A GEOTHERMAL RESOURCE DATA BASE NEW MEXICO

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DISCLAIMER

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INTRODUCTION

This report provides a compilation of geothermal well and spring information in New Mexico up to 1993. Economically important geothermal direct-use development in New Mexico and the widespread use of personal computers (PC) in recent years attest to the need for an easily used and accessible data base of geothermal data in a digital format suitable for the PC. This report and data base are a part of a larger congressionally-funded national effort to encourage and assist geothermal direct-use. In 1991, the U. S Department of Energy, Geothermal Division (DOE/GD) began a Low-Temperature Geothermal Resources and Technology Transfer Program. Phase 1 of this program includes updating the inventory of wells and springs of ten western states and placing these data into a digital format that is universally accessible to the PC. The Oregon Institute of Technology GeoHeat Center (OIT) administers the program and the University of Utah Earth Sciences and Resources Institute (ESRI) provides technical direction.

Since 1980, New Mexico has had significant direct-use geothermal development. In 1982, one of the nation's larger district heating systems began operation at New Mexico State University. In 1986, a geothermally-heated geothermal greenhouse research and business 'incubator' facility came on line through a combination of private donations and State funds and is operated by the Southwest Technology Development Institute (SWTDI/NMSU), a division of the Engineering College at New Mexico State University (Schoenmackers, 1988). The first client in the NMSU greenhouse now operates the nation's second largest geothermally-heated commercial greenhouse at Radium Springs, New Mexico. Currently, New Mexico has the largest acreage of geothermal greenhouses in the nation with more than 40 acres (161,900 m^2). This acreage is about half of the total greenhouse acreage in New Mexico and represents an estimated capital investment of more than $30 million and the direct creation of nearly 400 jobs.

So far in the 1990's, interest and growth has continued in using geothermal heat in New Mexico. Primary interest is from the agriculture sector, including greenhousing, aquaculture, crop and food processing, and milk and cheese processing. Other interest has included space heating and heated swimming pools. This data base will assist in further direct-use geothermal efforts.

PREVIOUS COMPILATIONS

The first statewide evaluation and compilation of geothermal information for New Mexico was begun in the mid 1960's and resulted in New Mexico Bureau of Mines and Mineral Resources Hydrologic Report 4, 'Catalog of Thermal Waters in New Mexico' (Summers, 1976). Summers (1976) remains the primary source information on New Mexico thermal springs. During the mid 1970's and early 1980's, Federal and State geothermal resource characterization efforts led to additional information collection efforts. Two U. S. Geological Survey (USGS) Circulars provided the initial estimates of resource size and quality (Muffler, 1979; and Reed, 1983). In addition, a cooperative effort between the U. S. Department of Energy (DOE), the National Oceanic and Atmospheric Administration (NOAA), and New Mexico State University resulted in 1:500,000 scale geothermal resource maps (Swanberg, 1980 and Swanberg and Icerman, 1983). Prior to 1983, geothermal data for New Mexico were included in GEOTHERM, a USGS mainframe computer system of geothermal data bases and geothermal evaluation software (Bliss and Rapport, 1983). The USGS discontinued GEOTHERM in 1983. More recently, a relational database system for the PC platform was developed at NMSU for geothermal information covering New Mexico (Witcher and others, 1990). Limited data compilation and new and easier to use relational database software make the 1990 database obsolete.

DATA SOURCES

Major statewide sources of data include Summers (1976), Swanberg (1980), Norman and Bernhardt (1982). A major source of statewide information is contained in the U. S. Geological Survey (USGS) WATSTORE file. WATSTORE has two major databases, the Ground-Water Site Inventory and the Water Quality File. A 1993 commercial version of the WATSTORE Water Quality File on CD ROM was used in this study.

Additional important data for the geothermally significant Jemez Mountains (Valles Caldera) region in north central New Mexico is found in Shevenell and others (1987).

The state geothermal resources maps and the USGS GEOTHERM file were reviewed for data and used to assist in the compilation. However, neither the maps or the GEOTHERM file are primary information sources for the type of data compiled in this study.

Additional information was compiled from published and unpublished site specific geothermal resource investigations at several locations. Other data was compiled from published ground-water studies and government open-file reports. Finally, it should be noted that this study is not an exhaustive compilation of data for geothermal wells and springs in New Mexico. Except for a few sites at high elevations, the only data compiled was for wells and springs with measured discharge temperatures greater than 30 °C. Virtually all wells and springs found at elevations below 5,000 feet (1,524 m) elevation in New Mexico exceed 20 °C.

In addition, sites based upon bottom-hole temperature data are not included in this data base. The 1980 state geothermal map includes bottom-hole temperature data. Also, no heat-flow or temperature-gradient data is included in this compilation. These data sets require analysis and interpretation beyond the scope of this project. The Southwest Technology Development Institute at NMSU has extensive compilations of heat-flow and bottom-temperature data for New Mexico.

DATA FORMAT

Three Excel@ (Microsoft Windows@ software) spreadsheets provided a working medium for data compilation, editing, and sorting. The first spreadsheet (Appendix 1) lists the geothermal sites and provides location information. Location data in many cases is poor quality and may be only accurate to a minute of latitude or longitude. Field experience shows that this is true of some WATSTORE data as well data from other sources. Field checks and determination of UTM coordinates are required to improve the locations at most sites.

The second spreadsheet lists 'complete' chemical analyses for geothermal sites in New Mexico (Appendix 2). Data in the second spreadsheet contains at a minimum a dissolved silica analysis and sufficient major cation (Na, K, Ca, Mg) and major anion (Cl, HCO3, SO4) data to check for analytical charge and mass balance (see Reed and Mariner, 1991). Each analysis for geothermal sites in New Mexico is assigned a unique sample identification if the original data source failed to provide this information. This approach assists in duplicate record checking and provides a foundation to include these data in a relational data base and Geographic Information System (GIS) for New Mexico geothermal information in the future.

The third spreadsheet lists 'partial' chemical analyses (Appendix 3). These data do not satisfy the criteria for the second spreadsheet. Also, the third spreadsheet has an added entry that shows sodium and potassium as a single analysis (Na+K) as is commonly reported in older citations. In general, the third spreadsheet may have lower quality data than those found in the second spreadsheet ('complete analysis'). Caution is advised in applying chemical geothermometers or in assessing potential for corrosion and scaling with the data in the third spreadsheet ('partial analysis'). The same caution applies to using data in the second spreadsheet with significant charge and mass balance errors (greater than 5 or 10 percent).

Except for the GEOTHERM and WATSTORE information, data was manually (keyboard) entered. WATSTORE data was extracted from the CD ROM data base by sequentially retrieving all analytical data for individual sites with measured temperatures greater than 30°C and placing these data in an ASCII master file using software provided by the data vendor. A small FORTRAN program was written and used to read the ASCII master file and retrieve specific analyses and to organize these data into a tabular ASCII file that can be opened by Excel@ and placed directly into the formatted spreadsheets.

OVERVIEW OF THE DATA BASE

The last comprehensive geothermal data compilation in 1980 (state geothermal map - Swanberg, 1980) displayed 312 thermal wells and springs. Many sources shown on the 1980 map are bottom hole temperature (BHT) measured either during geophysical logging of oil and gas exploration wells or from academic heat flow studies. No BHT data are included in this compilation. GEOTHERM lists 65 chemical analysis of New Mexico thermal wells and springs (Reed and others, 1983).

This data base contains 842 chemical analysis for 360 discrete thermal wells and spring discharges. About half of the sites (175 sites) are extracted from WATSTORE. The remaining data are taken from published and unpublished reports.

Figure 1 is a histogram that shows the relative frequency of measured surface discharge temperatures for 308 well and spring sites. Data for high temperature (>150 °C) test wells in the Jemez Mountains (Valles or Baca geothermal system) are excluded from the histogram. A median temperature of about 35 °C is evident. On a percentile basis, measured temperatures above 46 °C score 75 or higher while temperatures above 62 °C score 90 and above. With hot spring data removed, the remaining data for the greater than 62 °C category are from wells in three developing geothermal areas, Lightning Dock, Radium Springs, the Las Cruces East Mesa. Many, if not most, data in the 30 to 40 °C bracket are from deep wells with conductive thermal regimes (normal or slightly above regional temperature gradient averages). It is clear that a developer will need to drill new wells in areas with convective geothermal resources in order to obtain resource temperatures over 45 °C. On the other hand, if temperatures below 45 °C are required, there are many existing sites to evaluate.

Figure 2 is a map of New Mexico which summarizes the locations of thermal (mostly >30 °C) wells and springs. Several areas are notable when Figure 2 is compared to the 1980 and 1983 compilations (Swanberg, 1980 and Swanberg and Icerman, 1983). A new region with low-temperature potential is indicated in the Pecos Valley in southeastern New Mexico in Chaves and Eddy County. Numerous wells between 26 and 29 °C occur in the area of Eddy and Chaves Counties. Two wells, 30 °C or warmer, are shown in Figure 2. Aquaculture is one possible use for the low-grade thermal waters. Recent analysis of oil-and-gas well, temperature data and thermal conductivity measurement of subsurface units across the region by Reiter and Jordan (1995) suggest broad, upward cross-formational flow from depths of 3,000 to 5,000 feet (914 to 1,524 m) beneath the Pecos Valley.

An extensive north-south alignment of saline, travertine-depositing springs in remote western Valencia County are not included in this compilation. However, the springs are shown on the 1980 and 1983 compilations as the Laguna springs and seeps. All of the springs discharge less than 30 °C temperature fluids. Goff and others (1983) discuss these springs in some detail and use fluid chemistry to identify spring origins and hydrogeology.

Also, another new region is compiled in central Cibola County on the Acoma Pueblo lands. Kues (1989) briefly discusses many of the Acoma thermal wells.

