/l). In combination, the elevated Cl and SiO_2 suggest that the 3 Springs water is cooled outflow from a geothermal

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system and very possibly from McGee Mountain. If cool sources of elevated Cl and SiO2 were present, they could be expected to be manifested in other cool ground waters of the area (or at least in some). It is also possible that 3 Springs is a mixture of thermal Na-Cl water with water such as samples 3 and 4 along the Na-(SO4-HCO3) trend.

About a mile south of 3 Springs and east of Gridley Lake is another spring site known as (Gridley Lake) Warm Springs (location 7). The highest temperature reported here has been ~116 °F (47°C) but the flow rate of about 80 liters/minute somewhat reduces the amount of possible cooling during ascent. The fluid composition is Na-HCO3 with very low chlorides (about 6 mg/l). This suggests strongly that this spring is not related to the discharge at 3 Springs but instead manifests a separate circulation system. It is also likely to be unrelated to the thermal anomaly at McGee.

When the chemistry of 3 Springs water is used to estimate temperatures of water-rock interaction in the subsurface (Table 6.5.1), the results suggest late-stage (nearest-surface) conditions that approximate the temperatures in hole ST 1500-1: (a) 218°F (103°C) K-Mg temperature, (b) 229°F (109°C) chalcedony temperature and (c) 242°F (117°C) Na-K-Ca-Mg temperature. In contrast, the Na-K-Ca geothermometer may reflect earlier water-rock equilibration at about 375°F (190°C) or higher, and the Na/K temperature even suggests conditions near 220°C. Both the Na-K-Ca and Na/K estimates should be considered tentative, because several other waters in the data set also yield high Na-K-Ca and Na/K temperatures. For example, the 203°C Na-K-Ca estimate for Gridley Lake Warm Springs is simply not believable, as is the yet higher Na/K temperature. In general, Na/K temperatures cannot be trusted unless it is known or considered probable from other information that real temperatures exceed about 150°C.

As far as we know, no attempt has been made to sample the steam at the McGee Mountain fumarole for chemical analysis of the gas component and stable isotope analysis of the water fraction. Since the fumarole discharge is apparently weak, it is possible that a sample would find water vapor with a fair amount of entrained air.

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7. RESERVOIR TYPE (CONCEPTUAL MODEL)

No conceptual model has been developed for this project area although some constraining parameters can be established. The hydrothermal system probably comprises waters of meteoric origin heated by deep circulation. Final discharge from depth to the near-surface probably occurs along a pathway created by steeply-dipping faults and associated fractures. Tentative information about resistivity suggests that this pathway is oriented north-south, is vertical or nearly vertical and may extend downwards for a kilometer at least. At greater depth the hydrothermal fluid may well reside within zones that are related to lithology or both to lithology and to structure, such as in porous limestone or in brittle granite that is fractured in the general vicinity of fault zone(s).

Up flow of the deep thermal water occurs in the vicinity of Painted Hills Mine, to about 400 ft (120 m) depth near and probably west of hole 1500-1. The 242°F (116°C) temperature reversal at 400 ft in hole 1500-1 (Figure 6.3.2) is a manifestation of shallow outflow that is notably absent directly east of hole 1500-1 at hole 1500-2, but instead is suggested by the temperature conditions in hole 150 to the SE. Much further to the SE is a high gradient in hole 158A and the cold 3 Springs area, where water chemistry is anomalous and possibly a cooled geothermal outflow.

The position of the deep fluid source relative to Painted Hills Mine is uncertain. Particularly low temperature gradients have been measured in holes drilled into the plateau on top of McGee Mountain west of the Mine, and in the central basin north and northeast of the Mine (Figure 6.3.2). Therefore, it is relatively unlikely that deep upwelling comes from the west, north or northeast. Shallow gradient holes drilled to the east, southeast and south show anomalously high gradients, but the number of sites drilled has been quite limited and it is uncertain whether these express a deep anomaly and/or shallow outflow to the area of 3 Springs. No holes at all have been drilled to the southwest.

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The only possible indication of temperatures in the geothermal system above 242°F (116°C) (in hole 1500-1) is provided by the 375°F (190°C) Na-K-Ca temperature of 3 Springs. This estimate has an uncertainty of at least 15°C, which is the approximate standard deviation of calibration of the Na-K-Ca geothermometer, but it also could have been depressed during cooling from yet higher temperature conditions.

The temperature gradient in hole 1500-2 suggests that 350°F (177°C) probably lies deeper than about 5,000 ft (1,500 m), although there is no proof of this and the maximum temperature of fluid circulation could be lower.

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8. EXPLORATION

Beyond the activities described above, Caldera has done no further exploration on the property. Caldera does report that a Notice of Intent to Perform Exploration Drilling has been submitted to the BLM (Bureau of Land Management). Caldera anticipates getting approval of that notice to allow it to do shallow temperature gradient drilling in 2010. The following description of planned exploration activities and costs is taken from a Corporate Presentation by Caldera, dated November 2009[1] and represented to us as still in effect.

In 2009 Caldera applied to the U.S. Department of Energy (DOE) for a grant under the "Validation of Innovative Exploration Technologies" section of the American Recovery and Reinvestment Act. On October 29, 2009 the DOE awarded this grant to Caldera, whereby the DOE would provide $1.6 million of funding and Caldera would provide an equal amount under a 50/50 cost sharing model.

Caldera's planned exploration program is shown by the following table. The work is divided into two phases.

Phase 1 (for 2009-2010) comprises:

- a gravity survey (already done and described above)
- a hydroprobe survey (this is a method that obtains samples of shallow groundwaters through a probe that is pushed under heavy weight into the subsurface)
- structural mapping
- road and drill pad construction with two rounds of temperature gradient drilling and associated temperature measurements
- interpretation and synthesis of results and

[1] Caldera Geothermal. Corporate Presentation, November 2009. "Discovering Geothermal" as electronic file Nov09_Caldera Presentation.pdf

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- identification of slim hole drilling targets

CALENDAR QTR	ACTIVITIES	Federal Funds (USD)	Caldera Funds (USD)
Q4 2009	Gravity Survey & Hydroprobe, Structural Mapping	$45,000	$46,871
Q1 2010	Road & Drill Pad Construction, First Round of Temperature Gradient Drilling	$80,000	$83,325
Q2 2010	Temperature Measurements, Second Round of Temperature Gradient Drilling	$80,000	$83,325
Q3 2010	Temp. Measurements, Data Interpretation &Synthesis, Identify Slim Hole Targets	$45,000	$46,870
Q4 2010	Phase 1 Data Interpretation & Report Writing	$33,798	$33,798
Q1 2011	Winter Hiatus, Permitting Slim Holes & Data Interpretation	$33,799	$33,799
Q2 2011	Drill Slim Hole #1, Well Testing	$608,366	$608,366
Q3 2011	Drill Slim Hole #2, Well Testing	$608,366	$608,366
Q4 2012	Data Interpretation & Synthesis, Site Reclamation	$67,596	$67,596
Q1 2012	Report Writing	$7,350	$7,350
	TOTAL	**$1,609,275**	**$1,619,666**

Phase 2 (for 2011-2012) comprises:

- permitting and further data interpretation
- Drill Slim Hole #1; log and test
- Drill Slim Hole #2; log and test
- Data interpretation and synthesis, site reclamation and report writing.

GeothermEx considers the cost estimates in the preceding table to be reasonable even though drilling costs can be highly volatile. Assuming that 500 ft gradient holes can be drilled for about $15,000 each (based on recent information) and allowing approximately $25,000 for road and pad construction (perhaps an underestimate), Caldera's plan would allow 20 holes to be drilled; this should be more than enough. Slim hole drilling is very sensitive to the hole design and drilling program and to drilling problems. Costs could be as little as about $100/ft and as much as about $400/ft, the high end allowing a 3,000 ft to be drilled for about $1.2 million (without logging and testing). See additional comments regarding this program in Section 14.

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9. DRILLING AND SAMPLING

Caldera has not yet done any geothermal exploration drilling in the area. Results of earlier shallow gradient drilling, as described in Section 6, recorded a maximum temperature of 208°F (98°C) at 279 ft (85 m) depth close to the fumarole. The maximum temperature from a slim hole in the same area was recorded as ~240°F (116°C), at ~400 ft (122 m). The projected temperature gradient from one of the slim holes places temperatures of about 350°F (177°C) at 4,500 ft (1,372 m) depth. Although possible, it is general experience that gradients tend to decrease with depth and it is more likely that a commercial resource close to 350°F (177°C) will be found at depths of 5,000 ft (1,524 m) or more.

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10. ADJACENT PROPERTIES

To the best of our knowledge, there are no properties immediately adjacent to the Caldera leases that have been leased for geothermal exploration or that are being explored for geothermal resources. Balthazor Hot Spring is located about 8-1/2 miles NE of the NE corner of Caldera's leases, and in that area there are leases held by Magma Energy US Corp and by Win-Eldrich Gold Inc., at a closest distance of about 7 miles.

11. RESOURCE ESTIMATE

The magnitude of the McGee Mountain geothermal resource is uncertain at this time, due to a lack of drilling data, somewhat uncertain resource area and a lack of thermal fluids chemistry, from within the anomaly, with which to estimate the resource temperature. A first approximation estimate can nevertheless be obtained, as follows.

11.1 Methodology

The resource is estimated using a Monte Carlo method applied to estimating heat-in place and then to estimating the recoverable heat as electrical generation, as described in Appendix A of this document and somewhat more fully in Appendix III of GeothermEx, Inc. (2004).

Complete input parameters for the estimate are shown on Figure 11.1. The following narrative describes the choices of resource area, temperature and thickness that have been used. The other input parameters are described in GeothermEx (2004).

