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GEOTHERMAL ASSESSMENT OF THE MX DEPLOYMENT AREA IN NEVADA

Final Report, April 1, 1981—April 30, 1982

By
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University of Nevada, Las Vegas
Division of Earth Sciences
Museum of Natural History
Las Vegas, Nevada

U. S. DEPARTMENT OF ENERGY

Geothermal Energy

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DIVISION OF GEOTHERMAL ENERGY
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ABSTRACT

A preliminary geothermal resource assessment of the MX deployment area in Nevada focused on Coyote Spring Valley in southeastern Nevada (DOE Contract No. DE-AC08-81NV10187). Initially, an extensive literature search was conducted and a bibliography consisting of 750 entries was compiled covering all aspects of geology pertaining to the study area (see Appendix B).

A structural study indicates that Coyote Spring Valley lies in a tectonically active area which is favorable for the discovery of geothermal resources. Hot water may be funneled to the near-surface along an extensive fracture and fault system which appears to underlie the valley, according to information gathered during the literature search and aerial photo survey.

A total of 101 shallow temperature probes were emplanted in Coyote Spring Valley. Three anomalous temperature points all lying within the same vicinity were identified in the north-central portion of the valley near a fault.

A soil-mercury study also identified one zone of anomalous mercury concentrations around the north end of the Arrow Canyon Range. This zone is approximately seven miles south of the anomalous temperature zone in the direction of flow of the White River flow system which runs underground through Coyote Spring Valley.

A literature search covering regional fluid geochemistry indicated that the three fluid samples taken from Coyote Spring Valley have a higher concentration of Na + K. These samples are probably related to volcanic units found near springs and wells in Coyote Spring Valley. During field work, seven fluid samples were collected in Coyote Spring Valley which also appear to be derived from volcanic units due to the presence of Ca-Mg or Na-K carbonate-bicarbonate.

A temperature gradient study of six test water wells indicates that only one geothermal well with a temperature of 35.5°C (96°F) exists in the central portion of the valley at the north end of Arrow Canyon Range near the zone of anomalous soil-mercury points. This area also lies along a fault which may serve as a conduit for geothermal fluids.

A cultural assessment of Coyote Spring Valley was performed prior to field work. During the literature search, it was discovered that human activity has taken place continuously in the Valley over the past 15,000 years. During field work, if cultural material was found, the site was recorded and another site was selected for drilling.

In conclusion, this preliminary study indicates that geothermal resources may exist in Coyote Spring Valley along the eastern border, however, stratigraphic test drilling must be performed to confirm the resource.

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INTRODUCTION

Geothermal assessment of the Missile X (MX) deployment area in Nevada and Utah began in mid-1980 when the U.S. Department of Energy received a request from the U.S. Department of Defense for technical assistance in developing alternate energy sources for the MX System. The U.S. Department of Energy contacted the Nevada State Geothermal Resource Assessment Team, currently the Division of Earth Sciences of the University of Nevada, Las Vegas for assistance in the Nevada portion of the study.

A preliminary project scope and budget were compiled by the Division of Earth Sciences technical staff for assessment of the entire MX deployment area covering over one million square kilometers or one-third the area of the state of Nevada (fig. 1), including several potential geothermal resources (fig. 2).

Funding was provided under an existing U.S. DOE contract, No. DE-AC08-79NV-10039 for preliminary project planning and data acquisition in order to meet early deadlines established by the U.S. Air Force (U.S.DOD). Funding restrictions were later imposed by the U.S. Air Force, reducing the original project scope to three sites, Coyote Spring Valley, Ely and Tonopah, Nevada. In particular, the proposed main operating base site at Coyote Spring Valley in Clark County, Nevada was to be the primary focus of study (fig. 3).

In April, 1981 a contract for $1,196,240 for a 24-month geothermal resource assessment was awarded to the Division of Earth Sciences by the U.S. Department of Energy based upon U.S. Department of Defense requirements. This contract called for a complete study of the three areas described above, however, the contract performance would be based upon available funding from DOD. The initial incremental funding level was $210,645 for a reconnaissance geothermal assessment study of Coyote Spring Valley and the adjacent Kane Springs Valley,

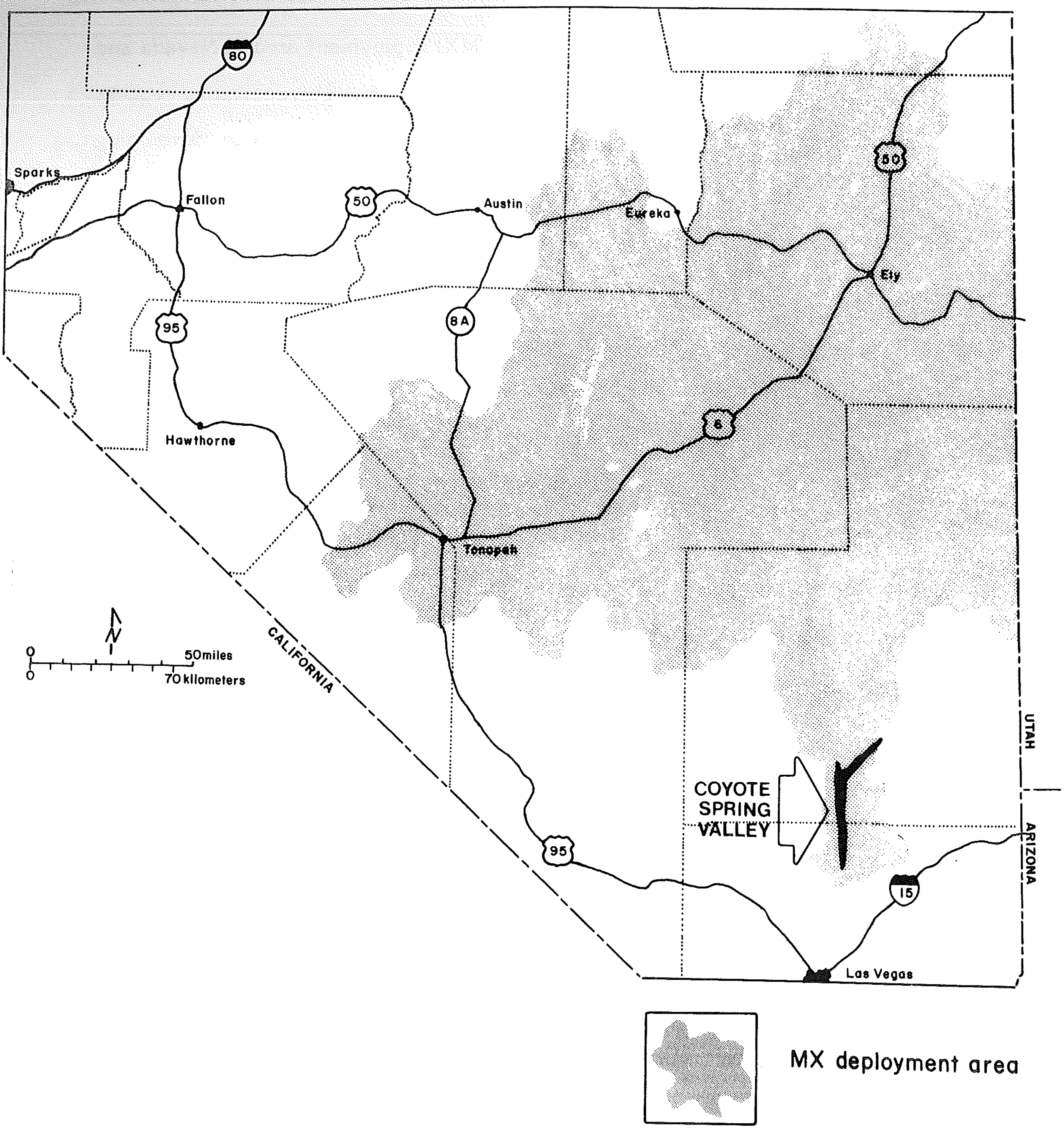


Figure 1. Index map of the original deployment area and study area.

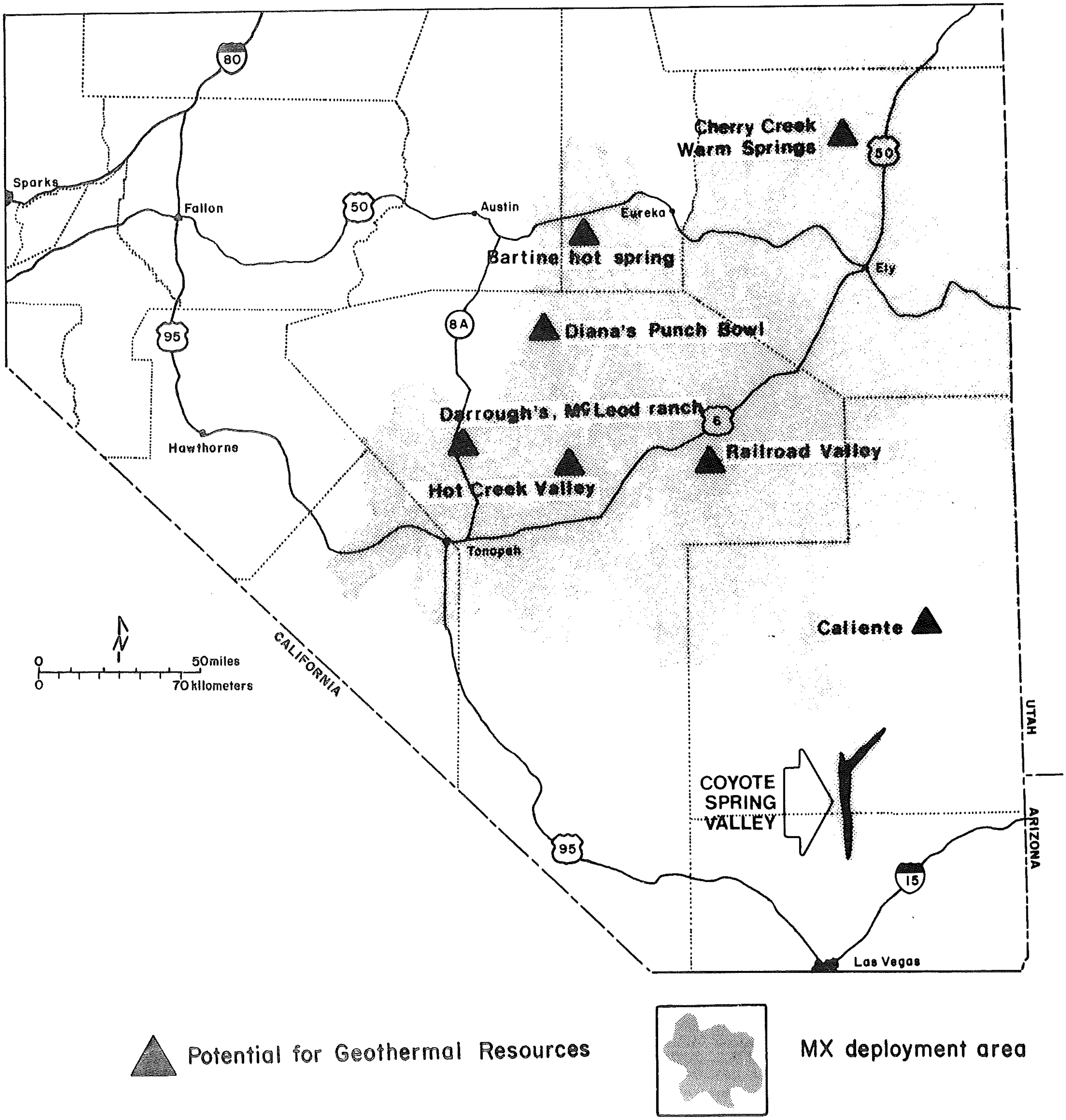


Figure 2. Geothermal resources within the deployment area.

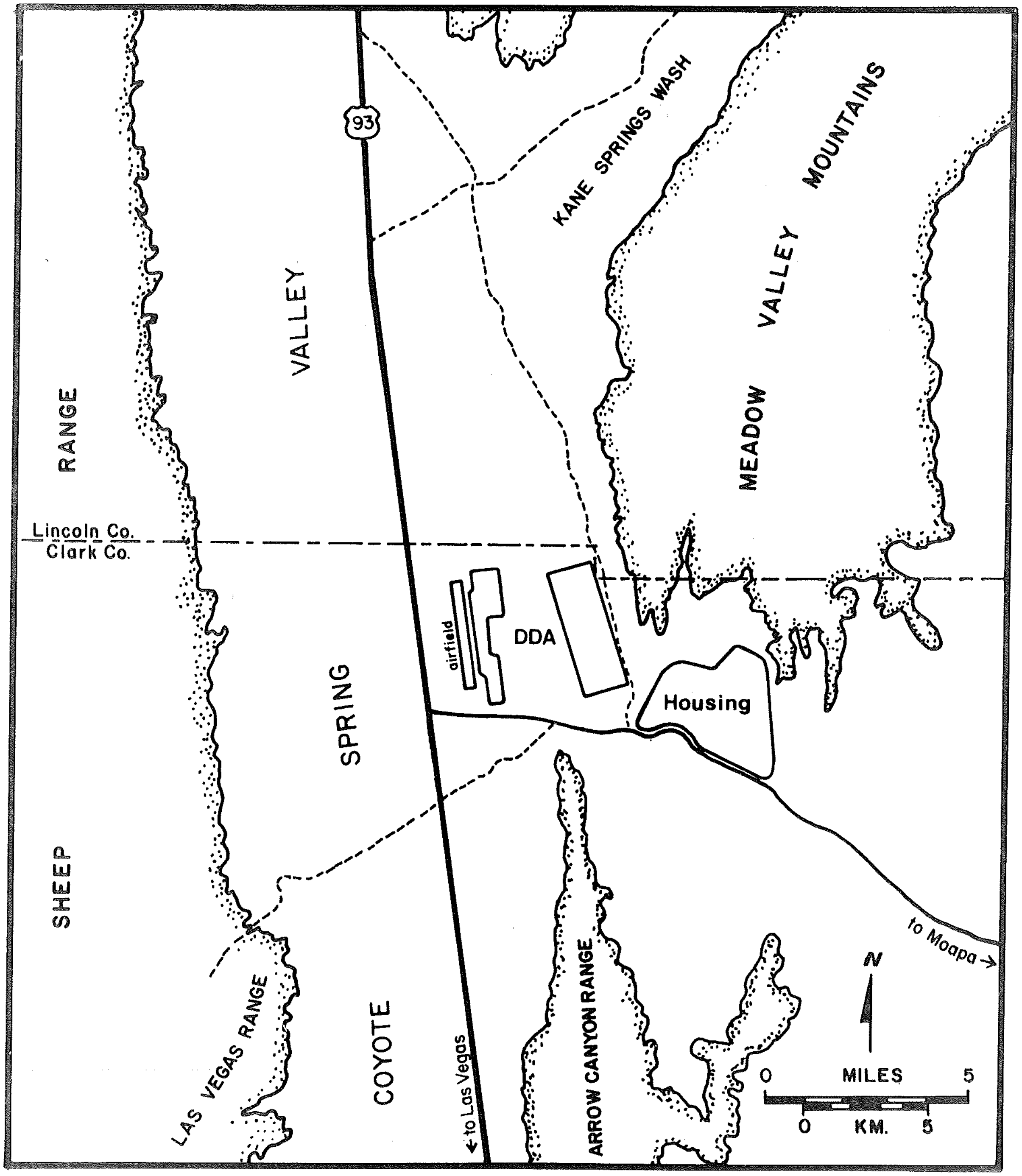


Figure 3. Location of proposed MX operation base, Coyote Spring Valley, Nevada

Figure 4. Tasks scheduled under this incremental funding included compilation of a bibliography, collection of available geologic data, regional and local lineament analysis, aerial photograph interpretation, regional two-meter temperature probe and soil-mercury surveys, and a regional and areal water chemistry study.

Further funding was not made available under Contract No. DE-AC08-81NV10187 because the current Administration postponed the proposed land basing mode of the MX System for further review and analysis. Therefore, geothermal assessment of the MX deployment area was restricted primarily to Coyote Spring Valley, and to a lesser extent, adjacent Kane Springs Valley (figs. 5, 6).

BASELINE DATA COLLECTION

A baseline data study of the MX deployment area was one of the preliminary tasks performed under U.S. DOE Contract No. DE-AC08-79NV10039 (fig. 7).

A bibliography was compiled of available geotechnical and geologic data within the deployment area and includes over 750 entries. A cross-reference key by subject matter was developed for the bibliography to increase its usefulness. Both the bibliography and the key are included in the Appendix.

Regional geologic or geotechnical data which could not be obtained through local sources was purchased, including several geologic reports and computer-enhanced false-color Landsat images of the MX deployment area. Figure 8 is a map showing the region covered by the satellite images.

A data exchange program was set up with the geotechnical subcontractor for the U.S. Air Force, however, much of the data was incomplete or not available. Figure 9 shows the areas for which geological data were obtained from the U.S. Air Force.

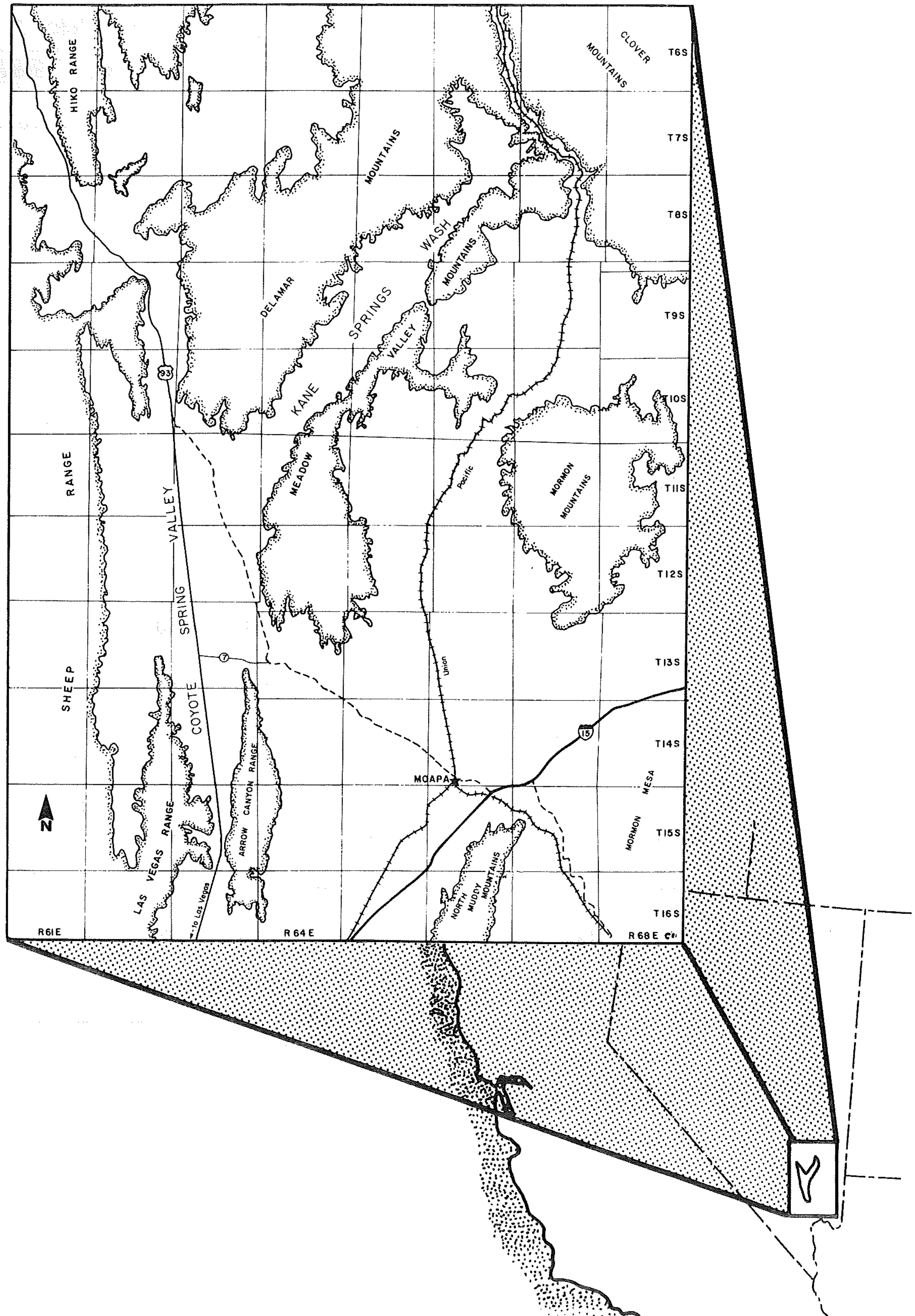


Figure 4. Location of Coyote Spring Valley study area.

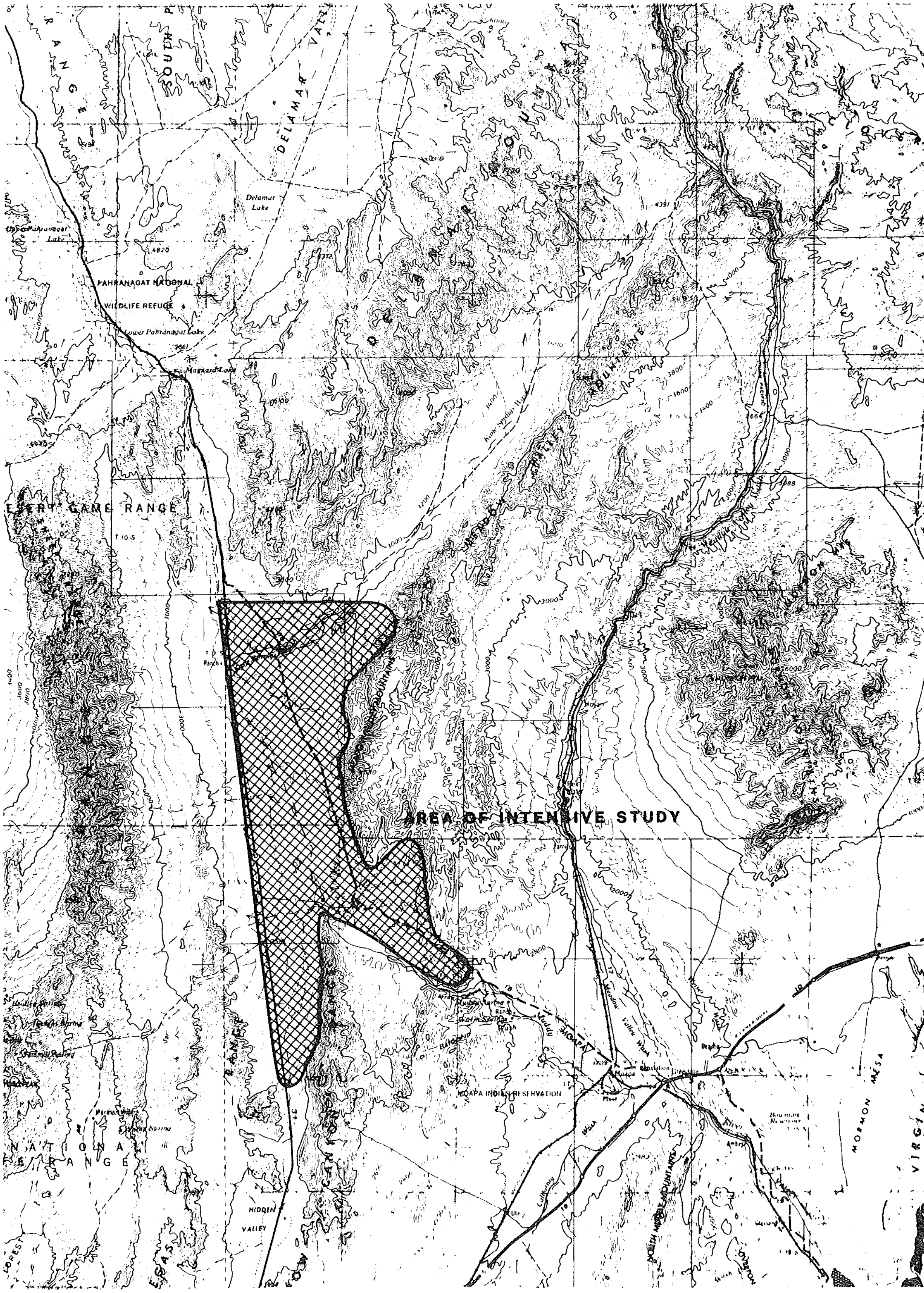


Figure 5. Location of area of intensive study: Coyote Spring Valley.

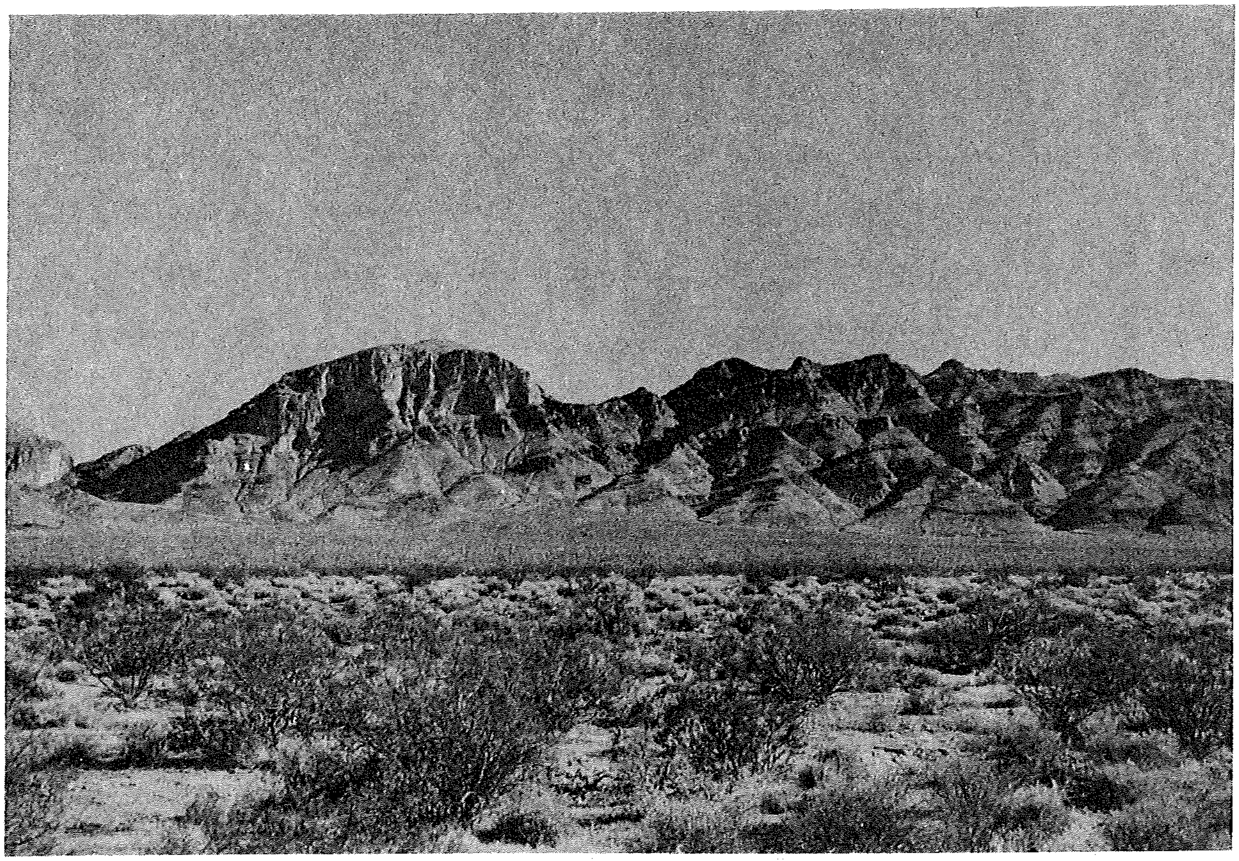


Figure 6. Coyote Spring Valley looking east to the Meadow Valley Mountains.

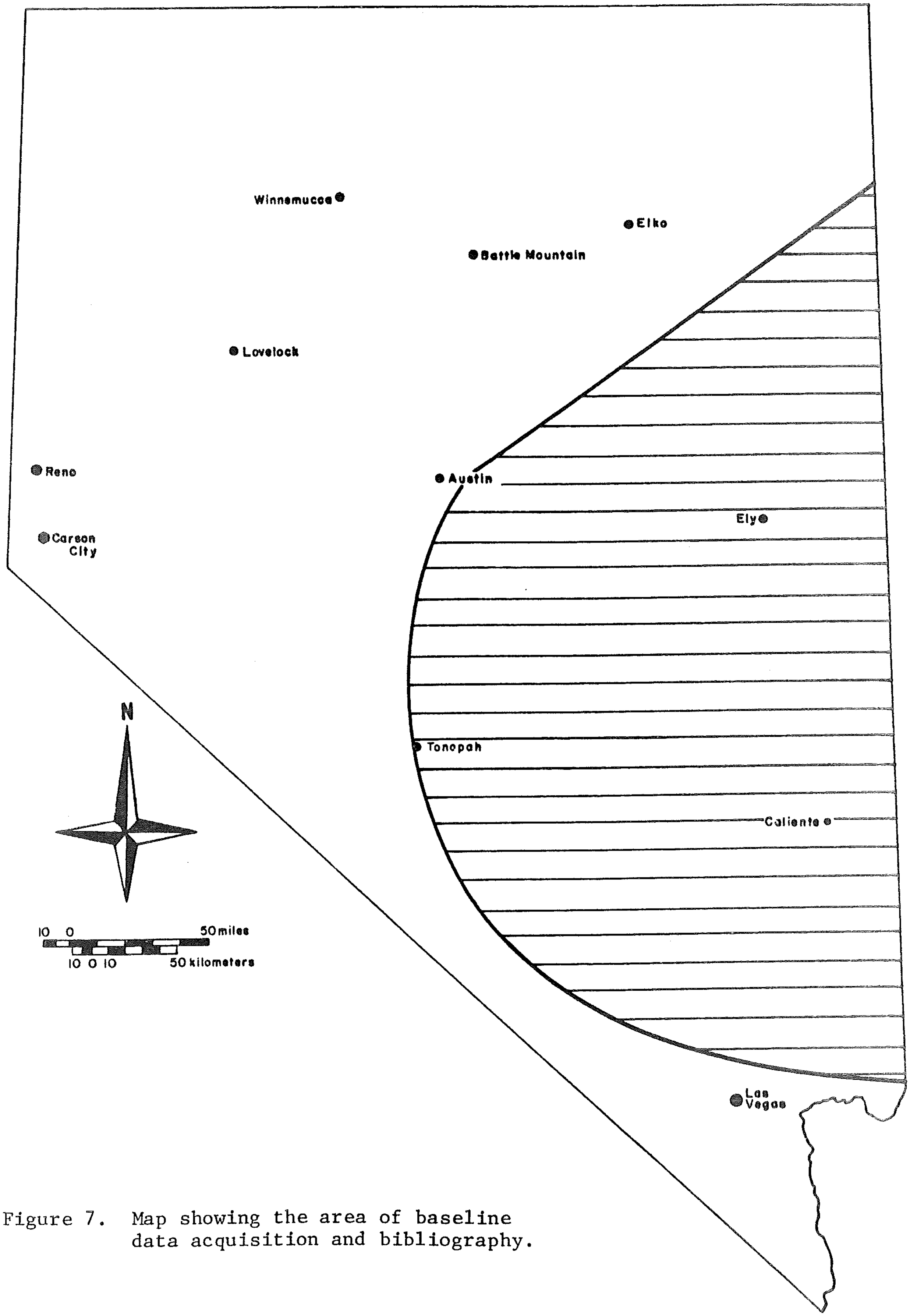


Figure 7. Map showing the area of baseline data acquisition and bibliography.

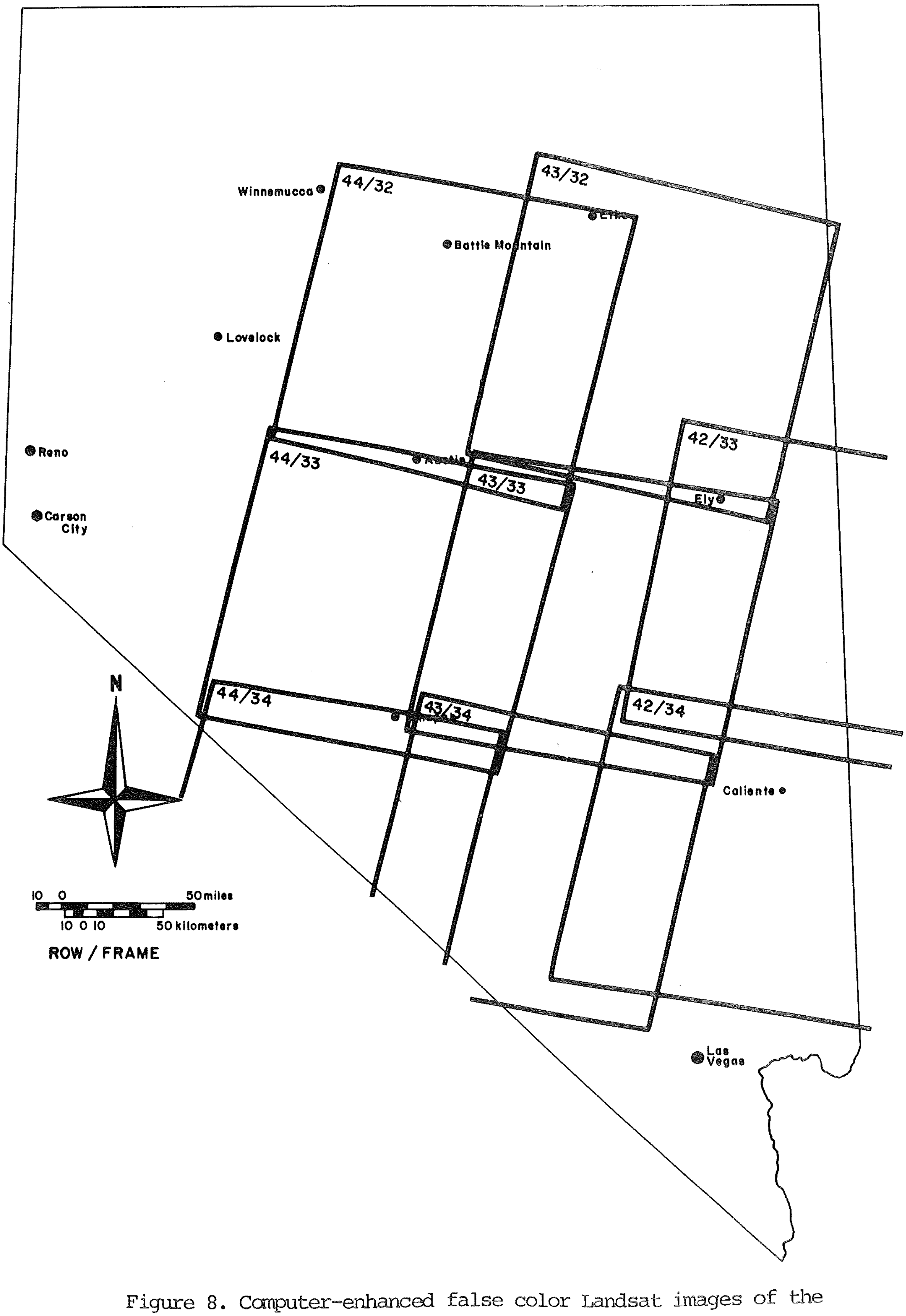


Figure 8. Computer-enhanced false color Landsat images of the deployment area.

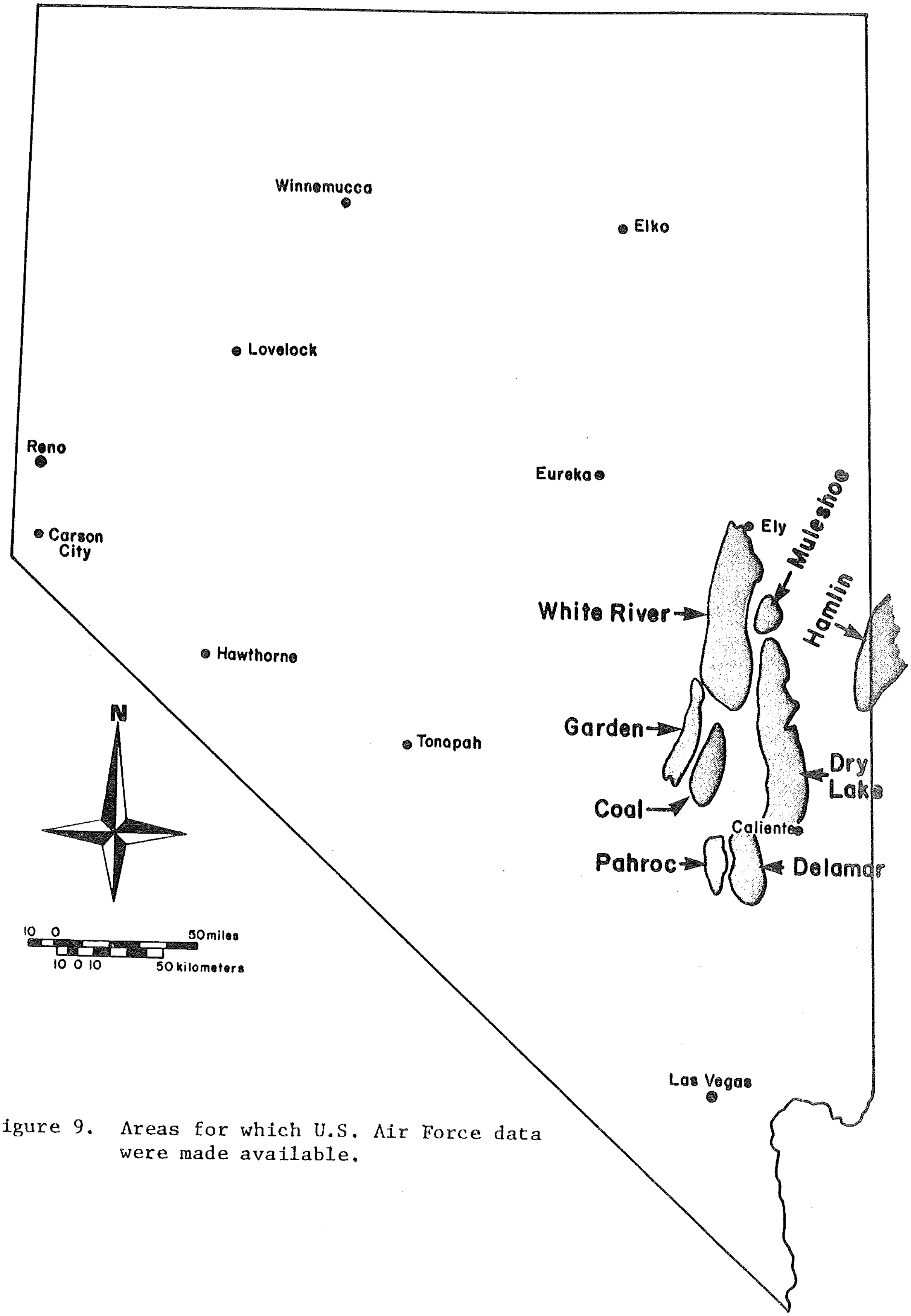


Figure 9. Areas for which U.S. Air Force data were made available.

REGIONAL GEOLOGY

Southeastern Nevada is an area of complex structure and lithology consisting of Paleozoic carbonate units thrust over each other (Stewart, 1980) which are partially covered by Tertiary volcanic and sedimentary rocks. Late Cenozoic Basin and Range faulting has further broken up the area. Figure 10 is a composite geologic map of the area compiled from several sources (Ekren and others, 1977; Longwell and others, 1965; Tschanz and Pampeyan, 1970).

Major lithologic units in the region around Coyote Spring Valley are carbonates of Paleozoic age; sandstone and shales are also interbedded with some of the carbonate sequences. Limestone is the major carbonate unit, although some large dolomite formations are also present. Carbonate rocks are divided into individual formations and units according to geologic reports on Clark and Lincoln counties (Longwell and others, 1965; Tschanz and Pampeyan, 1970).

Tertiary volcanic rocks and volcanic sediments overlie the Paleozoic units in the northern ranges which border Coyote Spring Valley. The Delamar Range northeast of Coyote Spring Valley is almost entirely covered with Tertiary volcanic rocks, and is also the source of many of these volcanic units (Noble, 1968). These Tertiary units also occur in the Sheep Range. Occurrences found in the western and eastern slopes of the Meadow Valley Mountains suggest that volcanic rocks covered most of this range. Uplift and erosion, however, have removed most of the Tertiary sequence from the western slope.

GEOLOGY OF COYOTE SPRING VALLEY

To improve the data base of Coyote Spring Valley, a geologic map was compiled from data provided by the U.S. Air Force's subcontractor (Fugro National Inc., 1980). Figure 11 shows the major lithologic units and structural features

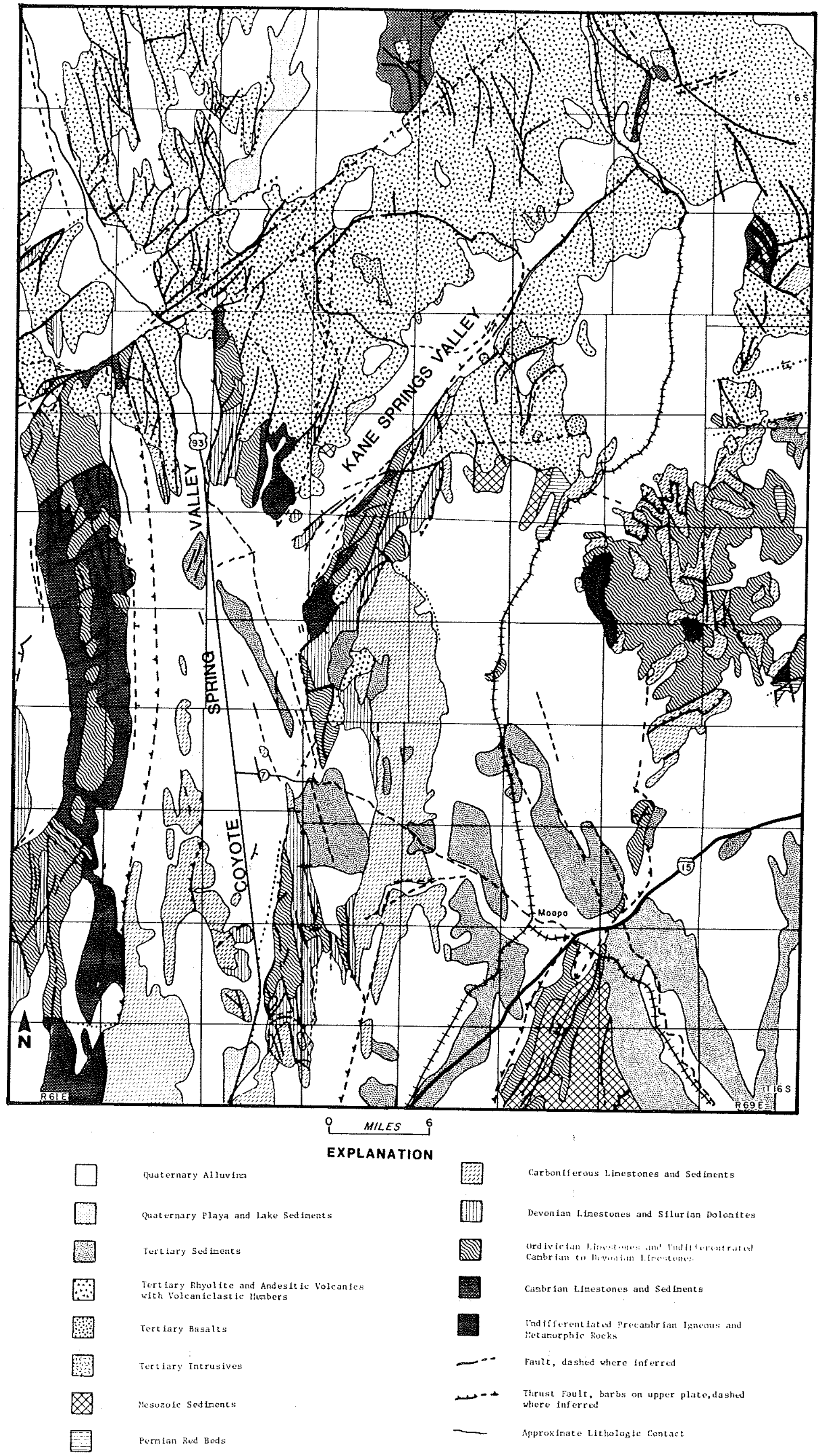


Figure 10. Regional geology of Coyote Spring Valley.