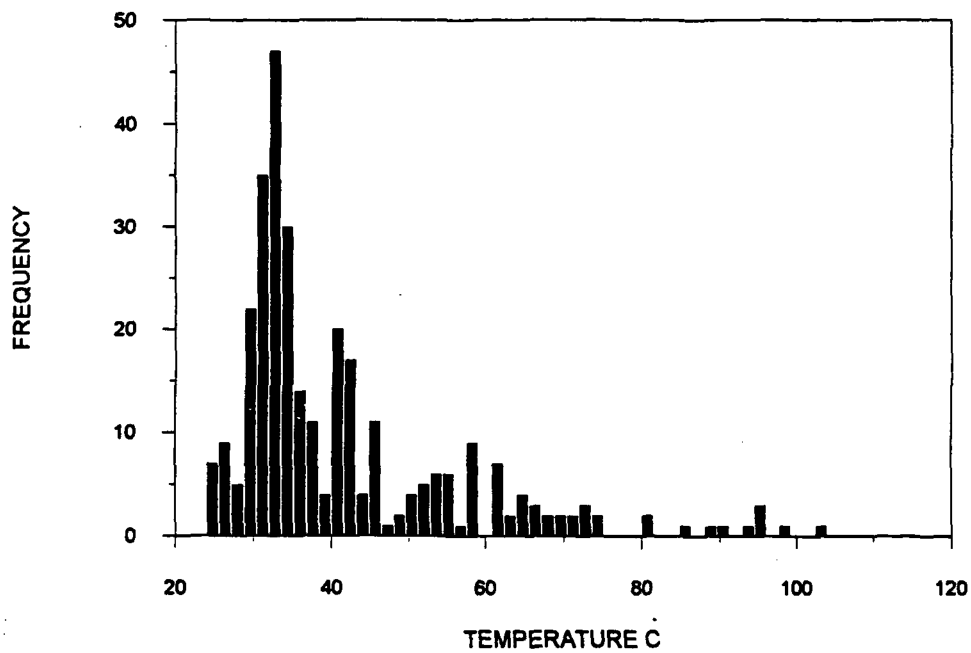

Figure 1 Histogram of well and spring discharge temperatures.

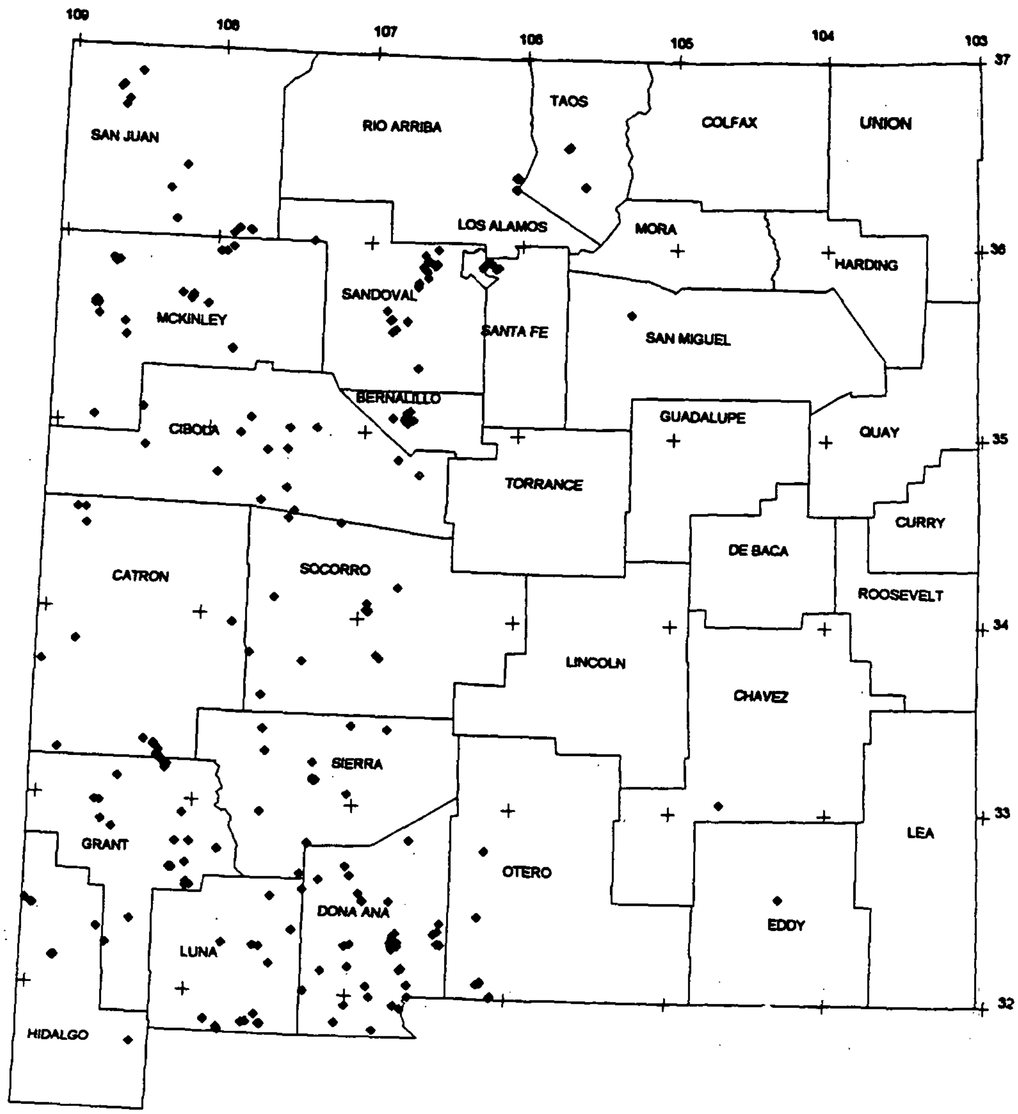

Figure 2 Generalized map of thermal (>30 C wells and springs. Symbols are thermal well and spring sites.

DISCUSSION OF THE RESOURCE BASE

The geothermal potential varies considerably from one area of New Mexico to the next. Regionally, the variation in subsurface temperatures is largely the result of physiographic or tectonic diversity. Physiographic provinces generally have unique geologic histories, structures, topography, hydrology, climate, and rocks. New Mexico includes four major physiographic provinces (Fig. 3). Provinces include the Southern Basin and Range (SBRP), Colorado Plateau (CP) , Southern Rocky Mountains (SRMP), and the Great Plains (GPP). Three subdivisions form the Basin and Range: 1) the Sacramento section; 2) the Mexican Highland section; 3) the Datil-Mogollon section. The eastern and northern portions of the Mexican Highland section of the SBRP and the SRMP are frequently referred to as the Rio Grande rift (RGR) 'tectonic province.'

High-to-moderate heat flow (>80 mWm^{-2}), widely-scattered hot springs and thermal wells, Quaternary volcanism (mostly basalt), recurrent Pleistocene-to-Recent and predominantly-normal faulting indicates, by rank of overall enhanced crustal heat, that the SBRP, SRMP, and CP have elevated subsurface temperatures and significant geothermal resource potential (Swanberg, 1980; Swanberg, 1983; Summers, 1976; Morgan and others, 1986; Reiter and others, 1975, 1978, and 1986; Decker and Smithson, 1975; Reiter and Barrol, 1990; Reiter and Minier, 1989). Crustal thinning in the SBRP and Rio Grande rift has resulted in crustal thicknesses as thin as 26 km (Sinno and others, 1986).

Cenozoic Geology

Cenozoic geology in the geothermally-important, western two-thirds of New Mexico (SBRP, SRMP, RGR, and CP) is dominated by three major tectonic episodes: 1) the Laramide orogeny; 2) a mid-Tertiary extensional and volcanic event; 3) a late Tertiary episode of rifting.

Laramide (Late Cretaceous to Eocene) deformation includes several large north- and west-northwest- trending, basement involved uplifted terranes that exhibit one to five kilometers or more of structural relief. These 'basement-cored' uplifts are frequently large-scale asymmetric homoclines with high-angle reverse faults and drape folds (monoclines) on vergent boundaries. Significant strike-slip movement occurred in other areas during the Laramide and resulted

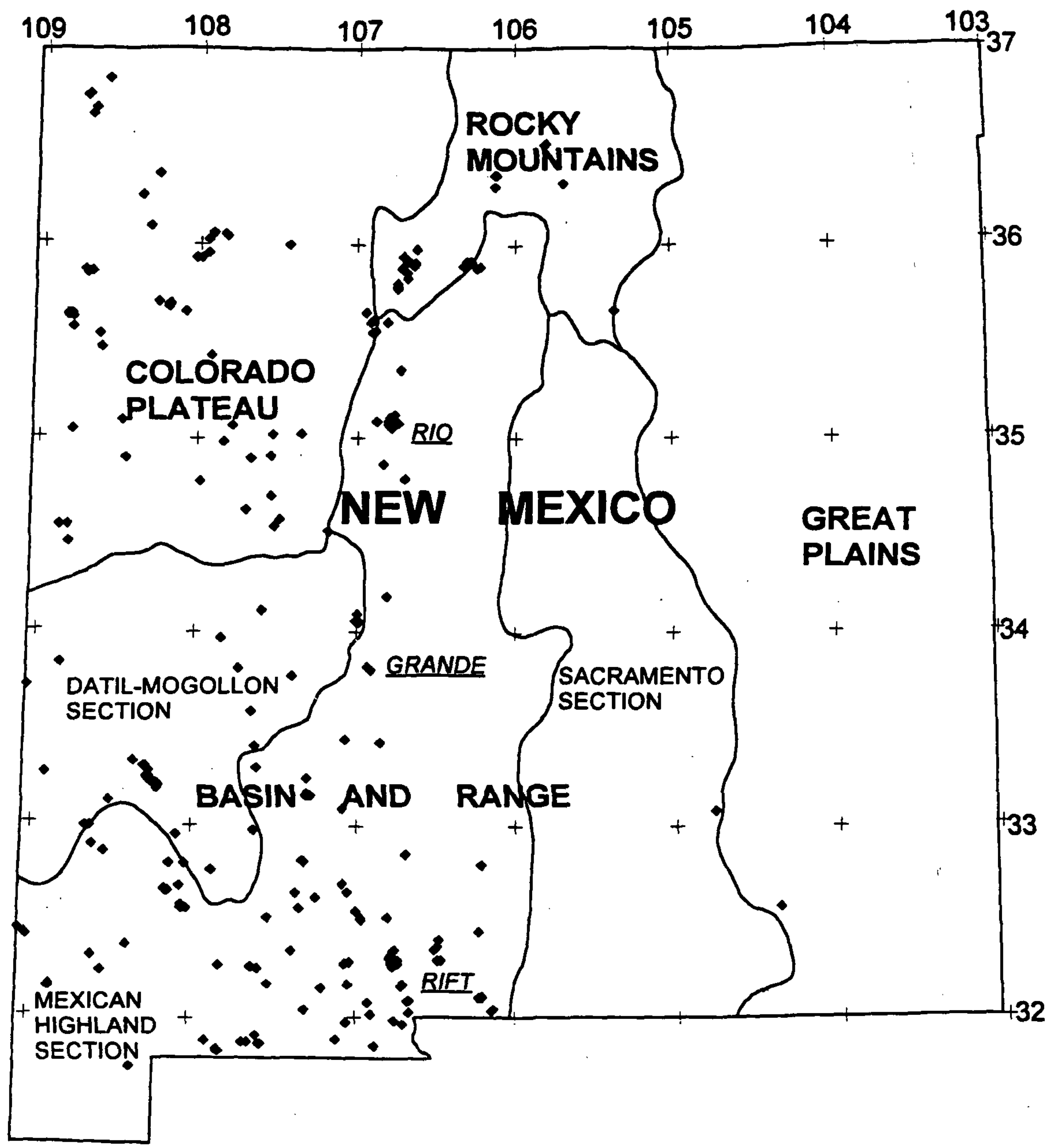

Figure 3 Physiographic provinces of New Mexico. Symbols are thermal well and spring sites.

in large symmetric and asymmetric transpressional structures (flower structures) which also involved basement rocks. Tertiary subcrops over these areas consist of Precambrian crystalline rocks and Paleozoic carbonate rocks. Important fine-grained Mesozoic aquitards are stripped away. Virtually all convective geothermal systems in New Mexico, including the Jemez systems, occur over Laramide structural highs (Witcher, 1987 and 1988).