11.2 Parameter Estimation

Area

In GeothermEx (2004) the most-likely area of the McGee Mountain resource was based on the distance from the Painted Hills Mine and fumarole southwards to gradient hole 158-A in the southeast corner of Section 34, where 10.4°F/100 ft (190°C/km) was measured at 300 ft (90 m) depth (see Figures 6.1.1 and 6.3.2). This distance was taken as 1.8 miles (2.9 km), yielding an area of 2.8 sq. miles (7.3 sq. km) with an assumed standard radius of 0.5 mile (0.8 km) around the end-points and connecting line. It was recognized that the northern end of the anomaly, in particular, was not well-bounded.

The 2-m deep temperature data that have since been obtained by Caldera (Figure 6.3.3) allow extending the length of the anomaly by about 0.6 mile (1 km) further north. This yields a most-

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likely area of 3.4 sq. miles (8.8 sq. km). Following the methodology of GeothermEx (2004), the minimum area is taken as one-half of the most-likely (1.7 sq. miles or 4.4 sq. km) and the maximum is taken as 1.5 times the most-likely (5.1 sq. miles or 13.2 sq. km).

Thickness

GeothermEx (2004) presents data from eleven relatively well-known geothermal reservoirs in Nevada and uses these data to establish reasonable thickness estimates for similar reservoirs not yet drilled. Specifically, a minimum average reservoir thickness of about 2,500 ft (0.8 km), a most-likely average reservoir thickness of about 3,500 ft (1.1 km) and a maximum average reservoir thickness of 5,500 ft (1.7 km) are used to estimate the reserves at otherwise un-drilled and poorly understood resource areas in the State. These dimensions don't necessarily represent the thickness of significant, widespread high permeability and convection in the geothermal reservoir, but rather the thickness likely to have some permeability and contribute over the life of the project to heat extraction. These thickness values are therefore used herein for heat estimation. Commercial levels of permeability may be restricted to upper or upper and middle levels of the hot volume, whereas heat would still be mined from less permeable rocks at lower levels.

Temperature

The temperature value for heat-in-place estimation is intended to represent average temperature within the volume (area times thickness) being modeled. Again, it is necessary for a McGee Mountain estimate to use default values that are based on the data compiled by GeothermEx (2004) from eleven relatively well-known geothermal reservoirs in Nevada. This yields an estimated minimum average temperature of 225°F (107°C), a most-likely average of 345°F (174°C) and a maximum average of 440° F (227°C).

Compared to these levels, the maximum temperature measured thus-far at McGee is ~241.5°F (116°C) in hole ST 1500-1. This represents conditions in an outflow zone at only 400 ft depth

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and there is little doubt that temperatures at depths of several thousand feet or more will be higher. The chemistry of 3 Springs supports the 345°F (174°C) value and suggests a deep source at closer to 374°F (190°C).

11.3 Results

Thermal energy in place

The preceding ranges of area, thickness and temperature, combined with heat capacity and porosity (listed on Figure 11.1), yield a 90%-probable ("P90") thermal energy-in-place estimate of 87,300 MW_{th}-years, which we consider to be a "minimum" likely value. (That is, 90% of estimates are higher.) At 50% probability ("P50") it is 134,000 MW_{th}-years. It is recognized that whereas the resource area is moderately constrained by shallow temperature measurements, both thickness and temperature of the deeper resource are as yet unknown and have been assigned default values based on other geothermal resources in Nevada.

Electricity generation

The recoverable portion of the preceding estimate of energy-in-place has also been estimated and converted into electrical energy, using the values of recovery factor, rejection temperature, utilization factor, plant capacity factor and power plant life that are listed on Figure 11.1, with results also shown on that figure.

The minimum (90% probable) estimate for generation potential in the McGee Mountain area is about 25 MW_e for 30 years (or a total of 750 MW_e-years). At 50% probability the estimate is 52 MW_e for 30 years (or a total of 1,560 MW_e-years).

11.4 Discussion

The preceding resource estimate was made without reference to the Caldera property (project area) boundary, but considering the configuration of the property (Figure 3.1.1) with respect to

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available resource information, we consider it reasonable to conclude that the entire magnitude of estimated resource lies within it.

As with all heat-in-place estimates of geothermal systems, this one must assume that there is adequate permeability at depth to supply geothermal wells at commercial flow rates, but permeability can be established only by drilling wells into the reservoir pay zone. Any estimate of this type should be regarded with caution because there needs to be subsequent proof of area, thickness, temperature and commercial permeability by means of deep drilling and testing. No heat-in-place estimate should ever be used to determine the final, installed size of a well field and power plant, because drilling and well testing are needed to confirm and better quantify the resource to be exploited.

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12. OTHER RELEVANT DATA AND INFORMATION

Information regarding historic exploration for or extraction of mercury at the Painted Hills Mine was not sought for this assessment.

12.1 Geothermal Energy in Nevada

Geothermal power generation is well established in Nevada. There are nine geothermal fields with plants currently operating in the state. The plants operating in these fields range in nameplate capacity from 2.4 MW to more than 100 MW. In 2008 these plants in total were producing 200 MW (gross) and 157 MW (net sales). A number of other geothermal projects in Nevada are at various stages of development.

The type of technology used to generate power depends in large part on the temperature of the resource. It is most likely that, for the McGee Mountain project, a binary-cycle system will be used to generate electricity. A binary system uses a closed loop to exchange heat between hot water from the geothermal resource and a circulating working fluid. The hot water is pumped from production wells, which allows higher overall flow rates than obtained under self-flowing conditions. This technology is well established, and has been in commercial operation for decades in Nevada, as well as other parts of the world.

It is also possible but much less likely that the resource temperature will be hot enough that self-flowing flashed steam wells will be developed, and the power plant designed to use steam turbine(s). This technology is also well established.

12.2 Energy Market

The McGee Mountain project is still in the early stage of development, and does not have a power purchase agreement in place. Potential customers include Nevada Energy, utilities in California (such as Pacific Gas and Electric, and Southern California Edison), Idaho (Idaho Power Company), and Oregon (Eugene Water and Electric Board).

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Power consumption is forecast to increase annually by 1.4% in the USA (International Energy Agency, 2004). While the bulk of this power is expected to be produced from fossil-fuel fired plants, environmental concerns may affect the ability to build and operate these facilities. There is a strong push towards renewable energy in both California and Nevada. California has recently enacted legislation (Senate Bill 107) requiring investor-owned utilities to provide 20% of their electrical generation from renewable sources by 2010. In Nevada, similar legislation (Assembly Bill 03 passed in 2005) has mandated that 20% of power be renewable by 2015.

In recent years power purchase agreements have been signed between geothermal power producers and private utilities in both Nevada and California, examples of which are included in the table below. With the increasing demand for power and the legislative requirement for renewable energy, there should be a viable market for the electricity produced from the McGee Mountain project.

Vendor	Purchaser	Contract
Nevada Geothermal	Sierra Pacific Resources	Up to 35 MW
Ormat	Sierra Pacific Resources	60 MW
IAE	PG&E	50 MW
Davenport Power	PG&E	60-120 MW
Western Geothermal Power Co.	Northern California Power Agency	35 MW
CHAR LLC	Salt River Project	50 MW
Esmeralda Truckhaven Geothermal	San Diego Gas and Electric	50 MW
ENEL	NV Energy	13 MW
ENEL	NV Energy	32 MW
Thermo Raser	City of Anaheim	10 MW

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Sources: Sierra Pacific Power, 2006; Enex, 2006; MSN, 2006; Davenport Power, 2006; GEA, 2009

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13. INTERPRETATION AND CONCLUSIONS

A geothermal resource is present in the McGee Mountain project area, manifested at the ground surface by a small fumarole and a zone of steam-heated ground. Data concerning the resource comprise geologic mapping, holes drilled to measure temperatures and fluids chemistry at a cool spring several miles to the SE that may be outflow from the thermal system. These data are insufficient to deduce the characteristics of the deep resource with a high degree of confidence or to determine yet whether the resource can be exploited commercially for generation of electric power. However, the geothermal resource appears to share characteristics with some others in the Basin and Range province, a number of which have been developed for power generation, and continued exploration of the McGee Mountain area is justified based on the results of exploration to date.

Deep drilling will eventually be needed to confirm the commercial viability of the McGee Mountain resource and to define its characteristics. A very preliminary model of the geothermal system, based on inferences that can be made a present, is contained in Section 7 of this report; this preliminary model can serve as a guide for the next stage of exploration, but will need to be updated and modified as new data become available. Similarly, a preliminary estimate of potentially recoverable geothermal energy reserves is presented in Section 11; a more accurate estimate will be possible when data from deep wells are obtained.

The physical and logistical conditions of the project area, including accessibility, land use and climate, do not present any known obstacles to the continued exploration and development of the McGee Mountain resource, or to generating and transmitting electric power from the area. The program of exploratory drilling currently planned by Caldera is feasible in terms of site conditions, and is appropriate for the next stage of project exploration and development.