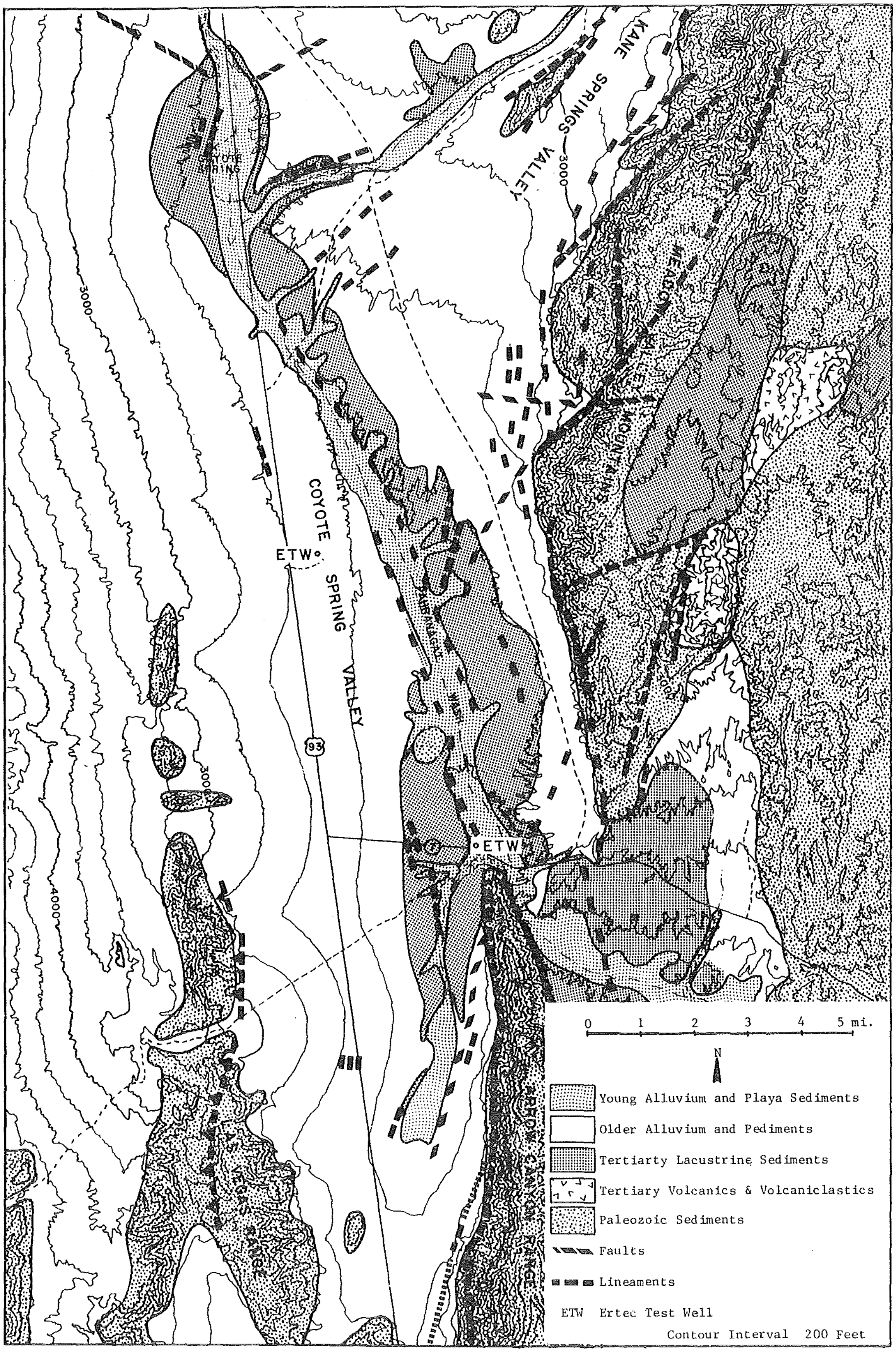


Figure 11. Generalized geology of Coyote Spring Valley.

identified within the valley. Several linear traces were identified in aerial photographs but sufficient data were not available to label them as faults.

Valley fill units in Coyote Spring Valley are Tertiary and Quaternary alluvial and fluvial sediments. Data from water wells show that valley fill varies from 92 meters (300 ft) in the northern part of the valley to over 183 meters (600 ft) in the central portion. Data are unavailable on the thickness of valley fill units in the southern part of Coyote Spring Valley between the Arrow Canyon Range and the Las Vegas Range. It is probable, however, that valley fill units thin out in this area based on: (1) an east-dipping basement surface suggested by outcrops of basement units bordering the valley fill west of U.S. Highway 93; and (2) the lack of evidence for block faulting along the Las Vegas Range (fig. 10).

GEOGRAPHIC SETTING: COYOTE SPRING VALLEY

Coyote Spring Valley is located approximately 60 km (40 miles) north of Las Vegas, Nevada within the Basin and Range physiographic province (fig. 4). This area is characterized by elongate north-trending fault block mountains with intervening alluviated valleys. Coyote Spring Valley is bounded on the west by the Sheep Range and on the east by the Meadow Valley Mountains. Kane Springs Wash trends N50E and intersects Coyote Spring Valley immediately south of the Delamar Mountains. Coyote Spring Valley and Kane Springs Wash have significantly different trends, possibly reflecting two different structural controls. Kane Springs Wash, in fact, exhibits a trend markedly different than most valleys in the region.

STRUCTURE/LINEAMENTS/TECTONICS

The structural history and tectonic setting of Coyote Spring Valley is complex. Very little is known about tectonic patterns of pre-Cambrian age due to the fact that there are only scattered remnants of pre-Cambrian age rocks in this region. Therefore, discussion will be limited to relatively recent structural phenomena.

Geologic features of the Basin and Range Province suggest it is a prime target for geothermal exploration and resource development since it is a region of higher than average heat flow. The crust is relatively thin as compared with the crust of surrounding provinces, (fig. 12). For example, the crust of the Basin and Range is estimated to be 20 to 35 km thick, whereas the crust of the Colorado Plateaus and Rocky Mountains is 35 to 50 km thick (Stewart, 1978). Regional uplift and extension is characteristic of the province. Although estimates of the amount of extension may vary considerably, a total extension of 72 km across the Great Basin appears to be a reasonable estimate (Stewart, 1971, 1978). The Great Basin is a tectonically active area, indicated by current seismicity, major faulting and volcanic activity which occurred during Cenozoic time (Press, 1960). The entire region is also underlain by a low seismic velocity layer believed to be in the upper mantle/lower crust. This low velocity zone probably indicates a less dense zone of partial melting (Stewart, 1978; Leeman and Rogers, 1970). It is hypothesized that plastic deformation occurs within this zone of partial melting. When deformation is transferred to the upper crust, the rocks of the upper crust undergo brittle deformation and develop joints and fractures which contain extensive, deep-seated, conduit systems. In the case of basement-controlled deformation, these conduits extend as far down as the zone of brittle deformation (fig. 13).

Sevier Orogenic Belt

The Sevier orogenic belt is an elongate north, northeast trending zone of folding and thrust-faulting which extends from eastern California across southern

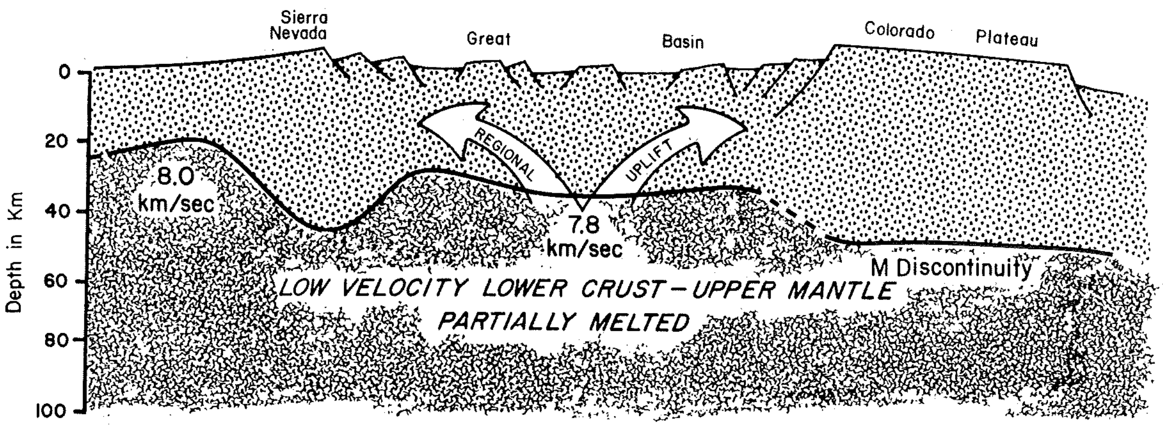


Figure 12. Hypothetical east-west cross section of the western United States showing characteristics of the Great Basin which create an excellent geothermal target area: regional uplift and extension, thin crust, and low velocity partially melted zone of the upper mantle-lower crust. Inferred in this diagram is a regional high heat flow. Compiled from Stewart (1978), Barazangi, Scholz, and Sbar (1971), and Pakiser (1963).

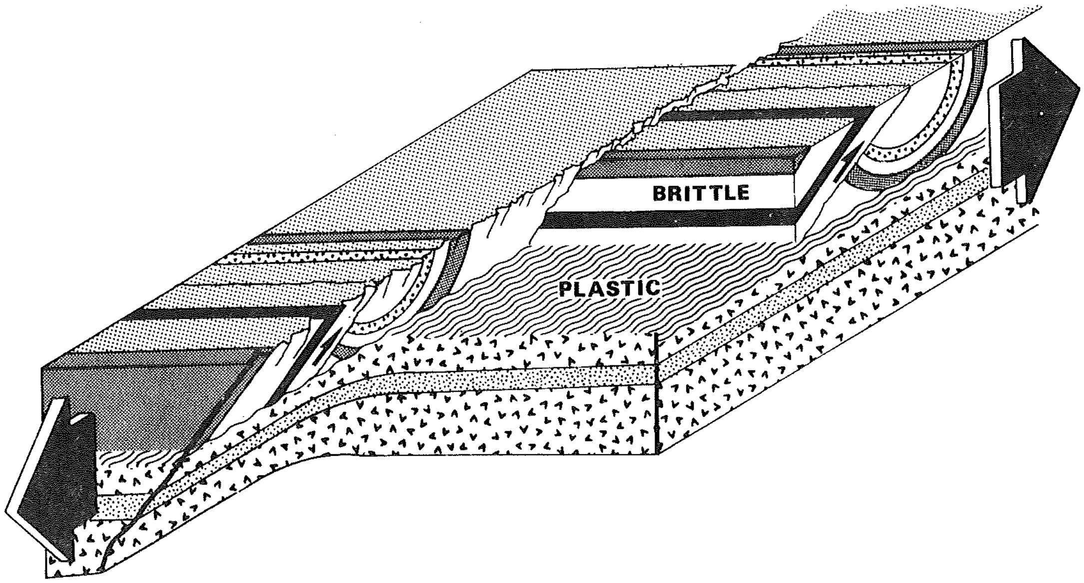


Figure 13. Conceptualized left-lateral shear in the northeast-trending Pahranagat lineament system in relation to brittle fracture and plastic flow. Fracture systems in the shear zone produce conduit systems ideal for localizing magma emplacement and allowing deep circulation of groundwater.

Nevada and continues northeastward into Utah. The thrusts are characterized by a west to east sense of movement with an average estimated displacement of 40 to 60 miles (Armstrong, 1968; Fleck, 1970; Longwell, 1960; Longwell, and others, 1965).

Evidence provided by clastic rocks, unconformities, and structural relationships suggests that deformation in the Sevier orogenic belt began in earliest Cretaceous time (140 m.y. ago) and continued until late Cretaceous (75 m.y. ago), with the primary episode of thrusting and folding occurring between 90 to 75 m.y. ago (Armstrong, 1968).

Figure 14 shows the location of Coyote Spring Valley with respect to the Sevier orogenic belt in southern Nevada. Due to the presence of the north-trending Gass Peak thrust in the northern Las Vegas Range, it is inferred that a fold belt exists beneath the alluvium of western Coyote Spring Valley (Tschanz and Pampeyan, 1970). This feature along with the north-plunging Arrow Canyon syncline in the northern Arrow Canyon Range reflects the local trend of a regional orogenic belt and probably controls the northerly trend of Coyote Spring Valley (Longwell, and others, 1965). It is hypothesized that both the Gass Peak thrust and the Arrow Canyon syncline are present beneath the alluvium of Coyote Spring Valley. Furthermore, the Arrow Canyon syncline and possibly the Gass Peak thrust may terminate against the Kane Springs fault of Tertiary age, thus creating a zone of increased permeability in the Paleozoic carbonate rocks.

Arrow Canyon Syncline

An important structural feature of the Sevier orogeny is located in the Arrow Canyon Range at the extreme southeast end of Coyote Spring Valley (figs. 14 and 15). Paleozoic carbonate rocks have been synclinally folded around a north plunging axis which lies along the eastern flank of the Arrow Canyon Range (Longwell, and others, 1965, plate 5).

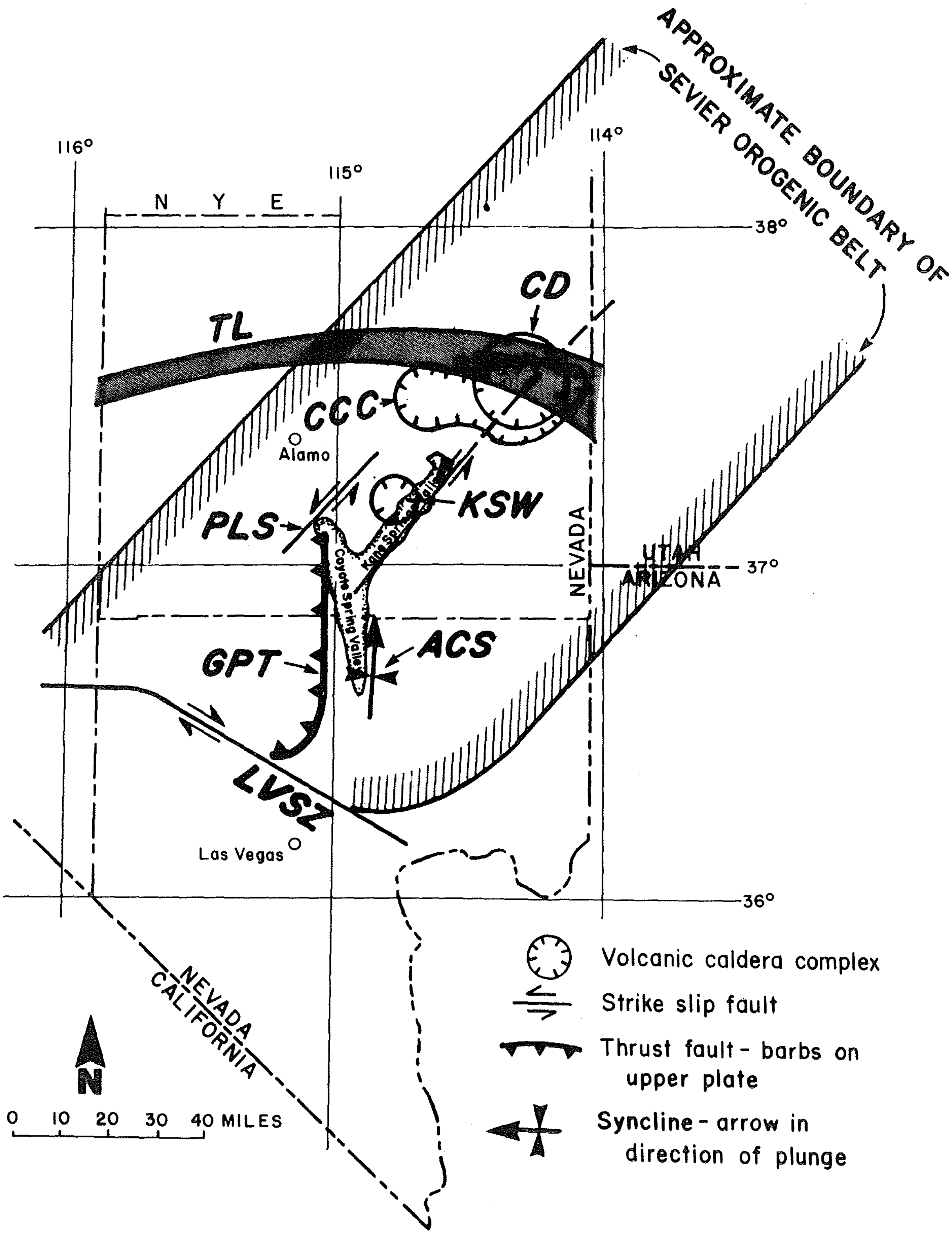


Figure 14. Major structural and tectonic elements of Coyote/Kane region: GPT-Gass Peak thrust; ACS-Arrow Canyon syncline: LVSZ-Las Vegas Shear Zone; PLS-Pahranagat lineament system; KSW-Kane Springs Wash volcanic center; TL-Timphaute lineament; CD-Caliente depression; CCC-Caliente caldron complex. Compiled from Armstrong (1968), Ekren et al. (1976), Ekren et al. (1977), Longwell et al. (1965), Noble (1968), Noble and McKee (1972), Rowan and Wetlaufer (1979), Shawe (1965), Tschanz and Pampeyan (1970).

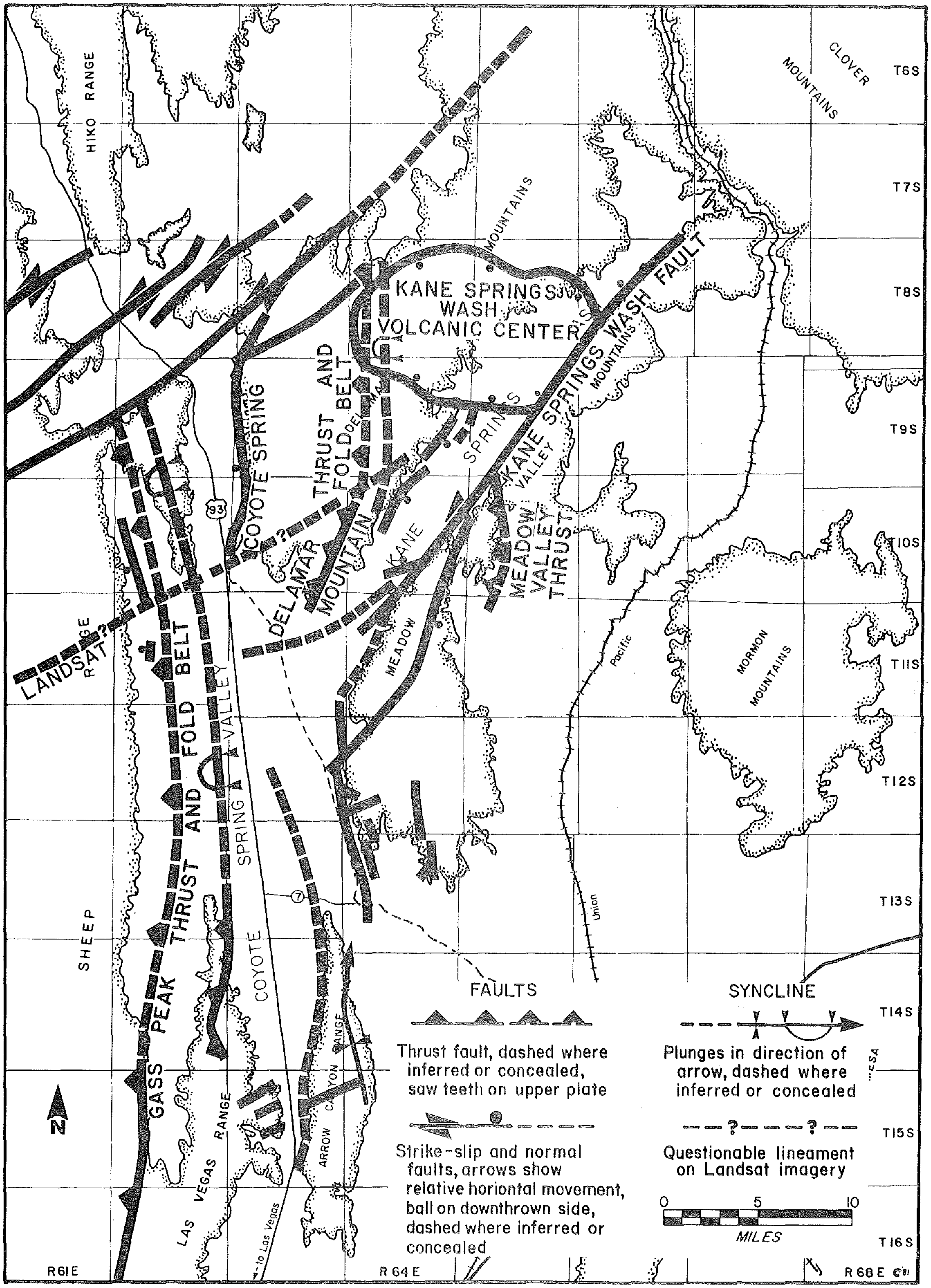


Figure 15. Major structural features of the immediate Coyote/Kane study area. Compiled from Tschanz and Pampeyan (1970), Ekren et al. (1977), Ekren et al. (1976), Longwell et al. (1965), Noble (1968), Rowan and Wetlaufer (1979), Fugro International Inc. (1980).

The syncline plunges beneath the alluvium of Coyote Spring Valley and may continue northward along the east side of the valley. If, indeed, the syncline continues plunging northward beneath the valley fill, then somewhere at depth the syncline may be terminated against and/or has been dragged along the left-lateral shear zone of the Kane Springs Wash fault, which is associated with the Pahranagat lineament system (Rowan and Wetlaufer, 1979).

Gass Peak Thrust and Fold Belt

The Gass Peak thrust is approximately 90 km (55 mi.) long and is terminated on both ends by strike-slip faults (figs. 14 and 15). From its southern termination along the Las Vegas Shear Zone (LVSZ) in Las Vegas Valley, the thrust trends east-northeasterly in the southern Las Vegas Range then curves abruptly, continuing northward through the Las Vegas Range (Longwell and others, 1965, plate 5). It is believed that north of the Las Vegas Range, the Gass Peak thrust and fold belt is present beneath valley alluvium on the east flank of the Sheep Range immediately west of Coyote Spring Valley (Tschanz and Pampeyan 1970, plate 3). The thrust may be terminated against a left-lateral strike-slip fault of the Pahranagat lineament system as far north as the Menard Lake fault.

Las Vegas Shear Zone (LVSZ)

The Sevier orogenic belt, including the Gass Peak thrust and fold belt, intersect and are offset in a right-lateral sense by the northwest-trending Las Vegas Shear Zone. The LVSZ extends approximately 125 km (75 mi.) northwest from Lake Mead past the city of Las Vegas through Las Vegas Valley (fig. 14).

The LVSZ is the southeast portion of a well-defined 600 km (375 mi.) northwest-trending zone of right lateral strike-slip faulting in southern and southwestern Nevada which extends from Las Vegas to Pyramid Lake. The entire zone is commonly referred to as the Walker Lane-Las Vegas Shear Zone (WL-LVSZ) or more simply, the Walker Lane (WL).

Major thrust faults of the Sevier orogenic belt and isopach lines on Paleozoic strata have been correlated across the LVSZ indicating displacement of approximately 40-70 km (25-45 mi.) (Fleck, 1970; Stewart and others, 1968). Displacement is probably post Oligocene age, between 17 and 10 m.y. ago. The right-lateral strike-slip movement along the LVSZ is probably unrelated in time or space to the deformation of the Sevier orogeny (Fleck, 1970).

Spatial and temporal relationships of two volcanic fields in southern Nevada, the Black Mountain volcanic province and the Nye County volcanic province, are important with respect to the LVSZ. Similar chronologies and style of volcanism and structural deformation appear in the two provinces. These eruptions and deformations also seem to be coincident with right-lateral movement along the LVSZ. Therefore, the Las Vegas Shear Zone may have formed in response to crustal extension in the two volcanic provinces in a manner similar to the formation of a ridge-ridge transform fault (Ligget and Childs, 1974). The LVSZ may have formed in response to extensional forces acting upon the crust which induced volcanism and was accompanied by normal faulting. This interpretation supports Fleck's estimates of dates of movement along the LVSZ as approximately 17 to 10 m.y. ago (Fleck, 1970).

Burchfiel (1965) and Shawe (1965) agree that strike-slip movement is basement controlled in the Basin and Range. In his regional assessment of Basin and Range structure, Shawe contends that northwesterly-trending zones of right-lateral offset (such as the LVSZ) and northeasterly-trending zones of left-lateral offset (such as the Pahranagat lineament system) are a conjugate system of strike-slip zones of deformation with roots in the upper mantle.

On a larger, more regional scale, the WL-LVSZ is more or less parallel to and has the same sense of movement as the San Andreas fault (Shawe, 1965; Atwater, 1970, fig. 14; Smith and Sbar, 1974). The San Andreas fault is the major transform fault between the North American and Pacific plates (Smith and Sbar, 1974, fig. 10). According to the authors, some of the relative motion between the Pacific and North American plates is probably being taken up by a soft boundary in the Basin and Range province. Much of the strain generated by the interactions of the two plates is apparently being released along the WL-LVSZ (Smith and Sbar, 1974).

Kane Springs Wash Fault

A prominent structural feature which may influence Coyote Spring Valley is the Kane Springs Wash fault (Tschanz and Pampeyan, 1970; Rowan and Wetlaufer, 1979; Ekren and others, 1977). This fault trends northeast and flanks the southern side of Kane Springs Wash (figs. 14 and 15). Ekren and others have interpreted the Kane Springs Wash fault "...to be a strike-slip or oblique-slip fault having a minimum of five miles of left-lateral displacement." A dip-slip component of unknown displacement is also believed to be present along the entire length of the fault about 40-48 km (25-30 mi.) (Tschanz and Pampeyan, 1970, plate 3).

The Kane Springs Wash fault is important because it increases the permeability of Paleozoic carbonate rocks presumed to be present in the subsurface of northern Coyote Springs Valley due to offsetting, deforming and fracturing.

Pahranagat Lineament System/Shear System

Left-lateral strike-slip faulting in the area around Coyote Spring Valley is not restricted to the Kane Springs Wash fault. Tschanz and Pampeyan (1970) mapped and described three post-Miocene, northeast-trending left-lateral strike-slip faults in the Pahranagat Range south of Alamo. Subsequently, these faults were grouped together and renamed the Pahranagat shear system. Left-lateral displacement in the region is interpreted as Tertiary reactivation of a major right-lateral basement shear zone which developed during the Sevier orogeny. The right-lateral shear zone developed during a period when the crust was undergoing compressional deformation, and has been reactived in Tertiary time as a left-lateral shear zone due to tensional deformation. These conclusions are based on the fact that 48 km (30 mi.) of apparent right-lateral off-set occur between thrust and fold belts of the once continuous Spotted Range and Pahranagat Range. This major reactivated fault is named the Arrowhead Mine fault (Tschanz and Pampeyan, 1970, plate 3).

The Kane Springs Wash fault is associated with the Pahranagat shear system, (now called the Pahranagat lineament system, Rowan and Wetlaufer, 1979). This northeast-trending belt of left-lateral shear 25 km wide is one of eight major lineaments in Nevada (fig. 16). The Pahranagat lineament system is subdivided into two parallel northeast-trending segments. Figure 16 shows two segments of the lineament system: a segment 30 km (19 mi.) long corresponds to the Pahranagat shear system and a segment 85 km (53 mi.) long corresponds to the Kane Springs Wash fault. Traces of the lineament can be identified as far as 100 km (62 mi.) into Utah on the Landsat mosaic of the United States.

Although the Pahranagat lineament system is poorly expressed in a regional gravity map (Rowan and Wetlaufer, 1979), it is enhanced in a total intensity aeromagnetic map of the Great Basin (fig. 16). The Pahranagat lineament system coincides with a series of aeromagnetic highs extending into Utah which follow the northeast trend of the system.

A northeast trending lineament-like feature has been identified on ERTS imagery during air photo inspection (fig. 15). This feature lies within and is parallel

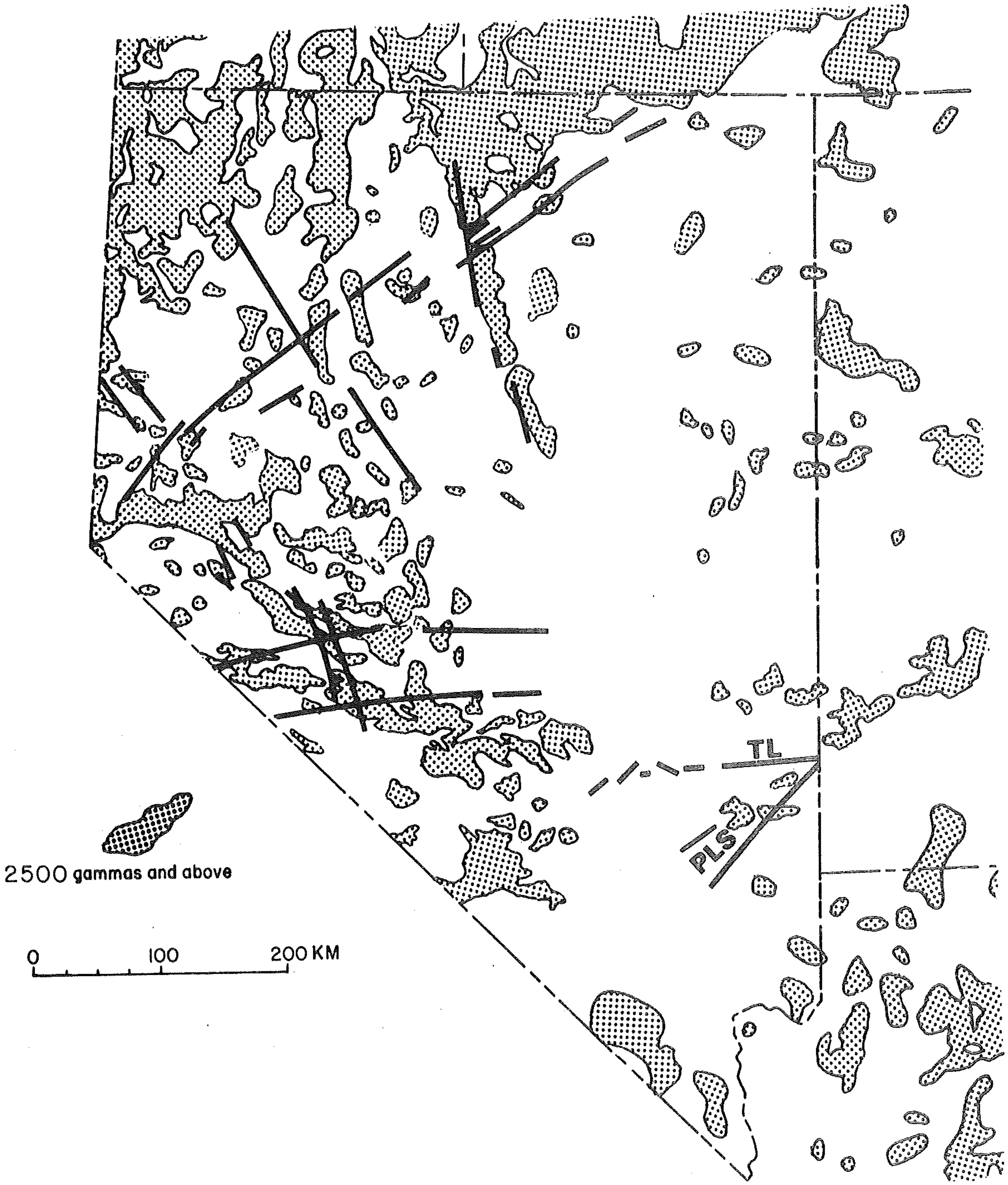


Figure 16. Aeromagnetic map of Nevada and adjacent areas showing total intensities greater than 2500 gammas and the eight major lineaments of Nevada. The extension of the Timpahute lineament system northeastward into Utah is clearly indicated by the linear pattern of the gamma pattern. TL is Timpahute lineament; PLS is Pahranagat lineament system. After Rowan and Wetlaufer (1979).

to the Pahranagat lineament system. It was neither previously mentioned in the literature nor was it mapped. It cuts through alluvium and bedrock and appears to be about 80 to 95 km 50 to 60 mi.) in length extending from the southern Delamar Mountains to southwest of the Sheep Range. This lineament-like feature further emphasizes the presence of the Pahranagat lineament system.

The Pahranagat lineament system is a deep-seated phenomenon perhaps with origins in the upper mantle (Rowan and Wetlaufer, 1979; Ekren and others, 1977; Shawe, 1965). The northeasterly-trending zones of left-lateral offset (such as the Pahranagat lineament system) and northwesterly trending zones of right-lateral offset (such as the LVSZ) are conjugate fault systems probably having roots in the upper mantle. It is inferred that the extensive left-lateral fracture system in the crust reflects an inherent zone of weakness in the upper mantle/lower crust.

If, indeed, the shear zone is deep-seated, and if there is a layer of partially melted upper mantle/lower crust, then we would expect to see volcanic activity localized along this shear zone: magmas generated in the upper mantle/lower crust would migrate upward along the fractures created by the shear zone. Also, geochemistry of volcanic rocks would indicate an upper mantle/lower crust source for magmatic fluids. Two major centers of volcanism are present within the Pahranagat lineament system. Both will be discussed in context of the lineament system.

Fracture systems created by the deep-seated shear, in addition to funnelling magma to the surface or near surface, would also serve as conduits for geothermal fluids. Thus, it is reasonable to assume that geothermal systems are located along deep-seated shear zones. Such a system exists in Caliente, Nevada, and although Caliente is 100 km (60 mi.) northeast of Coyote Spring Valley, it is situated along the Pahranagat lineament system.

Caliente Geothermal System

A lineament study conducted in northern and north-central Nevada indicated a definite correlation between occurrences of geothermal activity and northeast trending lineaments (Trexler and others, 1979). This correlation can also be applied to the northeast-trending Pahranagat lineament system. The geothermal system in Caliente, Nevada lies immediately northeast of and in direct line with the 30 km section of the Pahranagat lineament system, and north of the 85 km segment (figs. 14 and 16). The hottest temperature recorded in the Caliente region is 67°C (153° F) from a well at the Agua Caliente Trailer Park (Trexler and others, 1979).

Kane Springs Wash Volcanic Center

The Kane Springs Wash volcanic center described by Noble (1968) is partially situated within the Kane Springs Wash (fig. 14 and 15). Geographically, it is located in the southern Delamar Mountains approximately half the distance to Kane Springs Wash.

The volcanic center is considered by Noble to be the youngest ash-flow sequence in south-central Lincoln County with a K/Ar age of 14 m.y. A basalt collected from the center has been dated about 13 m.y. (Hedge and Noble, 1971). The volcanic center is elongated east-west with a diameter of 13 to 19 km (8 to 10 mi.), and shows no apparent signs of resurgence (Noble, 1968; Ekren and others, 1977). No indications of hydrothermal activity or alteration have been reported from the volcanic center.

The Kane Springs Wash volcanic center lies north of the Kane Springs Wash fault and well within the area defined by Rowan and Wetlaufer (1979) as the Pahranagat lineament system. It is believed that the northeast-trending Pahranagat lineament system is a regional deep-seated zone of weakness which has controlled the location and occurrence of the Kane Springs Wash volcanic center (Ekren and others, 1977). This may be partially substantiated by the fact that 13 m.y. old basalt collected from the volcanic center has Sr^{87}/Sr^{86} and Sr/Rb ratios indicative of an upper mantle source (Hedge and Noble, 1971). A basaltic magma generated in the upper mantle probably utilized the extensive fracture system produced by left-lateral shear to migrate through the crust and onto the earth's surface.

Caliente Caldron Complex

The Caliente cauldron complex named by Ekren and others (1977) lies immediately northeast of the north-easternmost extension of Kane Springs Wash, and south of Caliente in east-central Lincoln County. The complex is indicated on Figure 14 as a sub-circular, east-west elongated feature measuring 64 km (40 mi.) east to west and 29 km (18 mi.) north to south (Ekren and others, 1977). In an initial reconnaissance of the Caliente volcanic field, Noble and McKee (1972) identified a circular depression roughly 32 km (20 mi.) in diameter east of Caliente. They termed this feature the Caliente depression, but do not consider it to be genetically related to volcanism as the Caliente caldron complex is.

Dates obtained from ash-flow tuffs erupted from vents of the Caliente cauldron complex indicate a period of volcanism lasting from 21 to 17 m.y. ago, and possibly until 12 m.y. ago (Noble and McKee, 1972; Ekren, and others, 1977). As with the Kane Springs Wash volcanic center, Sr^{87}/Sr^{86} and Sr/Rb ratios of the Caliente caldron complex suggest an upper mantle source for the magmas. It is believed that the deep-seated lineament system controls the presence of both the Kane Springs Wash volcanic center and the Caliente cauldron complex (Ekren and others, 1977).

Timpahute Lineament

An east-trending structural feature termed the Timpahute lineament stretches across north-central Lincoln County (Ekren and others, 1976). The Timpahute lineament is approximately 350 km (218 mi.) long and lies approximately 72 km (45 mi.) north of Coyote Spring Valley extending into western Utah (fig. 14). The Timpahute and Pahranagat lineaments are two of eight major lineaments in Nevada (Rowan and Wetlaufer, 1979). Figure 16 is a map of Nevada showing those eight major lineament systems. The Timpahute lineament is a deep-seated structure which greatly influenced and/or controlled the development and presence of several geologic, topographic, and structural features proximal to the lineament (Rowan and Wetlaufer, 1979; Ekren and others, 1977). These features include strike-slip faulting, magmatism, volcanism, and contrasting structural styles across the lineament. It is believed the Timpahute lineament is much older than Tertiary age and perhaps even as old as pre-Cambrian.

Normal Faulting (Basin and Range Faults)

Because of its relatively recent occurrence, normal extensional faulting created a substantial impact on the geomorphological, geological, and structural evolution of the Great Basin including Coyote Spring Valley. Basin and Range topography developed as a result of normal faulting; normal faulting developed as a result of regional extension and uplift (Stewart, 1978).

Extensional deformation began in the Great Basin in Miocene time approximately 17 m.y. ago, and was generally accompanied by volcanism (Stewart, 1978). Faulting has continued into modern times in the Great Basin and in Coyote Spring Valley, in particular.

LANDSAT IMAGE AND COLOR AIR PHOTO ANALYSIS

Several recent faults were identified in the Coyote/Kane system (fig. 15). Black and white air photos at a scale of 1:62,500 were carefully inspected, and offsets were noted especially in valley alluvium. Other geologic sources were consulted in order to verify the locations of these faults, and also to insure complete coverage of the valleys (Ekren and others, 1977; Stewart and Carlson, 1978; Tschanz and Pampeyan, 1970; Longwell and others, 1965; Fugro International, Inc., 1980).

Regional and localized lineaments were mapped on computer enhanced false color 1:250,000 scale Landsat images and were then transferred to 1:25,000 scale color air photos obtained from U.S. Air Force. It was hypothesized that regional and localized lineaments seen in the Landsat images could be related to structural trends seen within Coyote Spring Valley. In general, this hypothesis appeared to be valid. However, several trends paralleling regional lineament trends could not be positively identified as faults, and have been included in the figures as lineaments.

Localized Linear and Curvilinear Trends

Color air photos obtained from the U.S. Air Force were reviewed and interpreted for linear and curvilinear trends which could be related to regional or localized structures. The 1:25,000-scale color air photos were also used as base maps for plotting location data taken from ground surveys. The resolution and quality of the photos allowed very accurate point location.

Linear and curvilinear trends identified in the 1:25,000 scale air photos are shown in Figure 17. The majority of these trends were shown as lineaments in the geologic map of Coyote Spring Valley, Figure 11.

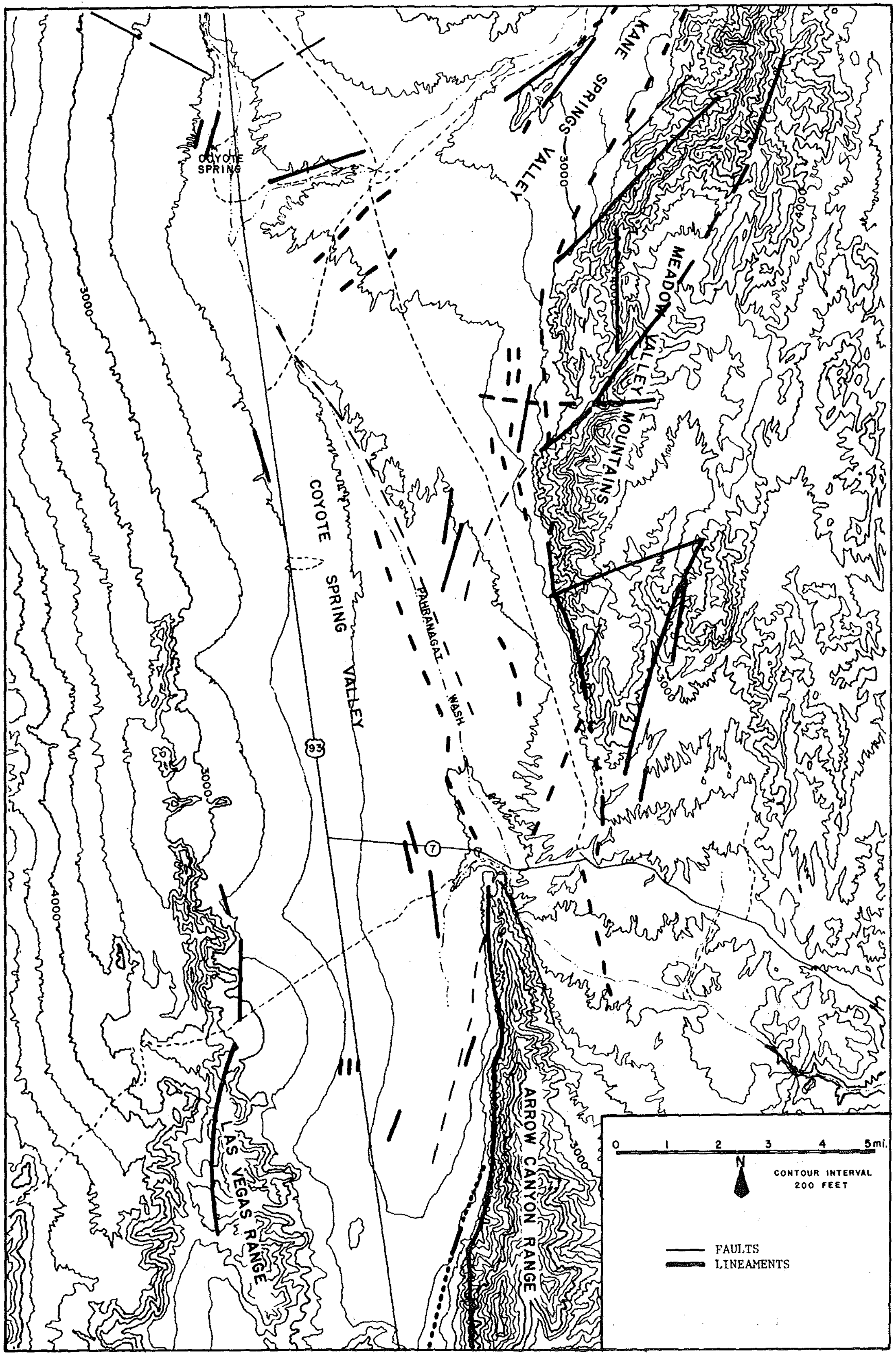


Figure 17. Localized linear and curvilinear features.

SHALLOW TEMPERATURE PROBE SURVEY

Shallow temperature anomalies were identified and mapped using thermistor probes buried to a depth of one to two meters. These surveys are most effective when probes are buried to depths at which the diurnal effects are insignificant, approximately 1.5 meters (Birman, 1969).

The thermistor probes are general-purpose vinyl-tipped probes, three meters long. They are encased in a two meter section of PVC plastic pipe for protection with the thermistor tip exposed in the end of the pipe. Small diameter holes (8-9 cm) were drilled to depths of two meters using a trailer mounted auger, Figure 18. The probe was placed in the hole and then the hole was backfilled. In general, the probes equilibrate within 24 hours, but are left in the ground longer to make sure equilibration has been reached.

Four probes were left in the ground to monitor seasonal variations in ground temperature over a six month period. A ground temperature variation of 4.5°C (8°F) was noted between field sessions using these four probes and other probes left between each session. The highest ground temperatures were noted during the August field session and the lowest, during the November field session. To simplify data interpretation, all temperatures were corrected to the August field session and adjusted for seasonal variations.

The coarse alluvium and intercalated caliche zones made drilling the holes for the thermistor probes extremely difficult, especially along the eastern and western edges of the intensive study area, Figure 19. Because numerous attempts to drill holes were unsuccessful in these areas, a truck-mounted drill rig (Mobil B52) was contracted for one day (fig. 20), and 19 holes (#44 - #62) were drilled in the areas of coarsest alluvium.

A total of 101 probes were emplanted in the study area. Their locations are shown in Figure 21. The apparent random placing of the probes was caused by

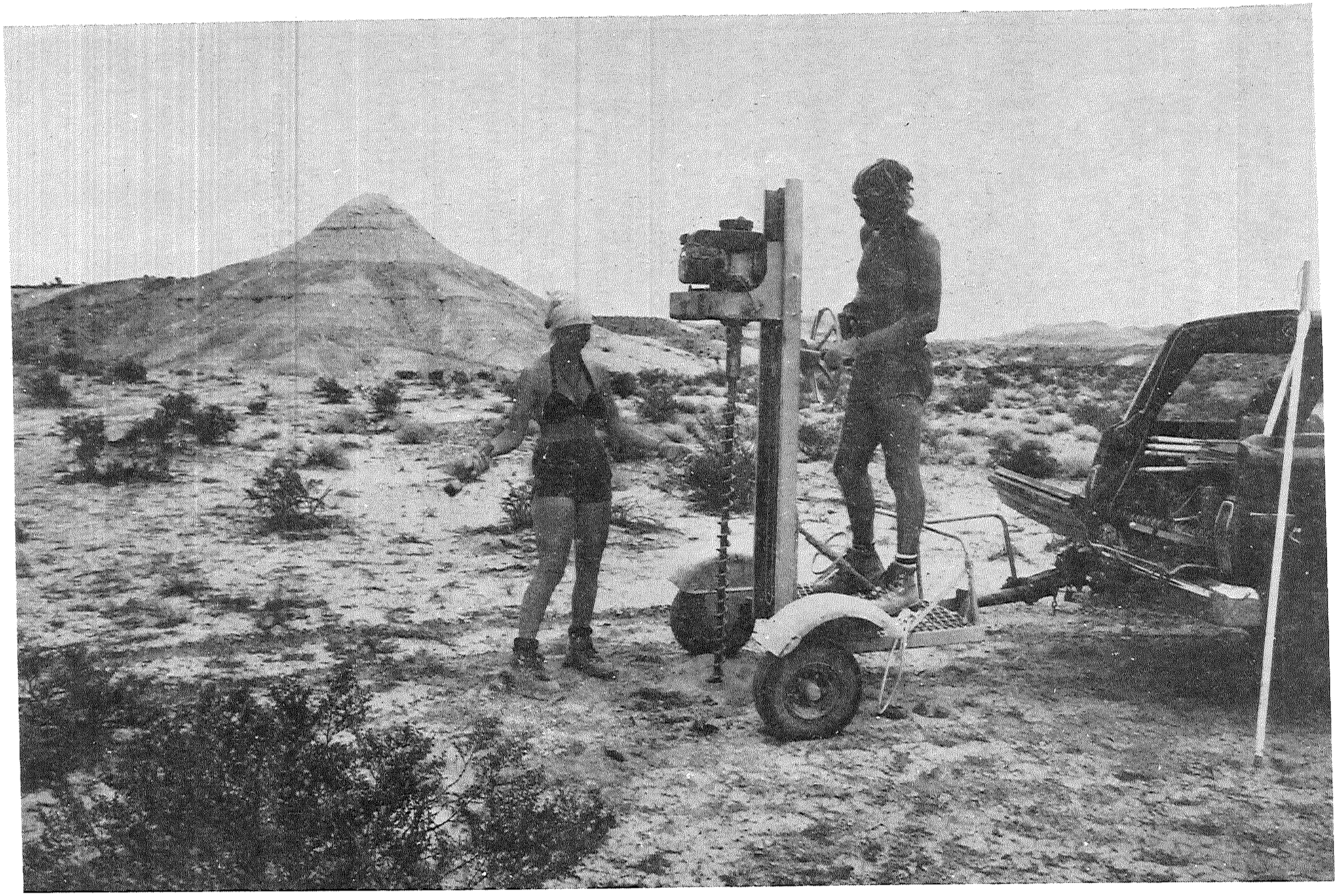


Figure 18. Trailer-mounted post hole digger in operation.