During the mid-Tertiary much of the Datil-Mogollon and Mexican Highland sections of the SBRP were covered by a blanket of predominantly volcaniclastic sediments and minor volcanic flows averaging one kilometer thickness (Cather and others, 1994). Flows locally dominate near volcanic centers. Regionally extensive volcaniclastic blankets provide important aquitards in the region. Locally, volcanic piles several kilometers thick occur, especially in association with silicic cauldron complexes. Many of the cauldron complexes were also the locus of intense extension (up to 100 percent) along systems of close-spaced, domino-style normal faults (Chamberlin and Osburn, 1986).

Large, widely-spaced normal faults largely blocked out present-day topography from 12 to 9 Ma over the SBRP and RGR in New Mexico up until 4 to 6 Ma (Seager and others, 1984). This late Tertiary rifting continues at lower rates today and has left an en echelon series of north-trending half grabens with extension amounting to no more than 10 or 15 percent. Many of the best geothermal systems in New Mexico occur where late Tertiary horsts intersect older highly-extended cauldron complexes and vergent boundaries of Laramide uplifts (Witcher, 1988). Late Tertiary horsts are frequently stripped of mid-Tertiary volcaniclastic aquitards to expose underlying fractured terranes.

Convective Resources

Occurrence Models

Several models for convective geothermal resource occurrence have been proposed the Rio Grande rift and SBRP. Chapin and others (1978), Elston (1981), Elston and others (1983) show that several systems occur at the intersection highly-faulted ring-fracture zones of mid-Tertiary cauldrons, regional lineaments, and Pleistocene faults. Elston and others (1983), Jiracek and Smith (1976), and Swanberg (1975) observe that late Tertiary fault zones apparently control other geothermal systems.

A model of forced convection through Tertiary basin-fill sediments was presented by Harder others (1980) and Morgan and others (1981). This model places geothermal discharges at surface hydrologic outlets and down-gradient structural boundaries of late Tertiary rift basins. This model is commonly referred as the 'constriction model.' Many systems in the Rio Grande rift appear to occur at basin 'constrictions' and the model is commonly cited in the literature to explain the Rio Grande rift geothermal resource base and associated thermal regimes. Actually, the model poorly predicts discharges on a local scale and fails to explain the predominance of system upflow zones in fractured bedrock. In fact, vertical flow across major regional aquitards, followed by horizontal flow across major fault zones, which usually act as flow-regime boundaries, is required to explain many geothermal system locations relative to a 'constriction model.'

Another model which allows forced, free, or a combination of convective processes is proposed by Witcher (1988). With this model, convective geothermal systems occur in fractured bedrock (structurally-high terrane) at low elevation within horst blocks. Fluid circulation depths are not restricted by graben structural relief and the systems are not confined to areas adjacent to horst-bounding faults, as predicted by a constriction model. A regional view of New Mexico convective occurrences indicates that virtually all known systems occur where aquitards or confining units have been stripped by faulting or by erosion from basement terranes which contain significant vertical fracture permeability. A variety of structures, ranging from faults, folds, and fractured stocks and dikes can provide local vertical permeability and reservoirs. This model is referred to as a 'hydrogeologic window model.'

Conductive Resources

Basin and Range and Rio Grande Rift

Half grabens, forming the southern Basin and Range and Rio Grande rift, may contain several thousand of feet of Cenozoic sediments in various stages of diagenesis, compositional and grain-size ranges, and degrees of structural deformation. Because of the region's high heat flow and general tendency of Cenozoic basin fills to have significant fine-grained lithologies with low thermal conductivity and low vertical permeability, deep-seated and permeable sediments, especially fractured and faulted older basin fill units, provide potential for large-volume conductive geothermal resources. In general, the cost of deep wells is a drawback to the use of the resource. However, existing deep water supply wells and irrigation wells have potential for use.

Colorado Plateau

The eastern Colorado Plateau, including the San Juan Basin and the Mogollon Slope, has generally high flow (Minier and Reiter, 1991, and Reiter and Mansure, 1983). Locally, heat flow can be as high as that observed in the Rio Grande rift and southern Basin and Range. Significant thicknesses of fine-grained Cenozoic and Mesozoic sediments are preserved over permeable lower Mesozoic redbed sands and Paleozoic redbed and carbonate aquifers. Because the bulk of the Cenozoic and Mesozoic fine-grained sequences act as aquitards and have low thermal conductivity, they act as thermal blankets to create a deep-seated conductive geothermal resource. Much of this conductive resource is under sufficient artesian pressure to allow flowing wells to be drilled and developed. A drawback to this resource, however, is fluids with high salinity, few geological alternatives for fluid injection, and the general remoteness of this region of New Mexico. Much of this region is covered by the Navajo, Zuni, Acoma, Laguna, and Jicarilla Reservations.

PRIORITY AREAS AND AREAS WITH NEAR-TERM UTILIZATION POTENTIAL

Several areas in New Mexico are identified as priority sites for near-term, low-to-intermediate temperature geothermal resource utilization. Identified areas should receive additional site specific geologic and feasibility studies. Selection is based upon several criteria. Potential quality of the resource is important. The resource quality is an engineering economics and feasibility problem as much as it is a geologic problem. Higher temperatures and highly productive shallow wells are most favorable. However, many other factors are required for development success. Resource co-location with users and other geographic attributes specific to particular direct-use applications are crucial.

Space heating and district heating are most feasible in areas where the resource is co-located with population and facilities with large heating loads. Geothermal heating has potential to be incorporated without retrofit of existing heating systems in some areas of New Mexico that are experiencing rapid growth.

Geothermal greenhouse heating requires a favorable land status to include costs and ownership, availability of nearby fresh water, a labor force, good transportation infrastructure or nearness to markets. Almost all of New Mexico has the sunshine and climate that growers need. Availability and cost of water rights may be an issue in some areas because New Mexico is an arid region.

While aquaculture is less labor intensive than greenhousing, a favorable land status and transportation or nearness to markets is necessary. Availability and cost of water rights may be an issue in some areas.

New Mexico has a rapidly growing dairy industry. Milk and cheese processing are very energy intensive. A high quality geothermal resource that is easily accessible and near dairies may have much potential energy savings and economic benefits. Other users include chile, onion, and other agricultural processors. Good transportation and year around product availability are desired.

Low-to-intermediate temperature geothermal direct-use utilization has much potential to enhance or create economic opportunities. This makes geothermal energy, a relatively unknown alternative to conventional fossil fuels, much more marketable. Most of the priority areas selected in New Mexico have geothermal resources co-located in areas with many favorable geographic and demographic attributes for specific end users. Most importantly, all of the priority areas have on-going private sector, Indian tribal, and/or municipal development and exploration activities or serious interest in development. Success in these areas will no doubt spawn additional interest and economic development centered on geothermal energy in New Mexico.

Selected areas cover a broad range of representative geologic and hydrologic settings favorable for economic geothermal resources in New Mexico. Areas are located in both southern and northern New Mexico. Figure 4 shows the locations of the areas to be discussed in this report.

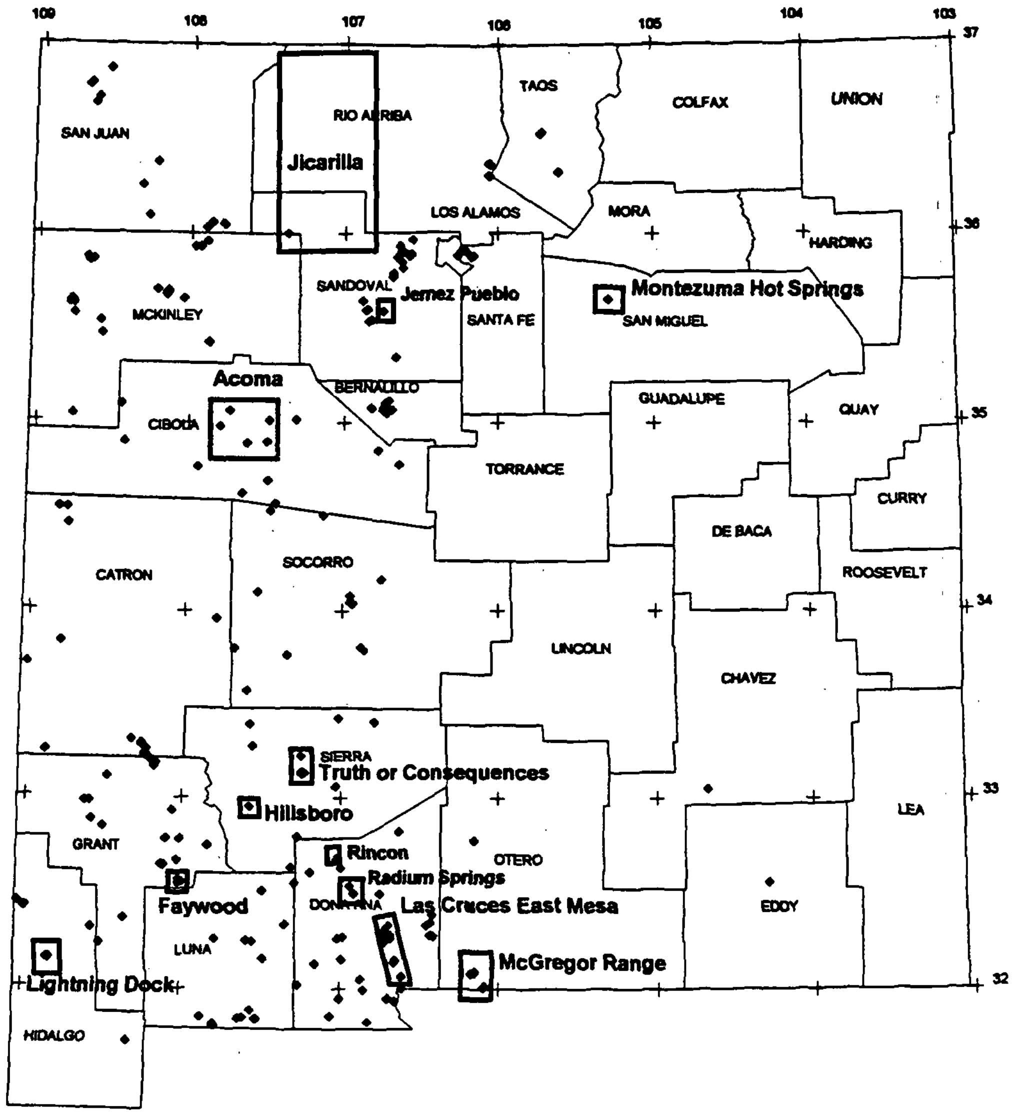

Figure 4 Map with general locations of priority study areas. Symbols are thermal well and spring sites.