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14. RECOMMENDATIONS

We recommend that exploration of the McGee Mountain project area proceed with the exploration program described in Section 8. As described in Section 8, we consider the cost estimates therein to be reasonable. We also consider the timeline to be reasonable. Some related comments are as follows:

- The designated gravity survey has already been completed, with coverage that we consider appropriate.
- Details of the rest of the exploration program have not been provided but it would be reasonable for these to still be under development.
- We suspect that a hydroprobe survey will find that depths to ground water in the area of greatest interest are too great for the hydroprobe, but it may be possible to conduct a survey of outlying points at lower elevations that might indicate patterns of outflow.
- We also recommend sampling of the McGee Mountain fumarole if possible, with interpretation of results in terms of possible source temperatures. We recognize that a fumarole in this setting may contain a substantial amount of entrained air and not yield useful samples.
- The temperature gradient drilling will probably comprise up to about 20 holes each drilled to a maximum depth of 500 ft. These will be used to help infer the resource distribution in the subsurface and guide the siting of deeper test wells. The holes are usually sited to establish background temperature patterns in and around the area, and to target zones of interest. Since holes have already been drilled at McGee, the new holes should be used to fill in gaps, confirm anomalies, and provide missing detail. Holes of this type are typically drilled with a simple truck-mounted rotary rig and completed with a sealed PVC plastic tube inserted to the bottom; the annulus is backfilled and the tube is filled with water. Temperatures in the tube are then measured at about 1 meter or 5 to 10 ft intervals, typically after about one week and then after a month or until stable. Temperature gradient holes are typically not permitted for flow tests or injection tests, but sometimes during drilling such holes will produce formation water that can and should be sampled for chemical analysis.
- A "Slim hole" is: (a) substantially deeper than a gradient hole but (b) too slim to produce at economic flow rates (this reduces the drilling cost). Slim holes have no unique design or depth, but most are at least 2,000 ft deep, few exceed about 4,000 to

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5,000 ft, and occasional ones reach about 7,000 ft. Most slim holes do not reach the depths of the primary reservoir target, but some do. Many are never produced but if they are the flow tests produce valuable water samples but flow information that may be compromised and ambiguous *vis a vis* reservoir properties. Some slim holes are instead tested by injection (which may be less ambiguous). The holes are usually completed with intermediate casings and sometimes a liner (slotted or blank) at bottom, to stabilize it for temperature measurements. A few are completed with 2-1/2 inch diameter pipe installed, for temperature measurements only. Some slim holes are drilled with coring rigs and some rotary, and it is our general experience that the rotary holes turn out to cost less (sometimes substantially less) than the core holes. Although it is argued that the rock cores obtained with a coring rig provide valuable geologic information, the cost of these can be so high that other information and the program is compromised. Caldera will need to consider all of these factors, as well as the availability and costs of drilling equipment and supplies, when the slim hole drilling is designed and permitted.

- Some drilling programs skip the slim holes entirely and proceed to deep, full diameter drilling, which costs per hole roughly twice as much as slim holes.

- Depending upon results, the final exploration stage will be two or three deeper wells designed for production and drilled with the intention of entering the reservoir. These deeper wells will then need to be tested at a production rate, with pressure interference monitoring, to evaluate the characteristics and capabilities of the reservoir/resource to generate electricity.

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16. QUALIFICATIONS AND SIGNATURES

16.1 History and Experience of GeothermEx, Inc.

GeothermEx is a U.S. corporation, in business since 1973, specializing exclusively in providing consulting, operational and training services in the exploration, development, assessment and valuation of geothermal energy. We are the largest and longest-established such organization in the Western Hemisphere. The staff consists of specialists in geosciences (geology, geochemistry, geophysics, hydrology), engineering (drilling, well testing, reservoir, production, power plant, chemical), computer science and economic analysis. All technical staff members have advanced degrees and lengthy geothermal experience (average 15 years), with several members having more than 25 years in the geothermal industry.

GeothermEx's clients include:

- major oil and mineral companies requiring assistance in exploration, drilling and field development;
- electrical utilities requiring independent resource evaluation;
- financial organizations requiring advice on loan, acquisition and grant programs; and
- agencies of government, land owners, legal counselors, and engineering companies requiring specialized technical assistance.

GeothermEx has been associated with more than 750 projects for some 180 clients in 44 countries. The company has been involved in the development of The Geysers geothermal field in California and in all the other producing geothermal fields in the United States, including those in the Imperial Valley, the Basin and Range, Hawaii, Alaska and the Cascade Range. GeothermEx has carried out detailed geothermal exploration, drilling, field development and/or assessment projects for government agencies or private companies in Canada, Costa Rica,

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Nicaragua, Indonesia, Papua New Guinea, Guatemala, Portugal (the Azores), Iran, Mexico, the Philippines, El Salvador, Honduras, Peru, Macedonia, Argentina, Italy, Japan and Taiwan. We have also carried out geothermal reconnaissance and evaluation projects in Viet Nam, Bolivia, China, Panama, St. Lucia, Kenya, Ethiopia, Mozambique, Yemen, Turkey, India, Thailand, Djibouti, Uganda, Hungary, Samoa, Jordan, Madagascar, and Fiji for the United Nations or World Bank. GeothermEx has conducted technology transfer or training projects in many countries, including Bolivia, Brazil, China, Costa Rica, Greece, Japan, Nicaragua, New Zealand and The Philippines.

GeothermEx's specialties include:

- Design and implementation of exploration programs.
- Design and management of drilling projects.
- Design and management of well logging operations.
- Design, execution and interpretation of well tests.
- Conceptual modeling based on integration of geologic, geochemical, geophysical, drilling and well-test data.
- Reservoir engineering and numerical simulation of reservoirs.
- Wellbore simulation and well design.
- Optimization of resource use.
- Design of power plants and gathering systems.
- Economic evaluation, risk appraisal and project financing support.
- Monitoring and maintenance of producing fields.

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- Production chemistry services.

- Project feasibility studies.

GeothermEx has conducted due diligence and verified resource adequacy for financial institutions in nearly all geothermal projects in the United States and abroad financed by bank loans or bonds. This has enabled the development of more than 6,000 MW of geothermal power, the total financed to date being more than US $6,500,000,000.

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16.2 Statements of Qualifications of Principal Investigators

(see pages following)

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STATEMENT OF QUALIFICATIONS

I, Christopher W. Klein, certify that:

1. I reside in Berkeley, California, U.S.A.

2. I have a Ph.D. in Geology from Harvard University and a Bachelor of Arts degree in Chemistry from the University of California (Berkeley).

3. I have worked as a geologist and geochemist with GeothermEx since 1975.

   My expertise includes: exploration geochemistry; structural geology; well testing and well-site geochemical studies; computerized thermodynamic and kinetic modeling of fluids behavior; design and evaluation of scale and corrosion controls; interpretation of chemical, geological, well logging, well test and reservoir engineering data from geothermal fields around the world; conceptual modeling of geothermal resources, relationships between temperature and structure and resource capacity assessment.

   I have been responsible for on-the-ground geothermal exploration, fluids sampling and well-testing in: Mexico, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, Panama, Argentina, Iran, Indonesia, The Philippines, Papua New Guinea, Portugal, Japan, Yugoslavia and western U.S.A. Major recent projects have included resource evaluations, conceptual modeling, geochemical data interpretation, database development and due-diligence review of geotechnical programs for: western Turkey (multiple areas), 2009; all known resources of Chile, 2009; a Coast Range, CA hot spring region, 2009; The Geysers steam reservoir, CA, 2009; four geothermal resource areas in Indonesia, 2008-9; all known geothermal resources of British Columbia, 2008; the Germencik project, Turkey, 2007-9; numerous prospects in Nevada, Idaho, Portugal and Serbia (Barren Hills, Alum, Hot Sulfur Springs, Blue Mountain, Magic Hills, Crane Creek, Chaves, Vrajnska Banya), 2005-9; fluids sampling at tests of geothermal wells, Raft

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River, ID, 2004; development of an integrated database of reserve estimates and development cost data for the California Energy Commission, covering over 80 geothermal resource areas in California and western Nevada, 2002 – 2004; conceptual modeling and evaluation of outflow zone effects on groundwater at the Steamboat geothermal field, 2005.

Prior to joining GeothermEx, I performed minerals exploration and structural geology studies from 1969 to 1975.

4. I am a member of the Geothermal Resources Council (Davis, California), the International Geothermal Association (Reykyavik, Iceland), and the American Chemical Society.

5. My knowledge of the McGee Mountain geothermal project is based on (1) technical documents provided to GeothermEx by Caldera Geothermal Inc., (2) the publications listed in the References section of this report, (3) geotechnical information concerning the prospect area obtained from public domain databases available through the internet, and (4) a brief site visit in 1977.

6. I do not own, nor do I expect to own, any shares or interest in Caldera Geothermal, Inc. or any related company.

7. I hereby grant Caldera Geothermal, Inc. and related companies permission to use this report for fund-raising purposes.

8. The effective date of this report is 1 July 2010.

Dated at Richmond, California, USA, this 1st day of July, 2010.

CWKlein

Christopher W. Klein, Ph. D.

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STATEMENT OF QUALIFICATIONS

I, James W. Lovekin, certify that:

1. I reside in Berkeley, CA, U.S.A.

2. I have an Engineer's Degree in Petroleum Engineering from Stanford University and am a registered Professional Engineer in the State of California. I also have a Bachelor's degree in Geological Engineering from the University of Nevada, Reno, as well as a Bachelor's degree in American Studies from Amherst College.

3. I have worked as a geothermal engineer since 1987 and joined GeothermEx as Manager of Field Operations in 1996.

   My expertise includes: planning and execution of geothermal project development; assessment of geothermal reserves and sustainable reservoir capacity; design and supervision of well workovers; prevention of scale in geothermal wells and surface facilities; selection of optimal injection strategies for geothermal fields; forecasting reservoir performance and estimating make-up drilling requirements; and budgeting for drilling and for monitoring reservoir performance.

   I have been responsible for planning development and monitoring project performance at numerous geothermal fields in the United States, Indonesia, and Central America.

   Prior to joining GeothermEx, as Director of Geothermal Resources for CalEnergy Company, I was a key person in field development and power plant construction for nine years, during which a total generation capacity of 270 MW (9 individual power plants) was installed at the Coso geothermal field in California. I was personally involved in the testing and evaluation of approximately 50 production wells at Coso, and established a

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reservoir monitoring program at Coso incorporating flow rate measurements, pressure and temperature surveys, geochemical sampling, and tracer studies.