Figure 19. Road cut on old highway illustration intercalated caliche (arrows) and coarse alluvium.

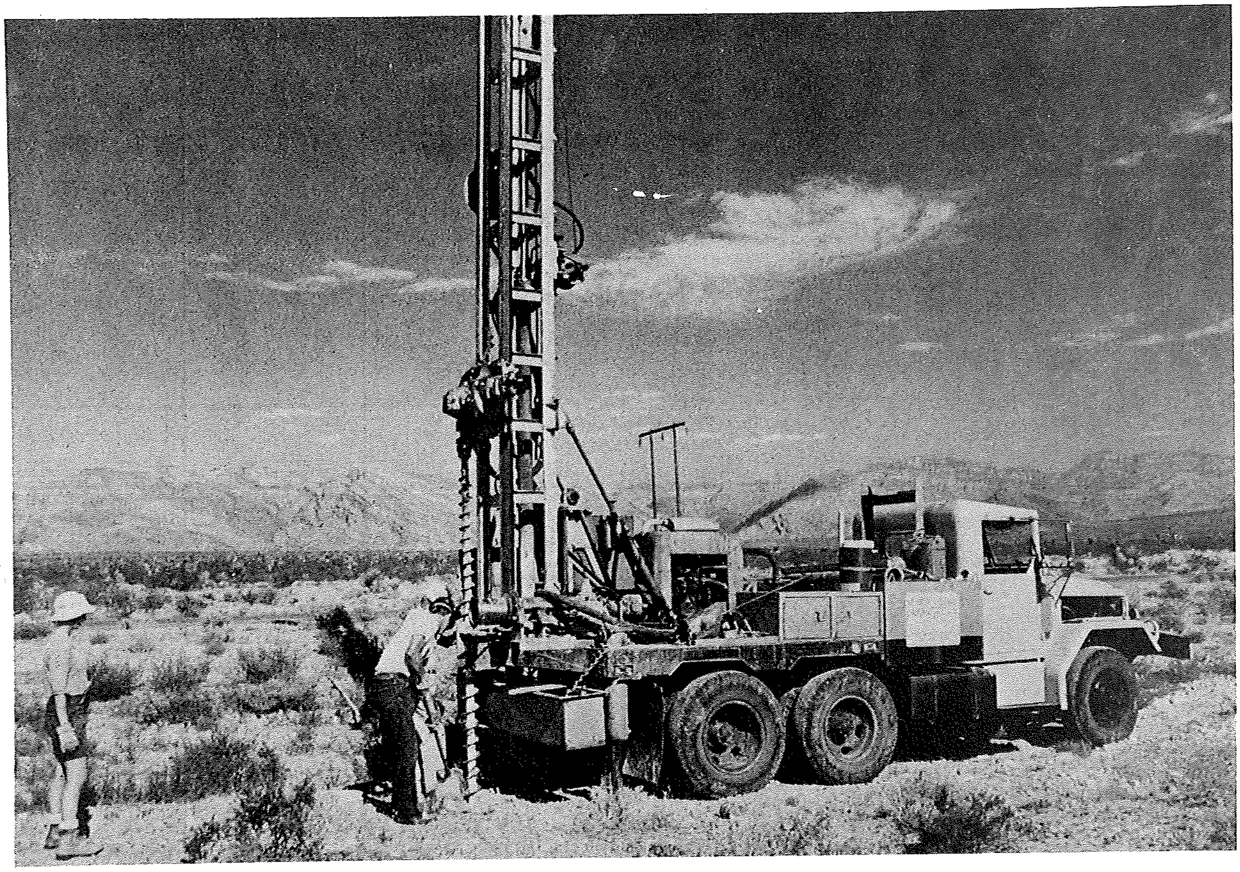


Figure 20. Truck-mounted drill rig.

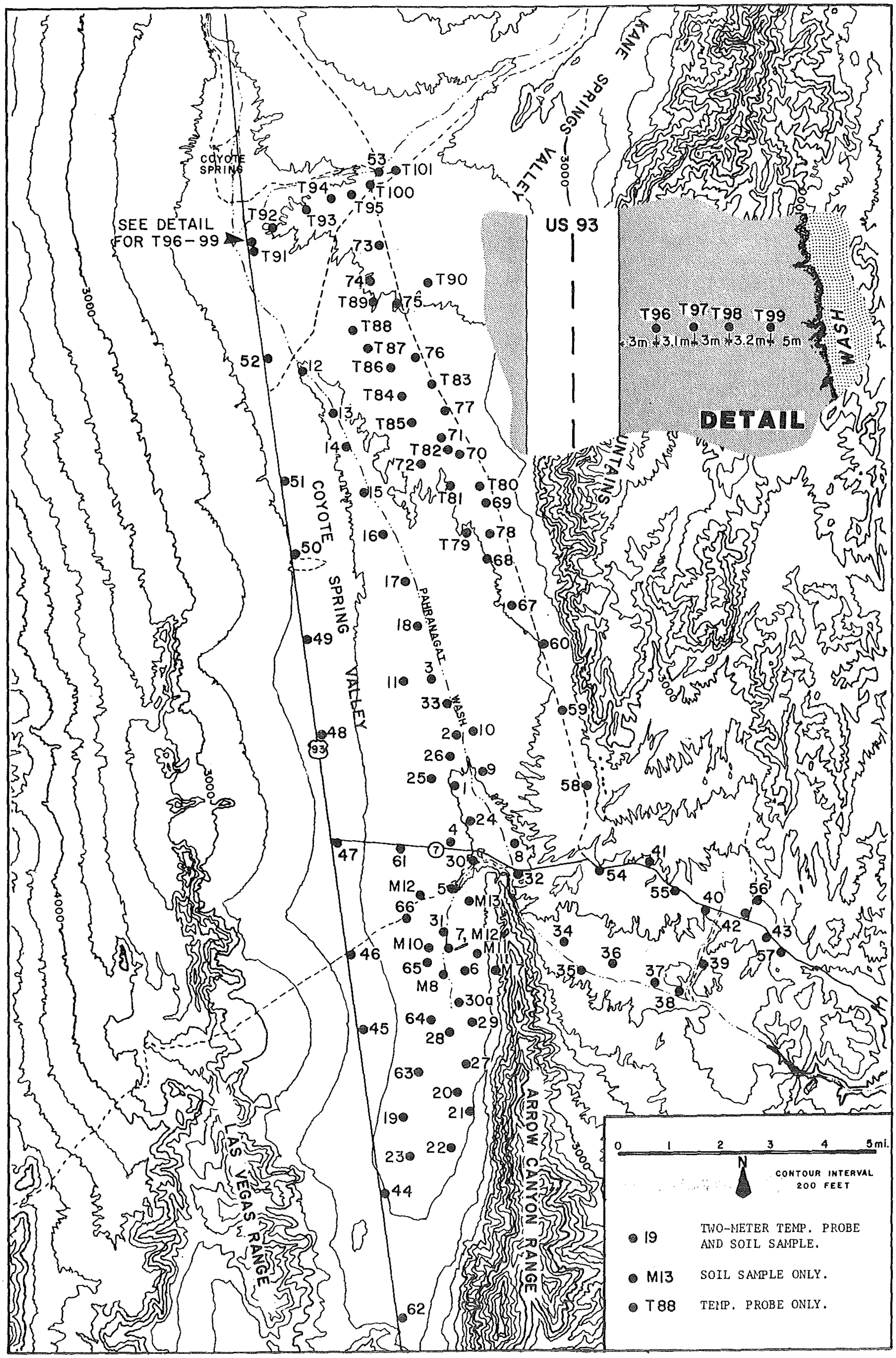


Figure 21. Location map of two-meter temperature probes and soil sample points.

accessibility and lithology problems. Originally a 1.0 to 1.6 kilometer grid spacing had been planned, but as accessibility problems were encountered, this grid system had to be abandoned.

Table I lists the corrected temperatures of the thermister probes and also shows the correction factor used to normalize the temperatures to the August field session. Figure 22 shows the plotted temperatures of monitor probes left in the ground during the four field sessions and reflects the seasonal variations in the ground temperature.

Anomalous temperatures within the data set were derived by calculating the mathematical mean and plotting positive variances from this mean using frequency distribution plots. From these calculations, temperatures in excess of 29°C (±1.5°C) are considered anomalous.

From the data in Table I, a generalized contouring of the temperatures was developed (fig. 23). Anomalous zones were identified around points 70, 71 and 82 (fig. 21) in the northeastern portion of the study area, and along U.S. Highway 93. This anomalous zone lies near the junction of Kane Springs Valley and Coyote Spring Valley near zones of Holocene faulting (fig. 11).

Another anomalous zone adjacent to U.S. 93 is probably caused by radiant heating of the ground by the asphalt highway. A monitor probe, #49, left in the ground adjacent to the highway to test this hypothesis was destroyed between the August and November field sessions during highway maintenance work. An attempt to place a new probe in this location failed, but four probes, #96 thru 99 were located adjacent to the highway further north (fig. 21). A thermal zone adjacent to the highway was noted after reading these probes. However, these probes were located during the lower temperature field session, and also probably represent conductive heating by the highway.

TABLE I
COYOTE SPRING VALLEY
REGIONAL TWO-METER TEMPERATURE PROBE SURVEY

Probe No.	Temp. °C	Correction Factor*	Probe No.	Temp. °C	Correction Factor*
1	22.4	+3.6	29	22.5	+3.0
2	25.3	+3.0	30	25.0	+3.0
3	26.8	+3.0	31	24.9	+3.0
4	24.9	+3.0	32	26.5	+3.0
5	23.9	+3.0	33	26.0	+3.0
6	23.9	+3.0	34	26.0	+3.0
7	24.0	+3.0	35	25.0	+3.0
8	24.2	+3.0	36	23.6	+2.0
9	26.9	+3.0	37	23.5	+2.5
10	26.8	+3.0	38	24.9	+2.5
11	25.1	+3.0	39	24.3	+2.5
12	24.8	+3.0	40	23.5	+2.5
13	26.1	+3.0	41	24.4	+2.5
14	26.3	+3.0	42	24.3	+2.5
15	23.3	+3.0	43	26.2	+2.7
16	24.3	+3.0	44	29.0	0
17	25.8	+3.0	45	29.0	0
18	28.0	+3.0	46	30.5	+1.5
19	25.8	+3.1	47	31.0	+2.0
20	22.5	+3.0	48	30.0	+2.5
21	28.0	+3.0	49	31.0	+2.5
22	27.5	+3.0	50	30.0	+3.0
23	26.0	+3.0	51	30.0	+3.5
24	25.0	+3.0	52	30.0	+3.0
25	26.5	+3.0	53	27.0	+2.5
26	26.0	+3.0	54	28.2	+2.6
27	23.5	+3.0	55	25.9	+2.0
28	23.5	+3.0	56	29.6	+3.4

*All temperatures corrected to August, 1981 Field Session

TABLE I
(continued)
COYOTE SPRING VALLEY
REGIONAL TWO-METER TEMPERATURE PROBE SURVEY

Probe No.	Temp. °C	Correction Factor*	Probe No.	Temp. °C	Correction Factor*
57	30.0	?	85	26.5	+4.5
58	27.5	+2.5	86	28.0	+4.5
59	29.7	+2.2	87	27.9	+4.5
60	29.0	+2.8	88	27.5	+4.5
61	28.6	+2.2	89	28.0	+4.5
62	29.2	+2.8	90	27.7	+4.5
63	23.8	0	91	25.9	+4.5
64	27.6	0	92	26.4	+4.5
65	25.2	0	93	27.2	+4.5
66	25.6	0	94	26.8	+4.5
67	25.5	-	95	26.0	+4.5
68	28.5	-	96	26.7	+4.5
69	28.3	-	97	26.4	+4.5
70	28.8	-	98	26.0	+4.5
71	30.8	-	99	26.2	+4.5
72	26.0	-	100	26.6	+4.5
73	26.5	-	101	26.9	+4.5
74	28.5	-			
75	27.9	-			
76	26.9	-			
77	26.9	-			
78	28.1	+4.5			
79	26.7	+4.5			
80	27.2	+4.5			
81	27.9	+4.5			
82	28.3	+4.5			
83	27.4	+4.5			
84	27.5	+4.5			

*All temperatures corrected to August, 1981 Field Session

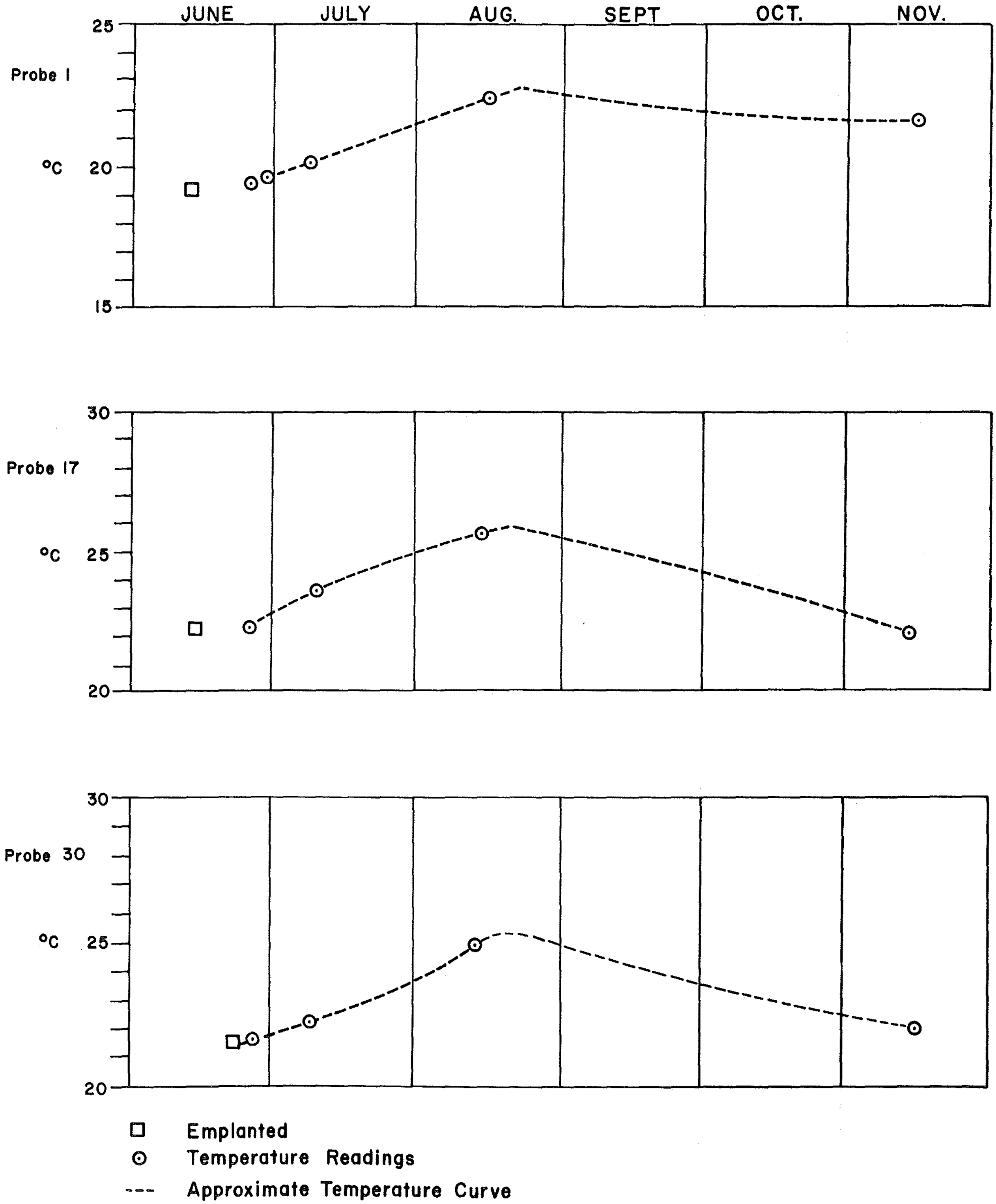


Figure 22. Variations in temperature probes during the four field sessions.

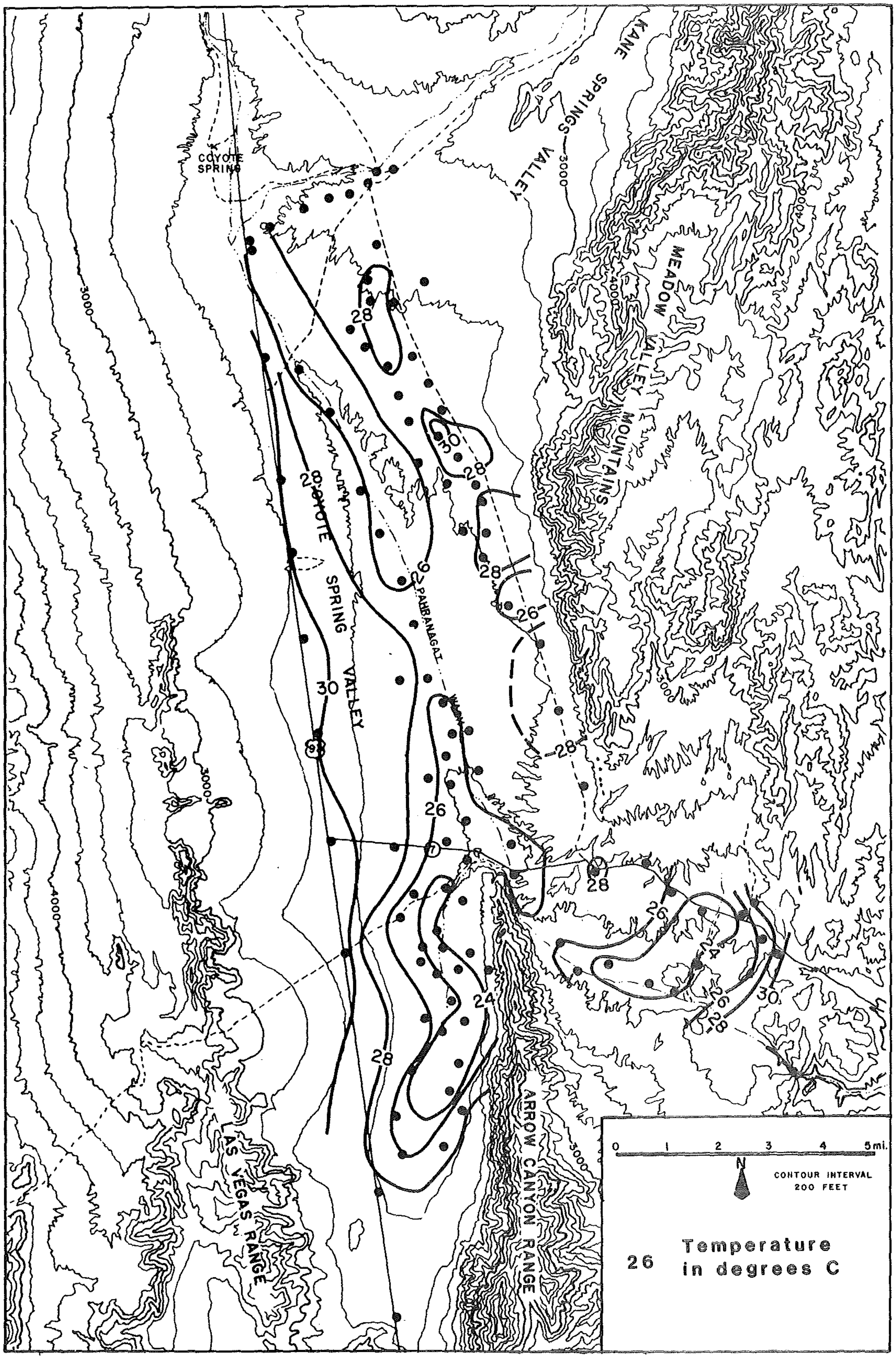


Figure 23. Generalized contour map of two-meter temperature probe data.

To positively prove or disprove this anomaly, a series of closely spaced probes should be emplanted in a line perpendicular to U.S. 93. The coarse alluvial character of the lithology in this region would require the use of the truck mounted auger rig, and access permits are required to enter the area west of the highway which is designated a wildlife preserve. Because of budget limitations, this was not performed.

SOIL-MERCURY SURVEY

Soil samples were collected from temperature probe holes at depths of 0.01-0.3 meters, 1.0 meter, and 2.0 meters and the cuttings were stored in plastic bags and labeled. A total of 85 samples were collected and analyzed for mercury content.

The theory behind this research method is that mercury vapor is released at temperatures in excess of 80°C (175°F), and will migrate upward until it encounters a clay rich zone where it is trapped. In a desert environment, clay-enriched zones are generally within the near surface (less than 0.3 m). If a soil horizon is developing, then the clay rich "B" horizon is sampled. The other samples collected at 1.0 and 2.0 meters were collected to see if the caliche layers within the alluvium might be inhibiting the migration of mercury vapor into the near-surface, clay-enriched zones.

Once the samples were returned to the office, they were prepared for analysis. Preparation included air drying the samples then passing them through an 80-mesh sieve. The seived fraction was then used in the analysis phase. A Jerome Gold-Film Analyzer was used to analyze for mercury concentrations. The principles of the machine and techniques are described in McNerney and others (1972) and Matlick and Buseck (1976).

Figure 21 shows the location of the soil-mercury sample points; Figure 24 is a schematic of where the samples were collected within the two-meter temperature probe hole.

Mercury concentrations from the surface samples (0.01-0.3 m interval) are shown in Table II. Only a few samples showed any detectable mercury concentrations. The samples collected at the one-meter and two-meter intervals were analyzed for mercury following the completion of analysis of the surface samples. No concentrations of mercury above five parts per billion were found in the subsurface samples and thus no further work was done with them.

Figure 25 shows the location of those points with anomalous mercury concentrations. No major interpretations can be made from this data other than noting the clustering of anomalous mercury concentrations around the north end of the Arrow Canyon Range. Because this clustering is somewhat randomly scattered and has zones of no mercury concentrations it can not be considered an anomalous zone.

REGIONAL FLUID GEOCHEMISTRY

Coyote Spring Valley is located at the southern end of the White River regional flow system (Mifflin, 1968) which is a large drainage system in southeastern Nevada (fig. 26). The direction of flow which is largely underground is generally to the central part of the system and then southward into the Colorado River east of Las Vegas (fig. 27).

A total of 32 springs and wells were identified within the system, plus two outside the system (fig. 26); Table III presents the fluid chemistry of these springs and wells. Gross chemical characteristics of the regional fluids are shown on a trilinear plot, Figure 28, which includes samples from the Coyote study area

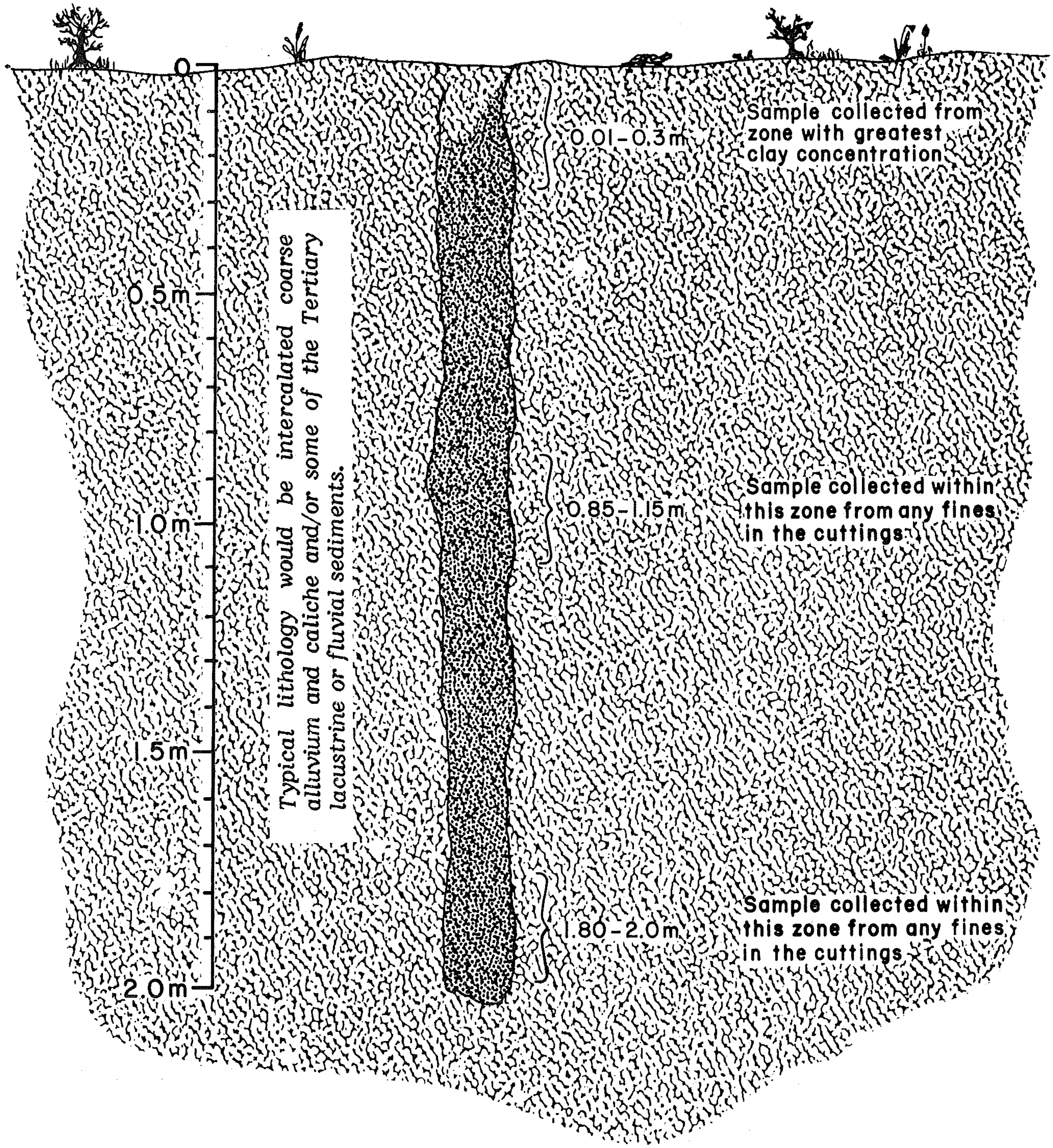


Figure 24. Approximate sample intervals of the soil mercury samples within the two-meter thermistor probe holes.

TABLE II

Coyote Valley Soil-Mercury Survey

Surface Samples

ppb = parts per billion; M = soil-mercury sample site
P = soil-mercury sample site/temperature probe site
* = results considered invalid due to heterogeneous contents of sample.

Sample #	ppb	Sample #	ppb	Sample #	ppb
P1	24	(P25)	105/31*	P54	0
P2	0	P26	0	P55	0
P3	0	P27	0	P56	0
P4	0	P28	0	P57	0
P5	0	P29	0	P58	0
P6	0	P30	0	P59	0
P7	0	P30a	0	P60	0
M8	21	P31	0	P61	0
P8	23	P32	20	P62	0
M9	0	P33	0	P63	0
P9	0	P34	0	P64	0
M10	0	P35	0	P65	27
P10	0	P36	0	P66	23
M11	0	P37	0	P67	0
P11	15	P38	0	P68	19
M12	0	P39	0	P70a	0
P12	12	P40	43	P70b	--
M13	21	P41	--	P71	0
P13	0	P42	0	P72	21
P14	16	P43	0	P73	35
P15	37	P44	0	P74	18
P16	16	P45	0	P75	61
P17	0	P46	0	P76	0
P18	0	P47	0	P77	0
P19	0	P48	0	P78	--
P20	0	P49	0		
(P21)	93/16*	P50	0		
P22	0	P51	0		
P23	0	P52	27		
P24	23	P53	27		

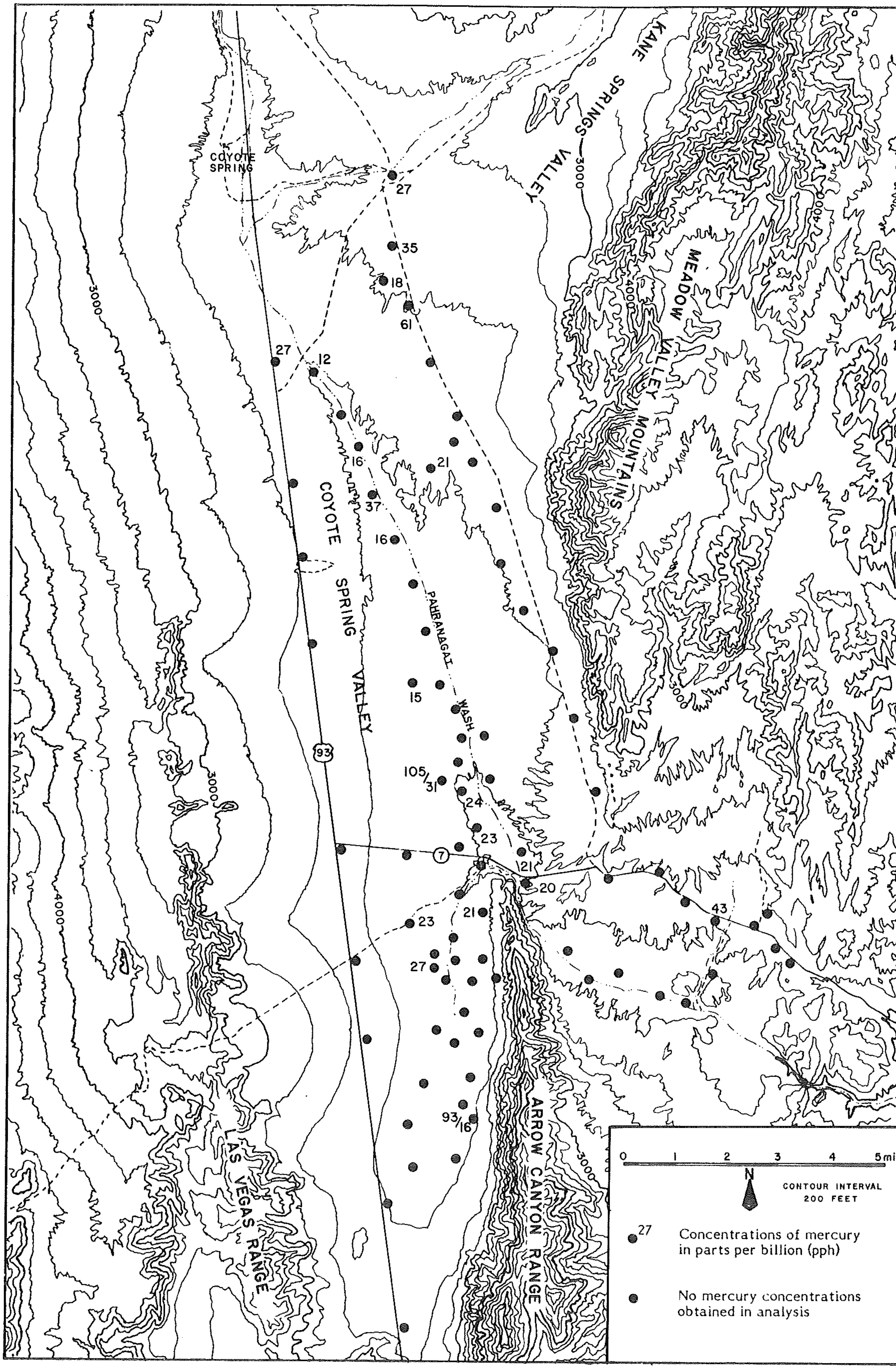


Figure 25. Concentrations of mercury in surface soil samples.

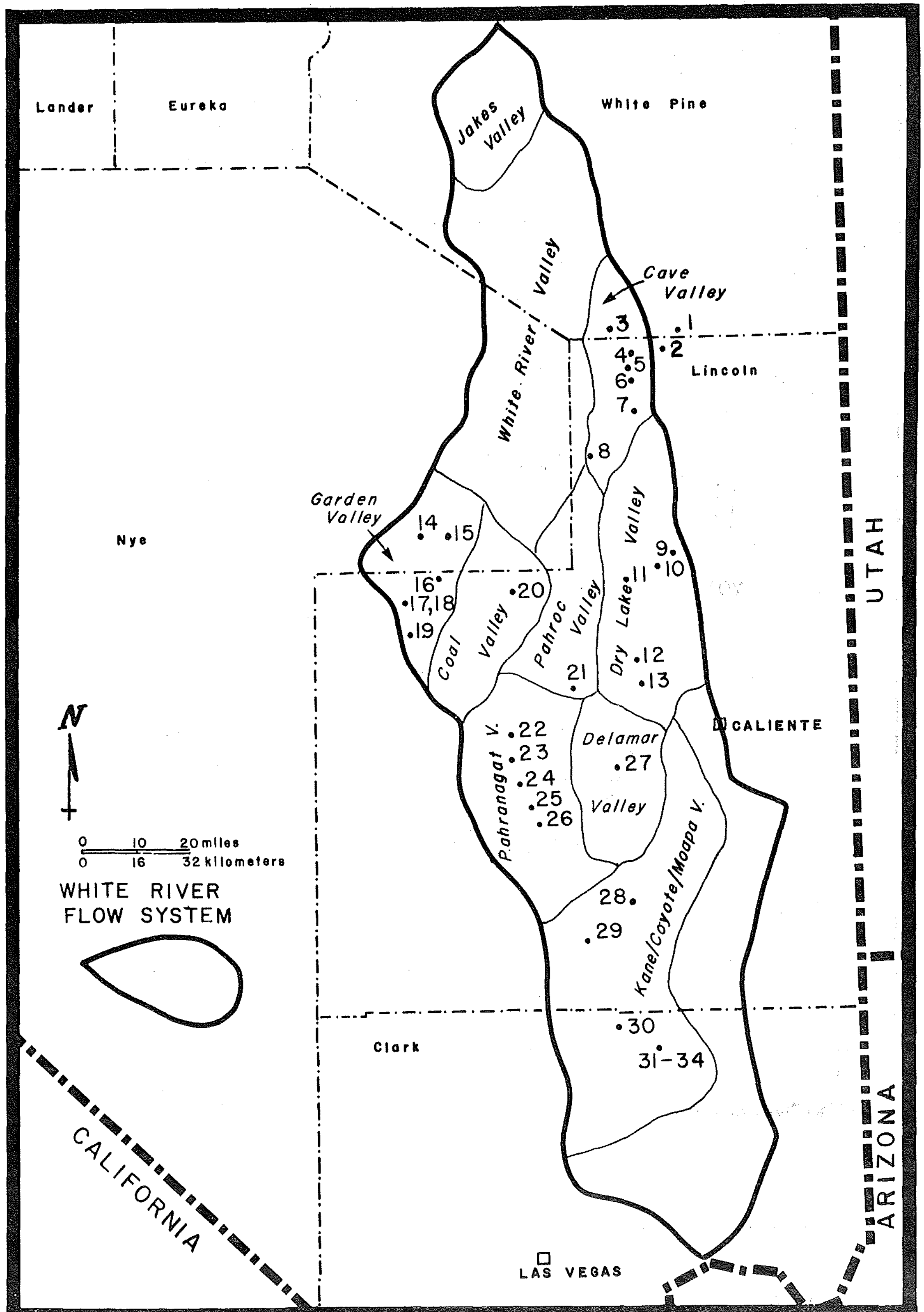


Figure 26. Locations of major drainage systems, selected springs and wells in the White River regional flow system. Numbers refer to sample numbers in Table III.

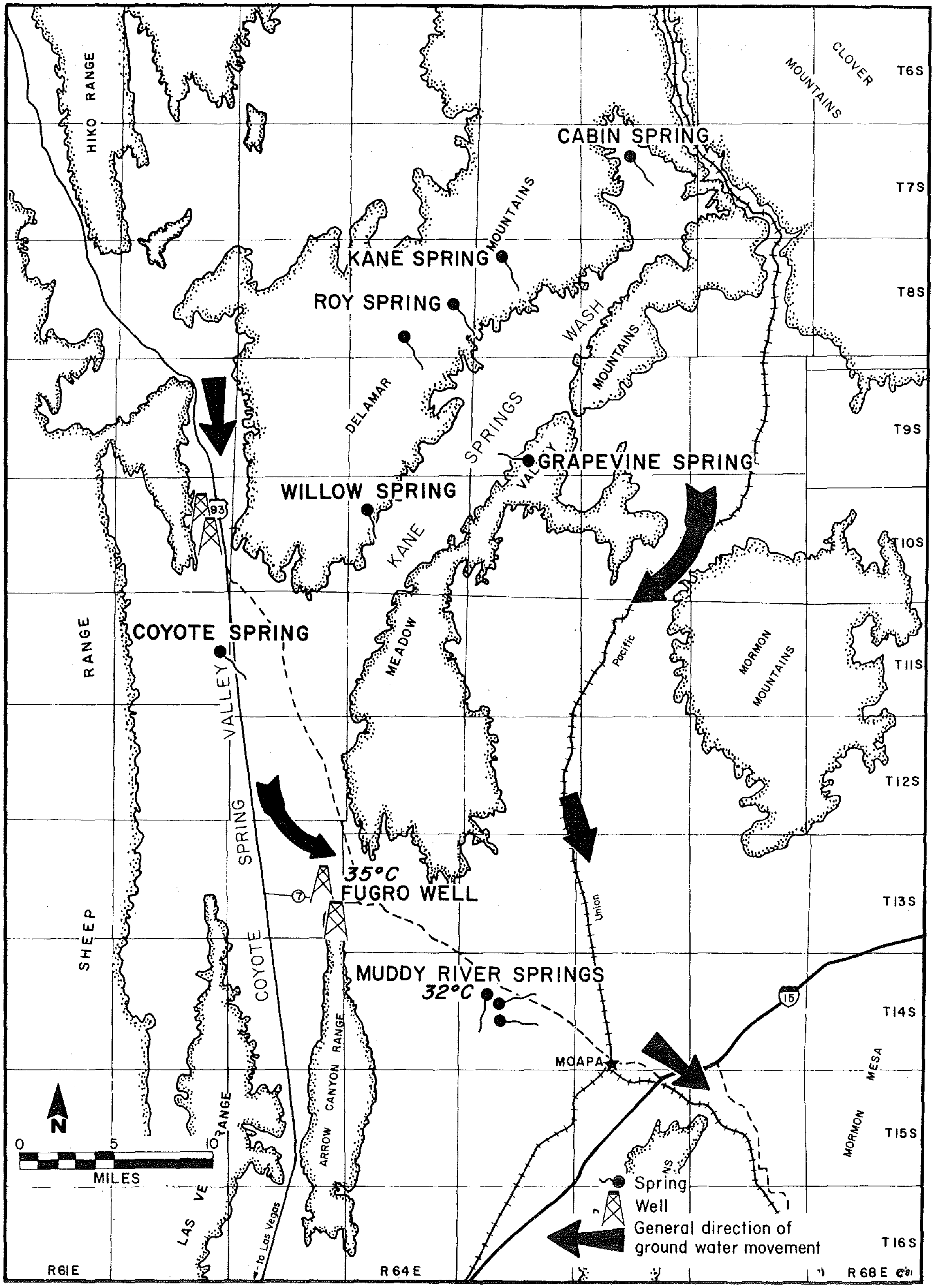


Figure 27. Springs, wells, and the direction of groundwater movement in Coyote/Kane valleys. Compiled from Eakin (1966), Mifflin (1968a and 1968b), and Fugro International (1980).

SPRING/WELL LOCATION	VALLEY	Sample Number	T°C	PH	Ca	Mg	Na	K	Al	Li	NH_4	Cl	SO_4	CO_3	HCO_3	NO_3	F	B	SiO_2	N	TDS	CONDUCTANCE MICROMHOS/CM	COLLECTION DATE	SOURCES
Well 10N/66E-31a	Lake	1	15	7.8	54	5.7	7.4	1.9	-	-	-	9.6	6.4	0	189	1.2	0	0	-	-	203	322	8/63	Rush & Eakin 1963
Geyser Spring 9N/65E-4c	Lake	2	20	8.0	30	3.4	3.0	1.0	-	-	-	3.0	5.0	0	103	.6	0	0	13	-	115	181	8/63	Rush & Eakin 1963
Urrutia Well 10/63E-25aca	Cave	3	-	7.2	52	12	10	4.0	-	-	-	15	20	0	160	-	0.15	-	<0.01	>0.7	-	510	3/80	Ertec 1980
Cave Valley Spring 9N/64E-16bdb	Cave	4	-	7.74	17	4.0	5.1	0.6	-	-	-	3.2	9.5	0	80	-	0.08	-	<0.01	>0.7	1800	1800	3/80	Ertec 1980
Seeding Well 8N/64E-4abd	Cave	5	-	7.5	25	6.7	7.5	1.4	-	-	-	8.9	4.1	0	120	-	0.13	-	<0.01	0.4	-	4100	3/80	Ertec 1980
Harris Well 8N/64E-15bcb	Cave	6	-	7.4	49	13	6.2	0.9	-	-	-	2.5	5	0	200	-	0.08	-	< 0.01	1.2	-	-	3/80	Ertec 1980
Sidehill Spring 7N/64E-33cc	Cave	7	7	7.6	31	-	11	0.96	-	-	-	11	11	0	250	-	-	-	-	0.34	-	-	8/79	Ertec 1980
Horse Spring 6N/63E-19da	Cave	8	16	8.0	25	-	11	1.2	-	-	-	16	15	5.4	280	-	-	-	-	1.2	-	-	8/79	Ertec 1980
Bristol Well 3N/65E-21dba	Dry Lake	9	-	-	76	33	37		-	-	-	110	71	0	187	-	-	-	49	32	509	-	1915	Eakin 1963
Spring 3N/65E-31cc	Dry Lake	10	24	6.8	40	10	21	2.5	-	-	-	17	21	0	214	-	0.24	-	53	.4	-	470	8/79	Ertec 1979
Coyote Spring 2N/63E-13cba	Dry Lake	11	20	6.8	82	13	49	7.6	-	-	-	25	25	0	282	-	0.51	-	79	<0.1	-	550	8/79	Ertec 1979
Spring 2S/64E-bdb	Dry Lake	12	26	6.9	83	10	53	7.1	-	-	-	30	54	0	320	-	0.36	-	44	14	-	720	8/79	Ertec 1979
Well 3S/64E-12ca	Dry Lake	13	-	7.90	20.2	10.3	76.0	5.2	-	-	-	21.2	44.8	1.0	217.5	6.7	0.010	-	1.440	-	292.4	480	4/80	Ertec 1979
Spring 3N/57E-16d	Garden	14	11	6.7	67	24	17	3.4	-	-	-	10	21	0	327	-	0.3	-	32	0.9	-	430	6/80	Ertec 1980
Well 3N/58E-16a	Garden	15	8	7.1	34	30	10	4.1	-	-	-	6.1	15	0	249	-	0.3	-	32	1.4	-	365	6/80	Ertec 1980
Heizer Well 2N/58E-14c	Garden	16	-	7.4	44	10	22	2	-	-	-	8.5	28	0	205	-	0.1	-	14	2.7	-	430	6/80	Ertec 1980
Spring 1N/57E-20	Garden	17	12	7.0	111	20	43	3.9	-	-	-	18	78	0	390	-	1.3	-	66	0.0	-	660	6/80	Ertec 1980
Frieburg Mine Well 1N/57E-20	Garden	18	-	7.6	100	17	30	3	-	-	-	15	55	0	386	-	0.7	-	23	3.4	-	445	6/80	Ertec 1980
South Uhalde Well 1S/57E-2bb	Garden	19	-	8.0	11	3.4	90	4	-	-	-	8.5	21	0	205	-	0.8	-	23	9.4	-	305	6/80	Ertec 1980
Oreana Spring 1N/61E-29ca	Coal	20	12	6.7	82	9.1	23	2	-	-	-	14	26	0	303	-	0.2	-	24	6.2	-	500	6/80	Ertec 1980
Pahroc Spring 3S/62E-25ab	Pahroc	21	15	7.0	28	7.6	13	5	-	-	-	12	12	0	151	-	-	-	23	0.6	-	190	5/80	Ertec 1980
Hiko Spring 4S/60E-22	Pahranagat	22	27	8.0	44.09	23.34	28.97	7.02	-	-	-	10.99	36.02	0	259.93	1.24	.570	-	33	-	-	494	3/62	Eakin 1962
Crystal Spring 5S/60E-10a	Pahranagat	23	27	8.0	45.09	23.46	22.99	5.08	-	-	-	8.15	26.90	0	272.14	1.24	.570	-	31	-	-	-	4/63	Eakin 1962
Ash Spring 6S/60E-36dd	Pahranagat	24	32	-	45.09	17.99	20.92	-	-	-	-	8.86	18.25	-	250.78	-	-	-	-	-	277	473	4/44	Eakin 1962

Table III. Fluid chemistry of selected springs and wells within and near the White River regional flow system.