Rincon

The Rincon geothermal system is a blind system (no surface hot springs). However, Pleistocene opal beds (fossil siliceous hot spring (?) deposits) are interbedded at this site in ancestral Rio Grande fluvial deposits exposed in escarpments adjacent to the present-day downcut Rio Grande floodplain.

A recently drilled continuous-core (HQ) borehole to 1,218 feet (371 m) at the site indicates a shallow highly-fractured reservoir from 300 to 600 feet (91 to 183 m) depth with a temperature of 85 to 90 °C in pervasively silicified ancestral Rio Grande fluvial deposits (Witcher, in preparation). The top of the reservoir is roughly the same level as the present day water table in the Rio Grande flood plain. The silicified zone is accompanied by adularia and disseminated sulfide mineralization. This zone is a part of the upflow zone for a much hotter and deeper-seated reservoir located in a fault zone dipping east beneath the core hole total depth. Between 600 and 1,218 feet (183 to 371 m), the core hole encountered a relatively unaltered clayey siltstone which acts as an aquitard or aquaclude. Temperature gradients are 250 °C/km in the lower 200 feet (61 m) of the hole. The bottom hole temperature is 100 °C. Geothermometer estimates indicate reservoir temperatures in the fault zone between 120 and 175 °C. The core hole was funded by the State of New Mexico Legislature.

The geothermal area is bounded on the south by Interstate 25 and on the east by an Atchison, Topeka and Santa Fe rail about 25 miles (40 km) north of Las Cruces in southern New Mexico. This area is an important agricultural area along the Rio Grande. The town of Hatch is located 5 miles (8 km) west of the site and is the locus of chile growers. The area is well known for the quality of chile produced. Large dairies are located a few miles west of Hatch. Fresh water is available within one to two kilometers of the Rincon site. Political support for geothermal development at Rincon includes the town of Hatch, the City of Las Cruces, Dona Ana County, and the State of New Mexico.

Reservoir production rates have not been determined at the site and some infrastructure work is needed to include land leveling. The land status is Federal Bureau of Land Management (BLM). Development will require a surface use license and such a license could be the first granted by the BLM for geothermal direct-use. Potential geothermal uses at this site include greenhouses, milk and cheese processing, chile processing, refrigerated warehousing, and binary electrical power. To date, exploration has included a slim-hole continuous core hole, 4 shallow temperature gradient holes (Witcher, 1991), a radon soil-gas survey (Witcher, 1991), a detailed SP survey (Ross and Witcher 1992).

Completion of geologic mapping at 1:6,000 scale and study of the core is needed. A shallow (600 feet or 183 m maximum) production hole is required to begin geothermal development at this site. Also, re-entering the core hole with an NQ drill string (the HQ string is currently in the hole) will determine deeper production and temperatures. Preliminary feasibility studies for direct use application have been performed. Detailed feasibility, production drilling, and infrastructure work is required for geothermal utilization at Rincon.

The Rincon resource has very high priority because it provides a case study for new exploration strategies and geologic occurrence models for 'blind' resources in the Rio Grande rift and southern Basin and Range capable of producing intermediate-temperature fluids for higher-end direct use and binary power production.

Truth or Consequences (T or C)

The town of Truth or Consequences (T or C) was formerly called Hot Springs before being renamed after a 1950's television game show as a part of promotional effort. T or C is a retirement and resort town of about 5,000 located along the Rio Grande near Elephant Butte Reservoir, one of the largest manmade lakes in the Southwest. Numerous shallow hot artesian wells exist in the downtown area of T or C. These wells have been used for most of this century in health spas. Generally, temperatures range from 40 to 43.3 °C. The aggregate flow from this system is estimated at 1,314 acre/ft per year (1.6×10^6 m^3). All of the wells have high-priority water rights and are a part of one of the first State Engineer declared ground-water basins in New Mexico.

Small-scale space heating is done at the Geronimo Springs Museum and the Carre Tinglely veterans center and in the spas around town. In recent years, a citizens group has been interested in using geothermal heat in a heated municipal swimming pool. One of the drawbacks to geothermal development at T or C has centered on the reluctance of spa owners to support additional geothermal use in the downtown area.

A variety of evidence suggests that a larger and hotter geothermal system may exist outside of town and away from the Rio Grande in the vicinity of the

Mud Springs Mountains. The currently known geothermal area probably represents outflow that has mixed with cold shallow ground water that is associated with the Rio Grande. Beds of opal (fossil hot spring (?) deposits) occur near the top of Pleistocene ancestral Rio Grande fluvial deposits. One bed is exposed in a road cut along I-25. Some manganese mineralization also occurs in nearby fluvial sand deposits. Late Pleistocene faults occur near the mineralized area. However, the most important structures are Laramide (Late Cretaceous to early Eocene) reverse faults that extend from T or C westward along the southwest margin of the Mud Springs Mountains. Such structures appear to provide first-order structure and deep plumbing for geothermal systems at Rincon, Radium Springs, Derry Warm Springs, and San Diego Mountain further south along the Rio Grande.

Some exploration has been done in the area including electrical resistivity (Jiracek and Mahoney (1981), heat flow studies (Sanford and others, 1979), reconnaissance geologic mapping in the Mud Springs Mountains and hydrogeologic evaluation (Wells and Granzow, 1981). Reported heat-flow measurements are insufficient to shed much information on the system as they are located far from the noted mineralization and probable structural control. The resistivity surveys map areas of low resistivity and steep resistivity gradients in the area of interest.

A hotter geothermal resource located north and west of T or C has potential for space heating, district heating, geothermal greenhousing and aquaculture. A 'phase 1' exploration effort is required to identify and confirm a probable system outside of downtown T or C. This effort should be concentrated near mineralized Pleistocene sediments of the ancestral Rio Grande. Detailed mapping (1:12,000 scale) of Quaternary geology and bedrock geology at the southeastern end of the Mud Springs Mountains should be performed. A thorough hydrochemical study of the known system in downtown T or C would be useful to evaluate mixing and probable sources of the water. Radon soil-gas, soil mercury, and SP surveys may identify potential upflow zones for shallow temperature gradient evaluation. If a system is found, sufficient local support would likely be generated to pursue use in the near future. In any case, more will be learned on the nature of the known resource in T or C and how to manage the resource so that current users interests are better insured in the future.

Las Cruces East Mesa/Tortugas Mountain

One of the largest 'convective' low-temperature geothermal systems in the United States occurs east of Las Cruces and southward along I-10 and I-25 nearly to the Texas line. This system, as outlined by more than 70 shallow temperature-gradient holes, is nearly 20 miles (32 km) long and 2 to 3 miles (3.2 to 4.8 km) wide over a buried horst block (Lohse and Icerman, 1982). Reservoir temperatures range from 40 to 70 °C. Production wells at New Mexico State University, and various industry exploration wells indicates a highly productive fractured reservoir system in Paleozoic carbonate rocks, Tertiary volcanic rocks, and older Tertiary basin-fill sediments. Production in excess of 1,000 gpm (63 L/s) has been demonstrated by NMSU production well PG-4 and inferred by the Chaffee geothermal test wells (Cunniff and Chintawongvanich, 1985). Available heat-flow data indicates that the total heat loss of the system exceeds 50 MWt with a natural mass flux exceeding 15,000 acre/ft per year (18×10^6 m^3) of 70 °C water (Witcher and Schoenmackers, 1990).

Current use of geothermal includes a district heating system for the New Mexico State University campus, a research and business start-up (incubator) greenhouse and aquaculture facility operated by SWDTI at NMSU, and a commercial 2 acre (8,093 m^2) greenhouse operated by J & K Growers. J & K Growers leased the SWTDI/NMSU facility to startup their business prior to moving to their present location. J & K Growers have increased the size of their greenhouse business annually.

Near-term geothermal utilization includes more geothermally-heated commercial greenhouses, aquaculture, and space heating of large buildings to include schools, hotels, and businesses. District residential heating is believed to be only marginally feasible due to generally mild winters. Access to the area is good and much of the resource is adjacent to the city or within the city limits.

The U. S. Bureau of Land Management has recently designated more than 40 km^2 of the area as a KGRA. This action discourages direct-use operators by adding additional time, paper work, and risk to business planning and execution.

A major attribute of this resource is co-location with one of the fastest growing medium-sized cities in the United States. In fact, the city of Las Cruces is growing in the direction of the resource at a rapid rate. Definitive integration of geothermal energy into city and public school planning is needed. Some feasibility studies were conducted in cooperation with the city and SWTDI/NMSU more than 10 years ago for existing large buildings near, but outside, the resource area (Icerman and Whittier, 1983; and CH^{2}MHILL, 1984). These studies need to be updated and applied to plans and projections of growth over the resource area proper. A significant cost-shared drilling or a demonstration project in the commercial or local government sectors and outside of the NMSU area is probably needed to fully realize the potential for Las Cruces. City and county officials are aware of geothermal energy and have been supportive of SWTDI/NMSU initiatives at Rincon and Radium Springs. However, momentum and general awareness needs to be fostered for potential of the Las Cruces East Mesa geothermal resource.