During my tenure with CalEnergy Company, I also managed field development and operations at the Salton Sea (then 240 MW), Roosevelt Hot Springs (then 25 MW), and Desert Peak (then 9 MW) geothermal fields, and coordinated the assessment and development planning for a number of exploratory geothermal projects, including Newberry Crater in Oregon, Glass Mountain (Telephone Flat) in northern California, San Jacinto-Tizate in Nicaragua, and the Dieng and Patuha fields in Indonesia.

4. I am a board member of the Geothermal Resources Council and a member of the International Geothermal Association, the Society of Petroleum Engineers, and the American Association of Petroleum Geologists.

5. My knowledge of the McGee Mountain geothermal project is based on (1) technical documents provided to GeothermEx by Caldera Geothermal, Inc., (2) the publications listed in the References section of this report, and (3) geotechnical information concerning the prospect area obtained from public domain databases available through the internet.

6. I do not own, nor do I expect to own, any shares or interest in Caldera Geothermal, Inc. or any related company.

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Dated at Richmond, California, USA, this 1st day of July, 2010.

James W. Lovekin, P.E. (State of California, No. 1594)

REGISTERED PROFESSIONAL ENGINEER
JAMES W. LOVEKIN
No. P001594
EXP. 30 SEP 2011
PETROLEUM
STATE OF CALIFORNIA

TABLES

Table 6.5.1: Chemical analyses of spring and well water samples from the vicinity of the McGee Mountain, NV geothermal prospect

No.	Name	Sample T°C	Flow l/m	pH	Na (mg/kg)	K	Ca	Mg	SiO2	T.Alk. as HCO3	SO4	Cl	F	TDS (sum)	Dif.% (±/sum)
1	Bog Hot Well B 46N-28E-31	11		7.5	104	14.0	22.0	7.30	45	353.0	19.0	16.0	0.8	401	-0.71
2	McGee Mtn Sp 45N-27E-4bbc	10	0.03	6.5 (f)	11	3.3	6.9	1.70	36	29.3	13.0	3.5	0.2	90	9.79
3	Bog Hot Well 45N-27E-1acc	13.5		7.5 (f)	64	10.3	6.9	0.90	63	101.0	68.0	6.7	2.4	270	1.15
4	Stockwell 45N-27E-13bbd	14		7.7	180	22.0	17.0	1.00	65	195.0	207.0	55.0	3.5	643	0.43
5	Gilotti Well 45N-28E-32ca	17		8.0 (f)	57	2.1	3.7	0.10	50	88.0	42.0	12.4	0.9	211	0.21
6	**3 Springs 44N-27E-1C**	**12**	**2**	**7.5 (f)**	**248**	**26.2**	**19.0**	**3.30**	**98**	**223.0**	**179.0**	**177.0**	**2.8**	**860**	**0.61**
7	Gridley Lk W.S.	36	80	7.0 (f)	33	6.7	1.7	0.10	66	62.0	16.8	5.7	0.7	161	4.17
8	Bog Hot Spr 46N-28E-18ba	55	4000	7.8 (f)	78	1.1	0.4	0.00	57	112.0	42.0	11.7	1.9	245	4.57
8	Bog Hot Spr 46N-28E-18ba	54	4228	9.1	81	1.0	0.2	-0.10	57	127.0	45.0	15.0	1.7	262	0.39
9	Balthazor HS 46N-34E-13bd	80	104	8.0	180	8.7	8.4	-0.10	160	141.0	220.0	48.0	7.1	695	-0.88
				f=field											

Geothermometers °C

No.	Name	Sample T°C	Na-K-Ca				Na-K-Ca-Mg	Fourner Variant		Silica	
			β=1/3	β=4/3	(√Ca)/Na	Na-K-Ca		K-Mg	Na/K	Chal.	Qtz
1	Bog Hot Well B 46N-28E-31	11	187°	110°	5.18	187°	58°	52°	244°	67°	97°
2	McGee Mtn Sp 45N-27E-4bbc	10	201°	62°	27.42	62°	cool	24°	334°	56°	88°
3	Bog Hot Well 45N-27E-1acc	13.5	199°	123°	4.71	199°	139°	87°	261°	84°	113°
4	Stockwell 45N-27E-13bbd	14	194°	144°	2.63	194°	172°	115°	235°	86°	115°
5	Gilotti Well 45N-28E-32ca	17	129°	78°	3.88	78°	78°	63°	144°	72°	102°
6	**3 Springs 44N-27E-1C**	**12**	**191°**	**154°**	**2.02**	**191°**	**117°**	**103°**	**222°**	**109°**	**136°**
7	Gridley Lk W.S.	36	214°	135°	4.54	214°	203°	114°	286°	86°	115°
7	Bog Hot Spr 46N-28E-18ba	55	109°	112°	0.93	109°	109°		92°	79°	108°
8	Bog Hot Spr 46N-28E-18ba	54	109°	127°	0.63	109°	109°		86°	79°	108°
9	Balthazor HS 46N-34E-13bd	80	152°	124°	1.85	152°	152°		162°	142°	166°

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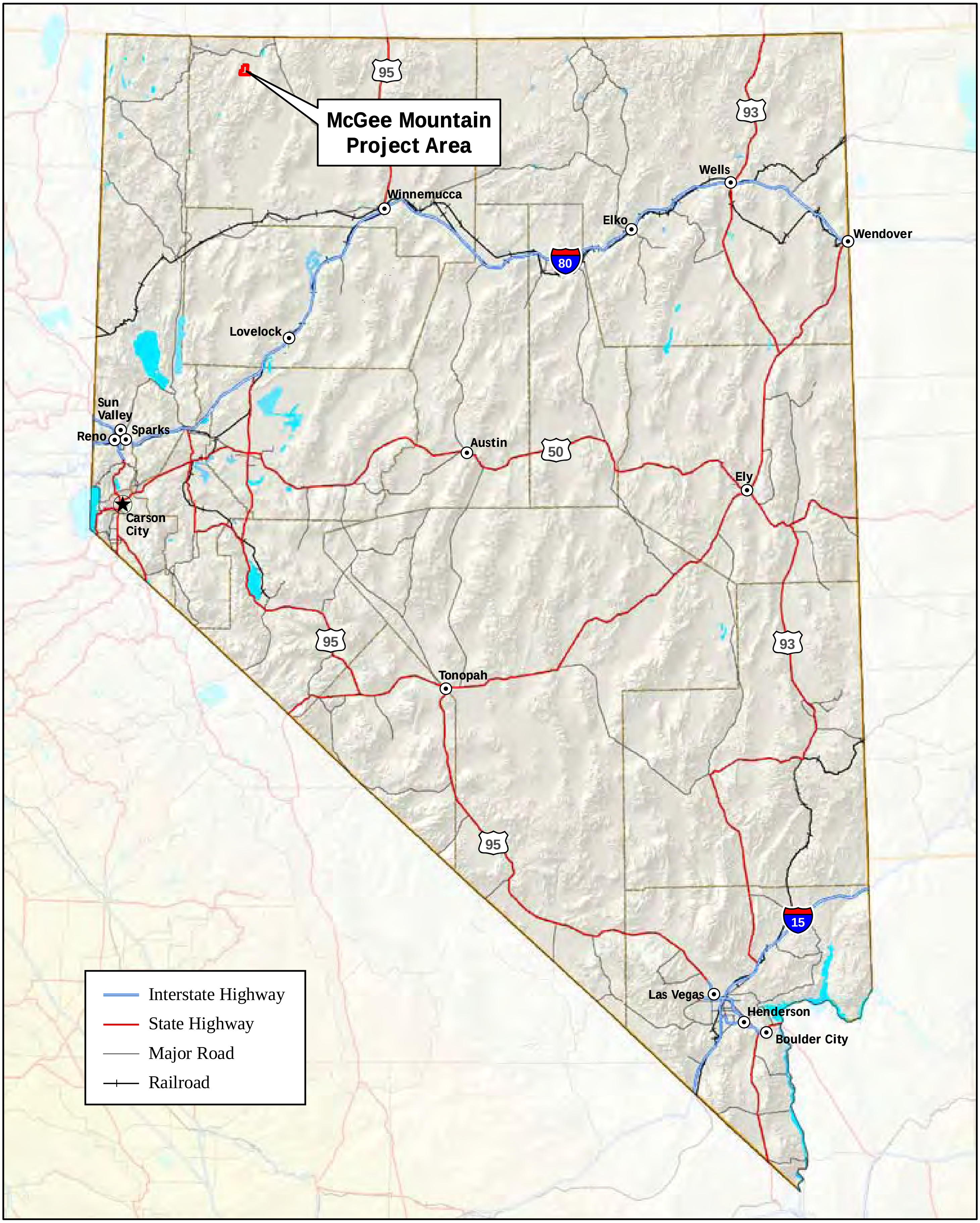
FIGURES