SPRING/WELL LOCATION	VALLEY	Sample Number	T°C	PH	Ca	Mg	Na	K	Al	Li	NH_4	Cl	SO_4	CO_3	HCO_3	NO_3	F	B	SiO_2	N	TDS	CONDUCTANCE MICROMHOS/CM	COLLECTION DATE	SOURCES
Alamo Town Well 7S/61E-5	Pahranagat	25	-	-	56.11	13.98	145.99	-	-	-	-	28.01	101.83	17.10	414.92	-	-	-	-	-	-	1111	4/44	Eakin 1961
Frehner Well 7S/61E-	Pahranagat	26	-	-	73.15	30.88	177.02	-	-	-	-	56.72	167.15	-	543.05	-	-	-	-	-	-	1250	1942	Eakin 1962
Well 6S/63E-12a	Delamar	27	-	7.95	21.2	5.2	42.9	2.7	-	-	-	5.10	25.6	.62	152.43	-	0.45	-	31.0	0.92	213	-	5/80	Ertec 1979
Willow Spring 10S/64E-9d	Kane	28	-	7.2	17.0	4.0	47.6	4.5	-	-	-	23.0	26.7	0.1	130.3	1.8	0.9	-	58.6	-	265.0	380.0	11/80	Ertec 1980
Well, CK-WQ-2 11S/62E-13bd	Coyote	29	-	7.7	37.4	27.0	32.1	2.9	-	-	-	16.4	35.4	0.4	257.7	1.2	0.2	-	18.9	-	299	563.0	11/80	Ertec 1980
Ertec Well, CE-DT-4 13S/63E-23dd	Coyote	30	-	-	51	20	83	10.7	-	-	-	37.1	102	-	306.4	-	2.1	-	34	.21	491	-	11/80	Ertec 1980
Well, CK-WQ-5 14S/65E-17aa	Moapa	31	-	7.5	114.6	60.2	225.0	25.1	-	-	-	143.4	394.2	0.6	579.2	0.0	1.5	-	37.8	-	1800	1792.0	11/80	Ertec 1980
Spring, CK-WQ-4 14S/65E-17aa	Moapa	32	-	7.5	64.8	26.5	94.8	14.1	-	-	-	61.0	171.9	0.3	277.5	0.5	1.3	-	25.3	-	591.0	982.0	11/80	Ertec 1980
Well, CK-WQ-5 14S/65E-17aa	Moapa	33	-	7.5	64.7	26.7	95.0	15.2	-	-	-	68.0	172.0	0.3	273.8	0.5	1.6	-	23.7	-	583.0	982.0	11/80	Ertec 1980
Well, CK-WQ-6 14S/65E-23ac	Moapa	34	-	7.7	136.0	68.8	315.0	30.5	-	-	-	120.0	819.3	0.6	359.7	0.0	2.0	-	22.8	-	1800	2351.0	11/80	Ertec 1980

Table III. Continued.

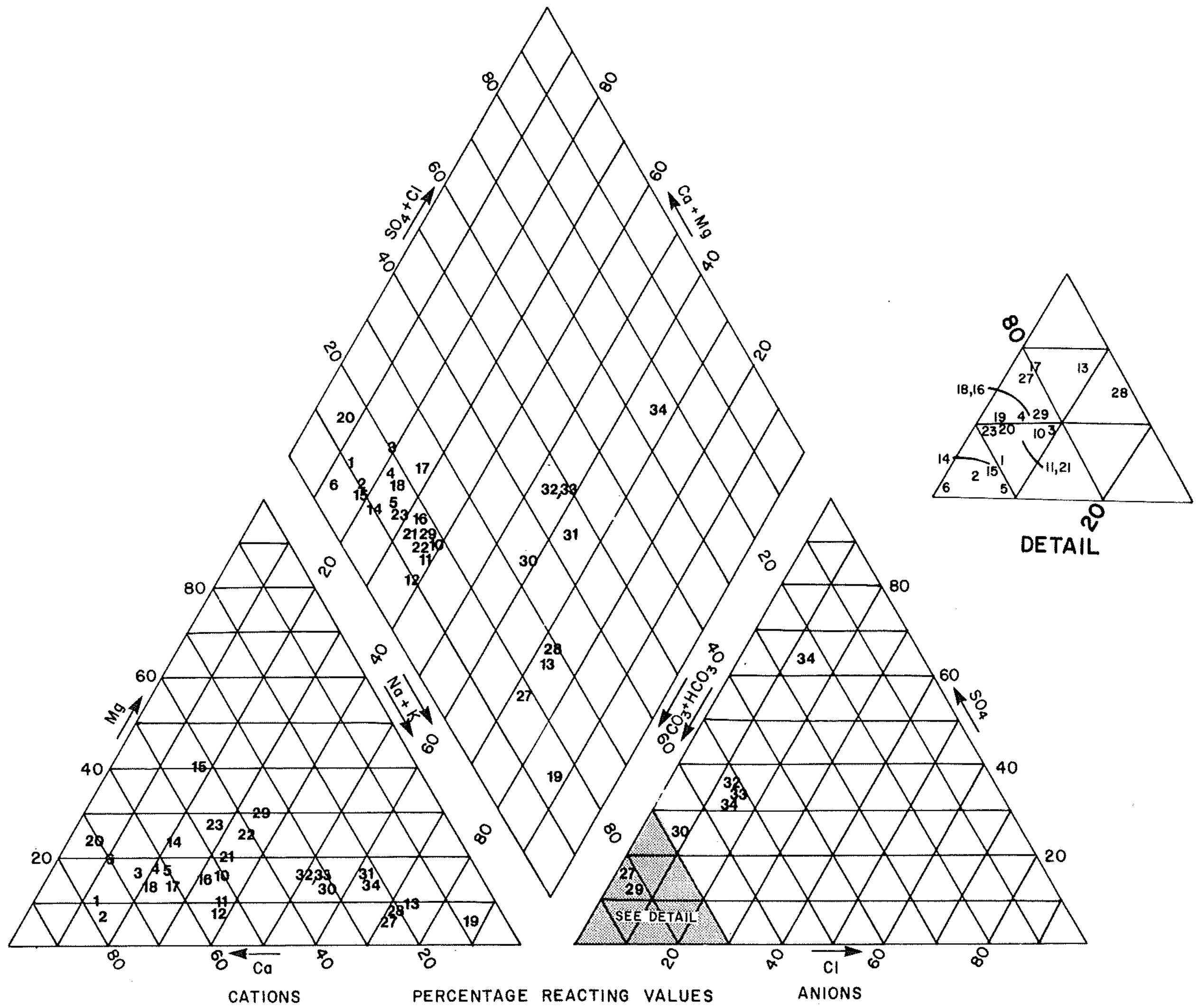


Figure 28. Chemical characteristics of selected springs and wells within or near the White River regional flow system.

(samples 28, 29, 30). Muddy River springs and wells are located immediately southeast of the study area in Moapa Valley and are numbered 31, 32, 33, 34. Several relationships are readily apparent from this plot. In general, fluids from springs and wells north of the Coyote/Kane study area (samples 1-26) contain relatively higher concentrations of Ca + Mg, and CO_3 + HCO_3 than do springs and wells located in Coyote/Kane Valleys (samples 27-29) and Moapa Valley (samples 30-34), indicating carbonate rock sources for these waters. On the other hand, fluids from the Coyote/Kane Valleys and Moapa Valley have a higher concentration of Na + K and SO_4 + Cl, respectively. These higher concentrations of Na + K and SO_4 + Cl are probably related to the volcanic units found near the springs and wells in Coyote Spring and Kane Springs Valley. There are exceptions to these observations. Sample 29 was collected from the Ertec carbonate aquifer test well in Coyote Spring Valley, and plots within the same range of the other carbonate springs and wells. Samples 13 and 19 are north of Coyote/Kane Valleys, and although they are concentrated in CO_3 + HCO_3, they are also very high in Na + K. Sample 34 from Moapa Valley plots relatively high in SO_4 + Cl and Na + K. Other thermal fluids in the Great Basin also plot in the general range of sample 34, which may indicate a thermal source for the Moapa Valley waters. Another explanation for the chemistry of sample 34 is that the water, as it flows from carbonate rocks, interacts with tuffaceous Tertiary sediments present in Moapa Valley, thereby increasing its Na + K content.

Waters which border on being classified thermal (30°C or greater) are found throughout the White River Flow System. These fluids are found in the deep carbonate aquifer systems. Several springs with fluids derived from the carbonate aquifers are found north of the study area. It is theorized that these low temperature (30-35°C) thermal fluids are heated by circulation within the carbonate aquifers (Mifflin, 1968). The heat source within the carbonate aquifers may be the normal geothermal gradient or it may be a shallow magma body, or both.

The normal geothermal gradient in southeastern Nevada is approximately 25°C/km (1.37°F/100 ft.) (Garside and Schilling, 1979). In order for fluids to be heated to 30-35°C temperatures (86-95°F), the fluids would have to circulate to depths of approximately 1500 meters (4600 ft.). It is very possible, due to the complex geology of the region, that the carbonate aquifers extend to these depths.

It is also possible that thermal fluids pass near a shallow heat source. The community of Caliente, approximately 75 kilometers northeast of Coyote Spring Valley, has several shallow water wells with temperatures greater than 45°C (110°F). It is interpreted that these warm and hot water wells are derived from a shallow heat source (Trexler and others, 1980). Also, a major volcanic region (Noble, 1968) lies between Caliente and Coyote Spring Valley in the Delamar Mountains (fig. 14) and may have a shallow heat source associated with it.

Coyote Spring Valley

A data exchange was arranged between the Division of Earth Sciences (DES) and the U.S. Geological Survey Water-Resources Division (USGS-WRD) since both groups were working in the study area. A total of ten samples were collected by the two groups in Coyote and Kane Springs Valleys and the Sheep Range. Figure 29 shows the location and relative chemical compositions of seven of the ten samples. The three remaining samples are off the map west of SR-1, and their locations and relative compositions are shown in the inset in Figure 29. Table IV gives the chemical data of the ten fluid samples; their general associations and characteristics are shown in a trilinear plot, Figure 30. A hydrogen and oxygen

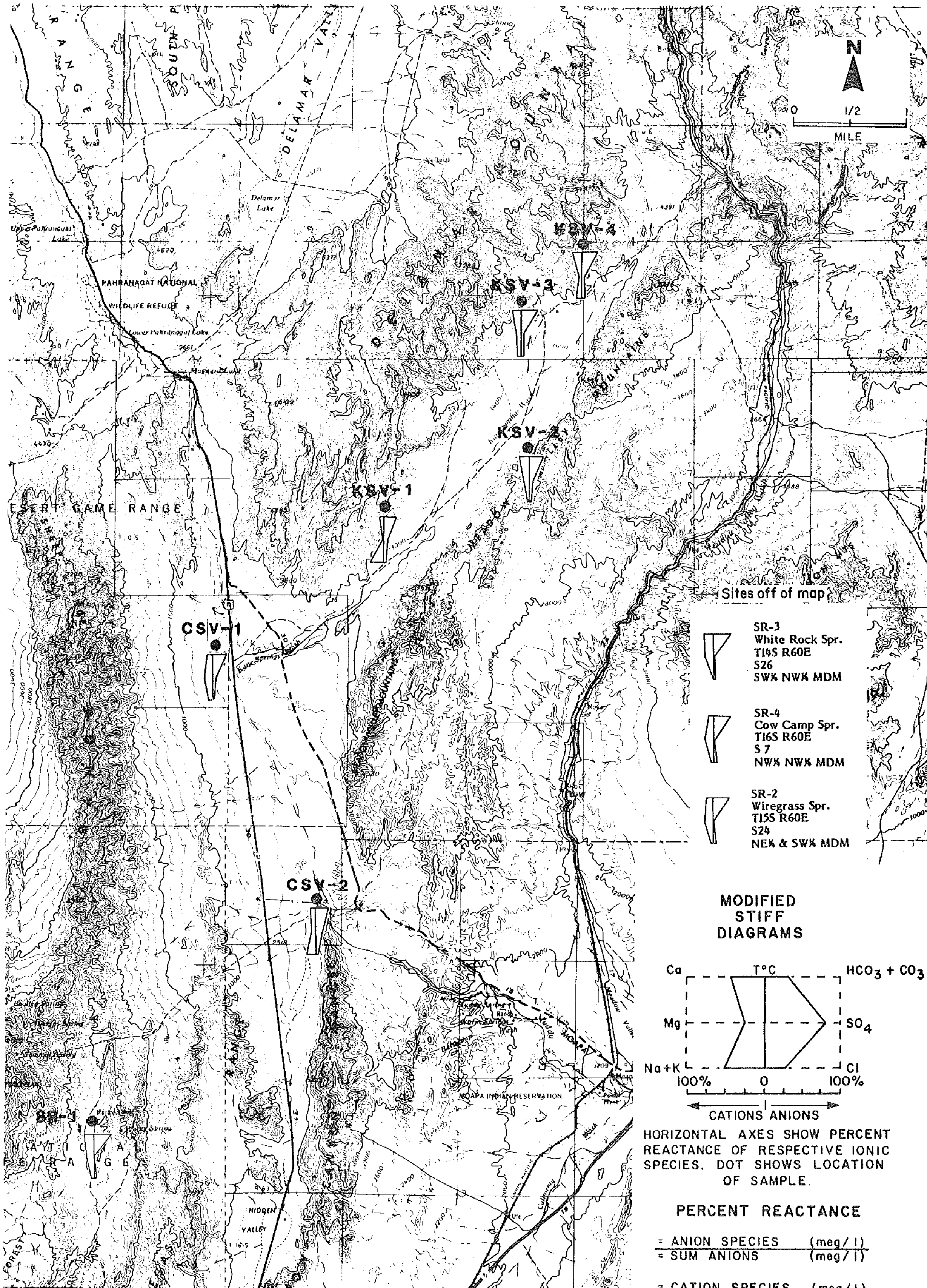


Figure 29. Location of springs and wells sampled in Coyote Spring Valley.

Table IV.

COYOTE SPRING VALLEY AND KANE SPRINGS VALLEY

WATER CHEMISTRY

(ppm)

Spring/Well	Sample #	T°C	pH	Ca	Mg	Na	K	Al	Li	Total Fe	Cl	SO_4	CO_3	HCO_3	NO_3	F	B	SiO_2	Collection Date	Source
Coyote Spring Valley																				
Coyote Spring Well	CSV-1	15.3	7.8	37.5	30.0	36.0	3.1	<0.10	0.01	<0.05	22.0	46	0	259.0	4.0	0.46	0.26	21	11/81	DES
Ertec Well, CE-DT-4	CSV-2	35.5	7.7	46.0	20.0	78.0	11.0	-	0.13	<0.01	34.0	100	-	300.0	1.5	1.90	0.30	33	7/81	USGS
Kane Spring Valley																				
Willow Spring	KSV-1	17.4	7.5	20.5	2.7	56.0	4.6	<0.10	0.01	<0.05	22.3	34	0	140.3	8.4	1.10	0.33	65	11/81	DES
Grapevine Spring	KSV-2	18.4	7.3	75.0	22.0	17.0	2.3	<0.10	0.02	<0.05	26.9	40	0	275.5	7.5	0.86	0.22	22	11/81	DES
Kane Springs	KSV-3	16.4	7.2	43.5	13.0	20.0	5.9	<0.10	0.02	<0.05	16.6	14	0	205.3	6.7	2.80	0.18	60	11/81	DES
Boulder Spring Stock Tank	KSV-4	16.8	7.9	21.5	4.9	12.2	2.3	<0.10	0.01	<0.05	7.8	6	0	102.2	1.3	1.70	0.13	41	11/81	DES
Sheep Range																				
Morman Well	SR-1	11.5	7.6	81.0	40.0	11.0	.4	<0.01	1.80	1.00	19.0	5	<0.01	400.0	<0.01	.10	<0.01	16	10/81	USGS
Wiregrass Spring	SR-2	9.5	7.6	69.0	32.0	2.7	1.1	<0.01	1.30	1.00	3.0	5	<0.01	350.0	<0.01	.10	<0.01	12	10/81	USGS
White Rock Spring	SR-3	15.0	7.7	37.0	29.0	14.0	7.0	<0.01	1.70	1.00	9.5	5	<0.01	260.0	<0.01	.20	<0.01	47	10/81	USGS
Cow Camp Springs	SR-4	14.5	8.2	48.0	31.0	21.0	.7	<0.01	2.10	1.00	28.0	9	<0.01	280.0	<0.01	.20	<0.01	16	10/81	USGS

<u>Sample collected by</u>

DES - Division of Earth Sciences

USGS - Preliminary data from Water Resources Division, United States Geological Survey, Nevada District

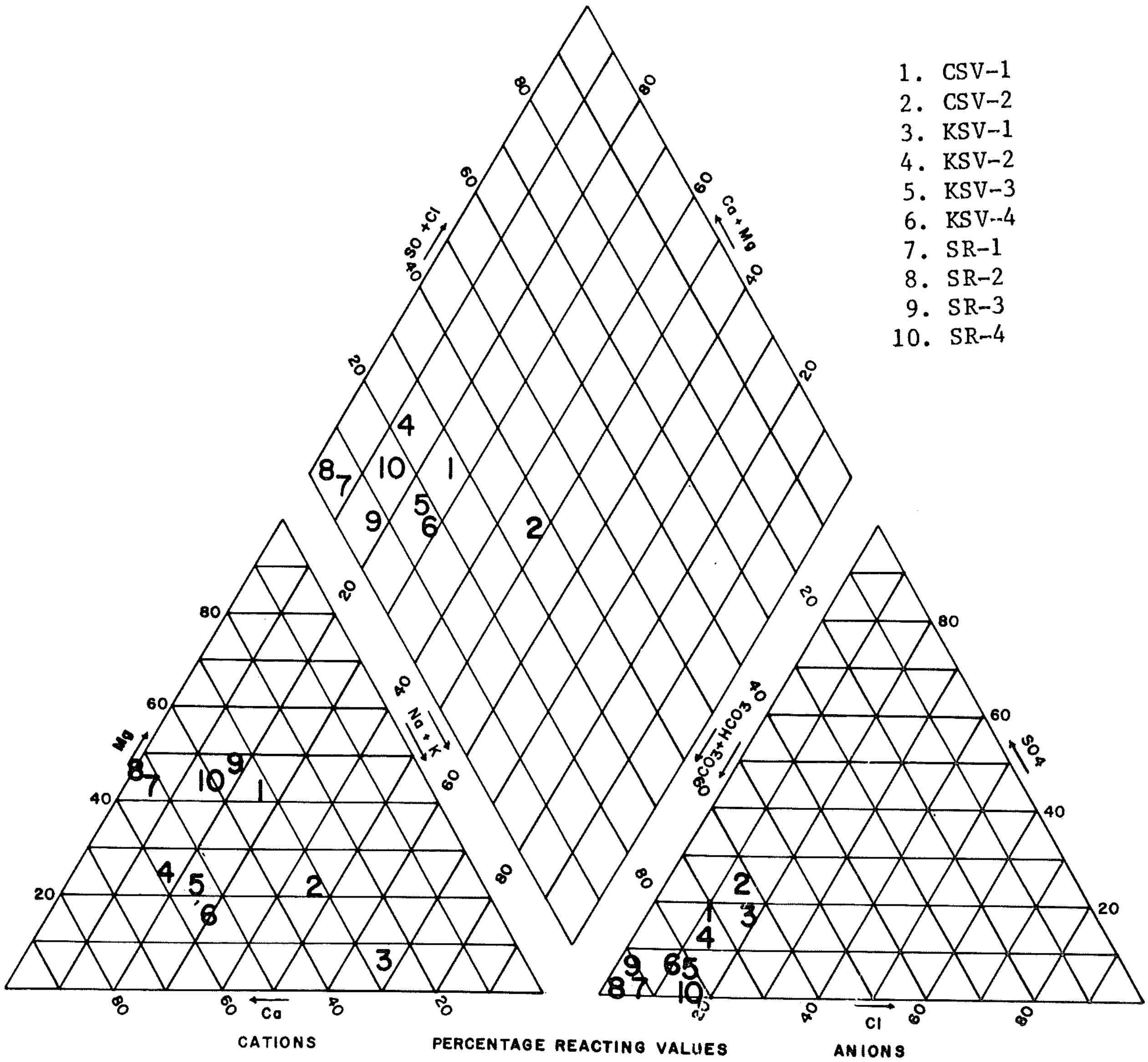


Figure 30. Trilinear plot of water chemistry data presented in Table III.

stable light isotope analysis was performed on six fluid samples, however, the results were not received until after this report was prepared. See Appendix A for details.

As seen in Figures 29, 30 and Table IV, all the samples are enriched in bicarbonate (HCO_3). Variations in the fluid chemistry are found in the cation component. These cation variations reflect the geologic conditions in which the fluids are found. Samples KSV-2, SR-1, SR-2, SR-3 and SR-4 are all derived from the carbonate units and reflect this in the chemistry as evidenced by the increased Ca or Mg.

The samples also appear to be derived from volcanic rocks (Ca-Mg or Na-K carbonate-bicarbonate). Samples KSV-1, KSV-3, and KSV-4 are found in the volcanic units and show an enrichment in either Na and K or similarities in the Ca, Mg, or Na + K component.

CSV-1 and CSV-2 are the two samples which do not fit the above generalities. CSV-1 reflects a more Mg character, such as a dolomite-derived fluid, however it is found within Tertiary lake sediments. The enriched Mg component may be derived from clays within the sediments or from some burried dolomitic units which the fluid passes through prior to being exposed at the surface. CSV-2 was derived from a highly permeable limestone aquifer, however it is enriched in Na + K, indicating a non-carbonate source. This sample is similar to the Na + K enriched fluids of the Moapa Valley area to the east (see sample numbers 31, 32, 33 34 on Table III).

According to Mifflin (1968), the White River flow system flows through Coyote Spring Valley into Moapa Valley. Fluid characteristics in Coyote Spring Valley are similar to those found in Moapa Valley, which supports this theory. However, it's assumed that Moapa area fluids became enriched in Na and K after passing through Tertiary sediments and volcanics between Coyote Spring Valley and

Moapa Valley. If this were correct, then sample CSV-2 should be depleted in Na + K and enriched in Ca and Mg. The situation is just the opposite. CSV-2 is enriched in Na + K (see fig. 29) rather than Ca and Mg as would be expected in carbonate aquifers. One explanation for this discrepancy is that the fluid source is within a non-carbonate environment; the flow through the carbonate aquifers is so rapid that the fluids do not have time to alter their chemistry to a more Ca and Mg enriched fluid.

The increased SO_4 component also suggests a non-carbonate source area. When CSV-2 is compared to the other carbonate aquifer fluids in the area.

Another discrepancy about the CSV-2 sample is that other carbonate aquifer samples within the White River flow system are primarily calcium bicarbonate (Ca HCO_3) (Mifflin, 1968). The Na + K enrichment of CSV-2 would tend to indicate a probable sediment or volcanic origin, but the occurrence of this fluid within a carbonate aquifer does not fit the regional chemistry.

Additional work on the carbonate aquifer system in Coyote Spring Valley might better delineate the system's characteristics. Until this has been done, one can only speculate as to the Na + K enrichment of fluids extracted from a carbonate aquifer.

TEMPERATURE GRADIENT STUDIES: TEST WELLS

During the preliminary phase of the project, temperature gradient data were collected on six test water wells within the area. The first test well, approximately 200 meters deep, was drilled by the U.S. Air Force's geotechnical subcontractor and encountered 35°C (95°F) water. A temperature gradient profile was made on this well and five other shallow test holes, each approximately 30 meters deep.

Figure 31 shows the location of this six test holes and their bottom hole temperatures are shown in Table V. Figure 32 is the temperature profile of the 200-meter test well. No major temperature anomalies are found other than the 35°C waters in the deep test well. The 35°C waters are found in a carbonate bedrock aquifer. Similar temperatures were also seen in other carbonate bedrock aquifers within the region (Table III).

CULTURAL ASSESSMENT OF COYOTE SPRING VALLEY

Before conducting the shallow temperature probe survey, it was necessary to obtain a permit from the Bureau of Land Management in compliance with BLM requirements. An archaeological literature survey was also undertaken to reveal those areas which should be avoided during field work.

There is evidence that human activity has taken place continuously within or in the vicinity of Coyote Spring Valley over the past 15,000 years. Human cultural remains include aboriginal lithic and textile fragments, and most recently, wells from ranching starts in the early 1900's, three highways (one now closed), numerous dirt roads and tire tracks, surveyors' flags and stakes, seismic survey lines, and water wells drilled by Ertec.

A Class I Cultural Resources Inventory (Rusco and Kuffner 1981) establishes ten east-west transect lines covering 20 percent of the 9,600-acre study area, including major land forms of Coyote Spring Valley. Thirteen archaeological sites and the cockpit of a jet aircraft were revealed in the study area (fig. 33). Gypsum series and Pinto series of projectile points found in Coyote Spring Valley give firm evidence that the valley was occupied as long ago as 2,000 years. The Colorado River basin in southern Nevada has signs of human habitation as long ago as 11,000 to 13,000 years B.P., an age linked with the San Dieguito/Lake Mohave culture.

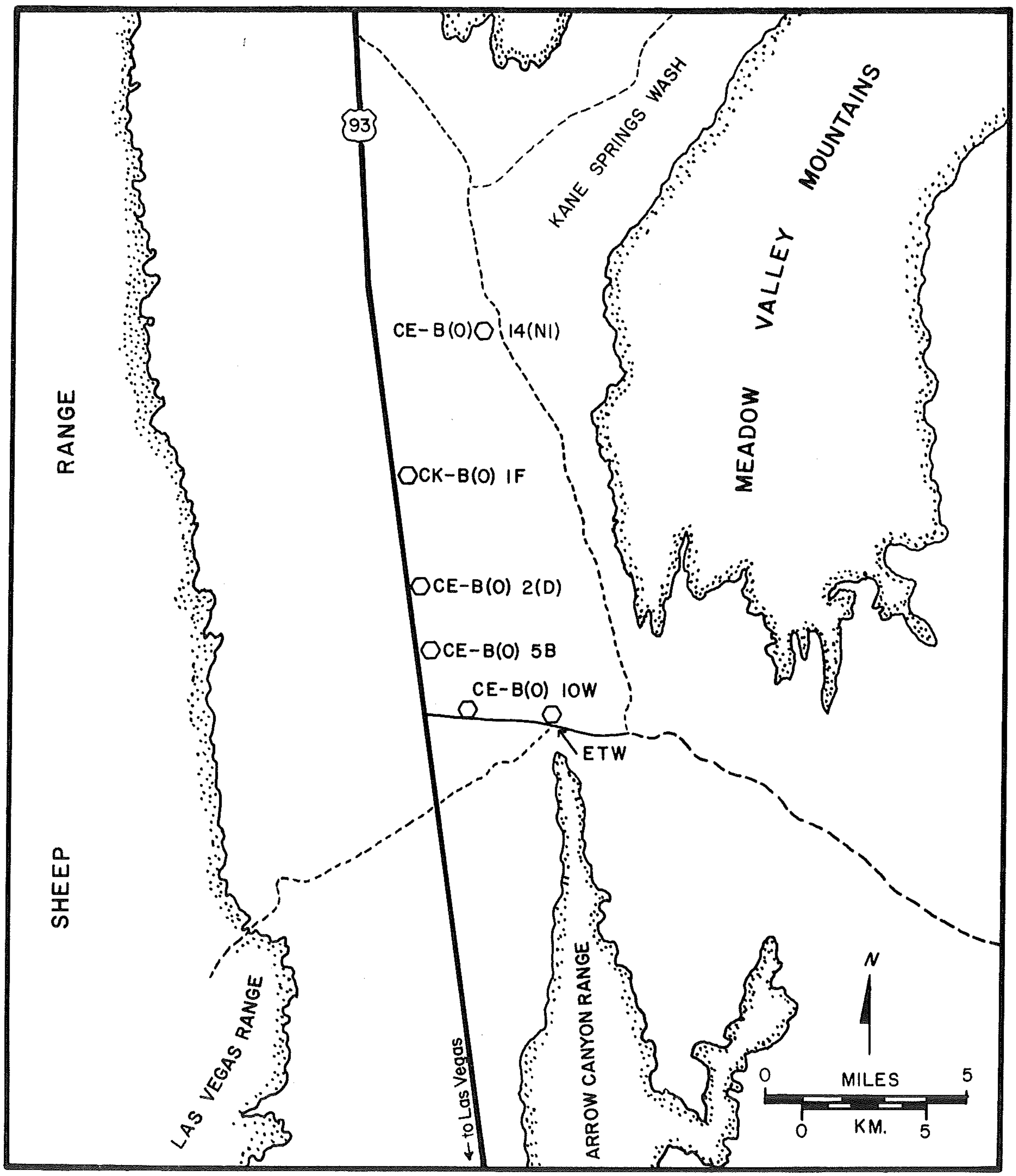


Figure 31. Location of temperature gradient test holes.

Table V

GEOTECHNICAL BORINGS AND CARBONATE AQUIFER TEST WELL IN COYOTE SPRING VALLEY

Well Identification	Depth in Feet	Temperature °C
1. CE-B(0) 10W	100	22.8
2. CE-B(0) 5B	160	23.4
3. CE-B(0) 2(D)	160	25.0
4. CE-B(0) 14(NI)	100	23.0
5. CK-B 1F	95	23.1
ETW*	665	34.9

*Carbonate Aquifer Test Well

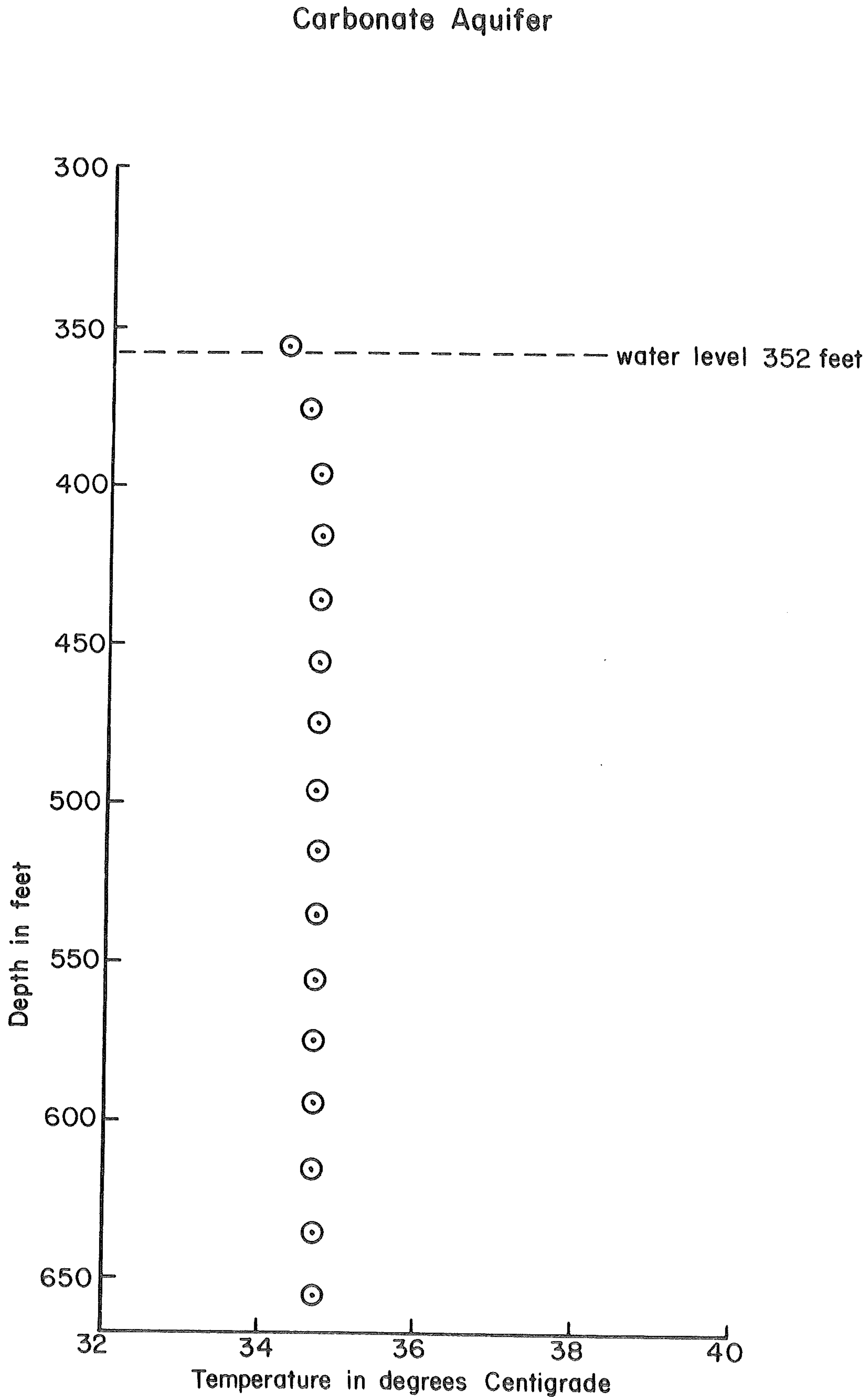


Figure 32. Temperature gradient profile of carbonate aquifer test well, ETW.

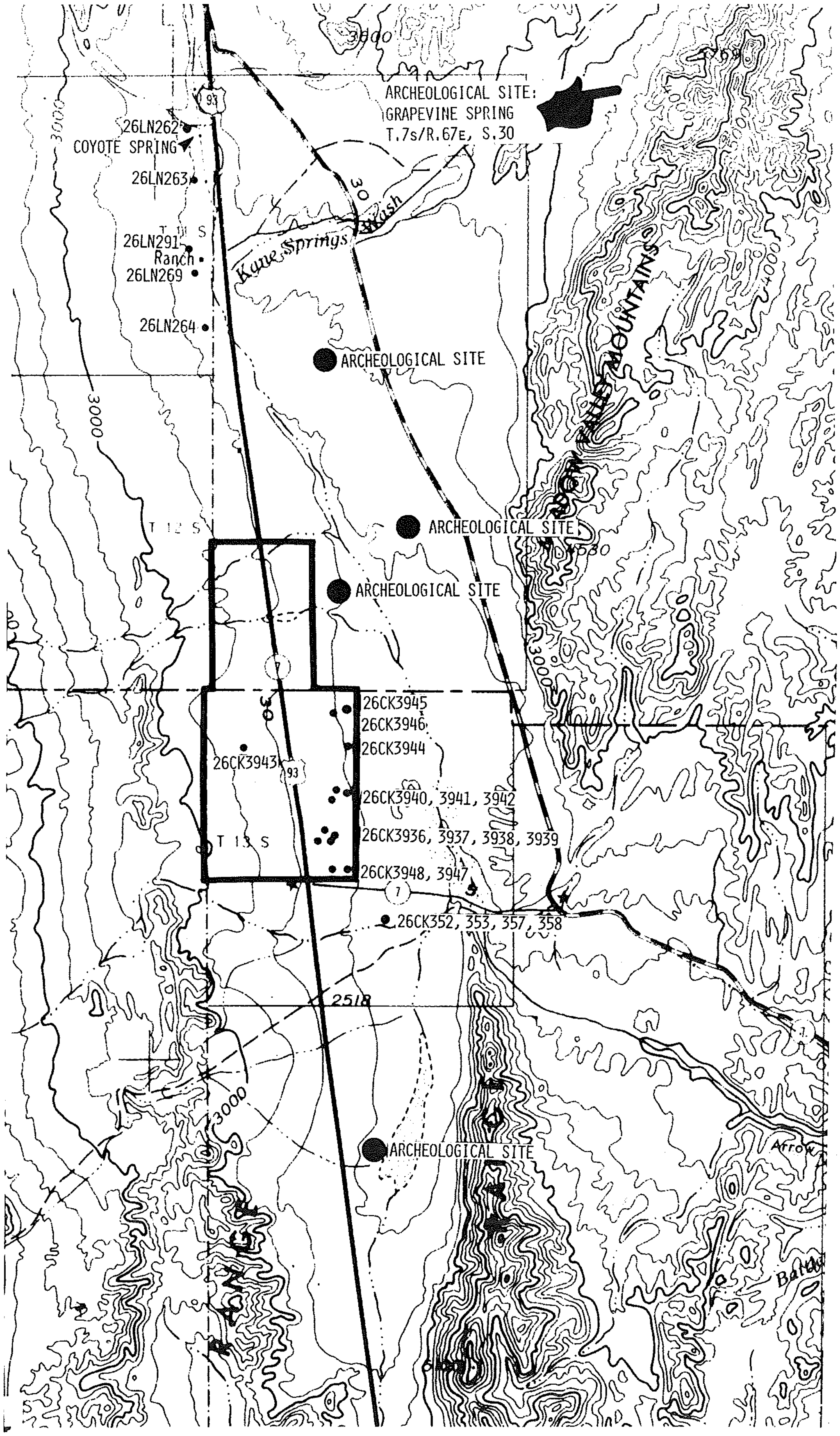


Figure 33. Location of previously recorded archaelogical sites, and Rusco's 20 percent sample.

The Anasazi tradition became established in the Virgin and Moapa valleys by 2,000 B.P. It's features include more permanent living structures, the beginnings of horticulture, and the use of Rose Spring/Eastgate style projectile points and ceramics. Rusco postulates that this group of people visited Coyote Valley to gather seasonal plants and raw materials for the manufacture of stone tools (Rusco and Kuffner, 1981). It appears that this large, stable population was replaced by the Numic speaking Southern Paiutes, the most recent aborigional inhabitants of the area. The relationship between the Anasazi tradition and the Southern Paiutes is still in question.

During the study, 101 one-inch diameter, two meter temperature probes were implanted throughout Coyote Spring Valley. Upon arrival at the preselected probe sites, the ground was carefully inspected. If cultural material was found, the site was recorded and another spot was selected for drilling. Off-road activities were primarily restricted to old jeep trails, existing tire tracks, the bottom of washes, and seismic survey lines. Drilling with a Mobil B42 drill rig was confined to the eastern margins of the old and new U.S. Highway 93, the Moapa highway, and the adjacent east-west power line corridor. This larger scale drilling was done on previously disturbed ground.

A total of five prehistoric sites were recorded while implanting temperature probes and taking water samples. Four of these were located in Coyote Valley, the fifth was located at Grapevine Spring T7S/R67E, NE¼ of SW¼ of S.30. This last site was the only one on which tools were found. Several biface fragments were found, which were probably made from a nearby white chert outcrop. As with most of the sites in the Coyote/Kane Springs Wash area, abundant obsidian flakes were present. These obsidian flakes usually had cortex remnants, often enough to show that they were assayed pebbles. The artifacts indicate activities such as tool manufacturing and hunting took place. The other four sites in Coyote Spring Valley appear to be material acquisition sites all within view of Pahanagat Wash. Three of these sites are characterized by assayed obsidian pebbles, along with some white and colored chert. All lie in an area north of the Moapa Highway, State Route 7, and south of Coyote Spring Valley. No tools were observed. The one site south of Highway 7 consisted of three unmodified white chert flakes adjacent to an abandoned burrow pit. All of these flakes were at least seven centimeters across the largest dimension.

In summary, the geothermal exploration project revealed five prehistoric sites. Due to the difficulties of drilling through caliche, the archeological site discovery based on drill sites was entirely random. This taken with Rusco's information and the amount of obsidian present indicates that more sites overlooking Pahanagat Wash will be discovered if a systematic survey of Coyote Spring Valley takes place. Field methods were useful to discover archaelogical sites, and also to gather temperature probe data with a minimum impact on the ground surface.

BIBLIOGRAPHY

Armstrong, R.L., 1968, Sevier Orogenic Belt in Nevada and Utah: Geol. Soc. American Bull. v. 79, p. 429-458.

Atwater, Tanya, 1970, Implications of Plate Tectonics for the Cenozoic Tenctonic Evolution of Western North America: Geol. Soc. Amer. Bull., v. 81, p. 3513-3536.

Birman, J.H., 1969, Geothermal Exploration for Ground Water: Geol. Soc. America Bull., v. 80, p. 617-630.

Burchfiel, B.C., 1965, Structural Geology of the Specter Range Quadrangle, Nevada and its Regional Significance: Geol. Soc. American Bull., v. 76, p. 175-192.

Ekren, E.B., Bucknam, R.C., Carr, W.J., Dixon, G.L. and Quinlan, W.D., 1976, East Trending Structural Lineaments in Central Nevada: U.S. Geol. Survey Prof. Paper 986.

Ekren, E.B., Orklid, P.P., Sargent, K.A. and others, 1977, Geologic Map of the Tertiary Rocks, Lincoln County, Nevada: U.S. Geological Survey, Misc. Invest. Ser., No. I-1041, 1 sheet.

Fleck, R.J., 1970, Tectonic Style, Magnitude and Age of Deformation in the Sevier Organic Belt in Southern Nevada and Eastern California: Geol. Soc. American Bull., v. 81, p. 1705-1720.

Fugro National Inc., 1980, Draft Geological Map of Operational Base S. 6, Coyote Spring Valley, Nevada.

Garside, L.J. and Schilling,J.H., 1979, Thermal Waters of Nevada: Nevada Bureau of Mines and Geology Bull. 91.

Hedge, C.E. and Noble,D.C., 1971,Upper Cenozoic Basalts with High Sr 87/86 and Sr/Rb ratios, Southern Great Basin, Western United States: Geol. Soc. America Bull., v. 82, P 3503-3510.

Leeman, W.P. and Rogers, J.J.W., 1970, Late Cenozoic Alkali-Olivine Basalts of the Basin and Range Province U.S.A.: Contr. Mineral and Petrol., v. 25, p. 1-24.

Liggett, M.A. and Childs, J.F., 1974, Crustal Extension and Transform Faulting in the Southern Basin and Range Province: Natl. Tech. Inf. Serv., U.S. Dept. of Comm., Springfield, Virginia, no. E74-10411, 54 p.

Longwell, C.R., 1960, Possible Exploration of Diverse Structural Patterns in Southern Nevada: Am. Journal Sci., v. 258-8 (Bradley volume) p. 192-203.

Longwell, C.R., Pampeyan, Bowyer, Ben and Roberts, R.J., 1965, Geology and Mineral Deposits of Clark County, Nevada: Nevada Bur. Mines & Geology Bull. 62.

McNerney, J.J., Buseck, P.R. and Hansen, R.C., 1972, Mercury Detection by Means of Thin Gold Films: Science, v. 178, p. 611-612.

Matlick, J.S. and Buseck, P.R., 1976, Exploration for Geothermal Areas Using Mercury: a new geochemical technique: Proc. Second U.N. Symposium on the Development and Use of Geothermal Resources, 1, p. 785-792.

Mifflin, M.D., 1968a, Delineation of Ground-water Flow Systems in Nevada: Technical Report Series 4-W, Hydrology and Water Resouces Research, DRI, Univ. of Nevada.

Noble, D.C., 1968, Kane Springs Wash Volcanic Center, Lincoln County, Nevada: Geol. Soc. America Mem. No. 110, p. 109-116, illus., (inc. geol. sketch map).

Noble, D.C. and McKee, E.H., 1972, Description and K-Ar Ages of Volcanic Units of the Caliente Volcanic Field, Lincoln County, Nevada and Washington County, Utah: Isochron/West no. 5, p. 17-24.

Press, F., 1960, Crustal Structure in the California-Nevada Region: Jour. Geophys. Research, v. 65, no. 3, p. 1039-1051.

Rowan, L.C. and Wetlaufer, P.H., 1979, Geologic Evaluation of Major Landsat Lineaments in Nevada and their Relationship to Ore Districts: U.S. Geol. Survey open-file rpt. 79-544.

Rusco, Mary and Kuffner, Carmen 1981, Archaeological Investigations in Coyote Springs Valley, Lincoln and Clark Counties, Nevada: (draft report) Nevada State Museum.

Shawe, D.R., 1965, Contemporary Tectonics and Seismicity of the Western United States with emphasis on the intermountain seismic belt: Geol. Soc. American Bull., v. 85, no. 8, p. 1205-1218.

Smith, R.B. and Sbar, M.L., 1974, Contemporary Tectonics and Seismicity of the Western United States with emphasis on the intermountain seismic belt: Geol. Soc. American Bull., v. 85, no. 8, p. 1205-1218.

Stewart, J.H., 1980, Geology of Nevada, Nevada Bureau of Mines and Geology, Special Publication #4, 121 p.

Stewart, J.H., 1978, Basin and Range Structure in Western North America; a review: in Smith, R.B. and Eaton, G.P., (eds.), Cenozoic Tectonics and regional Geophysics of the Western Cordillera, Geol. Soc. America Mem. 152, p. 1-31.

Stewart, J.H., 1971, Basin and Range Structure--A System of Horsts and Grabens Produced by Deep-seated Extension: Geol. Soc. America Bull., v. 82, no. 4, p. 1019-1043.

Stewart, J.H. and Carlson, J.E., 1978, Geologic Map of Nevada, U.S. Geol. Survey, map scale 1:500,000.

Stewart, J.H., Alberts, J.P. and Poole, F.G., 1968, Summary of Regional Evidence for Right-lateral Displacement in the Western Great Basin: Geol. Soc. America Bull., v. 79, no. 10, p. 1407-1413.