Montezuma Hot Springs/United World College

The Armand Hammer United World College at Montezuma Hot Springs near Las Vegas, New Mexico is interested in using geothermal energy for space heating the college in order to replace a coal-fired boiler. Sandia National Laboratory, Los Alamos National Laboratory and SWTDI/NMSU have teamed up to provide UWC with geotechnical and engineering services.

Initial 'phase 1' work is needed to determine the production potential of the resource and to determine the influence that a production well will have on the long-term flow of Montezuma Hot Springs. Resource quality and degradation potential on natural spring flow rate will dictate the geothermal heating approach. The least expensive alternatives are direct-use space heating or the use of ground water-coupled heat pumps.

The gross structural control for the Montezuma Hot Springs is a southern Rocky Mountain 'front range' structure consisting of a Laramide reverse fault and attendant fold structure that forms the vergent margin the basement-cored Sangre De Cristo uplift (Baltz, 1972; and Bejnar and Bejnar, 1979). This structure and others of similar nature continue northward into Colorado. It is possible that additional geothermal systems occur elsewhere on this trend, especially in the Mora, New Mexico area north of Las Vegas. It is also possible that Montezuma Hot Springs proper represents a larger local geothermal system that could provide geothermal for more users than UWC.

SWTDI/NMSU was recently awarded a contract from the State of New Mexico Department of Economic Development that will be used to provide a state match for a 'phase 1' evaluation of the resource at Montezuma Hot Springs. Sandia and Los Alamos labs have authorization from the U. S. DOE to apply federal funds as a match in the labs joint efforts in the 'phase 1' work.

A successful geothermal heating system at UWC will provide a high visibility demonstration of geothermal technology in northern New Mexico. Also, if the resource base in the area is determined to be larger, significant economic benefits will accrue to this economically depressed region of New Mexico.

Radium Springs

Radium Springs is the site of the second largest geothermally-heated greenhouse in the United States at 9.5 acres (38,440 m^2). At the present time, construction is proceeding on two additional acres (8,000 m^2) and land is being prepared for 4 more acres (16,000 m^2) of greenhouse. Prior to building the facility at Radium Springs, Alexander Masson of Lindeville, Kansas leased space in the SWTDI/NMSU greenhouse facility at Las Cruces in order to assist with business startup in New Mexico.

While the Masson greenhouse at Radium Springs is on private land, most of the area is either a part of the Radium Springs KGRA or the NMSU Research Ranch. The extreme southern and northern areas are located adjacent to fresh water that occurs in Rio Grande flood plain alluvial deposits.

The geothermal resource in the area is extensive across an area 3 miles (4.8 km) wide by 10 miles (16 km) in length, extending from Radium Springs on the south to San Diego Mountain on the north (Witcher and Schoenmackers, 1990). Deep drilling (8,000 to 9,000 feet or 2,438 to 2,743 m) by Hunt Energy indicates a deep reservoir in Paleozoic carbonate and Precambrian granite. Temperatures in the deep reservoir are not known, but they are probably between 100 and 150°C. Several shallow and isolated reservoirs or upflow zones in fractured rhyolite dikes and plugs and fault zones provide discharge to the near surface from the deep system. With wells less than 250 feet (76 m) deep, the Masson greenhouse taps 65 to 70 °C water that is contained in a large rhyolite dike.

Because of the limited extent of the upflow vertical permeability, nearness to the Rio Grande, and increasing geothermal production, studies are needed to detail shallow reservoir interaction with the Rio Grande and coupling of production and injection. These are potential problems that greenhouse operators, with lay knowledge of geology and hydrogeology, have trouble understanding and are generally not receptive to spending money for monitoring and evaluation. This attitude is probably universal in early development experience, even among engineers, geologists, and managers, as experience in over development of ground water in the arid West demonstrates. With direct-use geothermal there are few case studies that directly address these types of sustained production problems. A large geothermally-heated commercial greenhouse is a significant investment and provides much economic benefits through jobs, taxes, and local purchases. Cost-shared private and government funded studies may be a way to quantify and understand the best way to proceed with development and monitor a low-temperature resource that is palatable to pioneer operators in the current early stages of low-temperature geothermal development in the United States.

Jemez Pueblo

A poorly explored resource occurs within 1.5 miles (2.4 km) of the Jemez Pueblo in northcentral New Mexico. This resource represents a distal discharge from the outflow plume of the high-temperature Baca geothermal system in the Jemez Mountains (Witcher and others, 1992). Reconnaissance exploration by SWTDI/NMSU includes geologic mapping, geochemistry, a detailed gravity profile, and one mile (1.6 km) of shallow seismic reflection survey in two profiles, and a State Legislature funded shallow exploratory well (Witcher, 1988, 1990, and 1991). This well produces a 250 gpm (15.8 L/s) artesian flow of 57.8 °C water with 3,366 mg/L TDS. Fresh water is co-located with this shallow resource.

Tribal officials are very interested in using the geothermal resource as a spring board for much needed economic development to provide income and jobs for the Jemez People. The resource is also located near the Pueblo and it may be feasible to economically provide space heating. Potential uses include geothermal greenhousing, a spa/resort, geothermal aquaculture, and district heating.

Drawbacks include slow tribal decision making which results from frequent change over in tribal leadership. Also, resource utilization will require suitable heat exchangers and materials to control corrosion.

SWTDI/NMSU and pueblo officials are currently discussing approaches for detailed feasibility and action/business plans for direct-use geothermal utilization as a next step toward the eventual use of the resource.

Jicarilla Apache Reservation

The Jicarilla Apache are currently working with the NMSU Agriculture College on an Agricultural Sciences Center in northern New Mexico and to economically develop tribal lands. The Jicarilla Apache and the NMSU Agriculture College have invited SWTDI/NMSU to participate in evaluation of the geothermal resource base in this region. In June 1995, the Jicarilla leadership passed a resolution to begin an assessment of the geothermal resources in the region.

The Jicarilla Apache have significant oil and gas production on the southern portion of the reservation. This area is in the eastern portion of the San Juan Basin which has abnormally high heat flow for the Colorado Plateau (Minier and Reiter, 1991, and Reiter and Mansure, 1983). Heat flow is similar to the Rio Grande rift and southern Basin and Range provinces. Many petroleum wells have encountered hot saline water ranging from 50 to 110 °C, indicating a significant deep-seated conductive geothermal resource. Currently, the petroleum industry disposes much of this water in injection wells.

The northern portion of the Jicarilla Apache reservation is bounded on the north by Colorado. The area also is home to most of the tribe. Tribal headquarters are in Dulce which has harsh winters due to its elevation. The area is astride the Archuleta Arch, a northwest trending structure extending northward into Colorado. Several important geothermal occurrences exist along this trend in Colorado, including Pagosa Hot Springs. Numerous Tertiary dikes in the Dulce area may provide vertical permeability for upflow of deep-seated conductive thermal waters.

Potential uses may include geothermal space heating, geothermal greenhousing, aquaculture, and oil field cleanup and disposal with geothermal artificial wetlands.

McGregor Range, New Mexico (Ft Bliss)

An area covering more than 40 km^2 with abnormally high temperature gradients occurs just north of the New Mexico and Texas boundary within the McGregor Range military reservation (Henry and Gluck, 1981; and Taylor, 1981). Ft Bliss (Army), in conjunction with SWTDI/NMSU and the University of Texas at El Paso (UTEP), is currently investigating the resource potential in this area to determine if geothermal can lower energy costs for Army facilities in the region.

Hillsboro Warm Springs

Hillsboro is a small community west of Truth or Consequences in the foothills of the Black Range. Ranching, mining, and tourism provide an economic base for the area. About 3 miles (4.8 km) north of the community, a group of thermal springs occur on private land. Temperature-gradient/heat-flow studies (Files, SWTDI), geothermometry (Swanberg, 1980 and 1984), and preliminary SP studies (Ross and Witcher, in progress) indicate potential for an intermediate temperature (>90 °C) resource at shallow depths. Potential use of a resource in this area may include minerals extraction, greenhousing, small-scale binary electrical power, and district heating. An important porphyry copper deposit occurs at Copper Flat about 2 miles (3.2 km) east of the thermal springs (Dunn, 1982).

Acoma

An potentially important conductive geothermal resource occurs in the San Andres limestone along Interstate 40 about 10 miles (16 km) east of Grants on the Acoma Reservation. Test drilling by the U. S. Geological Survey Water Resources Division (USGS-WRD) shows that flowing artesian thermal wells may be developed in this area (Kues, 1989; White and Kelley, 1980; and Baldwin and Anderholm, 1992). Because this area is also in the heart of the Grants uranium belt, potential uses of geothermal may include greenhousing and algae culture which produces crops suitable for mine reclamation and waste-water cleanup. Small-scale space and district heating is also possible in the near-term, considering the areas local climate and concentration of rural population along the Interstate.

Faywood Hot Springs

Faywood Hot Springs has recently been sold by Phelps Dodge, a major mining company, to a private individual, opening the way for possible small-scale commercial geothermal utilization. The area is well situated with respect to highway transportation.

Lightning Dock

The Lightning Dock geothermal system is certainly a high priority area as past performance in geothermal development will attest. This area currently has the largest geothermally-heated greenhouse complex in the nation at more than 30 acres (121,000 m^2). Burgett Geothermal Greenhouses grow roses that are marketed throughout the Southwest and the rest of the country. From a hydrogeologic standpoint, it is unknown how current or future use will affect sustainable resource use.