Projection:
NAD27 Lamber Conformal Conic
Plot Date:
May 27, 2010

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1:3,390,000

Figure 1.1.1: Location of McGee Mountain project area, Humboldt County, Neveada

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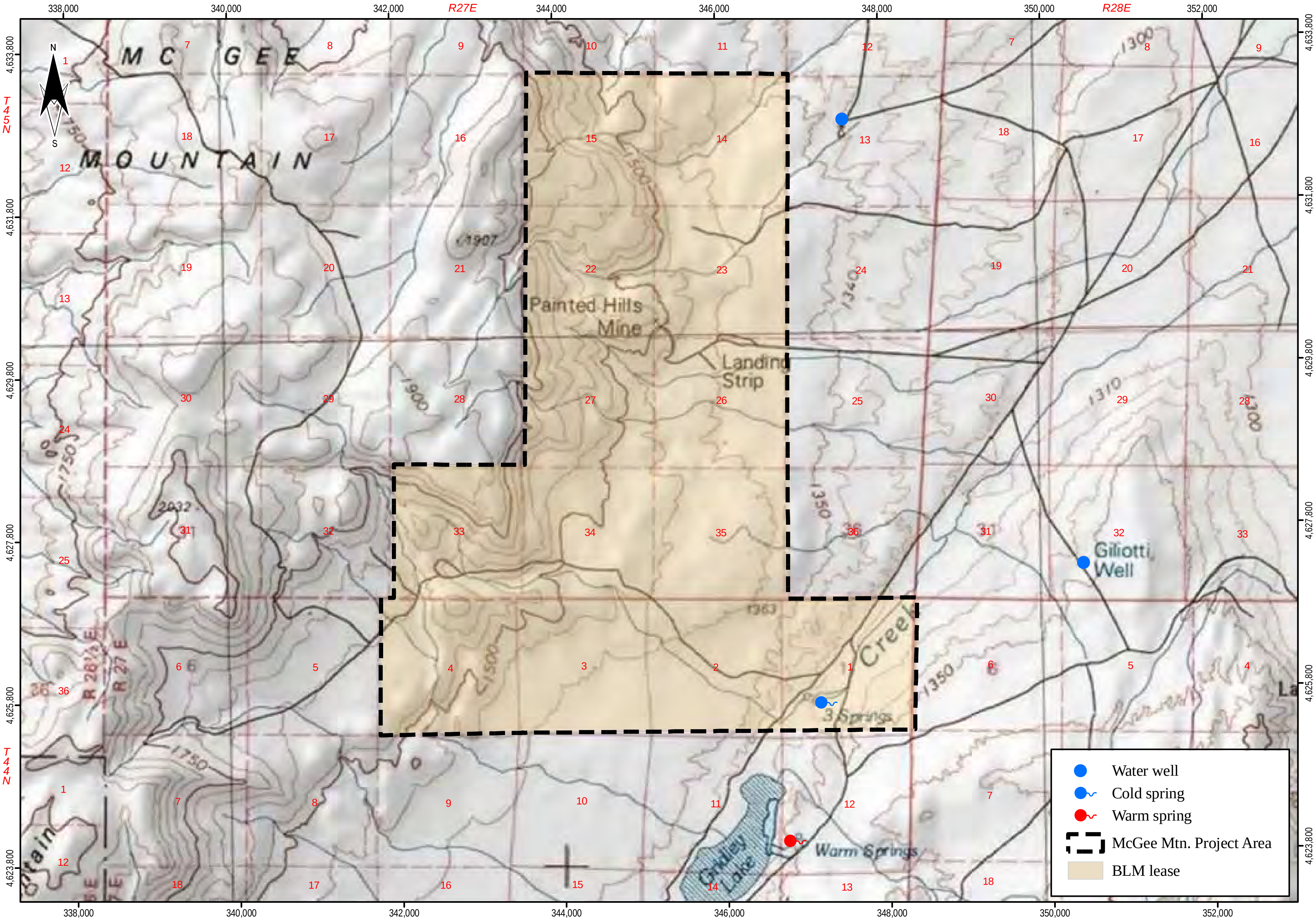

Projection:
NAD83 UTM 11N
Plot Date:
June 1, 2010

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0 2,000 Feet
1:60,000

Figure 3.1.1: Caldera lease map, McGee Mountain project area, Humbold County, Nevada

GeothermEx, Inc.

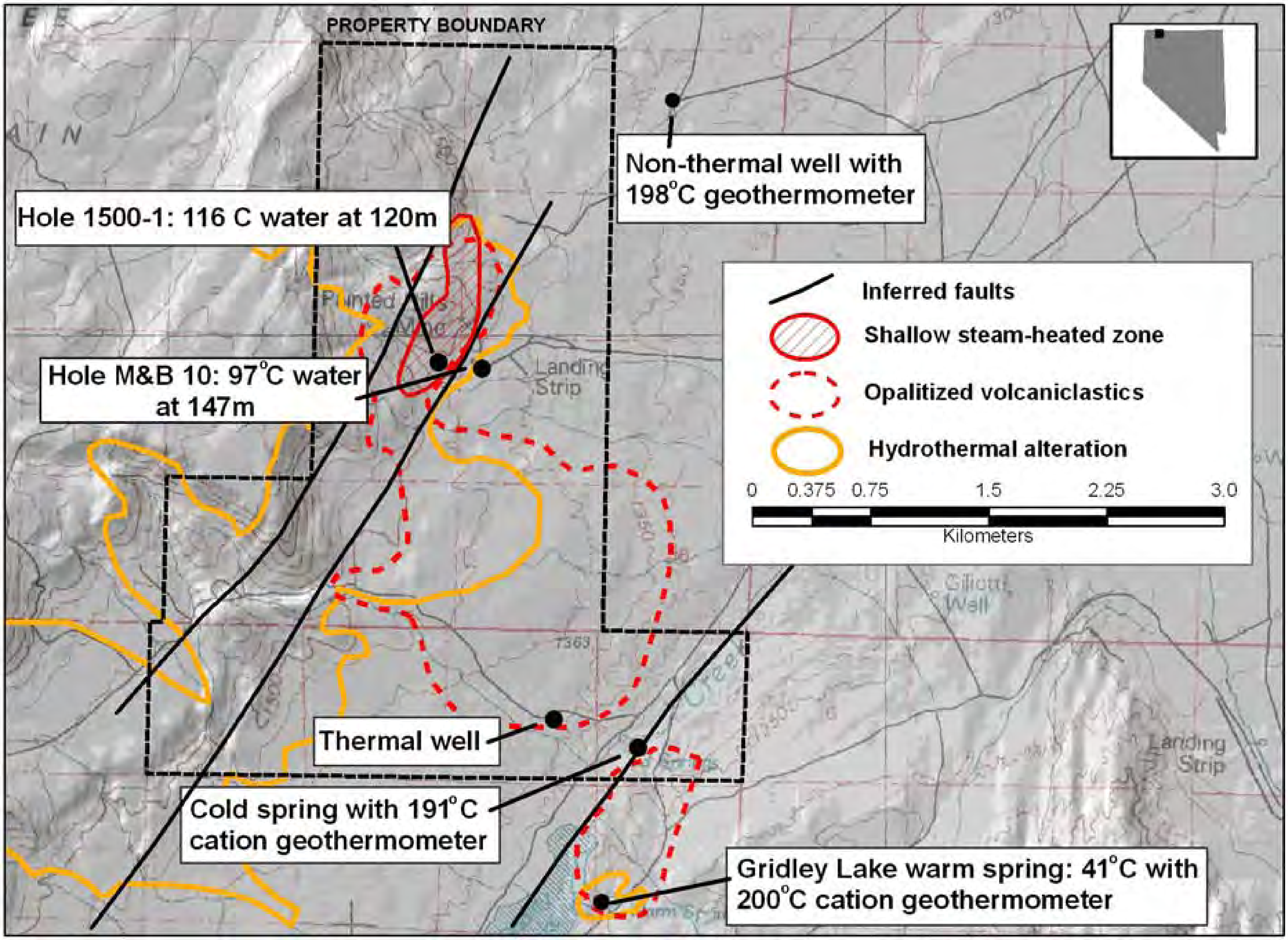
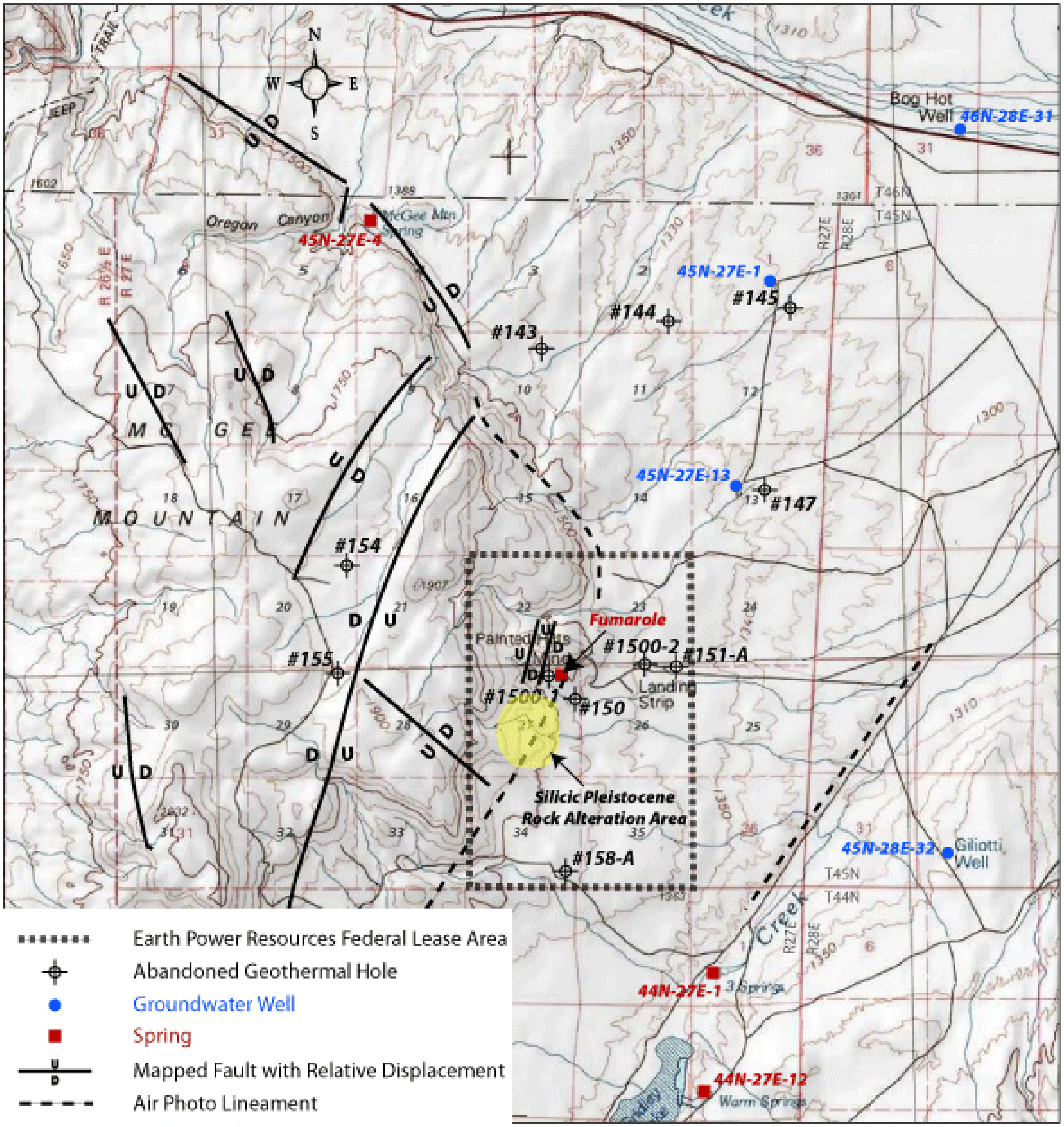