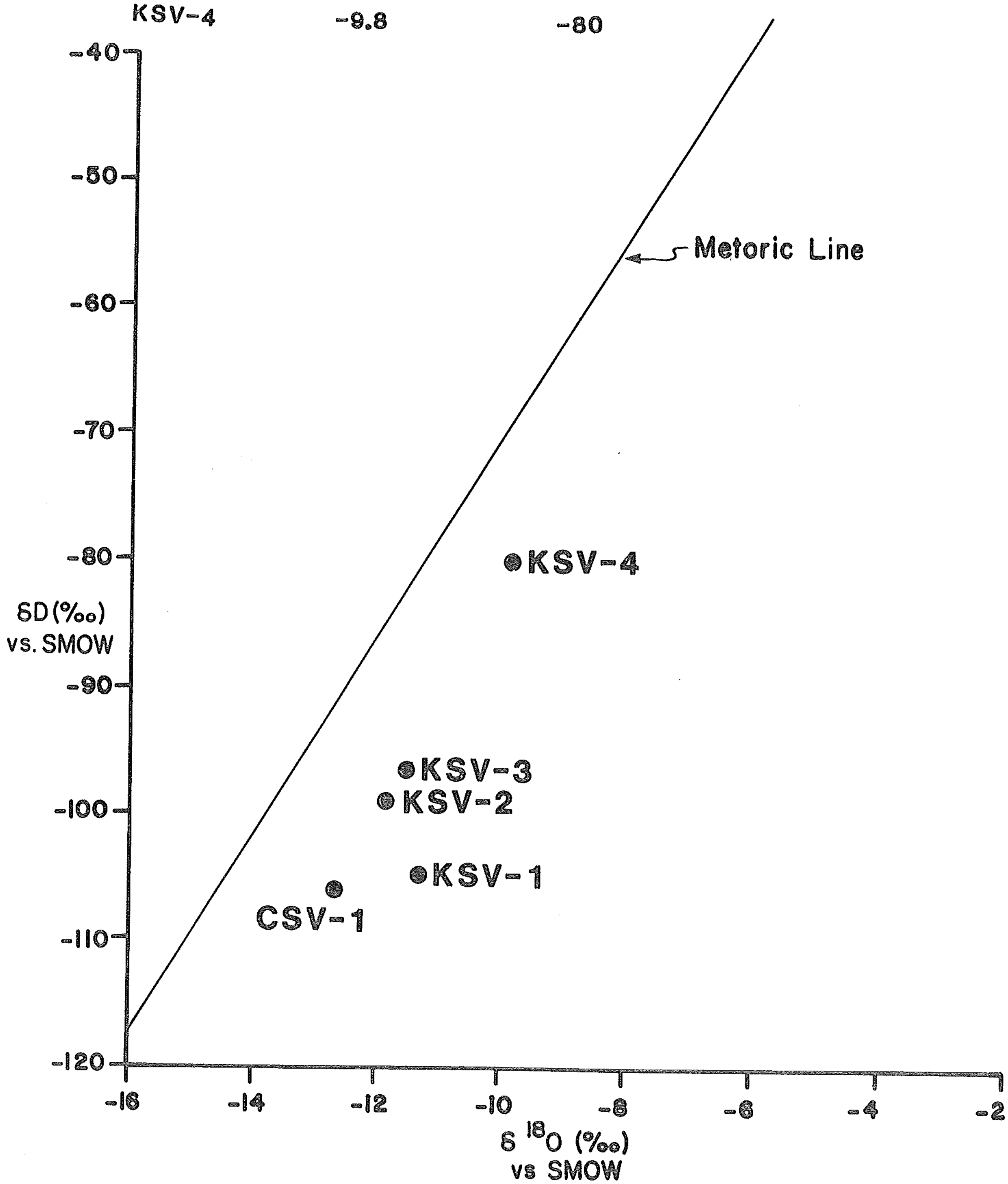
Trexler, D.T., Flynn, T., Koenig, B.A. and Bruce, J., 1980, Assessment of Geothermal Resources of Caliente, Nevada: Report DOE/NV/10039-1.

Trexler, D.T., Bell, E.J. and Roquemore, G.R., 1979, Evaluation of Lineament Analysis as an Exploration Technique for Geothermal Energy, Western and Central Nevada: Final report of work prerformed for the U.S. DOE under contract no. EY-76-S-08-0671, 78 p.

Tschanz, D.M. and Pampeyan, E.H., 1970, Geology and Mineral Deposits of Lincoln County, Nevada: Bull. #73, Nevada Bur. Mines, University of Nevada, Reno.

APPENDIX A: Results of five fluid isotope samples sent out for analysis and received after final report preparation: Coyote Spring Valley, Nevada.

Sample Designation	$^{18}O/^{16}O$ (0/00 vs SMOW)	D/H (0/00 vs SMOW)
CSV-1	-12.6	-106
KSV-1	-11.3	-105
KSV-2	-11.9	-99
KSV-3	-11.5	-97
KSV-4	-9.8	-80



Stable light isotope composition of waters from Coyote Spring Valley and Kane Springs Valley.

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Appendix B

ANNOTATED BIBLIOGRAPHY

The bibliography represents publications (reports and maps) that pertain to the proposed MX deployment area of Nevada. The publications cover all aspects of geology and related subspecialties such as geochemistry, geophysics and hydrology. The bibliographic list has been annotated with key abbreviations which denote the type of specialty adressed (i.e. lithology, hydrology, etc.), the geographic area covered (region, county, etc.) and the geologic age, physiographic province or orogenic zone covered by the publications.

The abbreviations used and their meaning are presented below.

G	Geology	M	Mesozoic
Gp	Geophysics	C	Cenozoic
Gc	Geochemistry	T	Tertiary
H	Hydrology/Groundwater	Q	Quaternary
Fg	Fluid Geochemistry	Sob	Sevier Orogenic Belt
Wd	Well Data	Gb	Great Basin/Basin & Range
Gt	Geothermal/Heat Flow	Nts	Nevada Test Site
Tt	Tectonics	N	Nevada
S	Structure	NN	Northern Nevada
Hy	Hydrothermal	CN	Central Nevada
Li	Lithology	SN	Southern Nevada
Ap	Aerial Photography or Images	EN	Eastern Nevada
Si	Satellite Images	WN	Western Nevada
Cc	Carbonates	WUS	Western United States
V	Volcanics	Cc	Clark County
PC	Precambrian	Lic	Lincoln County
P	Paleozoic	Nc	Nye County

Abdel-Gawad, M. and Tubbesing, L., 1974, Transverse shear in southwestern North America - a tectonic analysis: in Proc. of the First International Conf. on the New Basement Tectonics, Utah Geological Assoc., Pub. no. 5, Ch. 3. (Tt, S, N)

Adair, D.H., 1961, Geology of the Cherry Creek district, Nevada: M.S. thesis, Utah Univ., Salt Lake City, 125 p. (G, EN)

Adair, D.H., and Stringham, B., 1960, Intrusive rocks of east-central Nevada: in Boettcher, J.W., and Sloan, W.S., Jr., (eds.) Guidebook to the geology of east-central Nevada, Intermountain Assoc. Petroleum Geologists, 11th Annual Field Conf., p. 229-231. (G, EN)

Adams, W.B., 1944, Chemical analysis of municipal water supplies, bottled mineral waters and hot springs, Nevada: Univ. Nevada, Reno, Dept. of Food and Drugs. (Fy, Wd, Gt, N)

Affleck, J., 1963, Magnetic anomaly trend and spacing patterns: Geophysics, v. 28, p. 379-395. (Gp)

Aiken, C.L.V. and Ander, M.E., 1981, A regional strategy for geothermal explorations with emphasis on gravity and magnetotellurics: Jour. Volcanology Geotherm. Res., v. 9, no. 1, p1-27. (Gt, Gp)

Albers, J.P., 1967, Belts of sigmoidal bending and right-lateral faulting in the Western Great Basin: Geol. Soc. America Bull., v. 78, no. 2, p. 143-156. (S, Tt, N)

Albers, J.P., 1970, Spatial relationship of mineral deposits to Tertiary volcanic centers in Nevada: U.S. Geol. Survey Prof. Paper no. 700-C. (Gc, V, N)

Albers, J.P. and Kleinhampl, F.J., 1968, Spatial relation of metal-mining districts to Tertiary volcanic centers in Nevada: Soc. Mining Engineers, Am. Inst. Mining, Metallurgical and Petroleum Engineers Preprint 68-S-57. (Gc, V, N)

Anderson, D.N., and Lund, J.W., eds., 1980, Direct utilization of geothermal energy: a technical handbook: Geothermal Resources Council Spec. Rept. no. 7, p. 2-1 to 2-16. (Gt)

Anderson, R.E., 1971, Thin skin distension in Tertiary rocks of southeastern Nevada: Geol. Soc. America Bull., v. 82, p. 43-58. (V, T, SN)

Anderson, R.E., 1973, Large-magnitude late Tertiary strike-slip faulting north of Lake Mead, Nevada: U.S. Geol. Survey Prof. Paper 794, 18 p. (S, T, SN)

Anderson, R.E., and Ekren, E.B., 1968, Widespread Miocene igneous rocks of intermediate composition, southern Nye County, Nevada: Geol. Soc. America Mem. 110, p. 57-63. (T, V, SN, Nc)

Anderson, R.E., Ekren, E.B., Noble, D.C., and others, 1971, Geology of northern Nellis Air Force Base Bombing and Gunnery Range, Nye County, Nevada: U.S. Geol. Survey Prof. Paper 651, 91 p. (G, SN, Nc)

Anderson, R.E., and Jenkins, E.C., 1970, Geologic studies in Dry Lake Valley and Hidden Valley, southern Nevada: U.S. Geol. Survey Rept. 454-455, 36 p. (G, SN)

Anonymous, 1966, Nevada brine supports a big new lithium plant: Chemical Eng., v. 73, p. 86. (N, Fg)

Anonymous, Case histories: Soil mercury profiles: Jerome Instrument Corp. publication, Jerome, Arizona. (Gc, Gt)

Armstead, H.C.H., 1978, Geothermal energy: London, E. and F.N. Spon, Ltd., 357 p. (distributed in United States by Halsted Press Division of John Wiley and Sons, New York). (Gt)

Armstrong, R.L., 1964, Geochronology and geology of the eastern Great Basin in Nevada and Utah: Ph.D. thesis, Yale Univ. (G, Gb, EN)

Armstrong, R.L., 1967, Sevier orogenic belt in Nevada and Utah: Geol. Soc. America Bull., v. 79, p. 429-458. (Sob, Gb, T, V, EN)

Armstrong, R.L., 1970, Geochronology of Tertiary igneous rocks, eastern Basin and Range province, western Utah, eastern Nevada and vicinity, U.S.A.: Geochem. et Cosmochim. Acta., v. 34, no. 2, p. 203-232. (T, V, Gb, EN)

Armstrong, R.L., 1972, Low-angle (denudation) faults, hinterland of the Sevier orogenic belt, eastern Nevada and western Utah: Geol. Soc. America Bull., v. 88, p. 729. (S, Tt, Sob)

Armstrong, R.L., 1974, Magmatism, orogenic timing, and orogenic diachronism in the Cordillera from Mexico to Canada: Nature, v. 274, p. 348-351. (G, Gb, Gp)

Armstrong, R.L., Ekren, E.B., McKee, E.H., and others, 1969, Space-time relations of Cenozoic silicic volcanism in the Great Basin of the western United States: Am. Jour. Sci., v. 267, no. 4, p. 478-490, sketch maps. (C, V, Gb, Gc)

Asher-Bolinder, S., Vine, J.D., Glanzman, R.K., and Davis, J.R., 1980, Chemistry of groundwater from test holes drilled in Esmeralda and Nye Counties, Nevada: U.S. Geol. Survey open-file rept. 80-672. (Fg, Wd, H, Nc, SN)

Ashley, R.P., and Kieth, W.J., 1973, Geochemical map showing distribution and abundance of mercury in silicified rocks, Goldfield mining district, Esmerald and Nye Counties, Nevada: U.S. Geol. Survey Misc. Field Inv. Map MF-477. (Gc, V, SN)

Atkinson, D.J., and Meyer, W.T., 1980, Low cost airborne geochemical detection and evaluation of "blind" geothermal reservoirs: Geothermal Resources Council, Trans., v. 4, p. 141-143. (Gc, Gt)

Atwater, Tanya, 1970, Implications of plate tectonics for the Cenozoic tectonic evolution of western North America: Geol. Soc. America Bull., v. 81, p. 3513-2536. (Tt, C, Gb, N)

Avent, J.C., 1962, Structure and stratigraphy of the Antelope Range, northeast White Pine County, Nevada: M.S. thesis, Univ. Washington, Seattle. (G, S, EN)

Bailey, E.H., 1964, Mercury: in Mineral and water Resources of Nevada, Nevada Bur. Mines Bull. 65, p. 119-123. (Gc, H, V, N)

Bailey, E.H., and Phoenix, D.A., 1944, Quicksilver deposits in Nevada: Nevada Bur. Mines Bull. 41. (Gc, N)

Ball, S.H., 1908, The post-Jurassic igneous rocks of southwestern Nevada: Jour. Geol., v. 16, p. 36-45. (V, C, T, SN)

Balsey, J.R., 1961, Total-intensity aeromagnetic profile from Denver, Colorado to Point Reyes, California: U. S. Geol. Survey open-file rept. (Gp, N)

Banwell, C.J., 1970, Geophysical techniques in geothermal exploration: Second proceedings of the United Nations Symposium on the development and utilization of geothermal resources, Pisa, Sept/Oct 1970, published in Geothermics special issue, v. 1. (Gp, Gt)

Barazangi, Muawia, Shultz, Christopher, and Sbar, Marc, 1971, Late Cenozic evolution of the Great Basin, western United States, as an ensialic inter-arc basin, in three studies of the structure and dynamics of the upper mantle adjacent to a descending lithospheric slab: Ph.D. dissert., Columbia Univ., New York, 150 p.; Dissert. Abs. Internat., v. 33/01-B, p. 283; also Geol. Soc. America Bull., v. 82, no. 11, p. 2979-2990. (C, Gb, Tt, S, Wus)

Barnes, J.I., 1971, Measurement of mercury in soil gas--as an aid to minerals exploration in Nevada: M.S. thesis, Univ. Nevada, Reno. (Gc, N)

Barosh, P.J., 1964, Lower Permian stratigraphy of east-central Nevada and adjacent Utah: Ph.D. dissert., Univ. Colorado, Boulder, 272 p., Dissert. Abs. Internat., v. 28/12-B, p. 5076; also U.S. Geol. Survey open-file rept., 144 p., 15 pl., 3 tables. (P, G, EN)

Barosh, P.J., 1968, Correlation of Permian and Pennsylvanian sections between Egan Range and Spring Mountains, Nevada: U.S. Geol. Survey Bull., 1254-I, p. 11-18. (P, G, EN)

Barr, F.T., 1957, Paleontology and stratigraphy of the Pennsylvanian and Permian rocks of Ward Mountain, White Pine County, Nevada: M.S. thesis, Univ. California, Map Scale 1:42,300. (G, P, EN)

Barrett, D.C., and Magleby, D.N., 1954, Airborne radiometric survey, Kern and San Bernadino Counties, California, and Nye County, Nevada: U.S. Atomic Energy Comm. RME-2015, 17 p. (Gp, Nc, SN)

Bartel, D.J., 1968, Structure and stratigraphy of the Western Red Hills, east-central Nevada, White Pine County, Nevada-areal geology: M.S. thesis, Univ. Nebraska, Lincoln. (S, G, EN)

Bath, G.D., 1976, Interpretation of magnetic surveys in intermontane valleys of Nevada and southern New Mexico: U.S. Geol. Survey open-file rept.76-440, 37 p., scales 1:26,000, 1:165,000, and 1:98,000. (Gp, N)

Bayer, K.C., 1974, A preliminary seismicity study of the southern Nevada region; quarterly report, April-June 1973: U.S. Geol Survey Branch Seism. Eng., Las Vegas, 29 p. (Tt, SN)

Beck, P.J., 1970, The southern Nevada-Utah border earthquakes, August to December 1966: M.S. thesis, Univ. Utah. (Tt, S, SN)

Behnke, J.J., 1961, Geology of the southern portion of Martins Ridge, Monitor Range, Nye County, Nevada: M.S. thesis, Univ. Nevada, Reno. (G, Nc, SN)

Bell, E.J., Campana, M.E., Jacobson, R.L., Slemmons, D.B., and others, 1980, Geothermal reservoir assessment case study, northern Basin and Range province, northern Dixie Valley, Nevada: final rept. prepared by Mackay Minerals Research Inst. for U.S. DOE under contract no. DE-AC08-79ET27006, subcontracted to Southland Royalty Company, Ft. Worth, Texas. (Gt, Gb, Fg, Gc, Wd, S, G, CN)

Bell, E.J., and Slemmons, D.B., 1979, Recent crustal movements in the central Sierra Nevada - Walker Lane Region of California-Nevada: Part II, The Pyramid Lake right-slip fault zone segment of the Walker Lane: Tectonophysics, v. 52, no. 1-4, p. 571-583. (Tt, S, WN)

Benoit, W.R., 1978a, The discovery and geology of the Desert Peak, Nevada, geothermal field: in Energy exploration and politics; pre-prints, California, Div. Oil and Gas, 11 p. (Gt, G, WN)

Benoit, W.R., 1978b, The use of shallow and deep temperature geothermal exploration in northwestern Nevada using the Desert Peak thermal anomaly as a model: in Geothermal Energy, a novelty becomes a resource; Geothermal Resources Council trans. v. 12, sec. 1, p. 45-46. (Gt, Wd, G, WN)

Berry, W.B.N., McKee, E.H., and Merriam, C.W., 1972, Biostratigraphy and correlation of McMonnigal and Tor Limestone, Toquima Range, Nevada: Am. Assoc. Petroleum Geol. Bull., v. 56, no. 8, p. 1563-1570. (P, G, CN)

Best, M.G., and Brimhall, W.H., 1974, Late Cenozoic alkali basalt magmas in the western Colorado Plateaus and the Basin and Range transition zone and their bearing on mantle dynamics: Geol. Soc. America Bull., v.85, p. 1677-1690. (C, V, Gb, N)

Best, M.G., and Hamblin, W.K., 1978, Origin of the northern Basin and Range province: Implications from the geology of its eastern boundary: in Smith, R.B., and Eaton, G.P., (eds.), Cenozoic tectonics and regional geophysics of the western Cordillera: Geol. Soc. America Mem. 152, p. 313-340. (Gb, G, C, Tt, Gp, EN)

Beyer, J.H., 1977, Telluric and D.C. resistivity techniques applied to the geophysical investigation of Basin and Range geothermal systems Part II: A numerical model study of the dipole-dipole and Schlumberger resistivity methods: Lawrence Berkeley Laboratory LRL-6325, Univ. California, Berkeley. (Gp, Gb, Gt, N)

Beyer, H., Morrison, H.F., and Dey, 1975, Electrical exploration of geothermal systems in north central Nevada: Geophysics, v. 40, no. 1, p. 174. (Gp, Gt, CN)

Beyer, H., Morrison, H.F., and Dey, 1976, Electrical exploration of geothermal systems in the Basin and Range valleys in Nevada: Third proceedings of the Second United Nations Symposium on the development and use of geothermal resources, San Francisco, California, May, 1975. (Gp, Gt, Gb, N)

Biehler, Shawn, 1979, Structural methods in geothermal exploration: Geothermal Resources Council Short Course no. 1, Pacific Grove, California, June 4-6, 1979. (S, Gt, G)

Billingsley, F.C., Goetz, A.F.H., Rowan, L.C. and others, 1974, Discrimination of rock types and detection of hydrothermally altered areas in south-central Nevada by the use of computer-enhanced ERTS images: U.S. Geol. Survey Prof. Paper 883, 39 p. (Gt, G, Hy, CN)

Birman, J.H., 1969, Geothermal exploration for ground water: Geol. Soc. America Bull., v. 80, p. 617-630. (Gt, H)

Bissell, H.J., 1970, Realms of Permian tectonism and sedimentation in western Utah and eastern Nevada: Am. Assoc. Petroleum Geol. Bull., v. 54, no. 2, p. 285-312. (P, Tt, EN)

Bjorn, H., Bjornsson, S., and Sigurgeirsson, T., 1980, Geothermal effects of water penetrating into hot rock boundaries of magma bodies: Geothermal Resources Council Trans., v. 4, p. 13-15. (Gt, H)

Blackwell, D.D., 1978, Heat flow and energy loss in the western United States: in Smith, R.B., and Eaton, G.P., (eds.), Cenozoic tectonics and regional geophysics of the western Cordillera: Geol. Soc. America Mem. 152, p. 175-208. (Gt, Wus, C, Tt, Gp, Gb)

Blackwell, D.D., 1979, Thermal methods in geothermal exploration: Geothermal Resources Council Short Course no. 1, Pacific Grove, California, June 4-6, 1979. (Gt, Gp)

Blackwell, D.D. and Chapman, D.S., 1977, Interpretation of geothermal gradient and heat flow data for Basin and Range geothermal systems: Geothermal Resources Council, Trans., 1, 19-20. (Gt, Gb, Wd, N)

Blake, M.C., Jr., McKee, E.H., and Marvin, R.F., 1975, The Oligocene volcanic center at Eureka, Nevada: U.S. Geol. Survey Jour. Res., v.3, no. 5, p. 605-612, 1975. (T, V, EN)

Bodvarsson, G., 1970, Evaluation of geothermal prospects and the objectives of geothermal exploration: Geoexploration, v. 8, p. 7-17. (Gt, G)

Bohannon, R.G., 1977, Geologic map and sections of the Valley of Fire region, north Muddy Mountains, Clark County, Nevada: U.S. Geol. Survey Misc. Field Studies Map MF-849, Scale 1:25,000. (G, SN, Ce)

Bohannon, R.G., 1978, Preliminary geologic map of the Las Vegas 1° by 2° quadrangle, Nevada, Arizona, and California: U.S. Geol. Survey open-file rept. 78-670. (G, SN, Cc)

Bonham, H.F., Jr., and Garside, L.J., 1979, Geology of the Tonopah, Lone Mountain, Klondike, and Northern Mud Lake quadrangles, Nevada: Nevada Bur. Mines and Geol. Bull. 92. (G, CN)

Bortz, L.C., 1959, Geology of the Copenhagen Canyon area, Monitor Range, Eureka County, Nevada: M.S. thesis, Univ. Nevada, Map Scale 1:24,000. (G, CN)

Bowman, H.R., Herbert, A., Wollenberg, H., and others, 1974, A detailed chemical and radiometric study of geothermal waters and associated rock formations, with environmental implications: in Proceedings of the Second International Conference on Nuclear Methods in Environmental Research, p. 32-43 (rept. no. CONF-74071, available from NTIS, Springfield, VA.). (Gc, Gt, G, Hy)

Bowman, H.R., Wollenberg, H., and Asaro, F., 1978, Sampling and analysis of hot and cold spring waters and associated rock and soil samples from potential geothermal resource areas in north-central Nevada: in Proc. Second Workshop on Sampling Geothermal Effluents, rept. no. EPA-600/7-78-121, p. 55-68. (Fg, Gt, Hy, CN)

Boyden, Ernest, D., 1972, Geology of the Steptoe Warm Springs pluton, White Pine County, Nevada: M.S. thesis, Univ. Nebraska, Lincoln, 1972. Map Scale 1:20,000. (G, CN)

Briggs, P., Press, F., and Guberman, S. A., 1977, Pattern recognition applied to earthquake epicenters in California and Nevada: Geol. Soc. America Bull., v. 88, no. 2, p. 161-173. Gp, Tt, N)

Broderick, A.T., 1949, The geology of the southern part of the San Antonio Mountains, Nevada: Ph.D. dissert., Yale Univ., New Haven, Connecticut, Map Scale 1:40,800. (G, N)

Brogan, G.E., 1969, Geology of the Pancake Range near Duckwater, Nye County, Nevada: M.S. thesis, California State Univ., San Diego. (G, Nc, SN)

Brokaw, A.L., 1967, Geologic map and sections of the Ely quadrangle, White Pine County, Nevada: U.S. Geol. Survey Geol. Quad. Map GQ-697, Scale 1:24,000. (G, EN)

Brokaw, A.L., and Barosh, P.J., 1968, Geologic map and sections of the Riepetown quadrangle, White Pine County, Nevada: U.S. Geol. Survey Geol. Quad. Map GQ-758, scale 1:24,000. (EN)

Brokaw, A.L., Gott, G.B., Mabey, D.R., McCarthy, Howard, and Oda, Uteana, 1962, Mineralization associated with a magnetic anomaly in part of the Ely quadrangle, Nevada, in Geological Survey Research, 1962: U.S. Geol. Survey Prof. Paper 450-E, p. E1-E8; also U.S. Geol. Survey Circ. 475. (G, Gp, EN)

Brokaw, A.L., and Heidrick, Tom, 1966, Geologic map and sections of the Giroux Wash quadrangle, White Pine County, Nevada: U.S. Geol. Survey Quad. Map GQ-476, Scale 1:24,000. (G, EN)

Brown, P.R.L., 1978, Hydrothermal alteration in active geothermal fields: Ann. Rev. Earth Planet. Sci., v. 6, p. 229-250. (Hy, Gt, G)

Bucher, R.L., 1971, Crustal and upper-mantle structure beneath Colorado Plateau and Basin and Range provinces as determined by Rayliegh-wave dispersion: Ph. D. dissert., Univ. Utah. (Tt, S, Gb, Gp, N)

Bunker, C.M., and Bush, C.A., 1973, Radioelement and radiogenic heat distribution in drill hole UCE-1, Belmont stock, central Nevada: U.S. Geol. Survey Jour. Res., v. 1, no. 3, p. 289-292. (Gc, Wd, Gt, CN)

Burchfiel, B.C., 1965, Structural geology of the Spector Range quadrangle, Nevada, and its regional significance: Geol. Soc. America Bull., v. 76, no. 2, p. 175-191. (G, S, SN)

Burchfiel, B.C., and Davis, G.A., 1975, Nature and controls of Cordilleran orogenesis, western United States; extensions of an earlier synthesis: Am. Jour. Sci., v. 275-A, p. 363-396. (G, S, Tt, Wus)

Burke, Dennis, and McKee, E.H., 1979, Mid-Cenozoic volcanotectonic troughs in central Nevada: Geol. Soc. America Bull., pt. 1, v. 90, p. 181-184. (G, V, Tt, Cn)

Buseck, P.R., 1962, Contact metasomatic deposits at Concepion De Ore, Mexico; Tem Piute, Nevada; and Silver Bell, Arizona: Ph.D., Columbia Univ. (G, EN)

Butler, David, 1979, Notes on seismic exploration for geothermal energy: Geothermal Resources Council Short Course no. 1, Pacific Grove, California, June 4-6, 1979. (Gp, Gt)

Byrd, W.J., 1970, Geology of the Ely Springs Range, Lincoln County, Nevada: M.S. thesis, Univ. Illinois, Urbana, Map Scale 1:62,500. (Lc, SN)

Callaghan, Eugene, 1936, Geology of the Chief district, Lincoln County, Nevada: Univ. Nevada Bull., v. 30, no. 2, Geol. and Min. Ser. no. 26. (G, Lc, SN)

Callaghan, Eugene, 1937, Geology of the Delamar district, Lincoln County, Nevada: Univ. Nevada Bull., v. 31, no. 5, Geol. and Min. Ser. no. 30A. (G, Lc, SN)

Capuano, R.M., and Bamford, R.W., 1978, Initial investigation of soil mercury geochemistry as an aid to drill site selection in geothermal systems: Univ. Utah Research Inst./Earth Science Lab. Rept. 13, 32 p. (Gg, Wd, Gt)

Capuano, R.M., and Moore, J.N., 1980, Mercury and arsenic soil geochemistry as a technique for mapping permeable structures over a hot water geothermal system: Abs. Rocky Mtn. Section, Geol. Soc. America, p. 269. (Gc, Gt, S, G)

Carlson, H. S., 1974, Nevada place names -- A geographical dictionary: Univ. Nevada Press, Reno, 282 p. (N)

Carlson, J.E., and Mabey, D.R., 1963, Gravity and aeromagnetic map of the Ely area, White Pine County, Nevada: U.S. Geol. Survey Geophys. Inv. Map GP-392, Scale 1:250,000. (Gp, EN)

Carpenter, E., 1915, Groundwater in southeastern Nevada: U.S. Geol. Survey Water-Supply Paper 365. 86 p. (H, SN, EN)

Carpenter, E., 1941, An investigation into the presence of commerical quantities of mercury and gold in the dry lakes of Nevada: Univ. Nevada Bull., v. 35, p. 4; Geol. and Min. Ser. v. 35, p. 6. (Gc, G, N)

Carr, W.J., 1974, Summary of tectonic and structural evidence for stress orientations at the Nevada Test Site: U.S. Geol. Survey open-file rept. 74-176, 53 p. (Tt, S, SN)

Cebull, S.E., 1967, Bedrock geology of the southern Grant Range, Nye County, Nevada: Ph.D. dissert., Univ. Washington, Seattle, Map Scale 1:24,000. (G, Nc, SN)

Cebull, S.E., 1969, Bedrock geology and orogenic succession in southern Grant Range, Nye County, Nevada: Am. Assoc. Petroleum Geol. Bull., v. 54, p. 1828-1842, Scale 1:143,000. (G, Nc, SN)

Christiansen, R.L., 1978, Late Cenozoic volcanic and tectonic evolution of the Great Basin and Columbia Intermontane regions: in Smith, R.B., and Eaton, G.P., (eds.), Ceonzoic tectonics ad regional geophysics of the western Cordillera: Geol. Soc. America Mem. 152, p. 283-311. (C, V, Tt, Gb, S, G, N)

Christiansen, R.L., and Lipman, P.W., 1972, Cenozoic volcanism and plate-tectonic evolution of the western United States. II, Late Cenozoic: Royal Soc. London Philos. Trans., v. 271, p. 249-284. (C, V, Tt, Wus)

Clark, D.L., and Ethington, R.L., 1964, 3520 Age of the Roberts Mountain Formation (Silurian?) in the Great Basin: Geol. Soc. America Bull., v. 75, no. 7, p. 677-682. (P, Gb, G)

Clark, M.M., 1971, Comparison of SLAR images and small-scale, low sun-angle aerial photographs: Geol. Soc. America Bull., v. 82, p. 1735-1742. (Ap)

Clark, W.O., and Riddell, C.W., 1920, Exploratory drilling for water and use of groundwater for irrigation in Steptoe Valley, Nevada, with an introduction by O.E. Meinzer: U.S. Geol. Survey Water-Supply Paper 467, 70 p. (Wd, H, EN)

Coats, R.R., 1964, Igneous intrusive rock; in Mineral and water resources of Nevada: Nevada Bur. Mines Bull, 65, p. 32. (G, H, N)

Collins, W., 1978, Analysis of airborne spectroradiometric data and the use of Landsat data for mapping hydrothermal alteration: Geophysics, v. 43, no. 5, p. 967-987. (Gp. Hy)

Combs, Jim, 1979, Geothermal exploration techniques and strategies: Geothermal Resources Council Short Course no. 8, San Francisco, California, May 8-9, 1979. (Gt)

Coney, P.J., 1974, Structural analysis of the Snake Range decollement in east-central Nevada: Geol. Soc. America Bull., v. 85, no. 6, p. 973-978. (S, G, CN)

Coogan, A.H., 1964, Early Pennsylvanian history of the Ely Basin, Nevada: Am. Assoc. Petroleum Geol. Bull., v. 48, no. 4, p. 487-495. (P, G, EN)

Cook, E.F., 1958, Stratigraphic study of eastern Nevada Tertiary volcanic rocks (abs.): Geol. Soc. America Bull, v. 69, p. 1548-1549. (G, EN, T, V, G)

Cook, E.F., 1963, Ignimbrites of the Great Basin, U.S.A.: Bull. Volcanology, v. 25, p. 89-96. (G, Gb)

Cook, E.F., 1965, Stratigraphy of Tertiary volcanic rocks in eastern Nevada: Nevada Bur. Mines Rept. no. 11, 61 p. (G, T, V, EN)

Cook, H.E., III 1966, Geology of the southern part of the Hot Creek Range, Nevada: Ph.D. dissert., Univ. California, Berkeley, 247 p., Map Scale 1:30,000; Dissert. Abs. Internat. v. 27/05-B, p. 1510. (G, S, SN)

Cook, H.E., III 1968, Ignimbrite flows, plugs and dikes in the southern part of the Hot Creek Range, Nye County, Nevada, in Studies in Volcanology --A memoir in honor of Howell Williams: Geol. Soc. America Mem. 116, p. 107-152. (G, V, SN, Nc)

Cook, K.L., 1968, Rift system in the Basin and Range province (abs.): Geol. Soc. America Spec. Paper 101, p. 197; also Tectonophysics, v. 8, p. 469-511. (Tt, S, Gb)

Cornwall, H. R., 1972, Geology and mineral deposits of southern Nye County, Nevada: Nevada Bur. Mines and Geol. Bull. 77. (G, S, Nc, SN)

Craig, H., 1963, The isotopic geochemistry of water and carbon in geothermal areas: Proc. Sploeto Conference on Nuclear Geology, Tongiorgi, ed., p. 17-53. (Gc, Gy, Gt)

Crawford, J.P. 1958, Structure of a portion of the northern Toquima Range, Nevada (abs.): Geol. Soc. America Bull., v. 69, p. 1594. (S, CN)

Crawford, J.P. 1964, Paleozoic facies from miogeosynclinal slices, central Nevada: Ph.D. dissert., Columbia Univ., New York. (G, CN)

Cross, T.A., 1973, Implications of igneous activity for the early Cenozoic tectonic evolution of western United States: Geol. Soc. America Abs., v. 5, p. 587. (C, Tt, V, Wus)

Cross, T.A., and Pilger, R.A., 1974, Space-time distribution of late Cenozoic igneous activity in the western United States: Geol. Soc. America Bull., v. 6, p. 702. (C, Tt, V, Wus)

Crosthwaite, E.G., 1963, Groundwater appraisal of Antelope and Middle Reese River Valleys, Lander County, Nevada: Nevada Dept. Conserv. and Nat. Resources, Ground Water Resources-Recon. Ser. Rept. 19. (H, EN)

Dane, C.H., and Ross, C.P., 1942, The Wild Horse quicksilver district, Lander County, Nevada: U.S. Geol. Survey Bull. 931-K, p. 259-278, geol. maps. (G, CN)

Davidson, D.F., 1960, Selenium in some epithermal deposits of antimony, mercury, and silver and gold: U.S. Geol. Survey Bull. 1112-8, p.1-15. (G, Hy)

Davis, G.A., 1980, Problems of intraplate extensional tectonics, western United States, in Continental Tectonics, Nat. Acad. Sci. Pub., 197 p. (Tt, Wus)

Davis, W.E., Kleinhampl, F.J., and Ziony, J.I., 1971, Aeromagnetic and generalized geologic map of the San Antonio Mountains, Nevada: U.S. Geol. Survey Geophys. Inv. Map GP-744, Scale 1:125,000. (Gp, G, CN)

Davis, W.E., and Stewart, J.H., 1970, Aeromagnetic and generalized map of the Austin area, Lander, County, Nevada: U.S. Geol. Survey Geophys. Inv. Map GP-694, Scale 1:125,000, Separate text. (Gp, G, CN)

Davis, W.M., 1922, Faults, underdrag and landslides of the Great Basin ranges: Geol. Soc. America Bull., v. 14, p. 551. (S, Tt, Gb)

Dechert, C.P., 1963, Structure and stratigraphy of the northernmost Schell Creek Range, White Pine County, Nevada: M.S. thesis, Univ. Washington, Seattle. (S, G, EN)

Dechert, C.P., 1967, Bedrock geology of the northern Schell Creek Range, White Pine County, Nevada: Ph.D. dissert., Univ. Washington, Seattle, 304 p., Map Scale 1:50,000; Dissert. Abs. Internat., v. 29/01-B, p. 246B. (G, EN)

Deffeyes, K.S., 1959, Late Cenozoic sedimentation and tectonic development of central Nevada: Ph.D. dissert., Princeton Univ., 129 p.; Dissert., Abs. Internat., v. 20/09, p. 3692. (C, Tt, CN)

De Joia, F.J., 1952, Stratigraphy of the Sulfur Spring Range, central Nevada: M.S. thesis, Columbia Univ., New York. (G, CN)

Dempsey, W.J., 1951, Geologic and total intensity aeromagnetic map in the vicinity of Eureka, Eureka County, Nevada: U.S. Geol. Survey open-file rept., 1 map. (G, Gp, EN)

Denton, J.M., Bell, E.J., and Jodry, R.L., 1980, Geothermal reservoir assessment case study - northern Dixie Valley, Nevada: Prepared for U.S. Dept. of Energy, DOE/ET/27006-1, N.T.I.S. (G, Gp, H, Fg, Tt, S, CN)

Department of Defense, 1975, Bouguer gravity map of the Caliente 2° quadrangle, Nevada: Dept. Defense, Gravity Services Div., Defense Mapping Agency, Aerospace Center, St. Louis Air Force Station, Mo. 63125, Scale, 1:250,000. (Gp, Lic)

Dickinson, W.R., 1976, Sedimentary basins developed during evolution of Mesozoic-Cenozoic arc-trench system in western North America: Canadian Jour. Earth Sci., v. 13, no. 9, p. 1268-1287. (G, M, C, Tt, Wus)

Dickson, F.W., and Tunnell, G., 1968, Mercury and antimony deposits associated with active hot springs in the western United States: in Ore deposits of the United States, 1933-1967 (Graton-Sales volume), v. 2: New York, Am. Inst. Mining, Metall. and Petroleum Eng., p. 1673-1701. (G, Hy, Gt, Wus)

Diment, W.H., 1980, Geology and geophysics of geothermal areas: in Kestin, J., Di Pippo, R., Khalifa, H.E., and Ryley, D.J., eds., A sourcebook on the production of electricity from geothermal energy: Washington, D.C., U.S. Govt. Printing Office. (G, Gp, Gt)

Dobrin, M., 1976, Geophysical prospecting, New York, McGraw-Hill. (Gp)

Dolgoff, Abraham, 1960, The volcanic geology of the Pahranagat Range and certain adjacent areas, Lincoln County, southeastern Nevada: Ph.D. dissert., Rice Inst. (G, V, Lic, EN)

Dolgoff, Abraham, 1963, Volcanic stratigraphy of the Pahranagat area, Lincoln County, southeastern Nevada: Geol. Soc. America Bull., v. 74, p. 875-900. (V, G, Lic, EN)

Dolly, E.D., 1980, Geological techniques utilized in the Trap Spring Field discovery, Railroad Valley, Nye County, Nevada: RRAG-UGA Basin and Range Symposium Guidebook, p. 455-467. (G, EN)

Dressen, R.S., Jr., 1969, Geology of a portion of the Pancake Range, Nye County, Nevada: M.S. thesis, California State Univ., San Diego, Map Scale 1:31,250. (G, SN)

Drewes, Harald, 1954, Structural geology of the southern Snake Range, Nevada: Ph.D., Yale Univ., New Haven, Connecticut, Map Scale 1:31,680. (S, G, EN)

Drewes, Harald, 1958, Structural geology of the southern Snake Range, Nevada: Geol. Soc. America Bull., v. 69, no. 2, p. 221-239, pl. 1, Scale 1:63,360. (S, G, EN)

Drewes, Harald, 1962, Stratigraphic and structural controls of mineralization in the Taylor mining district near Ely, Nevada: U.S. Geol. Survey Prof. Paper 450-B, p. B1-B3. (G, S, Hy, EN)

Drewes, Harald, 1964, Diverse recurrent movement along segments of a major thrust fault in the Schell Creek Range near Ely, Nevada: U.S. Geol. Survey Prof. Paper 501-B, p. B20-B24. (S, Tt, EN)

Drewes, Harald, 1967, Geology of the Connor's Pass quadrangle, Schell Creek Range, east-central Nevada: U.S. Geol. Survey Prof. Paper 557, 93 p. (G, EN)

Drewes, Harald, 1970, Tertiary tectonics of the White Pine - Grant Range region, east central Nevada, and some regional implications; (a discussion of paper by Moores, E.M., Scott, R.B., and Lumsden, W.W., 1968): Geol. Soc. America Bull., v. 81, no. 1, p. 319-321. (T, Tt, EN)

Drewes, Harald, and Palmer, A.R., 1957, Cambrian rocks of the southern Snake Range: Am. Assoc. Petroleum Geol. Bull., v. 41, no. 11, p. 104-120. (G, EN)

Dreyer, R.M., 1940, The geochemistry of quicksilver mineralization: Econ. Geol., v. 35, no. 2, p. 140-157. (Gg, Hy)

Eakin, T.E., 1961, Groundwater appraisal of Long Valley, White Pine and Elko Counties, Nevada: Nevada Dept. Conserv. and Nat. Res. Groundwater Resources-Recon. Ser. Rept. 3, 35 p. (H, EN)

Eakin, T.E., 1962a, Groundwater appraisal of Ralston and Stonecabin Valleys, Nye County, Nevada: Nevada Dept. Conserv. and Nat. Res., Ground Resources-Recon. Ser. Rept. 18. (H, CN)

Eakin, T.E., 1962b, Groundwater appraisal of Cave Valley in Lincoln and White Pine Counties, Nevada: Nevada Dept. Conserv. and Nat. Res. Groundwater Resources-Recon. Ser. Rept. 13, 18 p. (H, EN)

Eakin, T.E., 1963a, Groundwater appraisals of Pahranagat and Pahroc Valleys, Lincoln and Nye Counties, Nevada: Nevada Dept. Conserv. and Nat. Res., Groundwater Resources Bull. 33. (H, EN)

Eakin, T.E., 1963b, Groundwater appraisal of Garden and Coal Valleys, Lincoln and Nye Counties, Nevada: Nevada Dept. Conserv. and Nat. Res., Groundwater Resources-Recon. Ser. Rept. 18. (H, EN)

Eakin, T.E., 1963c, Groundwater appraisal of Dry Lake and Delamar Valleys, Lincoln County, Nevada: Nevada Dept. Conserv. and Nat. Res. Groundwater Resources-Recon. Ser. Rept. 16, 26 p. (H, EN)

Eakin, T.E., 1964, Groundwater appraisal of Coyote Springs and Kane Springs Valley and Muddy River Springs area, Lincoln and Clark Counties, Nevada: Nevada Dept. Conserv. and Nat. Res., Groundwater Resources-Recon. Ser. Rept. 25. (H, EN)

Eakin, T.E., 1966, Regional interbasin groundwater system in the White River area, southeastern Nevada: Water Resources Research, v. 2, no. 2, p. 251-271; also Nevada Dept. Conserv. and Nat. Res., Water Resources Bull. 33. (H, EN)

Eakin, T.E., Hughes, J.L., and Moore, D.O., 1967, Groundwater appraisal of Steptoe Valley, White Pine County, Nevada: Nevada Dept. Conserv. and Nat. Resources, Water Resources Bull. 12. (H, EN)

Eakin, T.E., Robinson, T.W., Maxey, G.B., and others, 1951, Contributions to the hydrology of eastern Nevada: Nevada Dept. of Conserv. and Nat. Resources, Water Resources Bull. 12. (H, EN)

Eaton, G.P., 1963, Crustal structure from San Francisco, California, to Eureka, Nevada, from seismic-refraction measurements: Jour. Geophys. Res., v. 68, no. 20, p. 5789-5806. (S, CN)

Eaton, G.P., 1975, Characteristics of a transverse crustal boundary in the Basin and Range province of southern Nevada: Geol. Soc. America Abs., v. 7, no. 7, p. 1062-1063. (S, Tt, Gb, SN)

Eaton, G.P., Wahl, R.R., Prostka, H.J., and Kleinkopf, M.D., 1978, Regional gravity and tectonic patterns: their relation to late Cenozoic epeirogeny and lateral spreading in the western Cordillera: in Smith, R.B., and Eaton, G.P., (eds.), Cenozoic tectonics and regional geophysics of the western Cordillera: Geol. Soc. America Mem. 152, p. 175-208. (Gp, Tt, C, Wus)

Ehrenspreck, H.E., and Liggett, M.A., 1974, Pahranagat shear system, Lincoln County, Nevada: Natl. Aeronautics and Space Admin., no. CR-136388, 12 p.; Natl. Tech. Inf. Serv. no. E74-10206. (Tt, EN)

Ekren, E.B., 1970, Moore's Station quadrangle Nye County, Nevada: U.S. Geol. Survey open-file map, 6 sheets, Scale 1:24,000, geol. map. (G, Nc)

Ekren, E.B., Bath, G.D., Dixon, G.L. and others, 1974, Tertiary history of Little Fish Lake Valley Nye County, Nevada, and implications as to the origin of the Great Basin: U.S. Geol. Survey Jour. Res., v. 2, no. 1, p. 105-118, illus. (Tt, G, Gb, CN)

Ekren, E.B., Bucknam, R.C., Carr, W.J., Dixon, G.L., and Quinlivan, W.D., 1976, East-trending structural lineaments in central Nevada: U.S. Geol. Survey, Prof. Paper 986, 16 p. (Tt, S, CN)

Ekren, E.B., Hinrichs, E.N., and Dixon, G.L., 1972, Geologic map of The Wall quadrangle, Nye County, Nevada: U.S. Geol. Survey Misc. Inv. Ser. Map I-719. (G, Nc, CN)

Ekren, E.B., Hinrichs, E.N., Quinlivan, Q.D., and Hoover, D.L., 1973, Geologic map of the Moore's Station quadrangle, Nye County, Nevada: U.S. Geol. Survey Misc. Inv. Ser. Map I-756. (G, Nc, CN)

Ekren, E.B., Orkild, P.P., Sargent, K.H., and others, 1977, Geologic map of the Tertiary rocks, Lincoln County, Nevada: U.S. Geol. Survey Misc. Inv. Ser. no. I-1041, 1 sheet. (G, Nc, CN)

Ekren, E.B., Quinlivan, W.D., and Marvin, R.F., 1974, Pre-Basin and Range strike-slip faulting in the Reveille and Hot Creek Ranges, central Nevada Geol. Soc. America Abs., v. 6, p. 172. (S, Tt, CN)

Ekren, E.B., Quinlivan, W.D., Snyder, R.P., and others, 1974, Stratigraphy, structure, and geologic history of the Lunar Lake Caldera of northern Nye County, Nevada: U.S. Geol. Survey Jour. Res., v. 2, no. 5, p. 599-608, illus., (including geo. sketch map). (G, S, CN)

Ekren, E.B., Rogers, C.L., Anderson, R.E., and Botinelly, Theodore, 1967, Geologic map of the Belted Peak quadrangle, Nye County, Nevada: U.S. Geol. Survey Geol. Quad Map GQ-606, Scale 1:62,500, sections. (G, CN)

Ekren, E.B., Rogers, C.L., and Dixon, G.L., 1972, Geologic and bouger gravity maps of the Revielle quadrangle, Nye County, Nevada: U.S. Geol. Survey open-file rept., Nevada Bur. Mines no. 1000, 15 p., text, 3 sheets (map and cross-sections), Scale 1:48,000; also U.S. Geol. Survey Misc. Inv. Map I-806. (G, Gp, CN)

Elder, J.W., 1965, Physical processes in geothermal areas: in Terrestrial Heat Flow, ed. W.H.K. Lee, Am. Geophys. Union Mon. 8, 211 p. (Gt)

Elders, W.A., 1977, Petrology as a practical tool in geothermal studies: Geothermal Resources Council Trans., no. 1, p. 143-145. (G, Gt)

Ellis, A.J., 1979, Chemical geothermometry in geothermal systems: Chem. Geol., 25, p. 219-226. (Fg, Gt)

Ellis, A.J., and Mahon, W.A.J., 1977, Chemistry and geothermal systems: New York, Academic Press, 392 p. (Gc, Gt)

Ervine, Warren B., 1973, The geology and mineral zoning of the Spanish Belt mining district, Nye County, Nevada: Ph.D. dissert., Stanford Univ., California, Map Scale 1:5,450. (G, Hy, CN)