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APPENDIX 1

GEOTHERMAL SITES AND LOCATION DATA TABLES

NOTES:

SITE ID	geothermal site number
NAME	well or spring name
W/S	well - w / spring - s
COUNTY	county name
DEPTH	well depth (meters)
TEMP	temperature °C
LATITUDE	degrees
LONGITUDE	degrees
QUAD	quadrant of state (see Appendix 6 for description)
TWN	township (see Appendix 6 for description)
RNG	range (see Appendix 6 for description)
SEC	section (see Appendix 6 for description)
QTR	section quarters (see Appendix 6 for description)

SITE ID	NAME	W/S	COUNTY	DEPTH m	TEMP C	LATITUDE	LONGITUDE	QUAD	TWN	RNG	SEC	QTR
BE1	well	w	Bernalillo	362.1	40.5	35.0797	106.7211	2	10	2	22	143
BE2	well	w	Bernalillo	371.9	34.5	35.0786	106.7319	2	10	2	21	412
BE3	well	w	Bernalillo	373.1	33	35.0803	106.8253	2	10	1	22	322
BE4	West Mesa #1	w	Bernalillo		32.2	35.0750	106.7367					
BE5	West Mesa #4	w	Bernalillo		32.1	35.0800	106.7233					
BE6	well	w	Bernalillo	387.4	32	35.0717	106.6894	2	10	2	25	111
BE7	Don #1	w	Bernalillo	490	31.4	35.0683	106.7517					
BE8	well	w	Bernalillo	359.7	31	35.0722	106.7414	2	10	2	21	343
BE9	West Mesa #2	w	Bernalillo		30.6	35.0850	106.7317					
BE10	well	w	Bernalillo		30	35.0522	106.7261	2	10	2	33	240
BE11	well	w	Bernalillo		30	35.0814	106.7483	2	10	2	28	212
BE12	well	w	Bernalillo		30	35.0853	106.7236	2	10	3	21	213
BE13	College #2	w	Bernalillo	480.1	30	35.1033	106.7358					
BE14	well	w	Bernalillo		29.0	35.1183	106.7100	2	10	2	15	
CA1	hot spring	s	Catron		64.8	33.2333	108.2367	3	12	14	24	44
CA2	hot spring	s	Catron		60.6	33.2333	108.2417	3	12	14	24	411
CA3	Lower Frisco Hot Spring	s	Catron		46.11	33.2450	108.8817	3	12	20	23	12
CA4	Lower Frisco Hot Spring	s	Catron		43.3	33.2450	108.8817	3	12	20	23	32
CA5	Lower Frisco Hot Spring	s	Catron		43	33.2447	108.8811	3	12	20	23	321
CA6	Lower Frisco Hot Spring	s	Catron		40.0	33.2467	108.8783	3	12	20	23	14
CA7	Upper Frisco Hot Spring	s	Catron		36.5	33.8314	108.7994	3	5	19	35	132
CA8	Gila Middle Fork Hot Spring	s	Catron		36.0	33.2900	108.2650	3	11	14	34	24
CA9	Lower Frisco Hot Spring	s	Catron		35	33.2447	108.8811	3	12	20	23	321
CA10	Pueblo Windmill	w	Catron	320	33.8	34.5389	108.7772	1	4	19	25	414
CA11	Frieborn Canyon Hot Spring	s	Catron		33.33	33.7100	109.0100	3	7	21	9	442
CA12	hot spring	s	Catron		32.8	33.2600	108.2300	3	12	13	7	34
CA13	test well	w	Catron	182.9	32.2	33.2200	108.2200	3	12	13	30	231
CA14	well	w	Catron		32	33.9575	107.8014	3	4	9	17	311
CA15	well	w	Catron	182.9	32	33.2250	108.2417	3	12	14	25	231
CA16	Gila Middle Fork Hot Spring	s	Catron		31.0	33.2833	108.2633	3	11	14	35	34
CA17	well	w	Catron	411.5	28	34.5400	108.8300	1	4	19	28	234
CA18	Gila Middle Fork Meadows HS	s	Catron		27.5	33.3100	108.3300	3	11	14	30	2
CA19	warm seep	s	Catron		27.2	33.2900	108.2600	3	11	14	35	4
CA20	Zuni Salt Lake Warm Spring	s	Catron		26.0	34.4550	108.7667	1	3	18	30	31
CA21	Gila Middle Fork Pool HS	s	Catron			33.2333	108.2333	3	12	13	31	1
CA22	Gila Middle Fork Hot Spring	s	Catron		37	33.2833	108.2666	3	11	14	35	32
CA23	Gila Middle Fork Hot Spring	s	Catron		34	33.2666	108.2500	3	12	14	1	33
CB2	well	w	Cibola	884.2	52.8	35.0644	107.7406	1	10	9	25	3241
CB3	Acoma #1 Well	w	Cibola	766.3	41.5	34.9806	107.7983	1	9	9	28	1344
CB4	well	w	Cibola	615.4	41	34.6208	107.6542	1	5	8	35	123
CB5	well	w	Cibola	807.7	38.1	34.8914	107.6278	1	8	8	25	4231
CB6	well	w	Cibola	984.2	36	34.8931	108.4147	1	8	15	27	311
CB7	well	w	Cibola	807.7	34.5	35.0147	107.4836	1	9	6	16	111
CB8	well	w	Cibola	848.3	34	34.7625	107.9356	1	6	10	7	1413
CB9	well	w	Cibola	524.3	34	35.0189	107.3097	1	9	5	12	4424
CB10	well	w	Cibola	671.5	33.1	34.9006	107.4992	1	8	6	20	3334
CB12	well	w	Cibola		32	35.0939	108.4383	1	10	15	17	414
CB13	Salado Spring	s	Cibola		25	34.6900	107.4900	1	5	6	5	42
CV1	well	w	Chaves		33	33.0500	104.6808	4	15	23	6	22
DA1	Chaffee 55-25	w	Dona Ana	806.2	68	32.2781	106.6889	4	23	2	25	4111
DA2	Radium Hot Springs Bailey Well #15	w	Dona Ana		70.0	32.4967	106.9167	3	21	1	10	
DA3	Clary and Ruther State 1	w	Dona Ana	784.3	69.4	32.2717	106.6981	4	23	2	36	1111
DA4	Chaffee 35-25	w	Dona Ana	196.6	68	32.2667	106.6833	4	23	2	25	123
DA5	LC-2	w	Dona Ana	269.8	67.9	32.3333	106.7000	4	23	2	34	
DA6	Exxon Beard Ole Federal	w	Dona Ana	1219.5	65.5	32.3236	106.7128	4	23	2	11	1341
DA7	Chaffee 12-24	w	Dona Ana	400.8	65	32.2833	106.6833	4	23	2	24	311
DA8	NMSU PG-3	w	Dona Ana	265.2	63.3	32.2878	106.7158	4	23	2	22	4442
DA9	Radium Hot Springs Bailey's bathhouse	w	Dona Ana	6.1	60.8	32.4967	106.9167	3	21	1	10	213
DA10	Certified Sand Well	w	Dona Ana	182.9	58.8	32.2833	106.6833	4	23	2	14	431
DA11	T-14	w	Dona Ana	1833	54.4	32.3900	106.4200	4	22	5	15	221
DA12	Radium Hot Springs Hotel Well #2	w	Dona Ana	10.4	52.5	32.5003	106.7503	3	21	1	10	213
DA13	LC-1	w	Dona Ana	239.3	52.5	32.3089	106.7222	4	23	2	15	2334
DA14	Radium Hot Springs Roy Smith Well	w	Dona Ana		50.0	32.4967	106.9167	3	21	1	10	
DA15	NMSU PG-2	w	Dona Ana	153.9	47.7	32.2831	106.7250	4	23	2	27	1243
DA16	Pure Oil Federal "H" 1	w	Dona Ana	207.3	45	31.9494	106.9994	3	28	2	24	213
DA17	Nations Well	w	Dona Ana	108	43	32.2689	106.7194	4	23	2	34	2233
DA18	well	w	Dona Ana	64.6	43	32.2697	106.7217	4	23	2	34	214