Figure 3.3.1: Map showing areas of hydrothermal alteration in the McGee Mountain project area, Nevada (from Caldera)



(EPR Federal Lease Area now obsolete. May 2010.)

Figure 6.1.1: Faults, springs and well Locations at McGee Mountain, Nevada (from EPR).

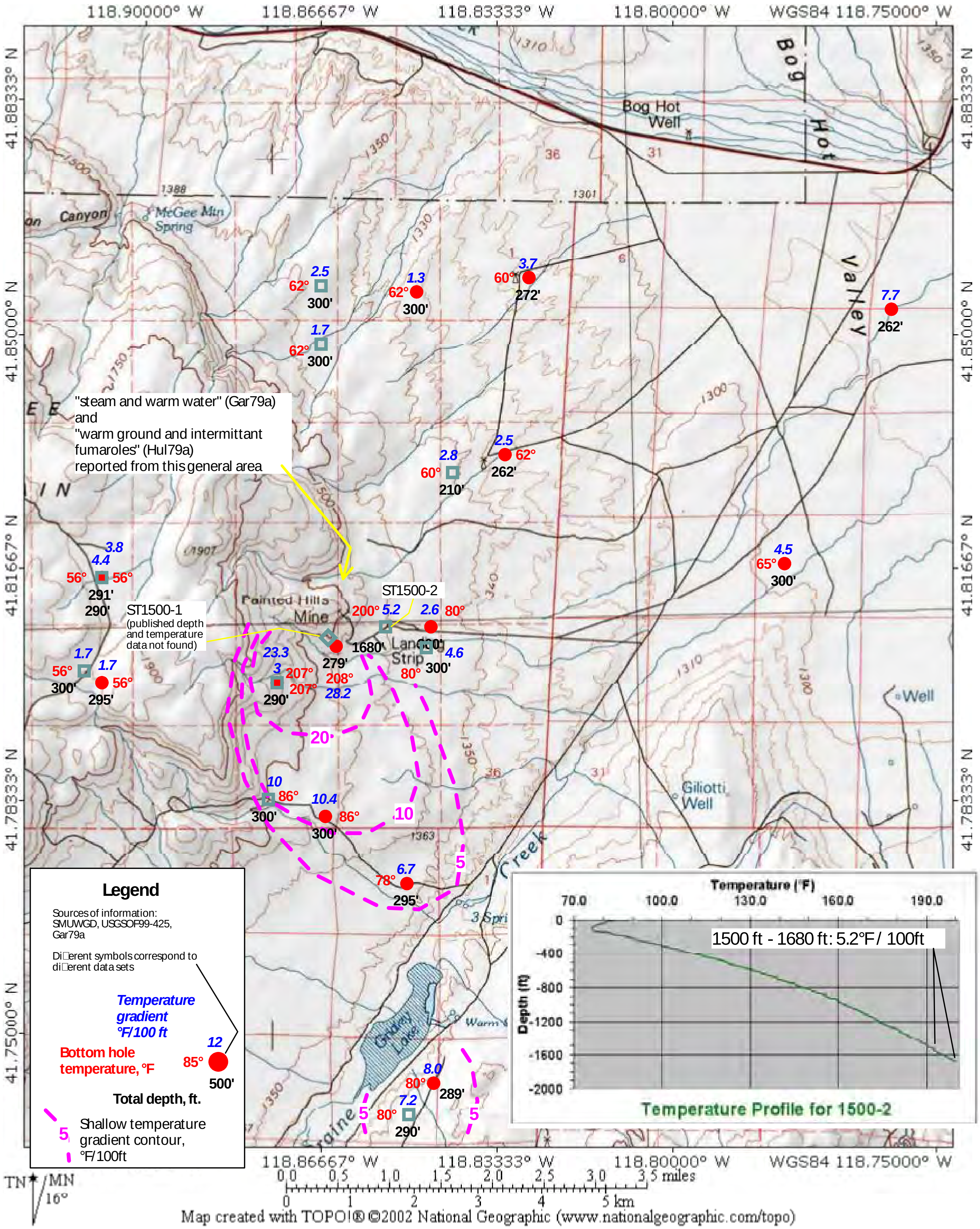


Figure 6.3.1: Map showing hole locations and temperature data, McGee Mountain (Painted Hills) area, Nevada

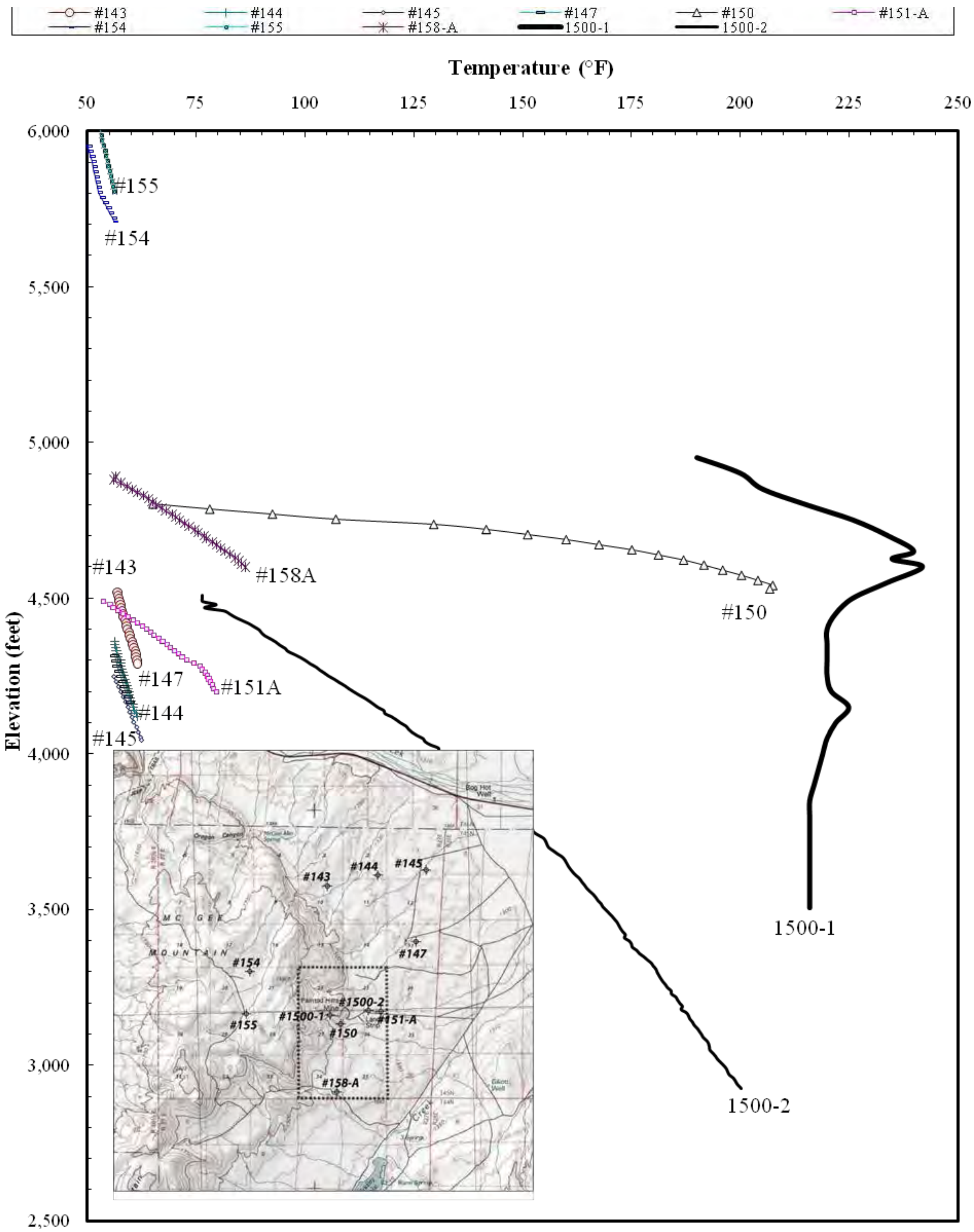
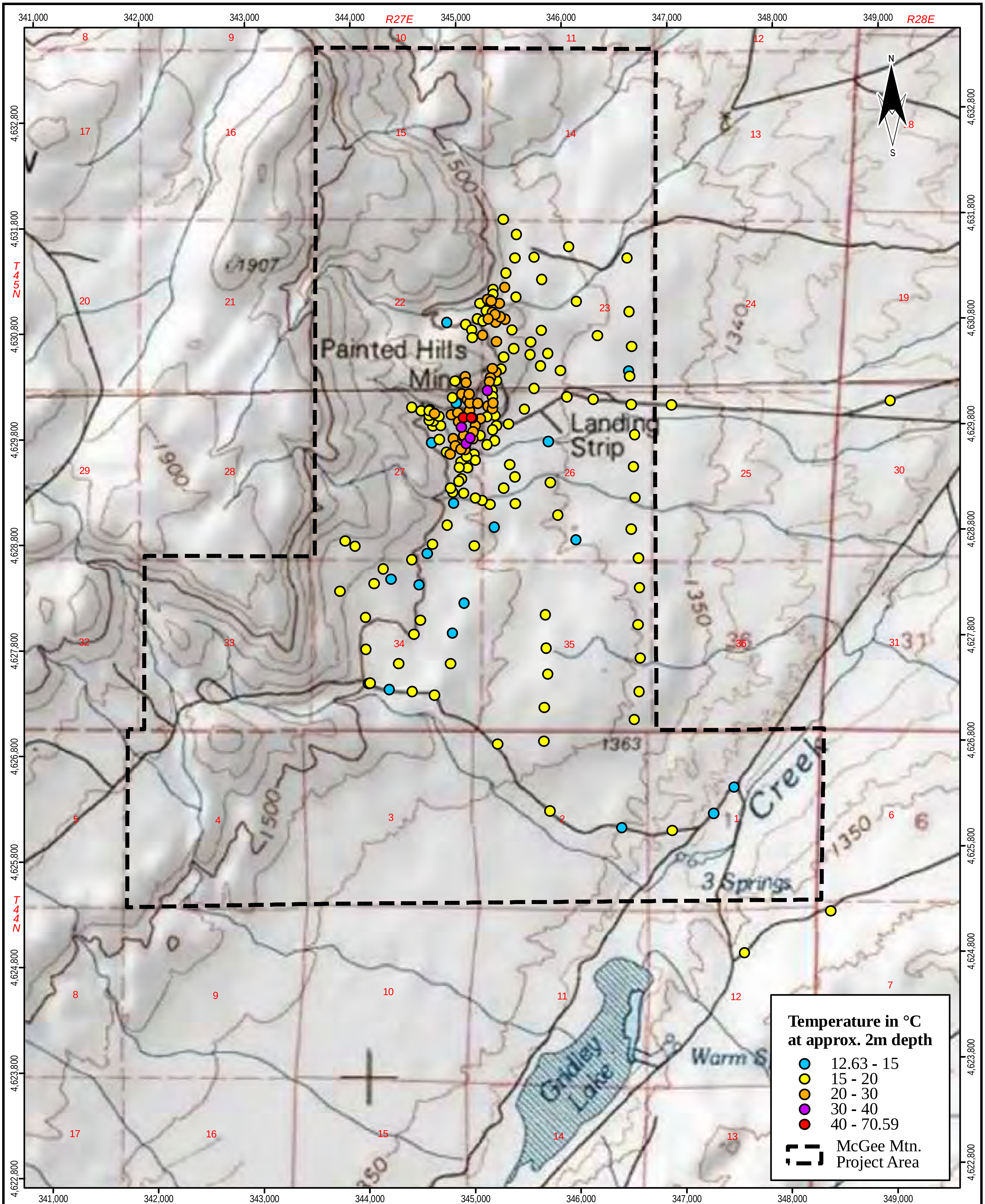