Erwin, J.W., 1966, Preliminary simple Bouguer gravity map of Tonopah, Lone Mountain, San Antonio Ranch, and Baxter Spring quadrangles, Esmeralda and Nye Counties, Nevada: Nevada Bur. Mines open-file rept., Scale 1:125,000. (Gp, Nc, CN)

Erwin, J.W., 1968, Gravity map of the Tonopah, Baxter Spring, Lone Mountain, and San Antonio Ranch quadrangles, Nevada: Nevada Bur. Mines Map 36. (Gp, Nc, CN)

Erwin, J.W., 1973, Bouguer gravity map of Nevada, Millett sheet: Nevada Bur. Mines open-file rept., Map no. 109, Scale 1:250,000. (Gp, CN)

Erwin, J.W., and Bittleson, E.W., 1977, Bouguer gravity map of Nevada, Millett sheet: Nevada Bur. of Mines and Geol. Map 53. (Gp, CN)

Erwin, J.W., Nichols, S.L., and Godson, R.H., 1980, Aeromagnetic map index of Nevada: Nevada Bur. Mines and Geol. Map 62, scale 1:1,000,000. (Gp, N)

Everett, D.E., 1964, Map showing saline groundwater areas in Nevada: U.S. Geol. Survey open-file rept. (H, N)

Evernden, J.F., and Kistler, R.W., 1970, Chronology of emplacement of Mesozoic batholith complexes in California and western Nevada: U.S. Geol. Survey Prof. Paper 623, p. 1-42. (G, WN)

Facca, G., and Tonani, F., 1967, The self sealing geothermal field: Bull. Volcanol., v. 30, p. 271-273. (Gc, Gt)

Faust, G.T., 1958, Mineralogy and petrology of the Currant Creek magnesite deposit and associated rocks of Nevada -- New data: Geol. Soc. America Bull., v. 69, p. 353-354. (G, EN)

Faust, G.T., and Callaghan, Eugene, 1948, Mineralogy and petrology of the Currant Creek magnesite deposits and associated rocks of Nevada: Geol. Soc. America Bull., v. 59, no. 1, p. 11-74, geol. maps. (G, EN)

Felmlee, J.K., and Cadigan, R.A., 1978, Radium and uranuim data for mineral springs in eight western states: U.S. Geol. Survey open-file rept. 78-561. (Gc, Wus)

Ferguson, H.G., 1917, The Golden Arrow, Clifford and Ellendale districts, Nye County, Nevada: U.S. Geol. Survey Bull., 640-F, p. 113-123. (G, Nc, CN)

Ferguson, H.G., 1921, The limestone ores of Manhattan: Econ. Geol., v. 16, p. 1-36. (G, Hy, CN)

Ferguson, H.G., 1922, The Round Mountain district, Nevada: U.S. Geol. Survey Bull. 725-I, p. 383-406. (G, Hy, CN)

Ferguson, H.G., 1924, Geology and ore deposits of the Manhattan district, Nevada: Ph.D. dissert., Yale Univ., New Haven Connecticut, Map Scale 1:12,000; also U.S. Geol. Survey Bull. 723, 163 p. (G, CN)

Ferguson, H.G., and Cathcart, S.H., 1954, Geology of the Round Mountain quadrangle, Nevada: U.S. Geol. Survey Geol. Quad. Map GQ-40, Scale 1:125,000, with text. (G, CN)

Feth, J.H., 1966, Reconnaissance survey of groundwater quality in the Great Basin: U.S. Geol. Survey Prof. Paper 550-D, p. D237-D241. (G, Fg, Gb)

Fiero, G.W., Jr., 1968, Groundwater flow systems of central Nevada: Ph.D. dissert., Univ. Wisconsin, Madison, 243 p.; Dissert. Abs. Internat., v. 30/03-B, p. 1198. (H, CN)

Fiero, G.W., Jr., 1969, Section B regional groundwater flow systems of central Nevada, with sections by Mindling, A.L., and Illian, J.R.: Univ. Nevada Desert Research Inst., Center for Water Resources Research Misc. Rept. 5, 218 p. (H, CN)

Fiero, G.W., Jr., and Illian, J.R., 1969, Regional hydrology of the Hot Creek Valley flow system, Nye County, Nevada, Interim report: Univ. Nevada Desert Research Inst., Center for Water Resources Research Misc. Rept. 6, 20 p. (H, Nc, CN)

Findlay, W.F., 1960, Geology of a part of Buck Mountain quadrangle, east-central Nevada: M.S. thesis, Univ. Southern California, Los Angeles, Map Scale 1:37,500. (G, CN)

Fiore, J.N., 1980, Overview and status of the U.S. Department of Energy's industry-coupled geothermal reservoir assessment program: Geothermal Resources Council, Trans., vol. 4, p. 201-204. (Gt, Wd)

Fissell, D.E., 1955, Geology of the post-Paleozoic section of the Ilipah region, Nevada: M.S. thesis, Univ. Utah, Salt Lake City, 35 p. (G, M)

Fitch, D.C., 1969, Geology and ore deposits of the Comet district, Lincoln County, Nevada: M.S. thesis, Univ. New Mexico, Albuquerque, Map Scale 1:12,000. (G, Lic, EN)

Fleck, R. J., 1970, Tectonic style, magnitude, and age of deformation in the Sevier Orogenic Belt in southern Nevada and eastern California: Geol. Soc. America Bull., v. 81, p. 1705-1720. (Tt, Sob, SN)

Flynn, T., Koenig, B.A., Trexler, D.T., and Bruce, J.L., 1980, Area specific investigations of three low to moderate temperature geothermal resource areas in Nevada: Geothermal Resources Council, Trans., v. 4, p. 41-44. (Gt, CN, NN, WN)

Foley, D., Brophy, G.P., Mink, L.L., and Blackett, E., 1980, The state coupled program - a new emphasis: Geothermal Resources Council, Trans., v. 4, p. 779-781. (Gt)

Forman, J.A., 1951, Geology of the southern Sulfur Spring Mountains: M.S. thesis, Claremont Grad. School, Claremont, California, Map Scale 1:24,000. (G, CN)

Foster, D.I., 1953, Lower Pennsylvanian stratigraphy of the southern Egan Range, Nevada: M.S. thesis, Columbia Univ., New York. (P, G, EN)

Foster, N.H., 1980, Geomorphic exploration used in the discovery of Trap Spring oil field, Nye County, Nevada: Basin and Range Symposium Guidebook, Rocky Mountain Association of Geologists, p. 477-486. (G, Nc, CN)

Fournier, K.P., and Krupicka, S.F., 1975, New approximate method for directly interpreting gravity anomaly profiles caused by surface geologic structures: Geophys. Prospect., v. 23, no. 1, p. 80-92. (Gp, G)

Fournier, R.O., 1958, Mineralization of the porphyry copper deposit near Ely, Nevada: Ph.D. dissert., Univ. California, Berkeley, 178 p. (Hy, G, EN)

Fournier, R.O., 1968, The porphyry copper deposit exposed in the Liberty open-pit mine near Ely, Nevada--Pt. 2, The formation of hydrothermal alteration zones: Econ. Geol., v.69, no. 2, p. 207-227. (Hy, G, EN)

Fournier, R.O., 1973, Silica in thermal waters: Laboratory and field investigations: in Proc. of International Symposium on Hydrogeochemistry and Biogeochemistry: Hydrogeochemistry: Washington, D.C., v. 1, p. 122-139. (Fg, Gt)

Fournier, R.O., 1977, Chemical geothermometers and mixing models for geothermal systems: Geothermics, v. 5, p. 41-50. (Fg, Gt)

Fournier, R.O., 1979a, A revised equation for the Na/K geothermometer: Geothermal Resources Council, Trans., v. 3, p. 221-224. (Fg, Gt)

Fournier, R.O., 1979b, Geochemical and hydrologic considerations in the predictions of underground conditions in hot spring systems: Jour. Volc. and Geothermal Res., v. 5, p. 1-16. (Fy, H, Gt)

Fournier, R.O., and Potter, R.W., 1978, A magnesium correction for the Na-K-Ca chemical geothermometer: U.S. Geol. Survey open-file rept. 78-486, 24 p. (Fg, Gt)

Fournier, R.O., and Rowe, J.J., 1966, Estimation of underground temperatures from the silica content of water from hot springs and wet steam wells: Am. Jour. Sci., v. 264, p. 685-697. (Fg, Gt)

Fournier, R.O., and Truesdell, A.H., 1973, An empirical Na-K-Ca geothermometer for natural waters: Geochim. et Cosmochim. Acta, v. 37, p. 1255-1275. (Fg, Gt)

Fournier, R.O., and Truesdell, A.H., 1974, Geochemical indicators of subsurface temperature - Part 2, Estimation of temperature and fraction of hot water mixed with cold water: U.S. Geol. Survey Jour. Res., v. 2, no. 3, p. 263-270. (Fg, Gt)

Fournier, R.O., White, D.E., and Truesdell, A.H., 1974, Geochemical indicators of subsurface temperatures - Part 1, Basic assumptions: U.S. Geol. Survey Jour. Res., v. 2, no. 3, p. 259-262. (Fg, Gt)

Frater, J.B., 1975, Geomorphic interpretation of Skylab photography collected over the Nevada portion of the Great Basin: M.S. thesis, Purdue. (G, Si, Gb, N)

Frater, J.B., and Melhorn, W.N., 1975, Geomorphic interpretation of Skylab photography collected over the Nevada portion of the Great Basin: in Remote sensing of earth resources, v. IV (Shahrokhi, F., ed.), p. 21-42, Univ. Tennessee Inst., Tullahoma, Tenn. (G, Si, Gb, N)

Free, E.E., 1913, Progress in potash prospecting in Railroad Valley, Nevada: Min. and Scientific Press, v. 107, p. 176-178. (G, EN)

Freyne, D.M., 1972, Geology of the Ruby Lake, SE 7.5 minute quadrangle, White Pine County, Nevada: M.S. thesis, California State Univ., San Diego. (G, EN)

Fritz, W.H., 1957a, Structure and stratigraphy of the Telegraph Canyon area, northern Egan Range, east-central Nevada: M.S. thesis, Univ. Washington, Seattle, 79 p., maps. (S, G, EN)

Fritz, W.H., 1957b, Geologic map and sections of the southern Cherry Creek and northern Egan Ranges, White Pine County, Nevada: Nevada Bur. Mines Map 35. (G, EN)

Fritz, W.H., 1960, The structure and stratigraphy of the northern Egan Range, White Pine County, Nevada: Ph.D. dissert., Univ. Washington, Seattle, 178 p.; Dissert. Abs. Internat., v. 21/12, p. 3748. (S, G, EN)

Fugro National, Inc., 1980a, MX siting investigation, gravity survey-Coal Valley, Nevada: prepared for the U.S. Dept. Air Force, Ballistic Missile Office, rept. no. FN-TR-33-CL. (Gp, EN)

Fugro National, Inc., 1980b, MX siting investigation, gravity survey-Dry Lake Valley, Nevada: prepared for the U.S. Dept. Air Force, Ballistic Missile Office, rept. no. FN-TR-33-DL. (Gp, EN)

Fugro National, Inc., 1980c, MX siting investigation, aggregate resources studies-Dry Lake Valley, Muleshoe Valley, Delamar Valley, Pahroc Valley, Nevada: prepared for U.S. Dept. Air Force, Ballistic Missile Office, rept. no. FN-TR-37-a. (G, EN)

Fugro National, Inc., 1980d, MX siting investigation, gravity survey-Garden Valley, Nevada: prepared for the U.S. Dept. Air Force, Ballistic Missile Office, rept. no. FN-TR-33-GN. (Gp, EN)

Fugro National, Inc., 1980e, MX siting investigation, gravity survey-Hamlin Valley, Nevada: prepared for U.S. Dept. Air Force, Ballistic Missile Office, rept. no. FN-TR-33-HV. (Gp, EN)

Fugro National, Inc., 1980f, MX siting investigation, aggregate resources study-White River Valley, Nevada: prepared for U.S. Dept. Air Force, Ballistic Missile Office, rept. no. FN-TR-37-c. (G, EN)

Fugro National, Inc., 1980g, MX siting investigation, gravity survey-southern White River Valley, Nevada: prepared for U.S. Air Force, Ballistic Missile Office, rept. no. FN-TR-33-WR. (Gp, EN)

Fugro National, Inc., 1980h, MX Siting Investigation. 5200 foot, 2/3 filled Hexagonal Linear MPS Regional Layout (200 clusters): prepared for U.S. Air Force, Ballistic Missile Office, Scale 1:500,000. (CN, EN)

Fugro National, Inc., 1980i, Interim report on active faults and earthquake hazards in the FY 79 verification sites-Nevada-Utah siting region: prepared for U.S. Air Force, Ballistic Missile Office, rept. no. FN-TR-36, 72 p. (G, Tt, S, CN, EN)

Fugro National, Inc., 1980j, Evaluation of geothermal energy resources: prepared for U.S. Air Force, Ballistic Missile Office, rept. no. FN-TR-31, Sec. 3.0, p. 3-1 to 3-24, Fournier, R.O. (Gt, G, CN, EN)

Fugro National, Inc., 1980k, Draft geological map of operational base site, Coyote Spring Valley, Nevada. (G, SN, Cc, Lic)

Gaal, Robert, 1958, Geology of the central portion of the Green Springs quadrangle, Nevada: M.S. thesis, Univ. Southern California, Los Angeles, 181 p., map. (G, CN)

Gamble, T.D., Goubeau, W.M., and Clarke, J., 1979, Magnetotellurics with remote reference: Geophysics, v. 44, p. 53-68. (Gp)

Gardner, J.N., Eddy, A.C., Goff, F.E., and Grafft, K.S., 1980, Reconnaissance geologic map of the northern Kawich and southern Reveille Ranges, Nye County, Nevada: Univ. California, Los Alamos Scientific Laboratory, LA-8390-MAP, UC-51. (G, CN)

Garside, L.J., 1973, Geothermal exploration and development in Nevada: Geothermal Resources Council Conf., 1st, El Centro, California, February 16-18, 1972, Spec. Rept. no. 1; Geothermal overviews of the West, U.S. Spec. Rept. no. 2, Compendium of first day papers, Rept. 1, Paper H, 7 p. (Gt, Wd, N)

Garside, L.J., 1974, Geothermal exploration and development in Nevada through 1973: Nevada Bur. Mines and Geol. Rept. no. 21, 12 p. (Gt, Wd, N)

Garside, L.J., and Schilling, J.H., 1967, Wells drilled for oil and gas in Nevada: Nevada Bur. Mines Map 34, Scale 1:1,000,000. (G, Wd, N)

Garside, L.J., and Schilling, J.H., 1979, Thermal waters of Nevada: Nevada Bur. Mines and Geol. Bull. 91. (Gt, Fg, Wd, G, N)

Geodata International Inc., 1979a, Aerial radiometric and magnetic survey of Goldfield NTMS quadrangle, Nevada: GJBX-66, prepared for the U.S. DOE under small business administration subcontract no. SBO308(a)77-C-508. (Gp, SN)

Geodata International Inc., 1979b, Aerial radiometric and magnetic survey of Tonopah NTMS quadrangle, Nevada: GJBX-104, prepared for the U.S. DOE under small business administration subcontract no. SB0308(a)77-C-508. (Gp, CN)

Geodata International Inc., 1979c, Aerial radiometric and magnetic survey of Millet NTMS quadrangle, Nevada: GJBX-154, prepared for the U.S. DOE under small business administration subcontract no. SBO308(a)77-C-508. (Gp CN)

Geodata International Inc., 1980, Aerial radiometric and magnetic survey of Caliente NTMS quadrangle, Nevada: GJBX-52-80, prepared for U.S. DOE under small business administration subcontract no. SBO308(a)77-C-508. (Gp, SN)

Gianella, V.P., 1945, Bibliography of geologic literature of Nevada, by V.P. Gianella, and Bibliography of geologic maps of Nevada areas, by Robert W. Prince.: Nevada Bur. Mines Bull. 43, 205 p. (G, N)

Gianella, V.P., and Callaghan, Eugene, 1934, The earthquake of December 20, 1932, at Cedar Mountain, Nevada, and its bearing on the genesis of Basin and Range structure: Jour. Geol., v. 42, p. 1-22. (S, Tt, Gb, CN)

Gibbs, A.D., 1976, Uranium geology of the granitic rocks near Round Mountain, Nevada: M.S. thesis, California State Univ., San Diego. (G, CN)

Gilbert, C.M., and Reynolds, M.W., 1973, Character and chronology of basin development, western margin of the Basin and Range province: Geol. Soc. America Bull., v. 84, p. 2489-2510, illus., (inc. geologic maps). (G, Tt, S, Gb, WN)

Gilbert, G.K., 1928, Studies of Basin-Range structure: U.S. Geol. Survey Prof. Paper no. 153, 92 p. (S, Gb, N)

Gilluly, J., 1954, Further light on the Roberts Thrust, north-central Nevada: Science, v. 119, p. 423. (S, G, CN)

Gilluly, J., 1966, Volcanism, tectonism, and plutonism in the western United States -- A reply: Geol. Soc. America Bull., v. 77, p. 667-670. (V, Tt, G, Wus)

Gilluly, J., 1967, Chronology of tectonic movements in the western United States: Am. Jour. Sci., v. 265, p. 306-331. (Tt, Wus)

Gilluly, J., 1971, Plate tectonics and magmatic evolution: Geol. Soc. America Bull., v. 82, no. 9, p. 2383-2396. (Tt)

Gilluly, J., 1976, Lineaments -- ineffective guides to ore deposits: Econ. Geol., v. 71, p. 1507-1514. (Tt, Si)

Glancy, P.A., 1968, Water-resources appraisal of Butte Valley, Elko and White Pine Counties, Nevada: Nevada Div. Water Resources, Water Resources-Recon. Ser. Rept. 49, 50 p. (H, EN)

Goldstein, I.J., 1973, Gold mineralization at the Northumberland gold mine, Nye County, Nevada: Geol. Soc. America Abs., v. 5, no. 1, p. 48. (G, CN)

Goldstein, N.E., 1977, Northern Nevada geothermal exploration strategy analysis: Report prepared for U.S. DOE under contract W-7405-ENG-48, 55 p. (Gt, NN)

Gordon, J.E., 1956, The upper Devonian stratigraphy and paleontology of the Silverhorn dolomite, West Range limestone, and Pilot shale at Dutch John Mountain, Lincoln County, Nevada: M.S. thesis, Univ. Wisconsin, Madison. (G, EN)

Gose, W.A., 1970, Paleomagnetic studies of Miocene ignimbrites from Nevada: Royal Astron. Soc., Geophys. Jour., v. 20, no. 3, p. 241-252, illus., (inc. sketch map). (Gp, N)

Gott, G.B., 1966, Distribution of gold, silver, tellurium, and mercury in the Ely mining district, White Pine County, Nevada: U.S. Geol. Survey Circ. 535. (G, EN)

Gott, G.B., 1968, Geochemical and geophysical anomalies in the western part of the Sheep Creek Range, Lander County, Nevada: U.S. Geol. Survey Circ. 595, 17 p. (Gc, Gp, CN)

Gott, G.B., and McCarthy, J.H., Jr., 1964, Distribution of mercury, silver, tellurium, arsenic, and antimony in the Rowe Canyon area, White Pine County: U.S. Geol. Survey open-file rept. 1, map. (G, Hy, EN)

Grant, T. A., 1974, Minor folding in the Rabbit Hill Formation, Eureka County, Nevada: M.S. thesis, Univ. Nevada, Reno, Map Scale 1:12,000. (G, S, CN)

Gray, R.C., 1966, Crustal structure from the Nevada Test Site to Kansas as determined by gravity profile: M.S. thesis, Univ. Utah. (S, Gp, SN)

Green, E.T., and Dubois, R.L., 1975, Paleomagnetic data from dry lake beds in the Basin and Range province, and determination of sedimentation rates: Geol. Soc. America Abs., v. 7, no. 2, p. 170. (Gp, Gb, N)

Green, Howard, 1951, A Paleozoic section in the Egan Range near Sunnyside, Nevada: M.S. 'hesis, Columbia Univ., New York. (G, P, EN)

Greene, J.M., 1972, Paleozoic stratigraphy of Clear Creek Canyon, Monitor Range, Nye County, Nevada: M.A. thesis, Columbia Univ., New York, Map Scale 1:6,000. (P, G, CN)

Greensfelder, R. W., Kintzer, K. C., and Somerville, M. R., 1980, Seismotectonic regionalization of the Great Basin, and the comparison of moment rates computed from Holocene strain and historic seismicity: in Proceedings of Conference X, Earthquake hazards along the Wasatch and Sierra-Nevada frontal fault zones, convened under the auspices of National Earthquake Reduction Program, July 29 to Aug. 1, 1979, U.S. Geol. Survey Open-file Rept. 80-801. (Tt, Gb, Q)

Greider, B., 1979, Geothermal potential 1978: Geothermal Resources Council Short Course no. 8, San Francisco, California, May 8-9, 1979. (Gt)

Greider, B., and Dolan, W.M., 1980, Geothermal exploration -- techniques and strategies: in Basic geology for the exploration of geothermal resources: Geothermal Resources Council Technical Training Course No. 5, July 21-23, Klamath Falls, Oregon. (Gt, G)

Griffith, L.S., 1959, The Carboniferous geology of the Pahranagat Range: M.A. thesis, Rice Inst. (G, SN)

Gromme, C.S., McKee, E.H., and Blake, M.C., Sr., 1972, Paleomagnetic correlations and potassium-argon dating of middle Tertiary ash-flow sheets in the eastern Great Basin, Nevada and Utah: Geol. Soc. America Bull., v. 83, no. 6, p 1619-1638. (Gp, G, T, V, Gb, EN)

Grove, D.B., Rubin, Meyer, Hanshaw, B.B., and others, 1969, Carbon-14 dates of groundwater from a Paleozoic carbonate aquifer, south-central Nevada: U.S. Geol. Survey Prof. Paper 650-C, p. C215-C218. (H, P, SN)

Gumper, F.J., and Scholz, C., 1971, Microseismicity and tectonics of the Nevada Seismic Zone: Seismol. Soc. America Bull., v. 61, p. 1413-1432. (Tt, S, N)

HDR Sciences, 1980, Summary of scoping for the MX; deployment area selection/land withdrawal environmental impact statement: prepared for U.S. Dept. Air Force, Ballistics Missile Office rept. no. ETR-225. (N)

Hamilton, Warren and Meyers, W.B., 1966, Cenozoic tectonics of the western United States: Rev. Geophys., v. 4, p. 509-549. (Tt, C, Wus)

Hamilton, Warren and Pakiser, L.C., 1965, Geologic and crustal cross section of the United States along the 37th Parallel -- A contribution to the Upper Mantle Project: U.S. Geol. Survey Misc. Geol. Inv. Map I-448, Scale 1:2,500,000. (G, S, Wus)

Hansen, H.J., III, 1960, Geology of the Big Creek area, Toiyabe Range, Lander County, Nevada: M.S. thesis, Columbia Univ. (G, CN)

Hansen, L.A., 1967, Geology and geochemical exploration at the Bristol Silver Mine, Lincoln County, Nevada: M.S. thesis, Univ. Utah, Salt Lake City, Map Scale 1:18,300. (G, Gc, EN)

Hansen, Michael W., 1975, Carbonate microfacies of the Monte Cristo Group (Miss.), Arrow Canyon, Clark County, Nevada: Ph.D. dissert., Univ. Illinois. (Cc, G, Cc, SN)

Hazzard, J.C., and Misch, Peter, 1972, Tertiary section, eastern Sacramento Pass area, Snake Range, eastern Nevada: Geol. Soc. America Abs., v. 4, no. 3, p. 168. (T, G, EN)

Hazzard, J.C., Misch, P., Wiese, J.H., and others, 1953, Large scale thrusting in northern Snake Range, White Pine County, northeastern Nevada (abs.): Geol. Soc. America Bull., v. 64, p. 1507. (S, Tt, EN)

Healey, D.L., 1967, Reconnaissance gravity survey of central Nevada: Natl. Tech. Inf. Serv., U.S. Dept. of Comm., Springfield, Virginia. (Gp, CN)

Healey, D.L., 1968, Application of gravity data to geologic problems at Nevada Test Site: Geol. Soc. America Mem. 110, p. 147-156. (Gp, G, SN)

Healey, D.L., 1970, Calculated in-situ bulk densities from subsurface gravity observations and density logs, Nevada Test Site, and Hot Creek Valley, Nye County, Nevada: U.S. Geol. Survey Prof. Paper no. 700-B, p. 52-62, illus., (inc. sketch map). (Gp, G, Wd, SN)

Healey, D.L., and Currey, F.E., 1977, Principle facts for gravity stations in central Nevada, Nye, Esmeralda, Lander, Eureka, and White Pine Counties, Nevada: U.S. Geol. Survey open-file rept. 77-510. (Gp, CN)

Healey, D.L., Wahl, R.R., and Currey, F.E., 1978, Complete Bouguer gravity map of the Nevada part of the Goldfield and Mariposa NTMS quadrangles: U.S. Geol. Survey report 474-260, prepared for U.S. DOE, Nevada Operations Office. (Gp, SN)

Healy, J., and Hochstein, M.P., 1973, Horizontal flow in hydrothermal systems: Jour. Hydrology (N.Z.), v. 12, p. 71-82. (Gt, H)

Heath, J., and Christopher, P.M., 1965, Microfacies of the lower Bird Spring Group (Pennsylvanian-Permian), Arrow Canyon Range, Clark County, Nevada: Ph.D., Univ. Illinois, Map Scale 1:31,200. (P, G, Cc, SN)

Heidrick, T.L., 1974, Cenozoic structure -- tectonic development of the Ward mining district, central Egan Range, Nevada: Geol. Soc. America Abs., v. 6, no. 3, p. 191. (Tt, C, EN)

Hem, J.D., 1970, Chemical behavior of mercury in aqueous media: in Mercury in the environment, U.S. Geol. Survey Prof. Paper 713, p. 19-24. (Gc, H)

Henyey, T.L., 1980, Plate tectonics as related to geothermal resources: in Basic geology for the exploration of geothermal resources: Geothermal Resources Council Technical Training Course No. 5, July 21-23, Kl amath Falls, Oregon. (Tt, Gt, G)

Hill, D.P., 1966, Crustal structure between the Nevada Test Site and Boise, Idaho, from siesmic - refraction measurement: in Steinhart, J.S., and Smith, T.J., (eds.), The earth beneath the continents, p. 391-419: Am. Geophys. Union Mon. 10, 633 p. (S, Gp, G, SN, CN, NN)

Hill, D.P., 1967, Seismic-refraction study of crustal structure between Nevada Test Site and Boise, Idaho: Geol. Soc. America Bull., v. 78, no. 6, p. 685-704. (Cp, S, SN, CN, NN)

Hilpman, P.L., 1956, Geology of the Easy Ridge area, White Pine County, Nevada: M.S. thesis, Univ. Kansas, Lawrence, Map Scale, 1:20,800. (G, EN)

Hinkle, M. E., and Learned, R. E., 1969, Determinations of mercury on silver screens: U.S. Geol. Survey Prof. Paper 650-D, p. D251-D254. (Fg)

Hoagland, J.R., and Elders, W.A., 1980, Mineralogy, hydrothermal alteration, and geochemistry: in Basic geology for the exploration of geothermal resources: Geothermal Resources Council Technical Training Course No. 5, July 21-23, Klamath Falls, Oregon. (Gt, Fg, Hy, G)

Hodder, D., Green, J., and Chandler, P., 1978, Inland basins geothermal appraisal studies: ESCA - Tech. Corporation for U.S. Bur. Reclamation, Contract 7-07-30-V0008, 209 p. (Gt, Gb)

Hood, J.W., and Rush, F.E., 1965, Water-resources appraisal of the Snake Valley area, Utah and Nevada: Nevada Dept. Conserv. and Nat. Resources, Water Resources--Recon. Ser. Rept. 34, 40 p. (H, EN)

Hooke, R., 1967, Processes on arid-region alluvial fans: Jour. Geol., v. 75, p. 438-460. (G, Q)

Horton, R.C., 1964, Hot springs, sinter deposits, and volcanic cinder cones in Nevada: Nevada Bur. Mines Map 25. (Gt, Hy, V, N)

Hose, R.K., Blake, M.C., Jr., and Smith, R.M., 1976, Geology and mineral resources of White Pine County, Nevada: Nevada Bur. Mines and Geol. Bull. 85. (G, S, EN)

Hose, R.K., and Taylor, B.E., 1974, Geothermal systems of northern Nevada: U.S. Geol. Survey open-file rept., 27 p. (Gt, NN)

Humphrey, F.L., 1945, Geology of the Groom district, Lincoln County, Nevada: Nevada Bur. Mines Bull. 42, 53 p. geol. maps. (G, SN)

Humphrey, F.L., 1956, Geology of the White Pine district, Nevada: Ph.D. dissert., Univ. California, Los Angeles, Map Scale, 1:48,000; also Nevada Bur. Mines Bull. 57, 119 p. (G, EN)

Huttrer, G.W., 1963, Structure and stratigraphy of the central Grant Range, Nevada: M.S. thesis, Univ. Washington, Seattle, Map Scale 1:23,600. (S, G, CN)

Hyde, J.H., 1963, Structure and stratigraphy of the north-central Grant Range, Nevada: M.S. thesis, Univ. Washington, Seattle, Map Scale 1:24,000. (S, G, CN)

Hyde, J.H., and Huttrer, G.W., 1970, Geology of central Grant Range, Nevada: Am. Assoc. Petroleum Geol. Bull., v. 54, no. 3, p. 503-552. (S, G, CN)

Intermountain Association of Petroleum Geologists, and Eastern Nevada Geological Society, Sloan, W.W., Jr., and Boettcher, W., (eds.), 1960, Geology of east-central Nevada: Intermountain Assoc. Petroleum Geol., 11th Annual Field Conf. Guidebook, 264 p. (G, EN, CN)

Isselhardt, C.F., 1980, Reservoir geology: in Basic geology for the exploration of geothermal resources: Geothermal Resources Council Technical Training Course No. 5, July 21-23, Klamath Falls, Oregon. (Gt, H, Wd)

James, J.W., 1954, Upper Mississippian-Lower Pennsylvanian rocks, southern Egan Range, Nevada (abs.): Geol. Soc. America Bull., v. 65, p. 1268. (P, G. EN)

James, L.P., 1972, Zoned hydrothermal alteration and ore deposits in sedimentary rocks near mineralized intrusions, Ely area, Nevada: Ph.D. dissert., the Pennsylvania State Univ., Univ. Park, 280 p; Dissert. Abs. Internat., v. 33/07-B, p. 3142. (Hy, G, EN)

James, L.P., 1976, Zoned alteration in limestone at porphyry copper deposits, Ely, Nevada: Econ. Geol., v. 71, no. 2, p. 488-512. (Hy, G, Cc, EN)

Jenney, W.P., 1909, Geology of the Manhattan district, Nevada: Eng. and Mining Jour., v. 89, p. 29-30. (G, Hy, CN)

Jensen, M.L., 1973, Geology of Utah and Nevada by ERTS-1 imagery: U.S. Natl. Aeronautics and Space Admin. Spec. Pub. no. 327, p. 247-255, illus. (G, Si, N)

Jensen, M.L., Rogers, R.J., and Erickson, M.P., 1973, Geological and geochemical studies in the Robinson mining district, White Pine County, Nevada, using Skylab S190A imagery: Natl. Aeronautics and Space Admin. E-73-10992/wr. (G, Gc, Si, EN)

Jensen, M.L., and Smith, M.R., 1974, Study of arcuate structural trends in Utah and Nevada using ERTS-1 imagery: Natl. Aeronautics and Space Admin. E74-10526. (G, S, Si, N)

Jensen, M.L., Smith, M., and Rogers, R.J., 1973, Fracture trends identified by ERTS-1 imagery in Utah and Nevada: Rept. no. NASA-CR-133014, 123 p. (S, G, N)

Johnson, J.G., 1959, Geology of the northern Simpson Park Range, Eureka County, Nevada: M.S. thesis, Univ. California, Los Angeles. (G, S, CN)

Johnson, J.G., 1965, Lower Devonian stratigraphy and correlation, northern Simpson Park Range, Nevada: Bull. Canadian Petroleum Geol., v. 13, no. 3, p. 365-381. (P, G, S, CN)

Kane, M.F., and Carlson, J.E., 1961, Gravity anomalies, isostacy, and geologic structure in Clark County, Nevada, Art. 390: U.S. Geol. Survey Prof. Paper 424-D, p. D274-D277, geol. map. (Gp, G, S, Cc, SN)

Kane, M.F., and Carlson. J.E., 1964, Bouguer gravity anomaly map of Clark County and gravity observations and bouguer anomaly values for Clark County: U.S. Geol. Survey open-file rept., 34 p., 1 map. (Gp, Cc, SN)

Kappelmeyer, O., 1957, The use of near-surface temperature measurements for discovering anomalies due to causes at depths: Geophys. Prospect., v. 5, no. 3, p. 239-258. (Gt, Gp)

Kaufmann, H., 1976, Telluric profiles across Darrough Known Geothermal Resource Area, Nevada: U.S. Geol. Survey open-file rept. 76-286. (Gp, Gt, CN)

Kay, Marshall, and Crawford, J.P., 1964, Paleozoic facies from the miogeosynclinal to the eugeosynclinal belt in thrust slices, central Nevada: Geol. Soc. America Bull., v. 75, p. 425-454. (P, G, Tt, S, CN)

Keller, G.V., 1976, Heat transport in geothermal systems: in Future energy production systems; heat and mass transfer processes: Volume II (Denton, J.C., and others, ed.), p. 405-416, Acad. Press, New York. (Gt)

Kellogg, H.E., 1959, Stratigraphy and structure of the southern Egan Range, Nevada: Ph.D. Dissert., Columbia Univ., New York, 232 p.; Dissert. Abs. Internat., v. 22/11, p. 3982, Map Scale 1:31,250. (G, S, EN)

Kellogg, H.E., 1963, Paleozoic stratigraphy of the southern Egan Range, Nevada: Geol. Soc. America Bull., v. 74, no. 6, p. 685-708. (P, G, EN)

Kellogg, H.E., 1964, Cenozoic stratigraphy and structure of the southern Egan Range, Nevada: Geol. Soc. America Bull., v. 75, no. 4, p. 949-986. (C, G, S, EN)

Keys, W.S., 1955, The geology of the Mary Ellen mine, Hamilton district, White Pine County, Nevada: M.S thesis, Univ. California, Los Angeles. (G, EN)

King, R.U., and Roberts, W.A., 1949, Henebergh Tunnel, Round Mountain, Nye County, Nevada, Special Report of field examination no. 12: U.S. Geol. Survey Trace Element Mem. Rept. TEM-12, 7 p. (G, CN)

Kirk, Edwin, 1933, The Eureka quartzite of the Great Basin region: Am. Jour. Sci., v. 226, p. 27-44. (G, Gb, N)

Kirkpatrick, D.H., 1960, Structure and stratigraphy of the northern portion of the Grant Range, east-central Nevada: M.S. thesis, Univ. Washington, Seattle, 79 p., Map Scale 1:31,680. (S, G, CN)

Kleinhampl, F.J., 1968, Pre-Tertiary geology of northern Nye County, Nevada (abs.): Geol. Soc. America Spec. Paper 101, p. 407. (G, M, P, CN)

Kleinhampl, F.J., and Merriam, C.W., 1969, Allochthonous Devonian facies, Hot Creek Range, Nevada (abs.): Geol. Soc. Spec. Paper 121, p. 522. (P, G, CN)

Kleinhampl, F.J., and Ziony, Joseph, 1967, Preliminary geologic map of northern Nye County, Nevada: U.S. Geol. Survey open-file map, Scale 1:200,000. (G, S, Nc, CN)

Knor, J.H., 1967, Permian studies of Nevada -- Clark, White Pine, and Elko Counties: M.S. thesis, Univ. Iowa, Iowa City. (P, G, EN)

Koenig, B.A., Trexler, D.T., and Flynn, T., 1980, Fluid chemistry studies of three low to moderate temperature geothermal resource areas in Nevada: Geothermal Resources Council, Trans., v. 4, p. 169-172. (Gt, Fg, N)

Koenig, J.B., 1970, Geothermal exploration in the western United States: in U.N. Symposium on the development and utilization of geothermal resources, Pisa 1970: Geothermics, Spec. Issue 2, v. 2, pt. 1, p. 1-13. (Gt, Wus)

Koizumi, C.J., Ryall, Alan, and Priestly, K.F., 1973, Evidence for a high-velocity lithospheric plate under northern Nevada: Seismol. Soc. America Bull., v. 63, no. 6, pt. 1, p. 2134-2144. (Tt, S, NN)

Kovach, R.L., and Robinson, Russell, 1969, Upper mantle structure in the Basin and Range province, western Northern America, from apparent velocities of S waves: Seismol. Soc. America Bull., v. 59, no. 4, p. 653-1665. (Tt,S, Gb, Wus)

Kral, V.E., 1951, Mineral resources of Nye County, Nevada: Nevada Bur. Mines Bull. 50, 222 p. (G, CN, SN)

Kruger, P., and Otte, C., 1973, Geothermal Energy, Stanford Univ. Press. 360 p. (Gt)

Kumamoto, L.H., and Butler, D., 1975, Microearthquake monitoring in geothermal areas in Alaska, Nevada, and Idaho: Soc. Explor. Ann. Internat. Mtg., Abs. no. 45, p. 27. (Tt, Gt, N)

Kurtak, J.M., 1975, Stratigraphy and structure in the Belmont mining district, Nye County, Nevada: M.S. thesis, Univ. Nevada, Reno, 68 p., Map Scale 1:12,000. (G, S, CN)

Kutina, J., 1969, Hydrothermal ore deposits in the western United States, a new concept of structural control of distribution: Science, v. 165, p. 1113-1119. (Hy, G, Wus)

Lachenbruch, A.H., 1978, Heat flow in the Basin and Range Province and thermal effects of tectonic extension: Pure and Applied Geophysics, v. 177. (Gt, Gb, Tt)

Lachenbruch, A.H., and Sass, J.H., 1977, Heat flow in the United States and the thermal regime of the crust: in Heacock, J.G., ed., The nature and physical properties of the earth's crust: Am. Geophys. Union, Geophys. Mon. Ser., v. 20, p. 626 -675. (Gt, S)

Lachenbruch, A.H., and Sass, J.H., 1978, Models of an extending lithosphere and heat flow in the Basin and Range Province: Geol. Soc. America Mem. 152, p. 209-250. (Tt, Gt, Gb)

Lamport, M.B., 1969, Geology of the southern half of the West Range, Lincoln County, Nevada: B.S. paper, Univ. Illnois, Urbana, Champaign. (G, S, Lic, EN)

Landa, Edward, R. 1978, The retention of mercury vapor by soils: Geochim. et Cosmochim. Acta, v. 42, p. 1407-1411. (Gc, G, Gt)

Lane, B.O., 1962, The paleontology and stratigraphy of the Ely Group in the Illipah area of Nevada: Ph.D. dissert., Univ. Southern California, Los Angeles, 114 p.; Dissert. Abs. Internat., v. 23/03, p. 993. (G, EN)

Langenheim, R.L., Jr., Barr, F.T., Shank, S.E., Stensas, L.J., and Wilson, C.E., 1959, Geologic map of the Ely No. 3 quadrangle, White Pine County, Nevada: U.S. Geol. Survey open-file map, Scale 1:24,000. (G, EN)

Langenheim, R.L., Jr., Brackin, E.B., Jr., Granath, J.W., and others, 1971, Geology of the Bristol Pass region and the Silverhorn and Fairview mining districts, Lincoln County, Nevada: Earth Sci. Bull., v. 4, no. 3, p. 59-76, illus., (inc. geol. sketch maps. (G, EN)

Langenheim, R.L., Jr., Carss, B.W., Kennerly, J.B., McKutcheon, V.A., and Waines, R.H., 1962, Paleozoic section Arrow Canyon Range, Clark County Nevada: Am. Assoc. Petroleum Geol., v. 46, n. 5, p. 592-609. (Cc, G, P, SN)

Langenheim, R.L., Jr., Lamport, M.B., and Winter, J.K., 1963, Geology, stratigraphy, and structure of the West Range, Lincoln County, Nevada: Earth Sci. Bull., v. 2, no. 3, p. 27-36. (G, S, Lic, EN)

Langenehim, R.L., and Larson, E.R., 1973, Correlation of Great Basin stratigraphic units: Nevada Bur. Mines and Geol. Bull. 72, 42 p., 3 pls. (G, S, Gb, N)

Langlois, J.D., 1971, Hydrothermal alteration of intrusive igneous rocks in the Eureka mining district, Nevada: M.S. thesis, Univ. Arizona, Tucson. (Hy, G, CN)

Larson, E.R., 1954, Nevada -- its structure and stratigraphy: Petroleum Eng. v. 26, no. 9, p. B30, B32, B34, B36-B38, August, 1954, (inc. geol. map). (S, G, N)

Larson, E.R., 1957, Minor features of the Fairview fault, Nevada: Seismol. Soc. America Bull., v. 47, p. 377-386. (S, Tt, WN)

Larson, E.R., Langenheim, R.J., Jr., and Lintz, J., Jr., 1979, Geology of the Mississippian and Pennsylvanian of Nevada: A survey of the development of the Mississippian and Pennsylvanian systems in Nevada: U.S. Geol. Survey Prof. Paper, no. 1110BB. (G, P, N)

Larson, E.R., and Riva, J.F., 1963, Preliminary geologic map of the Diamond Springs quadrangle, Nevada: Nevada Bur. Mines Map 20, Scale 1:62,500. (G, CN)

Larson, L.T., Beal, L.H., Cornwall, D.E., Sanders, C.D., 1977, Great Basin geologic framework and uranium favorability, bibliography, Part I: Work peformed under Bendix Field Engineer Corporation, Subcontract BFEC-GJO 76-020-E prepared for U.S. Energy Research and Development Administration. (G, Gb, N)

Larson, E.R., Langenheim, R.J., Jr., and Lintz, J., Jr., 1979, Geology of the Mississippian and Pennsylvanian of Nevada: A survey of the development of the Mississippian and Pennsylvanian systems in Nevada. U.S. Geol. Survey Prof. Paper, no. 1110BB. (G, Li, P, N)

Larson, E.R., and Riva, J.F., 1963, Preliminary geologic map of the Diamond Springs quadrangle, Nevada: Nevada Bur. Mines Map 20, Scale 1:62,500. (G, CN)

Lattman, L.H., 1973, Calcium carbonate cementation of alluvial fans in southern Nevada: Geol. Soc. America Bull., v. 84, no. 9, p. 3013-3028, illus., (inc. geol. sketch map). (G, Gc, SN)

Lawrence, E.F., and Wilson, R.V., 1962, Mercury occurrences in Nevada: Nevada Bur. Mines and Geol., Map 7. (G, N)

Lee, D.E., 1971, Hybrid granitoid rocks of the southern Snake Range, Nevada: U.S. Geol. Survey Prof. Paper 668, 48 p., illus., Map Scale 1:48,000. (G, EN)

Lee, D.E., 1971, Accessory epidote from hybrid granitoid rocks of the Mt. Wheeler mine area, Nevada: U.S. Geol. Survey Prof. Paper 750-C, p. C112-C116. (G, Gc, EN)

Lee, D.E., Marvin, R.F., Stern, T.W., and others, 1970, Modification of potassium-argon ages by Tertiary thrusting in the Snake Range, White Pine County, Nevada: U.S. Geol. Survey Prof. Paper no. 700-D, p. D92-D102, illus., (inc. geol. sketch maps). (T, Tt, S, EN)

Lee, D.E., Mays, R.E., Van Loenen, R.E., and others, 1969, Accessory sphene from hybrid rocks of the Mt. Wheeler mine area, Nevada: U.S. Geol. Survey Prof. Paper 650-B, p. B41-B46. (G, Gc, EN)

Lee, D.E., Stern, T.W., Mays, R.E., and Van Loenen, R.E., 1968, Accessory zircon from granitoid rocks of Mt. Wheeler mine area, Nevada: U.S. Geol. Survey Prof. Paper 600-D, p. D197-D203. (G, Gc, EN)

Lee, D.E., Van Loenen, R.E., and Mays, Robert, 1973, Accessory apatite from hybrid granitoid rocks of the southern Snake Range, Nevada: U.S. Geol. Survey Jour. Res. v. 1, no. 1, p. 89-98. (G, Gc, EN)

Lee, F.W., 1936, Geophysical prospecting for underground waters in desert areas: U.S. Bur. Mines Inf. Circ. 6899, 27 p. (Gp, H)

Leeman, W.P., 1969, Late Cenozoic basalts from the Basin and Range province, western United States: M.S. thesis, Rice Univ., Houston, Texas. (C, V, Gb, Wus)

Leeman, W.P., and Rogers, J.J.W., 1970, Late Cenozoic alkali-olivine basalts of the Basin and Range province, U.S.A.: Contr. Mineralogy and Petrology, v. 25, p. 1-24. (C, V, Gb)

Levandowski, D.W., Jennings, R.V., and Lehman, W.T., 1974, Relations between ERTS lineaments, aeromagnetic anomalies, and geological structures in north-central Nevada: Proc. of the First Internat. Conf. on the New Basement Tectonics, Utah Geol. Assoc. Publ. no. 5. (G, S, Gp, Si, CN)

Lewis, M., 1970, Hot Creek and the wide gray valley: Nevada Historical Soc. Quart., V. 13, no. 2, p. 41-54. (G, N)

Liaw, A.L., and McEvilly, T.V., 1979, Microseisms in geothermal exploration; studies in Grass Valley, Nevada: Geophysics, v. 44, no. 6, p. 1097-1115. (Tt, Gt, NN)

Lienert, B.R., and Bennett, D.J., 1977, High electrical conductivities in the lower crust of the northwestern Basin and Range; an application of inverse theory to a controlled-source deep-magnetic-sounding experiment: in The Earth's Crust; its nature and physical properties: Am. Geophys. Union, Geophys. Mon., no. 20, p. 531-552, Univ. Texas, Dallas, Inst. Geol. Sci., Contrib. no. 329. (Gp, Gb, NN, WN)

Liese, H.C., 1964, A correlative geothermetric mineral study: Am. Jour. Sci., v. 262, no. 2, p. 223-230. (Gt, G, H)

Liggett, M.A., 1974, A reconnaissance space-sensing investigation of crustal structure for a strip from the eastern Sierra Nevada to the Colorado Plateau: Natl. Tech. Inf. Serv., U.S. Dept. of Comm., Springfield, Virginia; Natl. Aeronautics and Space Admin. E74-10705, E74-10018. (Gp, S, Gb)