SITE ID	NAME	W/S	COUNTY	DEPTH m	TEMP C	LATITUDE	LONGITUDE	QUAD	TWN	RNG	SEC	QTR
DA19	Husand Well	w	Dona Ana	106	42.5	32.2500	106.7167	4	23	2	34	234
DA20	well	w	Dona Ana	471.8	42.5	31.9942	106.8489	4	27	1	4	121A
DA21	Rowan well	w	Dona Ana	100.6	36.8	32.2500	106.7167	4	23	2	34	
DA22	Tellyer Well	w	Dona Ana	148.1	36.5	32.2633	106.7208	4	23	2	34	4123
DA23	Running Indian Well	w	Dona Ana	320	36	32.2625	107.0144	3	23	2	35	411
DA24	well	w	Dona Ana		36.0	32.6333	107.0000					
DA25	well	w	Dona Ana	219.5	35.56	32.0667	106.6139	4	26	3	2	
DA26	NMSU GD-1	w	Dona Ana	185	35	32.2883	106.7325	4	23	2	21	4424
DA27	White well	w	Dona Ana	94.8	34.5	32.2500	106.7167	4	23	2	34	
DA28	well	w	Dona Ana	59.4	34	32.5514	107.2922	3	20	4	19	324
DA29	well	w	Dona Ana	131.1	33.5	32.0525	106.8711	4	26	1	18	222
DA30	well	w	Dona Ana	213.4	33.3	31.9394	106.6547	4	27	3	20	432
DA31	Gardner Well	w	Dona Ana	171.6	33	32.0100	106.0900	3	26	1	25	414
DA32	T-15	w	Dona Ana	623	33	32.3500	106.4300	4	22	5	33	244
DA33	well	w	Dona Ana	365.8	32.22	32.2700	106.9800	3	23	1	31	432
DA34	well	w	Dona Ana	243.8	32	32.2583	107.7833	3	23	2	35	430
DA35	T-17	w	Dona Ana	765	32	32.2800	106.4100	4	23	5	27	142
DA36	Berino Well	w	Dona Ana	152.7	31.1	32.0675	106.6147	4	26	3	11	111
DA37	Souse Springs	s	Dona Ana		31.0	32.6067	107.1950	3	19	3	31	34
DA38	Test Hole	w	Dona Ana		31	32.1300	107.1600	3	25	3	17	111
DA39	well	w	Dona Ana		31	32.1394	106.6647	4	25	1	17	111
DA40	well	w	Dona Ana		31	32.0047	106.6097	4	26	3	35	141
DA41	well	w	Dona Ana	304.5	31	31.8256	106.8261	4	28	1	34	414
DA42	well	w	Dona Ana	306	31	32.8236	106.6319	4	28	3	34	331
DA43	Pol Ranch Windmill	w	Dona Ana		30.5	32.0183	107.2617	3	26	4	28	131
DA44	SC2	w	Dona Ana		30.5	32.2842	106.4314	4	23	5	28	223
DA45	well	w	Dona Ana	549.3	30.5	31.9556	106.6989	4	27	2	13	331
DA46	T-18	w	Dona Ana	72.8	30	32.3361	106.4575	4	23	5	5	321
DA47	Dominguez Brothers Well	w	Dona Ana	76.2	30	32.1522	106.6544	4	25	3	8	214
DA48	well	w	Dona Ana		28.0	32.1533	106.9900	3	25	1	7	11
DA49	Railroad Well	w	Dona Ana			32.6800	107.0300	3	19	2	9	12
DA50	Radium Springs College Ranch Windmill	w	Dona Ana			32.5383	106.9394	3	20	1	27	34
DA51	Radium Hot Springs Hotel Well #1	w	Dona Ana	3.7		32.4967	106.9167	3	21	1	10	213
DA52	Radium Springs Masson 21	w	Dona Ana	85.3	76.1	32.5000	106.9167	3	21	1	10	211
DA53	Radium Springs Masson 22	w	Dona Ana			32.5000	106.9167	3	21	1	10	111
DA54	Radium Springs Masson 23	w	Dona Ana			32.5000	106.9167	3	21	1	10	112
DA55	Radium Springs Masson 26	w	Dona Ana	36.6	76.7	32.5000	106.9167	3	21	1	10	211
DA56	Radium Springs Ryan 72-35	w	Dona Ana	20.7	51.7	32.5000	106.9167	3	21	1	10	223
DA57	NMSU GD-2	w	Dona Ana	302		32.2833	106.7181	4	23	2	27	1133
DA58	NMSU OW-1	w	Dona Ana	262.1		32.2839	106.7164	4	23	2	27	2242
DA59	NMSU PG-1	w	Dona Ana	262.1		32.2842	106.7170	4	23	2	27	2241
DA60	NMSU PG-4	w	Dona Ana	309.4		32.2881	106.7144	4	23	2	23	3314
DA61	Radium Springs Masson 25 (injection)	w	Dona Ana	62.8		32.5000	106.9167	3	21	1	10	
DA62	Radium Springs Masson 27 (injection)	w	Dona Ana	24.4		32.5000	106.9167	3	21	1	10	
DA63	Radium Springs Masson 28	w	Dona Ana	36.6	71.7	32.5000	106.9167	3	21	1	10	211
ED1	Clayton Well	w	Eddy		31	32.5603	104.2942	4	20	27	21	133
GR1	Miimbres Hot Springs #3	s	Grant			32.7483	107.8350	3	18	10	13	11
GR2	Gila Hot Springs Doyle Well	w	Grant	138.7	74	33.1967	108.2035	3	13	13	5	2323
GR3	Turkey Creek Hot Spring	s	Grant		74.0	33.1083	108.4833	3	14	16	3	34
GR4	Gila Hot Springs Campbell #4 Well	w	Grant	72.5	72	33.1983	108.2033	3	13	13	5	2141
GR5	Gila Spring Hot Spring #14	s	Grant		66	33.2000	108.2000	3	13	13	5	2
GR6	Gila HS northern artesian well	w	Grant		65	33.2000	108.2083	3	13	13	5	12
GR7	Gila Hot Springs	s	Grant		64	33.1986	108.2044	3	13	13	5	214
GR8	well	w	Grant	158.5	62.2	32.6700	108.0300	3	19	12	12	
GR9	Gila HS middle artesian well	w	Grant		62	33.2000	108.2083	3	13	13	5	12
GR10	Gila Hot Springs Campbell #2 Well	w	Grant	84.4	61	33.2000	108.2044	3	13	13	5	212
GR11	Miimbres Hot Springs #25	s	Grant		59	32.7483	107.8350	3	18	10	13	11
GR12	Miimbres Hot Springs #28	s	Grant		58.06	32.7483	107.8350	3	18	10	13	11
GR13	Gila Spring Hot Spring #41	s	Grant		58	33.2000	108.2000	3	13	13	5	2
GR14	Mimbres Hot Springs	s	Grant		58	32.7492	107.8344	3	18	10	13	111
GR15	Miimbres Hot Springs #8	s	Grant		57.5	32.7483	107.8350	3	18	10	13	11
GR16	Miimbres Hot Springs #12	s	Grant		56.4	32.7483	107.8350	3	18	10	13	11
GR17	Miimbres Hot Springs #21	s	Grant		55	32.7483	107.8350	3	18	10	13	11
GR18	Miimbres Hot Springs #23	s	Grant		54.44	32.7483	107.8350	3	18	10	13	11
GR19	Faywood Hot Springs	s	Grant		53	32.5547	107.9950	3	20	11	20	243
GR20	Gila Lyons Lodge swimming pool HS	s	Grant		52.2	33.1847	108.1744	3	13	13	10	121
GR21	well	w	Grant		52	33.1847	108.1744	3	13	13	10	121

SITE ID	NAME	W/S	COUNTY	DEPTH m	TEMP C	LATITUDE	LONGITUDE	QUAD	TWN	RNG	SEC	QTR
GR22	Gila River Waterfall HS	s	Grant		43.6	33.1633	108.1833	3	13	13	17	32
GR23	Gila East Fork no name spring	s	Grant		41.39	33.1833	108.1667	3	13	13	10	2
GR24	Kennecott Warms Springs Well #9	w	Grant	36.6	41.1	32.5700	108.0200	3	20	11	18	3133
GR25	Gila East Fork Hot Spring	s	Grant		36.0	33.1917	108.1833	3	13	13	10	121
GR26	Gila Lyons Lodge East Fork Hot Springs	s	Grant		35.56	33.1847	108.1744	3	13	13	10	121
GR27	Kennecott Warm Spring Well #3	w	Grant	68	34.55	32.5700	108.0200	3	20	11	18	310
GR28	Kennecott Warms Springs Well #2	w	Grant	13.4	34.4	32.5700	108.0200	3	20	11	18	31434
GR29	Kennecott Warms Springs Well #3	w	Grant	68	34.4	32.5700	108.0200	3	20	11	18	33221
GR30	Cliff Warm Well	w	Grant	91.4	33.5	32.9758	108.5931	3	15	17	27	111
GR31	Kennecott Warm Springs Well #1	w	Grant	7.6	33.3	32.5700	108.0200	3	20	11	18	332
GR32	Muir Ranch well	w	Grant		33.0	32.2283	108.5117	3	24	16	8	32
GR33	Ground Hog Mine	w	Grant	670	32	32.7800	108.0100	3	17	12	32	44414
GR34	well	w	Grant	609.6	32	32.7797	108.0994					
GR35	well	w	Grant	268.5	31.1	32.6444	108.1278					
GR36	Spring Canyon Warm Spring	s	Grant		31.0	32.8767	108.5833	3	16	17	34	21
GR37	Apache Tejo Warm Springs Well #7	w	Grant	268.5	31	32.6444	108.1278	3	19	12	19	13212
GR38	Kennecott Warms Springs Well #4	w	Grant	89	30.5	32.5700	108.0200	3	20	11	18	133
GR39	Riverside Well	w	Grant	10.9	30	32.9300	108.0600	3	16	17	9	242
GR40	Kennecott Warms Springs Well #6	w	Grant	121.9	30	32.5500	108.0200	3	20	11	19	11133
GR41	Mangas Springs	s	Grant		27.0	32.8417	108.5100	3	17	16	8	24
GR42	Allen Spring	s	Grant		25.6	32.3617	108.3617	3	16	15	26	41
GR43	Cliff Warm Spring	s	Grant		25	32.9750	108.6250	3	15	17	30	222
GR44	Apache Tejo Warms Springs Well #4	w	Grant	236.8		32.6400	108.1200	3	19	12	19	3
GR45	Apache Tejo Warms Springs Well #5	w	Grant	745.2		32.6400	108.1100	3	19	12	19	3
HD1	Lightning Dock Burgett Well #1	w	Hidalgo		104.0	32.1450	108.8317	3	25	19	7	
HD2	Lightning Dock hot well	w	Hidalgo		98	32.1458	108.8325	3	25	19	7	234A
HD3	Lightning Dock hot well	w	Hidalgo		96	32.1450	108.8317	3	25	19	7	134
HD4	Lightning Dock hot well	w	Hidalgo		95.5	32.1458	108.8325	3	25	19	7	234
HD5	Lighting Dock Burgett Well #10	w	Hidalgo		95.2	32.1450	108.8317	3	25	19	7	
HD6	Lightning Dock hot well	w	Hidalgo		94	32.1486	108.8314	3	25	19	7	
HD7	Lightning Dock hot well	w	Hidalgo		85.0	32.1450	108.8317	3	25	19	7	23
HD8	Lightning Dock McCants Well	w	Hidalgo		81.0	32.1483	108.8317	3	25	19	7	21
HD9	Lightning Dock hot well	w	Hidalgo		71.0	32.1450	108.8400	3	25	19	7	14
HD10	Lightning Dock hot well	w	Hidalgo	36.6	52	32.1453	108.8389	3	25	19	7	143
HD11	warm well	w	Hidalgo		35	32.4167	108.9833	3	22	21	3	312
HD12	Lightning Dock hot well	w	Hidalgo	86.3	33.5	32.1453	108.8425	3	25	19	7	133
HD13	well	w	Hidalgo	734.6	32	31.7125	108.3228	3	30	15	12	323
HD14	Blowing Well	w	Hidalgo	136.9	31	32.4178	108.9928	3	22	21	3	3234
HD15	well	w	Hidalgo	169.8	30	32.4433	109.0331	3	21	21	30	444
HD16	Kipp Ranch Hot Well	w	Hidalgo			32.3100	108.5700	3	23	17	10	11
HD17	Lightning Dock hot well	w	Hidalgo			32.1450	108.8317	3	25	19	7	243
HD18	Lightning Dock hot well	w	Hidalgo			32.1450	108.8317	3	25	19	7	234b
HD19	Lightning Dock hot well	w	Hidalgo			32.1450	108.8317	3	25	19	7	342
HD20	Lightning Dock hot well	w	Hidalgo			32.1450	108.8317	3	25	19	7	243
HD21	Lightning Dock Rosette 1	w	Hidalgo	134.1	104.4	32.1300	108.8300	3	25	19	6	4
HD22	Lightning Dock Rosette 1	w	Hidalgo	170.7	107.2	32.1300	108.8300	3	25	19	6	4
HD23	Lightning Dock Rosette 1	w	Hidalgo	134.1	106.7	32.1300	108.8300	3	25	19	6	4
LA1	Pueblo Canyon #7 Well	w	Los Alamos		31	35.8833	106.2636	2	19	6	13	131
LU1	Smyer Well	w	Luna	338.3	39	32.2508	107.5881	3	24	7	5	133
LU2	Nunn Stock Well	w	Luna		38	32.5100	107.4900	3	21	6	6	11332
LU3	well	w	Luna	129.5	34.5	32.2461	107.5506	3	24	7	3	300
LU4	well	w	Luna	161.2	33	31.8500	107.6092	3	28	8	25	211
LU5	well	w	Luna	199	32	31.8600	107.0600	3	28	7	19	2211
LU6	well	w	Luna	304.8	31.5	32.1547	107.4828	3	25	6	8	112
LU7	well	w	Luna		31.5	31.8033	107.7867	3	29	9	8	11
LU8	well	w	Luna		31.1	31.8017	107.7817	3	29	9	8	23
LU9	well	w	Luna	304.8	31	31.8861	107.5597	3	28	7	9	411
LU10	well	w	Luna	213.4	31	31.8400	107.5300	3	28	7	26	4222
LU11	well	w	Luna	142.6	31	31.8511	107.8683	3	29	10	9	3111
LU12	well	w	Luna	335.3	30.7	31.8133	107.7900	3	29	9	8	12134
LU13	Little Ed Well	w	Luna	65.8	30	32.3353	107.3492	3	23	5	3	311
LU14	well	w	Luna		30.0	31.8417	107.5200	3	28	7	26	42
LU15	well	w	Luna	49.4	30	31.8439	107.6361	3	28	8	26	311
MK1	Fort Wingate Well/Santa Fe 'Spring'	w	McKinley	592.3	55	35.4667	108.5744	1	15	16	30	3443
MK2	well	w	McKinley	905.3	46	35.4244	107.8789	1	14	10	22	400
MK3	Ya-Ta-Hey Well	w	McKinley		45.5	35.6400	108.7800					
MK4	well	w	McKinley		42.2	35.9594	107.8981	1	20	10	16	4413