Figure 6.3.2: Temperature vs elevation data for wells drilled at McGee Mountain, Nevada (from EPR).



Projection:
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Plot Date:
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Figure 6.3.3: Temperature measurements at approximately 2 meters depth, McGee Mtn., Nevada

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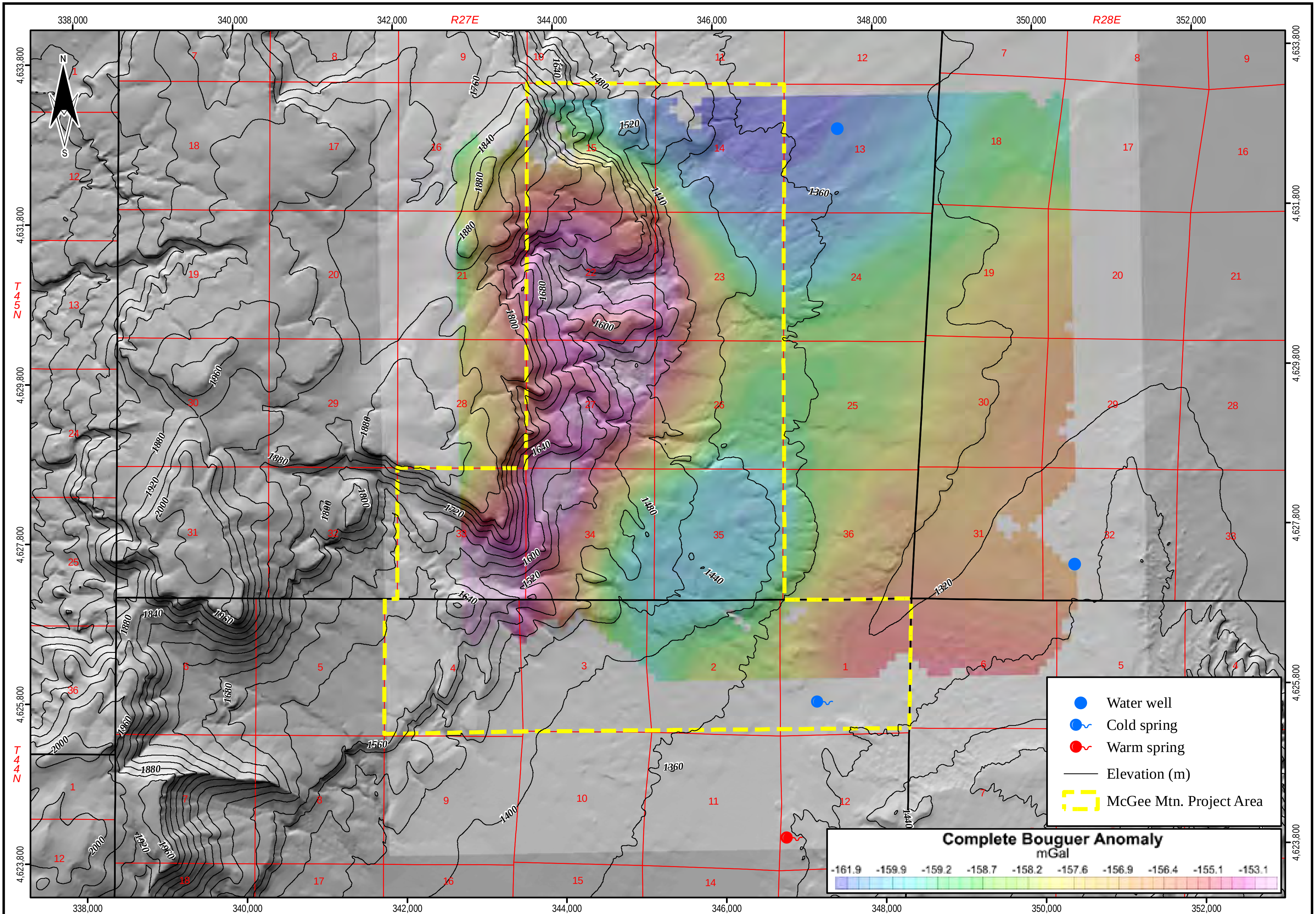

Projection:
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Plot Date:
June 4, 2010

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1:60,000

Figure 6.4.1: Complete Bouguer anomaly at density 2.35 g/cc, McGee Mountain, Nevada

GeothermEx, Inc.