Liggett, M.A., and Childs, J.F., 1974, Crustal extension and transform faulting in the southern Basin and Range province: Natl. Tech. Inf. Serv., U.S. Dept. of Comm., Springfield, Virginia, no. E74-10411, 54 p. (Tt, S, Gb, SN)

Liggett, M.A., and Ehrenspreck, H.E., 1974, Pahranagat shear system, Lincoln County, Nevada: Natl. Aeronautics and Space Admin., E74-10206. (Tt, S, Lic, EN)

Lindh, A.G., Fischer, F.G., and Pih, A.M., 1973, Nevada focal mechanisms and regional stress fields: EOS, Am. Geophys. Union Trans., v. 54, p. 1133. (Tt, N)

Lintz, J., Jr., (leader), 1969, Tenth day--Ely-Eagle Springs, Lunar Crater-Hot Springs Valley--Eureka: in Basin and Range Geology Field Conf., Second, Reno, Nevada, Guidebook: Reno, Nevada, Mackay School of Mines, p. 10/1-10/13. (G, Gb, N)

Lipman, P.W., 1964, A welded tuff dike in southern Nevada: U.S. Geol. Survey Prof. Paper 501-B, p. B79-B81. (V, SN)

Lipman, P.W., 1971, Evolving subduction zones in the western United States as interpreted from igneous rocks: Science, v. 174, p. 821-825. (Tt, S, Wus)

Lipman, P.W., 1972, Cenozoic volcanism and plate tectonic evolution of western United States -- Part I, Early and middle Cenozoic: Royal Soc. London Philos. Trans., Ser. A, v. 271, p. 217-248. (C, V, Tt, Wus)

Lipman, P.W., and McKay, E.J., 1964, Geologic map of the Topopah Spring SW quadrangle, Nevada: U.S. Geol. Survey Trace Element Inv. Rept. TEI-846; U.S. Geol. Survey map GQ-439. (G, CN)

Lipman, P.W. Prostka, H.J., and Christiansen, R.L., 1970, Cenozoic volcanism and tectonism in the western United States and adjacent parts of the spreading ocean floor -- Part I, Early and middle Tertiary: Geol. Soc. America Abs., v. 2, p. 112-113. (C, V, Tt, Wus)

Livingstone, D.E., 1973, A plate tectonic hypothesis for the genesis of porphyry copper deposits of the southern Basin and Range province: Earth Planet. Sci. Letters, v. 20, p. 171-179. (Tt, G, Gb, N)

Lloyd, G.P., Jr., 1959, Geology of the north end of the White River Valley, White Pine County, Nevada: M.S. thesis, Univ. California, Los Angeles, Map Scale 1:24,000. (G, EN)

Loeltz, O.J., 1963, Groundwater investigations in Nevada: Nevada Water Conf., 10th, Carson City, October 18-19, 1956, Proc., p. 40-42. (H, N)

Loeltz, O.J., and Malmberg, G.T., 1961, The groundwater situation in Nevada: Nevada Dept. Conservation and Nat. Resources, Inf. Ser. I. (H, N)

Lohr, L.S., 1965, Geology of the Brock Canyon area, Monitor Range, Eureka County, Nevada: M.S. thesis, Univ. Nevada, Reno, 44 p., Map Scale 1:24,000. (G, CN)

Long, C.L. and Batzle, M.L., 1976, Station location map and audio-magneto-telluric data log for Monte Neva Known Geothermal Resource Area, Nevada: U.S. Geol. Survey open-file rept. 76-700A. (Gp, Gt, EN)

Long, C.L., Senterfit, M., and Kaufman, H., 1976, Audio-magnetotelluric data log, apparent resistivity maps and station location map for the Darrough Known Geothermal Resource area, Nevada: U.S. Geol. Survey open-file rept. 76-285. (Gp, Gt, CN)

Longwell, C.R., 1922, The Muddy Mountains overthrust in southeastern Nevada: Jour. Geol., v. 30, no. 1, p. 63-72. (Tt, S, SN)

Longwell, C.R., 1926, Structural studies in southern Nevada and western Arizona: Geol. Soc. America Bull., v. 37, no. 4, p. 551-583. (S, Tt, SN)

Longwell, C.R., 1930, Faulted fans west of the Sheep Range, southern Nevada: Am. Jour. Sci., 5th Ser., v. 20, p. 1-13. (G, S, SN)

Longwell, C.R., 1945, Low-angle normal faults in the Basin and Range province: Am. Geophys. Union Trans., v. 26, pt. 1, p. 107-118. (S, Tt, Gb)

Longwell, C.R., 1950, Tectonic theory viewed from the Basin Ranges: Geol. Soc. America Bull., v. 61, p. 413-434. (Tt, Gb)

Longwell, C.R., 1960, Possible explanation of diverse structural patterns in southern Nevada: Am. Jour. Sci., v. 258-8 (Bradley Volume) p. 192-203. (S, Tt, SN)

Longwell, C.R., Pampeyan, B.B., and Roberts, R.J., 1979, Geology and Mineral Deposits of Clark County, Nevada: Nevada Bur. Mines and Geol. Bull. 62. (G, S, Cc, SN)

Loring, Annek, 1972, Temporal and spatial distribution of Basin and Range faulting in Nevada and Utah: M.S. thesis, Univ. Southern California, Los Angeles. (S, Tt, Gb, N)

Lowell, J.D., 1953, Paleozoic stratigraphy of Hot Creek and adjacent area, Hot Creek Range, Nye County, Nevada: M.A. thesis, Columbia Univ., Map Scale 1:22,000. (P, G, CN)

Lowell, J.D., 1965, Lower and middle Ordovician stratigraphy in the Hot Creek and Monitor Ranges, central Nevada: Geol. Soc. America Bull., v. 76, no. 2, p. 259-266. (P, G, CN)

Lui, Han-Shou, 1980, Mantle convection and subcrustal stresses under the United States: Modern Geol., v. 7, p. 81-93. (G, Tt, Wus)

Lumsden, W.W., Jr., 1964, Geology of the southern White Pine Range and the northern Horse Range, Nye and White Pine Counties, Nevada: Ph.D. dissert., Univ. California, Los Angeles, 258 p.; Dissert Abs. Internat., v. 25/05, p. 2929, Map Scale 1:29,700. (G, EN)

Lutsey, I.A., 1971, Geologic map index of Nevada, 1955-1970: Nevada Bur. Mines and Geol. Map 42. (G, N)

Lutsey, I.A., and Nichols, S.L., 1972, Land status map of Nevada (2nd edition): Nevada Bur. Mines and Geol. Map 40. (N)

Lyon, R.J.P., Mercado, Jose, and Campbell, R. Jr., 1970, Pseudo-radar, very high contrast aerial photography at low sun-angles: Photogram. Eng., v. 36. (Gp, Ap)

Mabey, D.R., 1960, Regional gravity survey of part of the Basin and Range province: U.S. Geol. Survey Prof. Paper 400-B, p. B283-B285; also GeoScience Abs., v. 2, no. 12, p. 34, (2-3343). (Gp, Gb, Wus)

Mabey, D.R., 1964, Gravity map of Eureka County and adjoining areas, Nevada: U.S. Geol. Survey Geophys. Inv. Series, Map GP-415. (Gp, CN)

Mabey, D.R., 1966, Relation between Bouguer gravity anomalies and regional topography in Nevada and the eastern Snake River Plain, Idaho: in Geological Survey Research 1966: U.S. Geol. Survey Prof. Paper 550-B, p. B108-B110. (Gp, G, N)

Mabey, D.R., Pakiser, L.D., Jr., and Kane, M.F., 1960, Gravity studies in the Basin and Range province (abs.): Geol. Soc. America Bull., v. 71, no. 12, pt. 2, p. 1920. (Gp, Gb, Wus)

MacDiarmid, R.A., 1959, Geology and ore deposits of the Bristol Silver mine, Pioche, Nevada: Ph.D. dissert., Stanford Univ., Stanford, California, 220 p., Map Scale 1:6,000; Dissert. Abs. Internat., v. 20/01, p. 170. (G, Hy, EN)

Mahon, W.A.J., 1976, Review of hydrogeochemistry of geothermal systems - prospecting, development, and use: Proc. Second U.N. Symposium on the Development and Use of Geothermal Resources, San Francisco, v. 1, p. 775-783. (Fg, Gt)

Majer, E., 1978, Seismological investigations in geothermal regions: Ph.D. dissert., Univ. California, Berkeley. (Tt, Gt)

Malone, S.D., 1971, Strain measurements in central Nevada and the'r relationship to regional tectonics: Geol. Soc. America Abs., v. 3, no. 2, p. 155-156. (Tt, S, CN)

Manetti, G., 1973, Attainment of temperature equilibrium in holes during drilling: Geothermics, 2, p. 94-100. (Gt, Wd)

Manydeeds, S.A., Flanigan, V.J., Christopherson, K.R., and Farkash, V., 1978, Schlumberger soundings in Fish Lake Valley area, Nevada: U.S. Geol. Survey open-file rept 78-373. (Gp, EN)

Mariner, R.H., Presser, T.S., Rapp, J.B., and Willey, L.M., 1975, The minor and trace elements, gas and isotope compositions of the principal hot springs of Nevada and Oregon: U.S. Geol. Survey open-file rept. (Fg, Gc, Gt, N)

Martin, R.C., 1957, Vertical variations within some eastern Nevada ignimbrites: M.S. thesis, Univ. Idaho, Moscow, 86 p. (G, EN)

Mason, John F., 1935, Paleontology and stratigraphy of the lower part of the Cambrian section of the Highland Range, Nevada: M.A., Univ. Southern California. (G, EN)

Masursky, Harold, 1960, Welded tuffs in the northern Toiyabe Range: U.S. Geol. Survey Prof. Paper 400-B, p. B81; also Geol. Soc. America Bull., v. 71, p. 1922. (V, CN)

Matlick, J.S., and Buseck, P.R., 1976, Exploration for geothermal areas using mercury: a new geochemical technique: Proc. Second U.N. Symposium, on the Development and Use of Geothermal Resources, 1, p. 785-792. (Gt, Gc)

Maxey, G.B., 1968, Hydrology of desert basins: Ground Water, v. 6, no. 5, p. 10-22. (H, Gb)

Maxey, G.B., and Eakin, T.E., 1949, Groundwater in White River Valley, White Pine, Nye, and Lincoln Counties, Nevada: State of Nevada, Office of the State Engineer Water Resources Bull. 8. (H, EN)

Maxey, G.B., and Eakin, T.E., 1951, Groundwater in Railroad, Hot Creek, Reveille, Kawich, and Penoyer Valleys, Nye, Lincoln, and White Pine Counties, Nevada: Nevada State Engineer Office, Water Resources Bull., no. 12, p. 127-171. (H, CN)

Maxey, G.B., and Mifflin, M.D., 1966, Occurrence and movement of groundwater in carbonate rocks of Nevada: in Limestone hydrology -- A symposium with discussion: Nat. Speleol. Soc. Bull., v. 28, no. 3, p. 141-157. (H, Cc, N)

McCarthy, R.J., 1974, Geology of the southern Maverick Springs Range, White Pine County, Nevada: M.S. thesis, California State Univ., San Diego. (G, EN)

McCleary, J.R., 1974, Geology of the Carbon Ridge area, Eureka County, Nevada with emphasis on the Diamond Peak Formation: M.S. thesis, Univ. Nevada, Reno, Map Scale 1:13,000. (G, CN)

McCoy, G., Rogers, B.W., and Bessee, B., 1975, The geologic history of the Egan Range, Nevada: in National Speleological Society 1975 convention guidebook (Rogers, B.W., ed.), p. 98-105, Nat. Speleol. Soc., Inc., United States. (G, EN)

McDonald, R.E., 1973, Great Basin Tertiary has potential, Part 2: Oil and Gas Jour., v. 71, no. 34, p. 86-90, illus. (T, G, Gb)

McDowell, F.W., and Kulp, J.L., 1976, Age of intrusion and ore deposition in the Robinson mining district of Nevada: Econ. Geol., v. 62, no. 7, p. 905-909, Table. (G, Gc, EN)

McKee, E.H., 1968a, Geologic map of the Ackerman Canyon quadrangle, Lander and Eureka Counties, Nevada: U.S. Geol. Survey Geol. Quad, Map GQ-761, Scale 1:62,500. (G, CN)

McKee, E.H., 1968b, Geology map of the Spencer Hot Springs quadrangle, Lander County, Nevada: U.S. Geol. Survey Geol. Quad. Map GQ-770. (G, CN)

McKee, E.H., 1971, Tertiary igneous chronology of the Great Basin of the western U.S. -- Implications for tectonic models: Geol. Soc. America Bull., v. 82, no. 12, p. 3497-3502. (T, G, Gb, Wus, Tt)

McKee, E.H., 1972a, Biostratigraphy and correlation of McMonnigal and Tor Limestones, Toquima Range, Nevada: Am. Assoc. Petroleum Geol. Bull., v. 56, no. 8, p. 1563-1570, illus., (inc. geol. sketch map). (G, CN)

McKee, E.H., 1972b, Preliminary geologic map of the Wildcat Peak quadrangle and the western part of the Diana's Punch Bowl quadrangle, Nevada: U.S. Geol Survey Mineral Inv. Field Studies Map MF-337, Scale 1:62,500, 2 sheets. (G, CN)

McKee, E.H., 1973, Preliminary geologic map of the Austin quadrangle, Lander County, Nevada: U.S. Geol. Survey Misc. Field Studies Map MF-485. (G, CN)

McKee, E.H., 1974, Northumberland Caldera and Northumberland tuff: in Guidebook to the geology of four Tertiary volcanic centers in central Nevada: Nevada Bur. Mines Rept. no. 19, p. 35-41, illus. (G, T, V, CN)

McKee, E.H., 1976a, Geologic history of the Austin quadrangle, Lander County, Nevada: U.S. Geol. Survey Geol. Quad. Map GQ-1307. (G, CN)

McKee, E.H., 1976b, Geology of the northern part of the Toquima Range, Lander, Eureka, and Nye Counties, Nevada: U.S. Geol. Survey Prof. Paper 931, 49 p. (G, CN)

McKee, E.H., Noble, D.C., and Silberman, M.L., 1970, Middle Miocene hiatus in volcanic activity in the Great Basin area of the western United States: Earth Planet. Sci. Letters, v. 8, no. 2, p. 93-96. (T, V, Gb, Wus)

McKee, E.H., and Ross, R.J., Jr., 1969, Stratigrapy of eastern assemblage rocks in a window in Roberts Mountain thrust, northern Toquima Range, central Nevada: Am. Assoc. Petroleum Geol. Bull., v. 53, no. 2, p. 421-429. (G, CN)

McKee, E.H., Silberman, M.L., Marvin, R.E., and others, 1971, A summary of radiometric ages of Tertiary volcanic rocks in Nevada and eastern California; Part 1, central Nevada: Isochron/West, no. 2, p. 21-42, illus., (inc. sketch map). (T, V, N)

McKenzie, W.F., and Truesdell, A.H., 1977, Geothermal reservoir temperatures estimated from the oxygen isotope composition of dissolved sulphate and water from hot springs and shallow drill holes: Geothermics, v. 5, p. 51-61. (Gt, Fg, Wd)

McNamara, J.J., 1979, Geothermal energy and the law: Geothermal Resources Council Short Course No. 8, San Francisco, California, May 8-9, 1979. (Gt)

McNerney, J.J., and Buseck, P.R., 1973, Geochemical exploration using mercury vapor: Econ. Geol., v. 68, no. 8, p. 1313-1320. (Gc, Gt)

McNerney, J.J., Buseck, P.R., and Hansen, R.C., 1972, Mercury detection by means of thin gold films: Science, v. 178, p. 611-612. (Gc, Gt)

Means, W.D., 1961, Structure and stratigraphy in the central Toiyabe Range, Nevada: Ph.D. dissert., Univ. California, Map Scale 1:21,200; Univ. California Geol. Pub. Geol. Sci., v. 42, no. 2, p. 71-110. (G, S, CN)

Meehan, R.J., Sharp, B.J. and Maloory, N.S., 1958, Airborne and ground reconnaissance project, Austin-Belmont, Tonopah area, Nevada: U.S. Atomic Energy Comm. Rept. RME-2055. (Gp, G, CN)

Meidav, Tsvi, 1979, Direct current resistivity methods in geothermal exploration: Geothermal Resources Council Short Course No. 1, Pacific Grove, California, June 4-6, 1979. (Gp, Gt)

Meinzer, L.J., 1967, Origin of the thermal springs of Nevada, Utah, and southern Idaho: Jour. Geol., v. 32, no. 4, p. 295-303. (Gt, N)

Meinzer, O.E., 1915, Groundwater in Big Smoky Valley, Nevada: U.S. Geol. Survey Water Supply Paper 375, p. 85-116. (H, CN)

Meinzer, O.E., 1917, Geology and water resources of Big Smoky, Clayton, and Alkali Spring Valleys, Nevada: U.S. Geol. Survey Water-Supply Paper 423. (G, H, CN)

Mercer, J.H., 1968, Sevier orogenic belt in Nevada and Utah: Geol. Soc. America Bull., v. 79, p. 429-458. (Sob, Gb, SN, Tt)

Merriam, C.W., 1935, Devonian of east-central Nevada: Geol. Soc. America Proc. 1934, p. 314-315. (P, G, CN)

Merriam, C.W., 1940, Devonian stratigraphy and paleontology of the Roberts Mountain region, Nevada: Geol. Soc. America Spec. Paper 25. (P, G, CN)

Merriam, C.W., 1963, Paleozoic rocks of Antelope Valley, Eureka and Nye Counties: U.S. Geol. Survey Prof. Paper 423. (P, G, CN)

Merriam, C.W., 1964, Cambrian rocks of the Pioche mining district, Nevada: U.S. Geol. Survey Prof. Paper 469, 59 p. (P, G, EN)

Merriam, C.W., 1973, Paleontology and stratigraphy of the Rabbit Hill limestone and Lone Mountain dolomite of central Nevada: U.S. Geol. Survey Prof. Paper no. 808, 50 p., illus., (inc. sketch maps). (G, CN)

Merriam, C.W. and Anderson, C.A., 1942, Reconnaissance survey of the Roberts Mountains, Nevada: Geol. Soc. America Bull., v. 53, p. 1675-1728. (G, CN)

Merrill, J.P., 1960, Geology of the lower part of Buck Mountain quadrangle, Nevada: M.S. thesis, Univ. Southern California, Los Angeles, Map Scale 1:37,400. (G, CN)

Miesch, A.T., and Nolan, T.B., 1958, Geochemical prospecting studies in the Bullwhacker mine area, Eureka district, Nevada: U.S. Geol. Survey Bull. 1000-H, p. 397-408. (Gc, CN)

Mifflin, M.D., 1968, Delineation of groundwater flow systems in Nevada: Ph.D. dissert., Univ. Nevada, Reno, 212 p.; Dissert. Abs. Internat., v. 30/02-B, p. 712, Map Scale 1:1,000,000. (H, N)

Mifflin, M.D. and Hess, J.W., 1979, Regional carbonate flow systems in Nevada: Jour. Hydrology, v. 43, p. 217-237. (H, Cc, N)

Minnick, E.P., 1975, Stratigraphy and structure of the Vinini Formation, Tyrone Creek area, Eureka County, Nevada: M.S. thesis, Ohio Univ., Map Scale 1:15,480. (G, S, CN)

Misch, Peter, 1968, Metamorphism, tectonism and granitic intrusions in central-east Nevada and some adjacent areas (abs.): Geol. Soc. America Spec. Paper 101, p. 324-325. (G, Tt, CN)

Misch, Peter, and Easton, W.H., 1954, Large overthrusts near Connors Pass in the southern Schell Creek Range, White Pine County, eastern Nevada (abs.): Geol. Soc. America Bull., v. 65, p. 1347. (G, S, EN)

Misch, Peter, and Hazzard, J.C., 1962, Stratigraphy and metamorphism of late Precambrian rocks in central northeast Nevada and adjacent Utah: Am. Assoc. Petroleum Geol. Bull., v. 46, no. 3, p. 289-343, pl. 1, Scale 1:62,500. (G, Pc, CN)

Missallati, A.A., 1973, Geology and ore deposits of Mt. Hope mining district, Eureka County, Nevada: Ph.D. dissert., Stanford Univ., Stanford, California, 235 p; Dissert. Abs. Internat., v. 34/03-B, p. 1153. (G, Hy, CN)

Montgomery, E.S., 1963, Geology of a part of the southern Butte Mountain, White Pine County, Nevada; M.S. thesis, Stanford Univ., Stanford, California, Map Scale 1:36,000. (G, CN)

Moody, J.D., and Hill, M.J., 1956, Wrench-fault tectonics: Geol. Soc. America Bull., v. 67, p. 1207-1246. (Tt, S)

Moore, J.G., 1960, Curvature of normal faults in the Basin and Range province of the western United States: U.S. Geol. Survey Prof. Paper 400-B, p. B409-B411. (S, Tt, Gb, Wus)

Moores, E.M., III, 1963, Geology of the Currant area, Nye County, Nevada: Ph.D. dissert., Princeton Univ., Princeton, New Jersey, 108 p., Map Scale 1:23,000; Dissert. Abs. Internat., v. 24/11, p. 4633. (G, CN)

Moores, E.M., III, 1968, Mio-Pliocene sediments, gravity slides and their tectonic significance, east-central Nevada: Jour. Geol., v. 76, no. 1, p. 88-98. (T, G, Tt, CN, EN)

Moores, E.M., Scott, R.B., and Lumsden, W.W., 1968, Tertiary tectonics of the White Pine - Grant Range region, east-central Nevada: Geol. Soc. America Bull., v. 79, no. 12, p. 1703-1726, pl. 1, Map Scale 1:51,600. (G, Tt, CN)

Moores, E.M., 1970, Tertiary tectonics of the White Pine - Grant Range region, east-central Nevada, and some regional implications -- A reply to discussion by Drewes, H., 1969, of 1968 paper: Geol. Soc. America Bull., v. 81, no. 1, p. 323-329. (T, Tt, CN)

Morgan, W.J., 1974, Heat flow and vertical movement of the crust: in Petroleum and global tectonics, Princeton Univ. Press. (Gt)

Moses, T.H., Jr., and Sass, J.H., 1979, Drilling techniques presently in use by the geothermal studies project, U.S. Geological Survey: U.S. Geological Survey open-file rept. 79-763. (Gt, Wd)

Mount, J.D., 1972, Late Paleozoic biostratigraphy of the Pancake Range, Nye County, Nevada: M.S. thesis, Univ. California, Los Angeles. (P, G, CN)

Muffler, L.J.P., 1975a, Summary of Section II: geology, hydrology, and geothermal systems: Washington, D.C., U.S. Govt. Printing Office, Second U.N. Symposium on the Development and Use of Geothermal Resources, p. xiv-lii. (G, H, Gt)

Muffler, L.J.P., 1975b, Tectonic and hydrologic control of the nature and distribution of geothermal resources: Washington, D.C., U.S. Govt. Printing Office, Second U.N. Symposium on the Development and Use of Geothermal Resources, p. 499-507. (Tt, H, Gt)

Muffler, L.J.P., 1979, (ed.), Assessment of geothermal resources of the United States: U.S. Geol. Survey Circ. 790, 163 p. (Gt)

Muffler, L.J.P. and Cataldi, R., 1978, Methods for regional assessment of geothermal resources: Geothermics, v. 7, no. 2-4. (Gt, Gp)

Muffler, L.J.P., Costain, J.K., Foley, Duncan, Sammel, E.A., and Youngquist, Walter, 1980, Nature and distribution of geothermal energy: in Anderson, D.N., and Lund, J.W., eds., Direct Utilization of Geothermal Energy: A technical handbook: Davis, California, Geothermal Resources Council Spec. Rept. No. 7, p. 1-1 to 1-15. (Gt)

Muller, L.F., Holmes, G.H., Jr., and Smith, R.M., 1952, Baltimore Camas Mines, Inc., Hilltop Mine, Minerva mining district, White Pine County, Nevada: Defense Mining Admin. Rept. of exam. field team, Region III, Docket DMA:2138, (tungsten, unpublished), 8 p. (G, EN)

Munroe, R.J., and Moses, T.H., Jr., 1969, Temperature data from exploratory boreholes at the supplemental test site central Nevada: U.S. Geol. Survey Interim Rept, Contract No. AT-(29-2) - 474. (Gt, Wd, CN)

Murray, D.K., and Bortz, L.C., 1967, Eagle Springs oil field, Railroad Valley, Nye County, Nevada: Am. Assoc. Petroleum Geol. Bull., v. 51, no. 10, p. 2133-2145. (G, Wd, CN)

Naff, R.L., Maxey, G.B., and Kaufman, R.F., 1974, Interbasin groundwater flow in southern Nevada: Nevada Bur. Mines and Geol. Rept. 20, 28 p., illus. (H, SN)

Nahma, R., 1961, Geology of the northeast quarter of the Treasure Hill quadrangle, Nevada: M.S. thesis, Univ. Southern California, Los Angeles. (G, EN)

Nakamura, K., 1977, Volcanoes as possible indicators of tectonic stress orientation - principle and proposal: Jour. Volc. and Geothermal Res. 2, p. 1-16. (V, Tt)

Nehring, N.L., Mariner, R.E., White, L.D., Huebner, M.A., Roberts, E.D., Harman, K., Bowen, P.A., and Tanner, L., 1979, Sulfate geothermometry of thermal waters of western United States: U.S. Geol. Survey open-file rept., 79-135, 11 p. (Fg, Gt, Wus)

Nehring, N.L., and Truesdell, A.H., 1977, Collection of chemical, isotope and gas samples from geothermal wells: Proc. Second Workshop Sampling Analysis Geothermal Effluents, Las Vegas, p. 13. (Fg, Gt)

Nehring, N.L., and Truesdell, A.H., 1978, Hydrocarbon gases in some volcanic and geothermal systems: Geothermal Resources Council, Trans., v. 2, p. 483-486. (Fg, V, Gt)

Nelson, R.B., 1959, The stratigraphy and structure of the northernmost part of the northern Snake Range and the Kern Mountains in eastern Nevada and the southern Deep Creek Range in western Utah: Ph.D. dissert., Univ. Washington, Seattle, 165 p., Map Scale 1:62,500; Dissert. Abs. Internat., v. 20, no. 3, p. 996-997. (G, S, EN)

Nelson, R.B., 1966, Structural development of northernmost Snake Range, Kern Mountains, and Deep Creek Range, Nevada and Utah: Am. Assoc. Petroleum Geol. Bull., v. 50, no. 5, p. 921-951. (S, EN)

Nelson, R.B., 1970, The stratigraphy and structure of the northernmost part of the northern Snake Range and the Kern Mountains in eastern Nevada and the southern Deep Creek Range in western Utah: Utah Geol. and Min. Survey Bull., 86, p. 116. (G,S,EN)

Nelson, W.J., Jr., 1973, Paleoenvironmental analysis of Chaetetes biostromes (Pennsylvanian) of Arrow Canyon quadrangle, Clark County, Nevada: M.S. thesis, Univ. Illinois, Urbana. (G, Cc, SN)

Nielson, R.L., 1965, Right-lateral strike-slip faulting in the Walker Lane, west-central Nevada: Geol. Soc. America Bull., v. 76, p. 1301-1308. (Tt, S, WN)

Noble, D.C., 1968, Kane Springs Wash volcanic center, Lincoln County, Nevada: Geol. Soc. America Mem. No. 110, p. 109-116, illus., (inc. geol. sketch map). (V, G, Lic, EN)

Noble, D.C., 1972, Some observations on the Cenozoic volcano tectonic evolution of the Great Basin, western United States: Earth Planet. Sci. Letters, v. 17, n. 1, p. 142-150, sketch map. (C, V, Tt, Gb, Wus)

Noble, D.C., Anderson, R.E., Ekren, E.B., and others, 1964, The Thirsty Canyon Tuff of Nye and Esmerald Counties, Nevada: U.S. Geol. Survey Prof. Paper, 475-D, p. D24-D27. (V, CN)

Noble, D.C., and McKee, E.H., 1972, Description and K-Ar ages of volcanic units of the Caliente volcanic field, Lincoln County, Nevada, and Washington County, Utah: Isochron/West, no. 5, p. 17-24, sketch map. (V, T, Lic, EN)

Noble, D.C., McKee, E.J., Hedge, C.E. and Blank, H.R., Jr., 1968, Reconnaissance of the Caliente depression, Lincoln County, Nevada: Geol. Soc. America Spec. Paper 115, p. 435-436. (S, Tt, G, Lic, EN)

Nolan, T.B., 1928, A late Paleozoic positive area in Nevada: Am. Jour. Sci., v. 5, n. 16, p. 153-161. (P, G, N)

Nolan, T.B., 1929, Notes on the stratigraphy and structure of the northwest portion of Spring Mountain, Nevada: Am. Jour. Sci., 5th Ser., v. 17, p. 461-472. (G, S, EN)

Nolan, T.B., 1943, The Basin and Range province in Utah, Nevada, and California: U.S. Geol. Survey Prof. Paper 197-D, p. 141-196. (G, Gb, N)

Nolan, T.B., 1962, The Eureka mining district, Nevada: U.S. Geol. Survey Prof. Paper 406, 78 p. (G, CN)

Nolan, T.B., 1974, Stratigraphic evidence on the age of the Roberts Mountains thrust, Eureka and White Pine Counties, Nevada: U.S. Geol. Survey Jour. Res. v. 2, no. 4, p. 411-416, illus., (inc. sketch map). (G, S, CN)

Nolan, T.B., Broderick, Alan, and Dorr, J.V.N., 1932-46, Geologic map of the Eureka mining district, Nevada: U.S. Geol. Survey open-file map, sheet 1, Scale 1:12,000. (G, CN)

Nolan, T.B., Dorr, J.V.N., II, Shelton, J.S., and Osterstock, R.W., 1951, Geologic and total intensity aeromagnetic map in the vicinity of Eureka: U.S. Geol. Survey open-file map, Scale 1:24,000. (G, Gp, CN)

Nolan, T.B., Merriam, C.W., and Brew, D.A., 1971, Geologic map of the Eureka quadrangle, Eureka and White Pine Counties, Nevada: U.S. Geol. Survey Misc. Geol. Inv. Map No. I-G12, 2 sheets, Scale 1:31,680, Sections, Washington, D.C. (accompanied by eight-page explanatory text). (G, CN)

Nolan, T.B., Merriam, C.W., and Williams, J.S., 1956, The stratigraphic section in the vicinity of Eureka, Nevada: U.S. Geol. Survey Prof. Paper 276. (G,CN)

Nowlin, J.O., 1978, A groundwater quality monitoring program for Nevada: U.S. Geol. Survey open-file rept. 78-768, 170 p., 2 sheets. (H, N)

O'Brian, K.G., 1963, Stratigraphy and paleontology of the Silverhorn dolomite of Dutch John Mountain, Lincoln County, Nevada: M.S. thesis, Univ. Illinois, Urbana 76 p. (G, EN)

O'Donnell, J.E., 1976, Magnetotelluric soundings in the Darrough Hot Springs area, Nevada: U.S. Geol. Survey open-file rept. 76-288. (Gp, Gt, CN)

Olmsted, F.H., 1977, Use of temperature surveys to a depth of 1 meter in geothermal exploration in Nevada: U.S. Geol. Survey Prof. Paper 1044-B. (Gp, Gt, N)

Olmsted, F.H., Glancy, P.A., and others, 1973, Sources of data for evolution of selected geothermal areas in northern and central Nevada: U.S. Geol. Survey open-file rept. (Gt, NN, CN)

Olmsted, F.H., Glancy, P.A., Harrill, J.R., Rush, F.E., and VanDenburgh, A.S., 1973, Sources of data for evaluation of selected geothermal areas in northern and central Nevada - water resources investigations: U.S. Geol. Survey Water Resources Inv. 44-73. (Gt, NN, CN)

Olmsted, F.H., Glancy, P.A., Harrill, J.R., Rush, F.E., and VanDenburgh, A.S., 1975, Preliminary hydrogeologic appraisal of selected hydrothermal systems in northern and central Nevada: U.S. Geol. Survey open-file rept. 75-56. (H, Gt, NN, CN)

Osborne, D.H., 1963, Arsenic as an indirect geochemical guide to epithermal precious metal deposits: M.S. thesis, Univ. Nevada, Reno. (Gc, Hy, G)

Otooni, M.A., 1958, Upper Ordovician dolomite sequences of the southern Egan Range, Nevada: M.S. thesis, Columbia Univ. New York. (P, G, EN)

Pack, F.J., 1906, Geology of Pioche, Nevada, and vicinity: Ph.D. dissert., Columbia Univ., New York, Map Scale 1:44,000. (G, EN)

Pakiser, L.C., 1963, Structure of the crust and upper mantle in the western United States: Jour. Geophys. Res., v. 68, no. 20, p. 5747-5756. (S, G, Tt, Wus)

Pakiser, L.C., and Hill, D.P., 1963, Crustal structure in Nevada and southern Idaho from nuclear explosions: Jour. Geophys. Res., v. 68, p. 5757-5766. (S, G, Tt, N)

Palmer, A.R., 1964, Pioche Shale fanules, in Cambrian rocks of the Pioche mining district, Nevada: U.S. Geol. Survey Prof. Paper 469, p. 25-27. (G, P, EN)

Park, C.F., Jr., Gemmill, P., and Tschanz, C.M., 1958, Geologic map and sections of the Pioche Hills, Lincoln County, Nevada: U.S. Geol. Survey Mineral Inv. Field Studies Map MF-136, Scale 1:12,000. (G, Lic, EN)

Pascoe, H.L., 1932, The geology of the combined metals mine, Pioche, Nevada: M.A. thesis, Columbia Univ., Map Scale 1:62,500. (G, EN)

Perkins, T.W., 1972, Paleontology and stratigraphic subdivision of the Devonian Sevy, Simonson, and Lower Guilmette Formations from the West Range and vicinity, Lincoln County, Nevada: Bachelor's paper, Univ. Illinois, 53 p. (G, Lic, EN)

Peterson, D.L., and Dansereau, D.A., 1976, Principal facts for gravity stations in the Darrough Known Geothermal Resource Area, Nevada: U.S. Geol. Survey open-file rept. 76-289. (Gp, Gt, CN)

Philbin, P.W., Meuschke, J.L., and McCaslin, W.E., 1963, Aeromagnetic map of the Roberts Mountains area, central Nevada: U.S. Geol. Survey open-file rept. (one map in 2 parts). (Gp, Cn)

Philbin, P.W., and White, B.L., Jr., 1965a, Aeromagnetic map of parts of the Kawich Peak and Reveille Peak quadrangles, Nye County, Nevada: U.S. Geol. Survey Map GP-516. (Gp, CN)

Philbin, P.W., and White, B.L., Jr., 1965b, Aeromagnetic map of parts of the Cactus Peak and Stinking Spring quadrangles, Nye County, Nevada: U.S. Geol. Survey Map GP-511. (Gp, CN)

Phillips Petroleum Company, 1979, Geothermal reservoir assessment case study, northern Basin and Range province: work performed under U.S. DOE contract no. ET-78-c-08-1592. (Gt, G, Gb)

Pheonix, D.A., 1948a, Geology and groundwater in the Meadow Valley Wash drainage area, Nevada, above the vicinity of Caliente: Nevada State Engineer's Office, Water Resources Bull. 7, p. 15-74, 90-117, geol. map. (G, H, EN)

Pheonix, D.A., 1948b, Ground water conditions in the vicinity of Tonopah, Nye County, Nevada: U.S. Geol. Survey open-file report. (H, Fg, CN)

Pheonix, D.A., 1949, Groundwater in the Austin area, Lander County, Nevada: U.S. Geol. Survey open-file rept. (H, CN)

Pipkin, B.W., 1956, Geology of the south third of the Green Springs quadrangle, Nevada: M.A. thesis, Univ. California, Los Angeles, 83 p., Map Scale 1:20,000. (G, CN)

Playford, P.E., 1962, Geology of the Egan Range near Lund, Nevada: Ph.D. dissert., Stanford Univ., Stanford, California, 249 p; Dissert. Abs. Internat. v. 22/12, p. 4322. (G, EN)

Porath, H., and Gough, D.I., 1971, Mantle conductive structures in the western United States from magnetometer array studies: Geophys. Jour. Roy. Astron. Soc., V. 22, p. 261-275. (Tt, S, Wus, Gp)

Potter, E.C., 1976, Paleozoic stratigraphy of the northern Hot Creek Range, Nye County, Nevada: M.S. thesis, Oregon State Univ., Map Scale 1:24,000. (P, G, CN)

Potter, R.W., II, 1979, Computer modeling in low temperature geochemistry: Rev. Geophys. Space Physics 17, p. 850-860. (Gc, Fg)

Press, F., 1960, Crustal structure in the California-Nevada region: Jour. Geophys. Res., v. 65, no. 3, p. 1039-1051. (S, Tt, N)

Presser, T.S., and Barnes, I., 1974, Special techniques for determining chemical properties of geothermal water: U.S. Geol. Survey Water Res. Inv. 11-74, 11 p. (Fg, Gt)

Priestly, K.F., 1974a, Earth strain observations in the western Great Basin: Ph.D. dissert., Univ. Nevada, Reno; Dissert. Abs. Internat., v. 35/09, p. 4507B. (Tt, Gp, Gb)

Priestly, K.F., 1974b, Crustal strain measurements in Nevada: Seismol. Soc. America Bull., v. 64, no. 4, p. 1319-1328. (Tt, Gp, N)

Prodehl, C., 1970, Seismic refraction study of crustal structure in the western United States: Geol. Soc. America Bull., v. 81, p. 2629-2646. (Gp, S, Wus)

Ptacek, A.D., 1962, Structure and stratigraphy of the Horse Range, Nevada: M.S. thesis, Univ. Washington, Seattle, 67 p., Map Scale 1:36,000. (S, G, CN)

Ptacek, A.D., 1966, Chronology of deformation of Paleozoic and Tertiary succession near Railroad Valley, Nevada, (abs.): Am. Assoc. Petroleum Geol. Bull., v. 50, no. 3, p. 650. (P, T, G, CN)

Quade, J.G., 1974a, The Great Basin investigation: Natl. Aeronautics and Space Admin. E74-10210, E74-10281, E74-10499. (G, N)

Quade, J.G., 1974b, Geologic investigations in Nevada using Skylab and high altitude photography: Econ. Geol., v. 71, no. 3, p. 701. (G, S, Ap)

Quade, J.G., 1975, Geologic investigations in Nevada using Skylab and high altitude photography: Mining Eng., v. 27, no. 12, p. 71. (G, S, Ap)

Quade, J.G., and Trexler, D.T., 1975, Geologic investigation in the Basin and Range of Nevada, using Skylab/EREP Data: NASA CR-144497. (G, Gb, Si, N)

Qualheim, B.J., 1979, Hydrogeochemical and stream sediment reconnaissance report for the Tonopah NTMS quadrangle, Nevada: GJBX-89, work performed by Lawrence Livermore Laboratory for the U.S. DOE under contract no. W-7405-ENG-48. (Fg, H, G, CN)

Qualheim, B.J., 1980, Hydrogeochemical and stream sediment special reconnaissance report for the Deep Creek Mountains, Nevada and Utah: GJBX-8, work performed by Lawrence Livermore Laboratory for the U.S. DOE under contract no. W-7405-ENG-48. (Fg, H, G, EN)

Quinlivan, W.D., and Rogers, C.L., 1970, Preliminary geologic map of the Tybo quadrangle, Nye County, Nevada: U.S. Geol. Survey open-file map, 1:24,000. (G, CN)

Rainwater, F.H., and Thatcher, L.L., 1960, Methods for collection and analysis of water samples: U.S. Geol. Survey Water Supply Paper 1454, 301 p. (Fg, H)

Ramspott, L.D., 1966, Volcanism, tectonism, and plutonism in the western United States -- A discussion: Geol. Soc. America Bull., v. 77, p. 663-666. (V, Tt, S, Wus)

Ravenscroft, A.W., 1974, The geology of Big Bald Mountain, White Pine County, Nevada: M.S. thesis, California State Univ., San Diego. (G, EN)

Reed, W.E., 1962, The geology of part of the southern Cherry Creek Mountains, Nevada: M.A. thesis, Univ. California, Map Scale 1:24,000. (G, EN)

Rees, W.E., 1962, The geology of part of the Warm Springs area, Nevada: M.S. thesis, Univ. Utah, Salt Lake City. (G, CN)

Reeves, R.G., 1969, Structural geology interpretations from radar imagery: Geol. Soc. America Bull., v. 80, no. 11, p. 2159-2164. (S, G, Si)

Reid, J.T., 1917, Earthquake crevices in Nevada: Eng. and Mining Jour., v. 104, p. 465. (Tt, S, N)

Reidy, D., Kane, M.F., and Healy, D.L., 1979, Complete Bouguer gravity map of the Las Vegas 1 by 2 sheet, Nevada: U.S. Geol. Survey open-file rept. 79-531. (Gp, SN)

Reitzel, J.S., and others, 1970, Geomagnetic deep sounding and upper mantle structure in the western United States: Geophys. Jour., v. 19, no. 3, p. 213-235. (Gp, S, Wus)

Reso, Anthony, 1955, Geology of the June Canyon region, Toquima Range, central Nevada: M.S. thesis, Columbia Univ., New York, Map Scale 1:12,000. (G, CN)

Reso, Anthony, 1963, Composite columnar section of exposed Paleozoic and Cenozoic rocks in the Pahranagat Range, Lincoln County, Nevada: Geol. Soc. America Bull., v. 74, no. 7, p. 901-918. (P, C, G, Lic, EN)

Rich, Mark, 1956, Geology of the southern portion of the Pancake Summit quadrangle, Nevada: M.S. thesis, Univ. Southern California, Los Angeles, 125 p., Map Scale 1:40,000. (G, EN)

Rinehart, J.S., and Elvey, C.T., 1951, A possible meteorite crater near Duckwater, Nye County, Nevada (ECN--+1157,387): Pop. Astron., v. 59, no. 4, p. 209-211; Meteorit. Soc. Contr., v. 5, no. 1, p. 44-45. (G, CN)

Roberts, R.J., 1964, Exploration targets in north-central Nevada: U.S. Geol. Survey open-file rept. (G, NN)

Roberts, R.J., 1968, Tectonic framework of the Great Basin: Univ. Nevada Jour., no. 1, (McNutt, V.H., Geol. Dept. Colloq. Ser. 1), p. 101-119, illus. (Tt, Gb, N)

Roberts, R.J., and Crittenden, M.D., Jr., 1973, Orogenic mechanism, Sevier orogenic belt, Nevada and Utah: in Gravity and Tectonics, p. 409-428: John Wiley and Sons, New York. (Tt, S, Sob, N)

Roberts, R.J., Montgomery, K.M. and Lehner, R.E., 1967, Geology and mineral resources of Eureka County, Nevada: Nevada Bur. Mines and Geol. Bull. 64. (G, CN)

Robinson, B.P., and Bectem, W.A., 1966, Preliminary inventory of wells and springs within 100 miles of 37° 15' N and 116° 23' W of Pahute Mesa, Nevada Test Site: U.S. Geol. Survey Tech. Letter NTS-166. (H, Wd, SN)

Robinson, E.W., 1970, Relations between geological structure and aeromagnetic anomalies in central Nevada: Geol. Soc. America Bull., v. 81, no. 7, p. 2045-2060, illus., (inc. geol. sketch map). (G, Gp, CN)

Robinson, T.W., 1953, Big Smoky Valley, Nevada: in U.S. Cong. House Comm. Interior and Insular Affairs, Subsurface facilities of water management and patterns of supply--type area studies, Ch. 8, p. 130-146. (H, CN)

Rogers, J.J.W., and others, 1974, Paleozoic and lower Mesozoic volcanism and continental growth in the western United States: Geol. Soc. America Bull., v. 85, p. 1913-1924. (P, M, V, Wus)

Rogers, R.D., 1978, Volatility of mercury from soils amended with various mercury compounds: Rept. No. EPA-606/3-78-046, NTIS, Springfield, VA., 9 p. (Gc, G)

Rowan, L.C., and Wetlaufer, P.H., 1973, Structural geologic analysis of Nevada using ERTS-1 images: a preliminary report: in Symposium on significant results obtained from the Earth Resources Technology and Satellite - 1, v. 1, technical representation, Sec. A: Natl. Aeronautics and Space Admin. Paper G-20, p. 413-423. (S, G, Si, N)

Rowan, L.C., and Wetlaufer, P.H., 1979, Geologic evaluation of major Landsat lineaments in Nevada and their relationship to ore districts: U.S. Geol. Survey open-file rept. 79-544, 64 p. (G, Si, S, N)

Rowan, L.C., Wetlaufer, P.H., Goetz, A.F., Billingsley, F.C., and Stewart, J.H., 1976, Discrimination of rock types and detection of hydrothermally altered areas in south-central Nevada by use of computer enhanced ERTS images: U.S. Geol. Survey Prof. Paper no. 883, 35 p., illus., (inc. sketch maps). (G, Hy, Si, CN)

Rowley, P.D., Lipman, P.W., Mehnert, H.H., and others, 1978, Blue Ribbon Lineament, an east-trending structural zone within the Pioche mineral belt of southwestern Utah and eastern Nevada: U.S. Geol. Survey Jour. Res., v. 6, no. 2, p. 175-192. (Tt, Si, EN)

Rush, F.E., and Eakin, T.E., 1963, Groundwater appraisal of Lake Valley in Lincoln and White Pine Counties, Nevada: Nevada Dept. Conserv. and Nat. Resources, Groundwater Resources-Recon. Ser. Rept. 24. (H, EN)

Rush, F.E., and Everett, D.E., 1964, Groundwater appraisal of Monitor, Antelope, and Kobeh Valleys, Nevada: Nevada Dept. Conserv. and Nat. Resources, Water Resources-Recon. Ser. Rept. 30. (H, CN)

Rush, F.E., and Everett, D.E., 1966, Water resources appraisal of Little Fish Lake, Hot Creek, and Little Smoky Valleys, Nevada: Nevada Dept. Conserv. and Nat. Resources, Water Resources-Recon. Ser. Rept. 38. (H, CN)

Rush, F.E., and Kazmi, S.A.T., 1965, Water resources appraisal of Spring Valley, White Pine and Lincoln Counties, Nevada: Nevada Dept. Conserv. and Nat. Resources, Water Resources-Recon. Ser. Rept. 33. (H, EN)