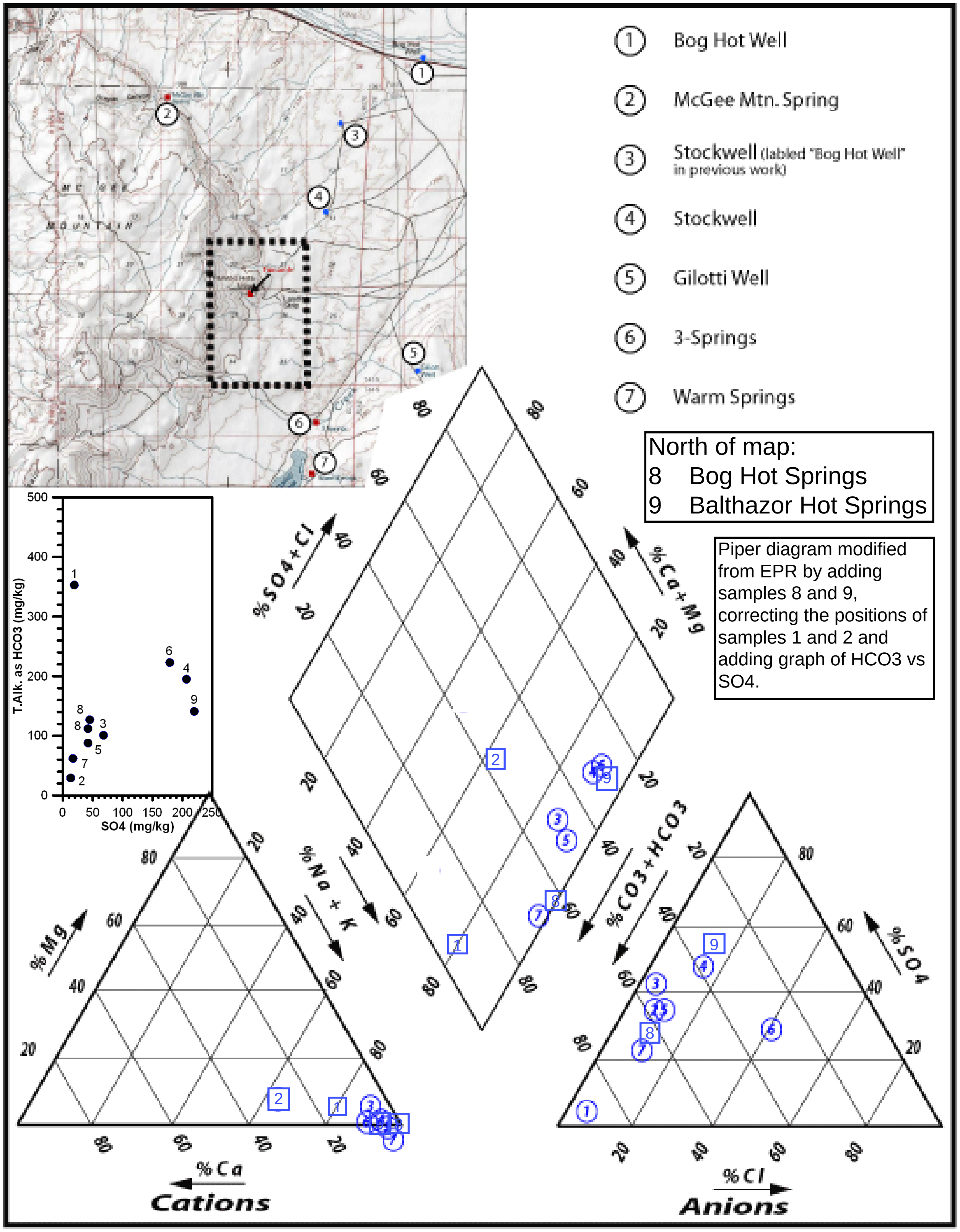


Figure 6.5.1: Piper Diagram for spring and well waters near McGee Mountain, Nevada (modified from EPR).

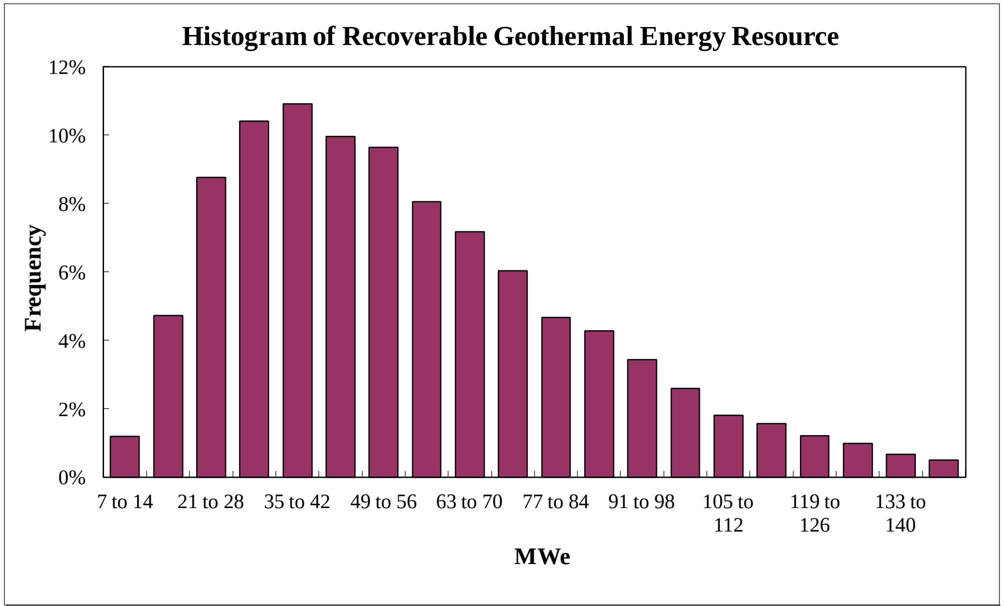
SUMMARY OF INPUT PARAMETERS

Variable Parameters	**Minimum**	**Most Likely**	**Maximum**
Reservoir Area (sq. km)	4.40	8.8	13.20
Reservoir Thickness (m)	800	1100	1700
Rock Porosity	0.03		0.07
Reservoir Temperature (°C)	107	174	227
Recovery Factor	0.05		0.20

Fixed Parameters		
Rock Volumetric Heat Capacity	2613	kJ/cu. m°C
Rejection Temperature	15	°C
Utilization Factor	0.45	
Plant Capacity Factor	0.90	
Power Plant Life	30	years

RESULTS

Statistics			
	MW	**MW/sq. km**	**Recovery Efficiency**
Mean	58.1	6.6	1.11%
Std. Deviation	31.0	3.2	0.41%
Minimum (90% prob.)	**24.7**	3.0	0.57%
Median (50% prob.)	**51.9**	6.1	1.09%
Most-likely (Modal)	**41.3**	4.7	0.76%



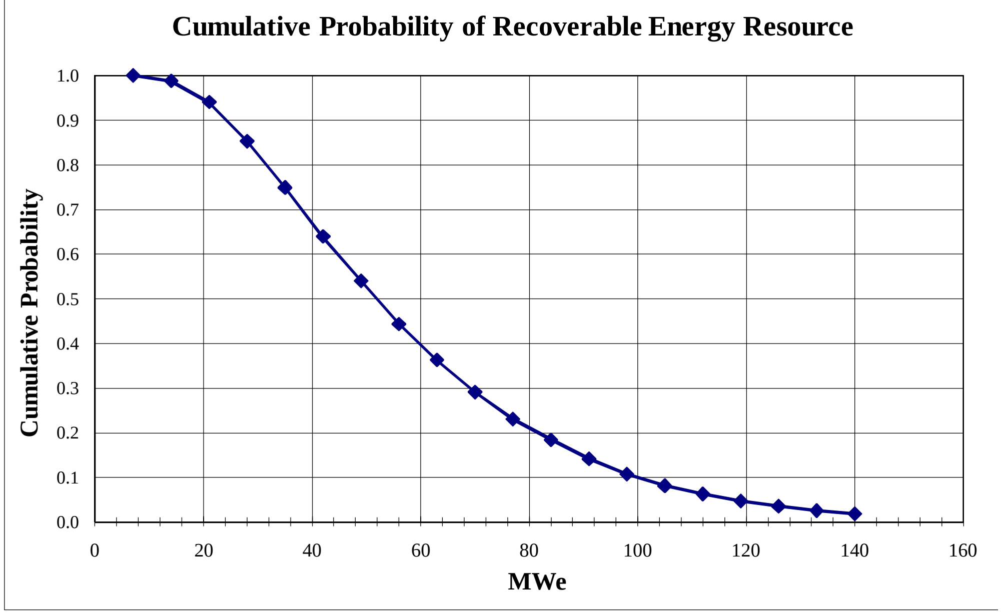


Figure 11.1:

Estimation of Geothermal Energy Resource
McGee Mountain Prospect, NV

APPENDICES

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APPENDIX A: METHODOLOGY FOR ESTIMATION OF AVAILABLE GEOTHERMAL ENERGY RESOURCE

To estimate the available energy resource in the project area we have used the volumetric estimation method introduced by the United States Geological Survey, modified to account for uncertainties in some input parameters by using a probabilistic approach (Monte Carlo simulation).

This technique used to estimate the magnitude of the energy resource is based on a volumetric calculation of the heat-in-place, with reasonable assumptions made about:

- the percentage of that heat that can be expected to be recovered at the surface; and
- the efficiency of converting that heat to electrical energy.

It must be emphasized that an estimate of heat resource does not imply any guarantee that a given level of generation can be achieved. Before generation can be realized, wells capable of extracting the heat from the rock by commercial production of geothermal fluid must be drilled and tested. This is the only way to demonstrate unequivocally the generating capacity of the resource.

In our method, the maximum sustainable power plant capacity (E) is given by:

$$E = V\,C_v(T-T_o)\cdot R/F/L \qquad \text{(A.1)}$$

where V = volume of the reservoir,

C_v = volumetric specific heat of the reservoir,

T = average temperature of the reservoir,

T_o = rejection temperature (equivalent to the average annual ambient temperature),

R = overall recovery efficiency (the fraction of thermal energy in-place in the reservoir that is converted to electrical energy at the power plant),

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F = power plant capacity factor (the fraction of time the plant produces power on an annual basis), and

L = power plant life.

The value of V, reservoir volume, is estimated by combining estimates of its area and thickness.

The parameter R can be determined as follows:

$$R = \frac{W \cdot r \cdot e}{C_f \cdot (T - T_o)} \qquad \text{(A.2)}$$

where r = recovery factor (the fraction of thermal energy in-place that is recoverable as thermal energy),

C_f = specific heat of reservoir fluid,

W = maximum available work from the produced fluid, and

e = utilization factor to account for mechanical and other losses that occur in a real power cycle.

The parameter C_v in (3.1) is given by:

$$C_v = \rho_r C_r (1-\varphi) + \rho_f C_f \varphi \qquad \text{(A.3)}$$

where ρ_r = density of rock matrix,

C_r = specific heat of rock matrix,

ρ_f = density of reservoir fluid, and

φ = reservoir porosity.

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The parameter W in (2) is derived from the First and Second Laws of Thermodynamics as follows:

$$dW = dq\ (1\text{-}T_o / T) \qquad \text{(A.4)}$$

and

$$dq = C_f\, dT \qquad \text{(A.5)}$$

where q represents thermal energy.

In the Monte Carlo simulation method, the uncertain parameters are sampled randomly and combined in a large number of trials to yield a probability distribution of energy reserves. For the estimate herein, 10,000 trials were used to construct the probability distribution of reserves. The selection of parameters and results of the estimate are discussed in the body of this report.