Rush, F.E., and Schroer, C.V., 1970, Water resources of Big Smoky Valley, Lander, Nye, and Esmeralda Counties, Nevada: Nevada Dept. Conserv. and Nat. Resources, Water Resources Bull. 41. (H, CN)

Ryall, Alan, 1974, Seismology of the western Basin and Range province: Geol. Soc. America Abs., v. 6, no. 3, p. 246. (Tt, Gb, WN)

Ryall, Alan, 1977, Earthquake risk in the Nevada region: Seismol. Soc. America, Bull. v. 67, no. 2, p. 517-532. (Tt, N)

Ryall, Alan, Slemmons, D.B., and Gedney, L.D., 1966, Seismicity, tectonism, and surface faulting in the western United States during historic time: Seismol. Soc. America Bull., v. 56, p. 1105-1135. (Tt, S, Wus)

Ryan, J.F., 1972, Upper Devonian sandstones in the Arrow Canyon Range, Clark County, Nevada: M.S. thesis, Univ. Illinois, Urbana. (G, P, Cc, EN)

Rybach, L., and Muffler, L.J.P., eds., 1980, Geothermal systems: principles and case histories: Chichester, England, John Wiley and Sons, Ltds., 384 p. (Gt)

Rye, R.O., Shawe, D.R., and Poole, F.G., 1978, Stable isotope studies of bedded barite at east Northumberland Canyon in the Toquima Range, central Nevada: U.S. Geol. Survey Jour. Res., v. 6, no. 2, p. 221-229. (Gc, CN)

Sainsbury, C.L., and Kleinhampl, F.J., 1969, Flourite deposits of the Quinn Canyon Range, Nevada: U.S. Geol. Survey Bull. 1272-C, pl. 1, Map Scale 1:62,500. (G, CN)

Sakai, H., 1977, Sulfate-water isotope thermometry applied to geothermal systems: Geothermics, 5, p. 67-74. (Fg, Gt)

Sales, J.K., 1966, Structural analysis of the Basin-Range province in terms of wrench faulting: Ph.D. dissert., Univ. Nevada, Reno, 289 p.; Dissert. Abs. Internat., v. 28/12-B, p. 5084. (S, Tt, Gb)

Sanders, J.W., and Miles, M.J., 1974, Mineral content of selected geothermal waters: Univ. Nevada Desert Research Inst., Water Resources Center, Project Rept. 26, 37 p. (Fg, Gt)

Santogrossi, Patricia A., 1977, Paleoenvironmental analysis of lithostrotionid biostrome, Yellowpine Limestone of Arrow Canyon Range, Clark County, Nevada: M.S. thesis, Univ. Illinois. (G, Cc, EN)

Sanyal, S.K., 1976, Geothermal reservoirs: exploration, assessment, development: Geothermal Resources Council Short Course, Snowbird, Utah, September 20-21, 1976; also GRC short course no. 8, San Francisco, California, May 8-9, 1979. (Gt, Wd)

Sanyal, S.K., and Meidav, H.T., 1977, Important considerations in geothermal well log analysis: Geothermal Resources Council Short Course no. 8, San Francisco, CA, May 8-10, 1979; also Soc. Petroleum Engineers, AIME, Annual California Regional Meeting, Bakersfield, April 13-15, 1977. (Gt, Wd)

Sargent, K.A., and McKee, E.H., 1969, The Bates Mountain tuff in northern Nye County, Nevada: U.S. Geol. Survey Bull. 1294-E, 12 p., illus., (inc. sketch maps). (V, CN)

Sass, J.H., Lachenbruch, A.H., Munroe, R.J., and others, 1971, Heat flow in the western United States: Jour. Geophys. Res., v. 76, no. 26, p. 6376-6413. (Gt, Wus)

Sayeed, U.A., 1973, Petrology and structure of the Kern Mountains plutonic complex, White Pine County, Nevada, and Juab County, Utah: Ph.D. dissert., Univ. Nebraska, Lincoln, 198 p.; Dissert. Abs. Internat., v. 34/12-B, p. 6071-6072. (G, S, EN)

Sayeed, U.A., Treeves, S.B., and Nelson, R.B., 1977, Geochemistry and hydrothermal alteration of the Kern Mountains plutonic complex, White Pine County, Nevada and Juab County, Utah: Geol. Rundsch., v. 66, no. 2, p. 614-644 (incl. German, French, Russian sum.). (G, Hy, EN)

Sbar, M.L., Barazangi, M., Dorman, J., Scholz, C.H., and Smith, R.B., 1972, Tectonics of the Intermountain seismic belt, western United States -- microearthquake seismicity and composite fault plane solutions: Geol. Soc. America Bull., v. 83, p. 13-20. (Tt, Wus)

Sbar, M.L., and Smith, R.B., 1974, Contemporary tectonics and seismicity of the western United States with emphasis on the intermountain seismic belt: Geol. Soc. America Bull., v. 85, no. 8, p. 1205-1218. (Tt, Wus)

Scales, Bert, 1961, Geology of Applebush Hill area, south Antelope Valley, Nye County, Nevada: M.S. thesis, Univ. Nevada, Reno, Map Scale 1:18,000. (G, CN)

Scharon, H.L., and Dent, G.E., 1946, Geophysical investigations of the Diamond Excelsior mine area, Eureka mining district, Nevada: U.S. Geol. Survey open-file rept. (Gp, CN)

Schilling, J.H., 1968, Nevada's geothermal resources: Nevada Univ., Reno, Bur. Business and Econ. Research, Nevada Business Review, p. 2, 4. (Gt, N)

Schmoll, H.R., 1955, Upper Mississipian (?) quartzites in the White Pine Range, east-central Nevada: M.S. thesis, Columbia Univ., New York. (P, G, CN)

Scholz, C.H., Barazangi, Muawia, and Sbar, M.L., 1971, Late Cenozoic evolution of the Great Basin, western United States, as an ensialic inter-arc basin: Geol. Soc. America Bull., v. 82, no. 11, p. 2979-2990, illus., (inc. sketch map). (C, Gb, Wus, V)

Schrader, F.C., 1931, Notes on ore deposits at Cave Valley, Patterson district, Lincoln County, Nevada: Nevada Univ. Bull., v. 25, no. 3; Nevada Bur. Mines Bull. 10. (G, EN)

Schultz, R.J., and Dibello, E.G., 1979, Applications of moderate-temperature geothermal resources: Geothermal Resources Council Short Course no. 8, San Francisco, California, May 8-9, 1979. (Gt)

Schweikert, R.A., 1976, Early Mesozoic rifting and fragmentation of the Cordilleran orogen in the western U.S.A.: Nature, v. 260, p. 586-591. (M, Tt, Wus)

Sclater, J.G., and Francheteau, J., 1970, The implication of terrestrial heat flow observations on current tectonic and geochemical models of the crust and upper mantle of the earth: Geophys. Jour. Roy. Astron. Soc., v. 20, 509 p. (Gt, Tt, Gc, S)

Scott, D.H., 1969, The geology of the southern Pancake Range and Lunar Crater volcanic field, Nye County, Nevada: Ph.D. dissert., Univ. California, Los Angeles, 209 p.; Dissert. Abs. Internat., v. 30/05-B, p. 2258. (G, V, CN)

Scott, D.H., and Trask, N.J., 1971, Geology of the Lunar Crater volcanic field, Nye County, Nevada: U.S. Geol. Survey Prof. Paper no. 599-I, 22 p., illus., (inc. geol. map, Scale 1:62,500). (G, V, CN)

Scott, R.B., 1965, The Tertiary geology and ignimbrite petrology of the Grant Range, east-central Nevada: Ph.D. dissert., Rice Univ., Houston, Texas, 110 p., Map Scale 1:37,200; Dissert. Abs. Internat., v. 26/06, p. 2692. (T, G, CN)

Scott, R.B., Nesbitt, R.W., Dasch, E., and others, 1971, A strontium isotope evolution model for Cenozoic magma genesis, eastern Great Basin, U.S.A.: Bull. Volcanology, v. 35, no. 1, p. 1-26, illus., (inc. sketch maps). (Gg, C, V, Gb)

Seward, A.E., 1962, The areal geology of the southern portions of the Reipetown quadrangle, Nevada: M.A. thesis, Univ. Southern California, Los Angeles, 83 p., Map Scale 1-24,000. (G, EN)

Shawe, D.R., 1961, Rhyolites in the Egan Range south of Ely, Nevada: U.S. Geol. Survey Prof. Paper 424B, p. B178. (V, EN)

Shawe, D.R., 1965, Strike-slip control of Basin-Range structure indicated by historical faults in western Nevada: Geol. Soc. America Bull., v. 76, no. 12, p. 1361-1378. (Tt, S, Gv, WN)

Shawe, D.R., 1977a, Geochemical and generalized geologic map showing distribution of iron, copper, lead, zinc, silver, molybdenum antimony, arsenic, tungsten, barium, boron, and potassium in the Round Mountain quadrangle, Nye County, Nevada: U.S. Geol. Survey Misc. Field Studies Map MF-835-A-L. (Gc, G, CN

Shawe, D.R., 1977b, Preliminary generalized geologic map of the Round Mountain quadrangle, Nye County, Nevada: U.S. Geol Survey Misc. Field Studies Map, MF-833. (G, CN)

Shawe, D.R., Poole, F.G., and Brobst, D.H., 1969, Newly discovered bedded barite deposits in east Northumberland Canyon, Nye County, Nevada: Econ. Geol., v. 64, no. 3, p. 245-254. (G, CN)

Sheldon, G.L., 1912, Railroad Valley potash fields, Nye County, Nevada: Min. and Scientific Press, v. 105, p. 502-503. (G, CN)

Shurbet, D.H., and Cebull, S.E., 1971, Crustal low-velocity layer and regional extension in Basin and Range province: Geol. Soc. America Bull., v. 82, p. 3241-3244. (Tt, S, Gb)

Sides, J.W., 1966, The geology of the central Butte Mountains, White Pine County, Nevada: Ph.D. dissert., Stanford Univ., Stanford, California, 175 p.; Dissert. Abs. Internat., v. 27/07-B, p. 2418. (G, EN)

Silberman, M.L., and McKee, E.H., 1975, Igneous activity, tectonics, and hydrothermal mineralization in the Great Basin during Cenozoic time: Mining Eng., v. 27, no. 12, p. 69; also Econ. Geol., v. 71, no. 3, p. 702-703, 1976. (Tt, V, Hy, Gb, C)

Silberman, M.L., Shawe, D.R., Koski, R.A., and others, 1975, K-Ar ages of mineralization at Round Mountain and Manhattan, Nye County, Nevada: Isochron/West, no. 13, p. 1-2. (Gc, G, CN)

Silk, Ernest, 1931, The geology and ore deposits of Hamilton, Nevada: Ph.D. dissert., Yale Univ., New Haven, Connecticut. (G, EN)

Sinclair, W.C., and Malchow, R.L., 1963, Groundwater appraisal of the Long Valley -- Massacre Lake Region: Nev. Dept. Conserv. and Nat. Resources, Groundwater Resources-Recon. Ser. Rept. 15. (H, CN)

Slemmons, D.B., 1967, Pliocene and Quaternary crustal movements of the Basin and Range province, U.S.A.: Osaka City Univ., Jour. Geosci., v. 10, Art. 1-11, p. 91-103. (Q, T, Tt, Gb)

Slemmons, D.B., 1969, New methods for studying regional seismicity and surface faulting: EOS, Amer. Geophys. Union Trans., v. 50, p. 397-398. (Tt, S)

Slemmons, D.B., Gimlett, J.I., Jones, A.E., and others, 1965, Earthquake epicenter map of Nevada: Nevada Bur. Mines Map 29. (Tt, N)

Slemmons, D.B., Jones, A.E., and Gimlett, J.I., 1965, Catalog of Nevada earthquakes, 1852-1960: Seismol. Soc. America Bull., v. 55, no. 2, p. 519-565. (Tt, N)

Slemmons, D.B., Stroh, J. and Whitney, R.A., (eds.), 1980, An environmental overview of geothermal development, the northern Nevada region: Mackay School of Mines report prepared for Lawrence Livermore Laboratory, LLL, P.O. 4585209. (Gt, NN)

Smith, J.L., and Matlick, J.S., 1976, Summary of 1975 geothermal drilling in the western United States: Geothermal Energy Magazine, v. 4, no. 6, p. 28-31. (Gt, Wd, Wus)

Smith, M.B., 1960, List of basement wells in California and Nevada: U.S. Geol. Survey open-file rept., 129 p. (Wd, N)

Smith, M.R., 1976, Arcuate structural trends and Basin and Range structures, based on a study of ERTS-1 imagery: Utah Geol. Assoc., Publ. no. 5, Proc. First International Conference on New Basement Tectonics, p. 626-634. (Tt, S, Si, Gb)

Smith, R.B., and Eaton, G.P., eds., 1978, Cenozoic tectonics and regional geophysics of the Western Cordillera: Geol. Soc. America Mem. 152, 388 p. (C, Tt, Gp, Gb)

Smith, R.B., and Sbar, M.L., 1974, Contemporary tectonics and seismicity of the western United States with emphasis on the Intermountain seismic belt: Geol. Soc. America Bull., v. 85, no. 8, p. 1205-1218. (Tt, Gb, Wus)

Smith, R.L., and Shaw, H.R., 1975, Igneous-related geothermal systems: in Assessment of geothermal resources of the United States: U.S. Geol. Survey Circ. 726, p. 58-83, illus., (inc. tables, sketch maps). (Gt, V)

Smith, S.W., and King, R., 1972, Regional secular strain fields in southern Nevada: Tectonophysics, v. 14, p. 57. (Tt, SN)

Snyder, W.S., Dickinson, W.R., and Silberman, M.L., 1976, Tectonic implications of space-time patterns of Cenozoic magmatism in the western United States: Earth Planet. Sci. Letters. (C, Tt, V, Wus)

Snyder, R.P., Ekren, E.B., and Dixon, G.L., 1969, Geologic map of the Lunar Crater quadrangle, Nye County, Nevada: U.S. Geol. Survey open-file rept.; also U.S. Geol. Survey Misc. Inv. Ser. Map I-700. G, CN)

Snyder, W.S., Dickinson, W.R., and Silberman, M.L., 1976, Tectonic implications of space-time patterns of Cenozoic magmatism in the western United States: Geol. Soc. America Abs., v. 7, p. 1279. (Tt, C, V, Wus)

Southwick, R.S., 1962, Geology of the south-central part of the Schell Peaks quadrangle, Nevada: M.A. thesis, Univ. Southern California, Los Angeles, Map Scale 1-24,000. (G, EN)

Speed, R.C., and McKee, E.H., 1976, Age and origin of the Darrough Felsite, southern Toiyabe Range, Nevada: U.S. Geol. Survey Jour. Res., v. 4, no. 1, p. 75-81. (V, G, EN)

Stager, H.K., 1960, A new beryllium deposit at the Mt. Wheeler mine, White Pine County, Nevada: U.S. Geol. Survey Prof. Paper 400-B, p. B70-B71. (G, EN)

Stauber, D.A., and Boore, D.M., 1978, Crustal thickness in northern Nevada from seismic refraction profiles: Seismol. Soc. America Bull. v. 68, no. 4, p. 1049-1058. (S, Gp, NN)

Stearns, N.D., Stearns, H.T., and Waring, G.A., 1937, Thermal springs in the United States: U.S. Geol. Survey Water Supply Paper 679-B. (Gt)

Steele, Grant, 1959, Basin and Range structure reflects Paleozoic tectonics and sedimentation: Am. Assoc. Petroleum Geol. Bull., v. 43, no. 5, p. 1105. (Gb, P, G)

Stenaas, L.J., 1957, Paleontology and stratigraphy of the Joana Limestone at Ward Mountain, Nevada: M.A. thesis, Univ. California, Map Scale 1:42,300. (G, EN)

Stewart, J.H., 1971, Basin and Range structure -- A system of horsts and grabens produced by deep-seated extension: Geol. Soc. America Bull., v. 82, no. 4, p. 1019-1043. (Gb, Tt)

Stewart, J.H., 1978, Basin-Range structure in western North America; a review: in Smith, R.B., and Eaton, G.P., (eds.), Cenozoic tectonics ad regional geophysics of the western Cordillera: Geol. Soc. America Mem. 152, p. 1-31. (Gb, S, Wus)

Stewart, J.H., 1980a, Geology of Nevada, A discussion to accompany the Geologic Map of Nevada: Nevada Bur. Mines and Geology Spec. Pub. 4. (G, S, N)

Stewart, J.H., 1980b, Regional tilt patterns of late Cenozoic basin-range blocks, western United States: Geol. Soc. America Bull. (G, Tt, Gb, Wus)

Stewart, J.H., Albers, J.P., and Poole, F.G., 1968, Summary of regional evidence for right-lateral displacement in the western Great Basin: Geol. Soc. America Bull., v. 79, no. 10, p. 1407-1413. (Tt, Gb, WN)

Stewart, J.H., and Carlson, J.E., 1976, Cenozoic rocks of Nevada -- four maps and a brief description of distribution, lithology, age and centers of volcanism: Nevada Bur. Mines and Geol. Map 52, Scale 1:100,000. (C, V, N)

Stewart, J.H., and Carlson, J.E., 1978, Geologic Map of Nevada: U.S. Geol. Survey, Map Scale 1-500,000. (G, N)

Stewart, J.H., and McKee, E.H., 1968, Geologic map of the Mt. Callaghan quadrangle, Lander County, Nevada: U.S. Geol. Survey Geol. Quad. Map GQ-730, Scale 1:62,500, sections. (G, CN)

Stewart, J.H., McKee, E.H., and Stager, H.K., 1977, Geology and mineral deposits of Lander County, Nevada: Nevada Bur. Mines and Geol. Bull., no. 88. (G, CN)

Stewart, J.H., Moore, W.J., and Zietz, Isidore, 1977, East-west patterns of Cenozoic igneous rocks, aeromagnetic anomalies, and mineral deposits, Nevada and Utah: Geol. Soc. America Bull., v. 88, p. 67-77, 6 figs. (C, G, Gp, S, Tt, N)

Stewart, J.H., and Palmer, A.R., 1967, Callaghan Window -- a newly discovered part of one of the Roberts Thrusts, Toiyabe Range, Lander County, Nevada: U.S. Geol. Survey Prof. Paper 575-D, p. D56-D63. (G, CN)

Stewart, J.H., Walker, G.W., and Kleinhampl, F.J., 1975, Oregon-Nevada lineament: Geology, v. 3, no. 5, p. 265-268, illus. (G, Tt, S, N)

Stone, R.O., 1962, A sedimentary study and classification of playa lakes: M.S. thesis, Univ. Southern California, Los Angeles. (G)

Stone, R.O., 1956, A geologic investigation of playa lakes: Ph.D. dissert., Univ. Southern California, Los Angeles. (G)

Stone, R.T., 1978, The role of the U.S. Geological Survey in the federal geothermal leasing program: Geothermal Resources Council Trans., v. 2, p. 617-621. (Gt, Gb)

Stringham, B.F., 1957, Geology of the Kingsley quartz monzonite stock, Antelope Range, eastern Nevada, (abs.): Geol. Soc. America Bull., v. 68, no. 12, pt. 2, p. 1873. (G, EN)/

Suppe, John, Powell, C., and Berr, R., 1975, Regional topographic, seismicity, Quaternary volcanism, and the present day tectonics of the western U.S.: Am. Jour. Sci., v. 275A, p. 397-436. (Tt, Q, V, Wus)

Swanberg, C.A., and Morgan, P., 1978, The linear relation between temperatures based on the silica content of ground-water and regional heat flow: A new heat flow map of the United States: Pure and Applied Geophysics, v. 117, p. 227-241. (Fg, Gt)

Swanberg, C.A., and Morgan, P., 1980, The silica heat flow interpretation techniques: Assumptions and applications: Jour. Geophys. Res. (Fg, Gt)

Tamrazyan, G.P., 1968, The earthquakes of Nevada, U.S.A., and the tidal forces: Jour. Geophys. Res., v. 73, no. 18, p. 6013-6018. (Tt, N)

Tchalenko, J.S., 1970, Similarities between shear zones of different magnitude: Geol. Soc. America Bull., v. 81, p. 1625-1640. (Tt)

Thomas, H.F., 1964, Water resources: in Mineral and water resources of Nevada: Nevada Bur. Mines and Geol. Bull., no. 65, p. 273-314. (H, N)

Thompson, G.A., 1952, Problem of Late Cenozoic structure of the Basin Ranges: Internat. Geol. Cong., 21st, Copenhagen, Rept., pt. 18, p. 62-68. (C, Tt, Gb, S)

Thompson, G.A., 1959, Gravity measurements between Hazen and Austin, a study of Basin and Range structure: Jour. Geophys. Res., v. 64, p. 217-229. (Gp, Gb, EN)

Thompson, G.A., 1960, Crustal structure and Cenozoic deformation in the Basin and Range province (abs.): Geol. Soc. America Bull., v. 71, p. 1992. (S, Tt, Gb)

Thompson, G.A., 1971, Thin-skin distension in Tertiary rocks of southeastern Nevada: Geol. Soc. America Bull., v. 82, p. 3529-3532. (T, Tt, EN)

Thompson, G.A., 1972, Cenozoic Basin-Range tectonism in relation to deep structure: Internat. Geol. Conf., 24th, Montreal, Sec. 3, p. 84-90. (C, Tt, Gb, S)

Thompson, G.A., and Burke, D.B., 1973, Rate and direction of spreading in Dixie Valley, Basin and Range province, Nevada: Geol. Soc. America Bull., v. 84, p. 627-632. (Tt, Gb, CN)

Thompson, G.A., and Burke, D.B., 1974, Regional geophysics of the Basin and Range province: Earth Planet. Sci., Ann. Rev., v. 2, p. 213-238. (Gp, Gb)

Tieh, T.T., 1971, Carbonate-rich dikes in ignimbrites of southeastern Nevada: Geol. Soc. America Bull., v. 82, no. 5, p. 1293-1303, illus., (inc. geol. sketch map). (G, V, EN)

Tieh, T.T., and Cook, E.F., 1970, Carbonatitic dikes in ignimbrites of Lincoln County, Nevada: Geol. Soc. America Abs., v. 2, no. 4, p. 301. (G, V, EN)

Tonani, F., 1970, Geochemical methods of exploration: Geothermics, v. 2, pt. 1, p. 492-515. (Gc)

Tonigiorgi, E. (ed.), 1970, Geothermics Special Issue 2: Proc. of U.N., Symposium on Development and Utilization of Geothermal Resources, 2, Part 1, 973 p. (Gt)

Trask, N.J., 1969, Ultramafic xenoliths in basalt, Nye County, Nevada: U.S. Geol. Survey Prof. Paper 650-D, p. D43-D48. (V, EN)

Trexler, D.T., 1977, Summary report of availability of geothermal data for potential direct heat application in Nevada: Rept. no. NVO-0671-1 10 p., available from NTIS, Springfield, VA. (Gt, N)

Trexler, D.T., Bell, E.J., and Roquemore, G.R., 1979, Evaluation of lineament analysis as an exploration technique for geothermal energy, western and central Nevada: Final report of work performed for the U.S. DOE under contract No. EY-76-S-08-0671, 78 p. (Gt, Si, WN, CN)

Trexler, D.T., Flynn, T., and Koenig, B.A., 1979, Low to moderate temperature geothermal resource assessment of Nevada: Final report of work performed for the U.S. DOE under contract no. ET-78-S-08-156. (Gt, G, S, N)

Trexler, D.T., Koenig, B.A., and Flynn, T., 1978, Geothermal resources of Nevada and their potential for direct utilization: Map prepared for U.S. DOE under contract no. ET-78-S-08-1556. Scale 1:500,000. (Gt, N)

Trexler, D.T., Flynn, T., Koenig, B.A., and Bruce, J., 1980, Assessment of geothermal resources of Caliente, Nevada: Nevada Bur. Mines and Geol., DOE/NV/10039-1, Contract AC08-79, NV10039, 23 p. (Gt, G, Gc, EN)

Trexler, D.T., Flynn, T., Koenig, B.A., and Bruce, J., 1980, Assessment of the geothermal resources of Carson-Eagle Valleys and Big Smoky Valley, Nevada: first annual report of work performed under U.S. DOE contract no. DE-AC08-79 NV10039. (Gt, G, S, Gc, WN, CN)

Tripp, E.C., 1957, The geology of the north half of the Pancake Summit quadrangle, Nevada: M.S. thesis, Univ. Southern California. (G, EN)

Truesdell, A.H., 1975, Geochemical techniques in exploration: 2nd United Nations Symposium on Development and Use of Geothermal Resources, San Francisco, 1975, Proc., v. 1, table 1. (Fg, Gc, Gt)

Truesdell, A.H., 1976, Chemical evidence of subsurface structure and fluid flow in geothermal systems: Proc. Internat. Symp. Water-Rock Interaction, Prague, p. 250-257. (Fg, Gc, Gt)

Truesdell, A.H., 1976, Geoterm, a geothermometric computer program for hot spring systems: Proc. 2nd United Nations Symposium on the Development and Use of Geothermal Resources, San Francisco, v. 1, p. 831-836. (Gt, Gc)

Truesdell, A.H., 1976, Geochemical techniques in exploration: Summary: Proc. 2nd U.N. Symposium on the Development and Use of Geothermal Resources, San Francisco, p. liii-lxxix. (Gc, Fg, Gt)

Truesdell, A.H., and Fournier, R.O., 1977, Procedure for estimating the temperature of hot water component in a mixed water by using a plot of dissolved silica versus enthalpy: U.S. Geol. Survey Jour. Res., v. 5, no. 1, p. 49-52. (Fg, Gt)

Truesdell, A.H., and Frye, G.A., 1977, Isotope geochemistry in geothermal reservoir studies: 47th Annual California Regional Meeting, Soc. Petroleum Eng. of AIME, Paper No. SPE-6533. (Fg, Gt)

Trummel, J.E., 1972, Stratigraphy of the Guilmette Formation, West Range, Lincoln County, Nevada: Bachelor's paper, Univ. Illinois, Urbana-Champaign, 60 p. (G, EN)

Tschanz, C.M., 1960, Regional significance of some lacustrine limestones in Lincoln County, Nevada, recently dated as Miocene: U.S. Geol. Survey Prof. Paper 400-B, p. B293-B295. (G, EN)

Tschanz, C.M., and Pampeyan, E.H., 1970, Geology and mineral deposits of Lincoln County, Nevada: Nevada Bur. Mines Bull., 73. (G, EN)

Turner, N.L., 1962, Geology of the Ruth quadrangle, White Pine County, Nevada: M.S. thesis, Univ. Southern California, Los Angeles, 151 p., Map Scale 1:24,000. (G, EN)

U.S. Geological Survey, 1964, Mineral and water resources of Nevada (prepared by the U.S. Geol. Survey and the Nevada Bur. Mines as a U.S. Senate document): Nevada Bur. Mines Bull., 65, 314 p. (G, H, N)

U.S. Geological Survey, 1967a, Aeromagnetic map of parts of the Lander County-Austin, Spencer Hot Springs and Wildcap Peak quadrangles: U.S. Geol. Survey open-file map, Scale 1:62,500. (Gp, CN)

U.S. Geological Survey, 1967b, Aeromagnetic map of the Round Mountain and parts of the Belmont quadrangles, Nevada: U.S. Geol. Survey open-file map, Scale 1:62,500. (Gp, CN)

U.S. Geological Survey, 1967c, Aeromagnetic map of the San Antonio Ranch, Baxter Spring, Lone Mountain and Tonopah quadrangles and parts of the Antelope Spring quadrangle, Nevada: U.S. Geol. Survey open-file map, Scale 1:62,500. (Gp, CN)

U.S. Geological Survey, 1968a, Aeromagnetic map of the Hot Creek Range region, south-central Nevada: U.S. Geol. Survey Geophys. Inv. Map GP-637, Scale 1-250,000. (Gp, CN)

U.S. Geological Survey, 1968b, Aeromagnetic map of the Eureka region, Eureka and White Pine Counties, Nevada: U.S. Geol. Survey open-file map, Scale 1:62,500, (Nevada Bur. Mines Map no. 21). (Gp, CN)

U.S. Geological Survey, 1968c, Aeromagnetic map of the Austin region, Lander County, Nevada: U.S. Geol. Survey open-file map, Scale 1:62,500, no. 17, (Nevada Bur. Mines Map no. 53). (Gp, CN)

U.S. Geological Survey, 1969, Aeromagnetic map of Monitor Valley and vicinity, Lander and Eureka Counties: U.S. Geol. Survey open-file map, Scale 1:62,500, (Nevada Bur. Mines Map no. 69). (Gp, CN)

U.S. Geological Survey, 1970, Surface water supply of the United States, 1961-1965--part 10, The Great Basin: U.S. Geol. Survey Water Supply Paper 1927, 978 p. (H, Gb)

U.S. Geological Survey, 1971, Aeromagnetic map of parts of the Tonopah and Millet 1° by 2° quadrangles, Nevada: U.S. Geol. Survey Geophys. Inv. Map no. GP-752, Magnetic survey map, Scale 1:250,000. (Gp, CN)

U.S. Geological Survey, 1973. Aeromagnetic map of southeastern part of Lund and eastern half of Caliente, 1 by 2 quadrangles, Nevada: U.S. Geol. Survey open-file rept., 1 sheet, Scale 1:250,000. (Gp, EN)

U.S. Geological Survey, 1974a, Surface water supply of the United States, 1966-1970--Part 10, The Great Basin: U.S. Geol. Survey Water Supply Paper 2127, 1143 p. (H, Gb)

U.S. Geological Survey, 1974b, Quality of the surface waters of the United States, 1969-Parts 9 and 10, Colorado River Basin and the Great Basin: U.S. Geol. Survey Water Supply Paper 2148, 348 p. (Fg, H, Gb)

U.S. Geological Survey, 1976a, Aeromagnetic map for part of central Lund 1° by 2° quadrangle, Nevada: U.S. Geol. Survey open-file map 76-361, Scale 1:62,500. (Gp, EN)

U.S. Geological Survey, 1976b, Aeromagnetic map for part of northwestern Lund 1° by 2° quadrangle, Nevada: U.S. Geol. Survey open-file map 76-362, Scale 1:125,000. (Gp, EN)

U.S. Geological Survey, 1976c, Aeromagnetic map of the Connors Pass and Schell Peak quadrangles, Nevada: U.S. Geol. Survey open-file map 76-363, Scale 1:62,000. (Gp, EN)

U.S. Geological Survey, 1978, Aeromagnetic map of east-central Nevada: U.S. Geol. Survey open-file rept. 78-281, 1 sheet. (Gp, CN)

U.S. Geological Survey, 1979a, Aeromagnetic map of the Manhattan area, Nevada: U.S. Geol. Survey open-file rept. 79-1454. (Gp, CN)

U.S. Geological Survey, 1979b, Aeromagnetic map of the Lone Mountain area, Nevada: U.S. Geol. Survey open-file rept. 79-1456. (Gp, CN)

VanDenburgh, A.S., and Rush, F.E., 1974, Water resources appraisal of Railroad and Penoyer Valleys, east-central Nevada: Nevada Dept. Conser. and Nat. Resources, Water Resources-Recon. Ser. Rept. 60. (H, CN)

VanHouten, F.B., 1956, Reconnaissance of Cenozoic sedimentary rocks of Nevada: Am. Assoc. Petroleum Geol. Bull., v. 40, no. 12, p. 2801-2825. (G, C, Li)

VanHouten, F.B., 1965, Maps of Cenozoic depositional provinces, western United States: Am. Jour. Sci., v. 259, p. 612-621. (C, G, Wus

Vitaliano, C.J., 1951, Magnesium-mineral resources of the Currant Creek district, Nevada: U.S. Geol. Survey Bull., 978-A, p. 1-25. (G, CN)

Vitaliano, C.J., and Harvey, R.D., 1965, Alkali basalt from Nye County, Nevada: Am. Min., v. 50, no. 1-2, p. 73-84. (V, CN)

Wagoner, J.L., 1978, Hydrogeochemical and stream sediment reconnaissance basic data report for Millet NTMS quadrangle, Nevada: Lawrence Livermore Lab., UCRL no. 52641, 22p., rept. no. GJBX-39/79. (Fg, H, CN)

Wahl, E.F., 1977, Geothermal energy utilization: John Wiley and Sons, New York, 302 p. (Gt)

Waldbaum, Raymond, 1970, Geology of the Portugese Mountain area, Nye County, Nevada: M.S. thesis, California State Univ., San Diego. (G, CN)

Walker, L.G., 1962, Geology of the Mt. Hope area, Garden Valley quadrangle, Nevada: M.A. thesis, Univ. California, Los Angeles, 41 p., Map Scale 1:24,000. (G, EN)

Walker, P.M., and Trexler, D.T., 1977, Interpretive techniques, uses, and flight planning considerations for low-sun-angle photography: Photogram. Eng. and Remote Sensing, v. XLIII, no. 4. (Ap, G)

Walker, R.F., and Motts, Wards, 1970, Reconnaissance geology of Big Smoky Playa, Nevada: in Geology and hydrology of selected playas in the western United States, Motts, W.S., (ed.): Univ. Massachusetts Geology Dept., Contract AF19 (628) - 2486, final sci. rept., pt. 2, Chap. 4, Bedford, Mass., U.S. Air Force Office Aerospace Research, p. 137-165. (G, H, CN)

Wallace, R.E., 1978, Patterns of faulting and seismic gaps in the Great Basin province: in Proc. Conference VI Methodology for identifying seismic gaps and soon-to-break gaps, National Earthquake Hazards Reduction Program. (Tt, S, Gb)

Walther, J.V., and Helgeson, H.C., 1977, Calculation of the thermodynamic properties of aqueous silica and the solubility of quartz and its polymorphs at high pressures and temperatures: Am. Jour. Sci., v. 277, no. 10, p. 1315-1351. (Fg, Gt)

Ward, R.A., 1962, Geology of the northern half of the Reipetown quadrangle, Nevada: M.A. thesis, Univ. Southern California, Los Angeles, 56 p., Map Scale 1:24,000. (G, EN)

Ward, S.H., Glenn, W.E., Smith, B.D., and Rijo, L., 1975, Electromagnetic soundings in the geothermal environment: Geophysics, v. 40, no. 1, p. 177. (Gt, Gp)

Wardner, W.R., 1909, Glory-Hole mining at DeLamar, Nevada: Eng. and Mining Jour., v. 87, p. 451-452. (G, EN)

Waring, G.A., 1965, Thermal springs of the United States and other countries of the world: U.S. Geol. Survey Prof. Paper 492. (Gt)

Washburn, R.H., 1966, Structure and paleozoic stratigraphy of the Toiyabe Range, southern Lander County, Nevada: Ph.D. dissert., Columbia Univ., New York, 79 p., Map Scale 1:24,730; also Am. Assoc. Petroleum Geol. Bull., v. 54, no. 2, p. 275-284. (S, G, CN)

Washburn, R.H., 1970, Paleozoic stratigraphy of the Toiyabe Range, southern Lander County, Nevada: Am. Assoc. Petroleum Geol. Bull., v. 54, no. 2, p. 275-284. (G, Li, P, SN)

Watson, P., Sinclair, P., and Waggoner, R., 1976, Quantitative evaluation of a method for estimating recharge to the desert basins of Nevada: Jour. Hydrology, v. 31, no. 3-4, p. 335-357. (H, Gb)

Western Geophysical Company of America, Aeros Service Division, 1979, Airborne gamma-ray spectrometer and magnetometer survey Las Vegas, Williams, Prescott, and Kingman NTMS quadrangles, Arizona, Nevada, and California: GJBX-59, prepared for the U.S. DOE under Bendix Field Engineering Corporation subcontract no. 77-062-L. (Gp, SN)

Westgate, L.G., and Knopf, A., 1927, Geology of Pioche, Nevada, and vicinity: Am. Inst. Mining, Metallurgical and Petroleum Eng. Trans., v. 75, p. 816-836. (G, EN)

Westgate, L.G., and Knopf, A., 1932, Geology and ore deposits of the Pioche district, Nevada: U.S. Geol. Survey Prof. Paper 171, 79 p. (G, EN)

Westphal, W.H., and Huttrer, G.W., 1974, Geothermal exploration in the United States -- 1974: Geol. Soc. America Abs., v. 6, p. 1004-1005. (Gt)

Wheeler, H.E., and Lemmon, D.M., 1939, Cambrian Formations of the Eureka and Pioche districts, Nevada: Nevada Bur. Mines Bull. 31, 60 p. (P, G, EN)

White, D.E., 1954, Hydrothermal alteration and other characteristics of five explored hot spring systems (abs.): Geol. Soc. America Bull., v. 65, p. 1325. (Hy, Gt)

White, D.E., 1955, Thermal springs and epithermal ore deposits: Econ. Geol., 50th Ann. Vol., p. 100-154. (Gt, Hy)

White, D.E., 1957, Thermal waters of volcanic origin: Geol. Soc. America Bull., v. 68, p. 1637-1658. (Gt, V)

White, D.E., 1967, Mercury and base metal deposits with associated thermal and mineral waters; in Geochemistry of hydrothermal ore deposits, Barnes, H.L., (ed.): Holt, Rinehart and Winston, New York, Toronto, and London, Chap. 13, p. 575-631. (Gc, Hy, Gt)

White, D.E., 1970, Geochemistry applied to the discovery, evaluation, and exploration of geothermal energy resources: in United Nations Symposium on development and utilization of geothermal resources, Pisa 1970, v. 1, pt. 2: Geothermics, Special Issue 2, p. 58-80. (Fg, Gc, Gt)

White, D.E., and Guffanti, Marianne, 1979, Geothermal systems and their energy resources: Reviews Geophys. Space Phys., v. 17, no. 4, p. 887-902. (Gt)

White, D.E., Muffler, L.J.P., and Truesdell, A.H., 1971, Vapor-dominated hydrothermal systems compared with hot water systems: Econ. Geol., v. 66, p. 75-97. (Gt, Gc)

White, D.E., and Williams, D.L., 1975, Assessments of geothermal resources of the United States - 1975: U.S. Geol. Survey Circ. 726, 155 p. (Gt)

Whitebread, D.H., 1968, Snake Range decollement and related structures in the southern Snake Range, eastern Nevada, 1966 (abs.): Geol. Soc. America Spec. Paper 101, p. 345-346. (G, Tt, S, EN)

Whitebread, D.H., 1970, Geologic map of the Wheeler Peak and Garrison quadrangles, Nevada and Utah: U.S. Geol. Survey Misc. Geol. Inv. Map I-578, Scale 1-48,000. (G, EN)

Whitebread, D.H., Griggs, A.B., Rogers, W.B., and Myhon, J.W., 1962, Preliminary geologic map and sections of the Wheeler Peak quadrangle, White Pine County, Nevada: U.S. Geol. Survey Misc. Field Studies Map MF-244, Scale 1-48,000. (G, EN)

Whitebread, D.H., and Lee, D.E., 1961, Geology of the Mt. Wheeler Mine area, White Pine County, Nevada: U.S. Geol. Survey Prof. Paper 424-C, p. C120-C122. (G, EN)

Whitten, C.A., 1956, Crustal movement in California and Nevada: Am. Geophys. Union Trans., v. 37, no. 4, p. 393-398. (Tt, N)

Wiegand, Jeffrey, 1961, Variation in composition of three granitic stocks associated with ore deposits, Lincoln County, Nevada: M.A. thesis, Columbia Univ., New York. (G, EN)

Wilber, H.T., 1971, Geology of a portion of the Las Vegas Range, Clark County, Nevada: Bachelor's paper, Univ. Illinois, Urbana. (G, Cc, SN)

Wilcox, A.R., and Ganzel, R. (eds.), 1979, Energy and Nevada: Univ. Nevada, Reno, Nevada, 263 p. (Gt, N)

Williams, P.L., 1967, Stratigraphy of the Quichapa Group, southeastern Nevada: Ph.D. dissert., Univ. Washington, Seattle, 139 p.; Dissert. Abs. Internat., sec. B, v. 28/05, p. 2003-B. (G, Li, SN)

Williams, S.A., and Millett, F.B., Jr., 1970, Complex silver ores from Money, Nevada -- A correction: Canadian Min., v. 10, pt. 2, p. 275-277. (G, N)

Wilson, E.C., 1960, Pennsylvanian and Permian paleontology and stratigraphy of Ward Mountain, White Pine County, Nevada: M.A. thesis, Univ. California, Map Scale 1:24,000. (P, G, EN)

Wilson, R.V., and Paul, R.R., 1965, Map of the intrusive rocks in Nevada: Nevada Bur. Mines Map 30. (G, V, N)

Wilson, W.R., 1978, Geology of the Robinson mining district, Nevada: Nevada Bur. Mines Rept. 32, p. 55-61. (G, EN)

Winograd, I.J., and Friedman, I., 1972, Deuterium as a tracer of regional groundwater flow, southern Great Basin, Nevada and California: Geol. Soc. America Bull,. v. 83, p. 3691-3708. (Gc, Fg, H, Gb, N)

Winograd, I.J. and Thordarson, W., 1968, Structural control of groundwater movement in mio-geosynclinal rocks of south-central Nevada: in Eckels, E.C., ed., Nevada Test Site, Geol. Soc. America Mem. 110. (S, H, SN)

Winter, J.K., 1969, Geology of the northern half of the West Range, Lincoln County, Nevada: Bachelor's paper, Univ. Illinois, Urbana. (G, EN)

Winterer, E.L., 1968, Tectonic erosion in the Roberts Mountains, Nevada: Jour. Geol., v. 76, no. 3, p. 347-357. illus. (Tt, CN)

Wire, J.C., 1961, Geology of the Currant Creek district, Nye and White Pine Counties, Nevada: M.A. thesis, Univ. California, Los Angeles, Map Scale 1:24,000. (G, CN)

Wise, D.U., 1963, An outrageous hypothesis for the tectonic pattern of the North American Cordillera: Geol. Soc. America Bull., v. 74, p. 357-362. (Tt, Gb)

Withrow, Carol, 1980a, Computer plotting of drill hole geochemical data: Univ. Utah Research Inst., Earth Sci. Lab. Rept. no. DOE/ID/12079-6; ESL-36. (Wd, Gc)

Withrow, Carol, 1980b, Computer plotting of geochemical data in plan view: Univ. of Utah Research Institute, Earth Science Laboratory, rept, no. DOE/ID/12079-3; ESL-35. (Gc)

Wollenberg, H.A., Radioactivity of Nevada Hot Spring systems: Geophys. Res. Letter, v. 1, no. 8, p. 359-362, illus., (inc. sketch map). (Gt, Gc)

Wollenberg, H.A., 1975, Radioactivity of geothermal systems: Natl. Tech. Inf. Serv., U.S. Dept. Comm., Springfield, Virginia, May 1975, 28 p., ERDA; also United Nations Symposium on the development and use of geothermal resources, abs., no. 2, unpaginated, 1975. (Gt)

Wollenberg, H.A., 1976, Sampling hot springs for radioactive and trace elements: in Geothermal Energy Development, p. 143-164, rept. no. EPA-600/9-76-001, available from U.S. Environ. Protect. Agency, Washington D.C. (Fg, Gc, Gt)

Wollenberg, H.A., Asard, F., Bowman, H., McEvilly, T., Morrison, and Witherspoon, P., 1975, Geothermal energy resource assessment: Lawrence Berkeley Lab. UCID-3762, p. 91. (Gt)

Woodward, L.A., 1962, Structure and stratigraphy of the central northern Egan Range, White Pine County, Nevada; Ph.D. dissert., Univ. Washington, Seattle, 179 p., Map Scale 1:24,000; Dissert. Abs. Internat., v. 23/08, p. 2879. (S, G, EN)

Woodward, L.A., 1963, Late Precambrian metasedimentary rocks of Egan Range, Nevada: Am. Assoc. Petroleum Geol. Bull., v. 47, no. 5, p. 814-822. (Pc, G, EN)

Woodward, L.A., 1964, Structural geology of central northern Egan Range, White Pine County, Nevada: Am. Assoc. Petroleum Geol. Bull., v. 48, no. 1, p. 22-39. (S, G, EN)

Woollard, G.P., 1943, Transcontinental gravitational and magnetic profile of North America and its relation to geologic structure: Geol. Soc. America Bull., v. 54, p. 747. (Gp, Gb, S)

Wright, Lauren, 1976, Late Cenozoic fault patterns and stress fields in the Great Basin and westward displacement of the Sierra Nevada block: Geology, v. 4, p. 489-494. (C, S, Tt, Gb)

Wright, L.A., and Troxel, B.W., 1971, Shallow-fault intrepretation of Basin and Range structure, southwestern Great Basin: in Gravity and tectonics: John Wiley and Sons, New York, p. 397-407. (Tt, S, Gb)

Wright, Phillip M., 1979, Nature and occurrence of geothermal resources: Geothermal Resources Council Short Course no. 8, San Francisco, California, May 8-9, 1979. (Gt)

Wright, P.M., Foley, Duncan, Nichols, C.R., and Grim, P.J., 1978, Western states cooperative direct heat geothermal program of DOE: Geothermal Resources Council Trans., v. 2, p. 739-742. (Gt)

Young, E.J., 1966, Heavy minerals in stream sediments of the Connors Pass quadrangle, White Pine County, Nevada: U.S. Geol. Survey Prof. Paper no. 550-C, p. C108-C112. (G, Gc, H, EN)

Young, J.C., 1959, Structure and stratigraphy in north-central Schell Creek Range, eastern Nevada: Ph.D. dissert., Princeton Univ., Princeton, New Jersey, 256 p., Map Scale 1:17,000; Dissert. Abs. Internat., v. 21/11, p. 3425. (S, G, EN)

Zietz, Isidore, Bateman, P.C., Case, J.E., and others, 1969, Aeromagnetic investigation of crustal structure for a strip across the western United States: Geol. Soc. America Bull., v. 80, no. 9, p. 1703-1714. (Gp, S, Wus)

Zietz, I., Gilbert, F.P., and Kirby, J.R., 1978, Aeromagnetic map of Nevada - color coded intensities: U.S. Geol. Survey Geophys. Inv. Map GP-922. (Gp, N)

Zoback, M.L., and Thompson, G.A., 1970, Basin and Range rifting in northern Nevada: clues from a mid-Miocene rift and its subsequent offsets: Geology, v. 6, p. 111-116. (Tt, Gb, NN)

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