SITE ID	NAME	W/S	COUNTY	DEPTH m	TEMP C	LATITUDE	LONGITUDE	QUAD	TWN	RNG	SEC	QTR
MK5	well	w	McKinley	939.1	40.2	35.4256	107.8803	1	14	10	22	414
MK6	well	w	McKinley	965.3	39	35.6289	108.7764	1	16	18	7	423
MK7	Navajo well	w	McKinley	762	37.5	35.8525	108.6694					
MK8	Toh Sah Toh	w	McKinley		37.0	35.8700	108.6800					
MK9	well	w	McKinley	981.5	36	35.6228	108.7683	1	16	18	17	122
MK10	NTUA #2 Well	w	McKinley		36	35.6953	108.1439	1	17	12	20	1111
MK11	well	w	McKinley		35.5	35.6842	108.1442	1	17	12	20	3313
MK12	Pure Oil Navajo #1 Well (Tohachi Well)	w	McKinley	762	35	35.8511	108.6683	1	19	17	29	230
MK13	Pure Oil Navajo #3 Well	w	McKinley	243.8	35	35.8600	108.6400	1	19	17	22	
MK14	Mobil Well Crown Point	w	McKinley	655.3	33.5	35.7008	108.2158	1	17	13	15	332
MK15	well	w	McKinley		33.5	35.9297	107.9778	1	20	11	26	3414
MK16	well	w	McKinley		33	35.6847	108.1528	1	17	12	19	4314
MK17	well	w	McKinley	654.7	32.5	35.6372	108.7917	1	16	18	7	1111
MK18	well	w	McKinley		32.5	35.9314	107.9397	1	20	10	30	3244
MK19	well	w	McKinley	502.9	32	35.5361	108.5878	1	15	17	13	210
MK20	well	w	McKinley	240.2	32	35.6250	108.7917	1	16	18	7	3333
MK21	well	w	McKinley	877.8	31.5	35.5683	108.7611	1	16	18	32	44
MK22	well	w	McKinley		30.5	35.0372	108.7611	1	9	18	5	324
MK23	well	w	McKinley		30.5	35.6522	108.0450	1	16	11	5	1212
MK24	well	w	McKinley		30	35.6714	108.1561	1	17	12	30	3241
OT1	N-9 Well	w	Otero	137	71.1	32.0931	106.1514	4	26	8	5	332
OT2	N-11 Well	w	Otero	227	61.1	32.0842	106.1514	4	25	8	32	333
OT3	M-11 Well	w	Otero	153	50	32.0789	106.1750	4	26	7	1	241
OT4	FLOUR-1 Well	w	Otero	321.3	33.5	32.4306	106.1811	4	21	7	36	344
OT5	Garton Well	w	Otero	301.5	34	32.7800	106.1500	4	18	8	5	431
OT6	N-8 Well	w	Otero	304		32.0167	106.0833	4	26	8	33	120
OT7	N-11	w	Otero	227.1	61	32.0841	106.1513	4	25	8	32	300
RA1	Ojo Caliente Hot Spring Soda Spring	s	Rio Arriba			36.3050	106.0567	2	24	8	24	11
RA2	Ojo Caliente Hot Spring Well	w	Rio Arriba	26.5	55.6	36.3050	106.0567	2	24	8	24	11
RA3	Ojo Caliente Arsenic Hot Spring	s	Rio Arriba		45.0	36.3050	106.0567	2	24	8	24	11
RA4	Ojo Caliente Hot Spring	s	Rio Arriba		43	36.3050	106.0567	2	24	8	24	11
RA5	Ojo Caliente HS Lithia Spring	s	Rio Arriba		41.9	36.3050	106.0567	2	24	8	24	11
RA6	Ojo Caliente HS Sodium Sulfate Spring	s	Rio Arriba		40.6	36.3050	106.0567	2	24	8	24	11
RA7	Ojo Caliente Hot Spring Iron Spring	s	Rio Arriba		40	36.3044	106.0522	2	24	8	24	11
RA8	Statue Spring	s	Rio Arriba		36	36.3683	106.0583	2	25	8	26	414
RA9	Ojo Caliente Hot Spring Well #1	w	Rio Arriba	14.6	34.3	36.3050	106.0567	2	24	8	24	11
RA10	spring	s	Rio Arriba		27.5	36.3667	106.0450	2	25	8	25	44
RA11	spring	s	Rio Arriba		25.5	36.3633	106.0417	2	25	8	36	22
RA12	Ojo Caliente Hot Spring Well #2	w	Rio Arriba	16.2		36.3050	106.0567	2	24	8	24	11
SA1	Jemez/Baca # 15	w	Sandoval		326.0	35.8933	106.5800					
SA2	Jemez/Baca # 4	w	Sandoval		297.0	35.8892	106.5703					
SA3	Jemez/Baca # 4	w	Sandoval		294.0	35.8892	106.5703					
SA4	Jemez/Baca # 13	w	Sandoval		279.0	35.8964	106.5678					
SA5	Jemez/Baca #13	w	Sandoval		278.0	35.8964	106.5678					
SA6	Jemez/Baca #24	w	Sandoval		261.0	35.8844	106.5825					
SA7	Jemez/GRI WC 23-4 at 6300 ft depth	w	Sandoval		232.6	35.9094	106.6314					
SA8	Jemez/Baca # 19	w	Sandoval		223.0	35.8933	106.5800					
SA9	Jemez/GRI WC 23-4 at 4800 ft depth	w	Sandoval		214.0	35.9094	106.6314					
SA10	Jemez/Sulphur Springs Women's Bathhouse	s	Sandoval		90.0	35.9081	106.6150					
SA11	Jemez/Sulphur Springs main fumarole	s	Sandoval		88.0	35.9081	106.6150					
SA12	Jemez HS Jemez Springs #1 Well	w	Sandoval		73.3	35.7733	106.6889	2	18	2	23	
SA13	Jemez HS Travertine Mound Spring	s	Sandoval		72.6	35.7733	106.6889	2	18	2	23	
SA14	Jemez HS Soda Spring	s	Sandoval		65.5	35.7725	106.6900	2	18	2	23	
SA15	Jemez/Sulphur Springs unnamed HS	s	Sandoval		63.0	35.9081	106.6150					
SA16	Jemez Hot Springs	s	Sandoval		58	35.7706	106.6914	2	18	2	23	432
SA17	Jemez/Sulphur Springs Lemonade Spring	s	Sandoval		58.0	35.9081	106.6150					
SA18	Jemez Pueblo #1 Well	w	Sandoval	73.2	57.8	35.5900	106.7530	2	16	2	29	213
SA19	Jemez HS Gazebo Spring	s	Sandoval		55.0	35.7733	106.6889	2	18	2	23	
SA20	Kaseman #2 Well (Zia Hot Well)	w	Sandoval	612.7	52	35.6456	106.8883	1	16	1	1	4211
SA21	Jemez HS Buddhist Spring	s	Sandoval		50.0	35.7733	106.6889	2	18	2	23	
SA22	Jemez HS Marsh Spring	s	Sandoval		49.0	35.7733	106.6889	2	18	2	23	
SA23	Jemez/Soda Dam Hot Spring	s	Sandoval		46	35.7914	106.6861	2	18	2	14	442
SA24	Jemez/Soda Dam Hot Springs (west spring)	s	Sandoval		46	35.7917	106.6864	2	18	2	14	
SA25	Jemez/Spence Hot Spring	s	Sandoval		44	35.8494	106.6283	2	19	3	28	143
SA26	Jemez/Sulphur Springs Men's Bathhouse	s	Sandoval		43.5	35.9067	106.6153					
SA27	Jemez Pueblo Indian Hot Spring	s	Sandoval		43.0	35.5911	106.7531	2	16	2	29	1423
SA28	Jemez/McCauley Hot Spring	s	Sandoval		43	35.8200	106.6267	2	18	3	4	321

SITE ID	NAME	W/S	COUNTY	DEPTH	TEMP	LATITUDE	LONGITUDE	QUAD	TWN	RNG	SEC	QTR
				m	C							
SA29	Jemez/San Antonio Hot Spring	s	Sandoval		41.3	35.9383	106.6456	2	20	3	29	1
SA30	Jemez/Sulphur Springs Footbath Spring	s	Sandoval		40.5	35.9081	106.6150					
SA31	Jemez/San Antonio Warm Springs	s	Sandoval		38.5	35.9711	106.5614					
SA32	Jemez/Soda Dam Grotto Spring	s	Sandoval		38.0	35.7914	106.6864	2	18	2	13	
SA33	Jemez/Bathhouse HS	s	Sandoval		37.4	35.9714	106.5606					
SA34	Jemez/Sulphur Springs Electric Spring	s	Sandoval		36.0	35.9081	106.6150					
SA35	Jemez/Little Spence Hot Spring	s	Sandoval		34.0	35.8494	106.6289	2	19	3	28	
SA36	Star Lake #2 Ojo Encino Well	w	Sandoval		33	36.0047	107.3775	1	21	5	32	424
SA37	Jemez/Soda Dam Hidden Warm Spring	s	Sandoval		32.3	35.7914	106.6864	2	18	2	14	
SA38	well	w	Sandoval		32	35.3494	106.6694	2	13	3	18	330
SA39	Penasco #3 Spring	s	Sandoval		27.0	35.5940	106.8637	2	16	1	29	1143
SA40	Penasco #4 Spring	s	Sandoval		27.0	35.5940	106.8648	2	16	1	29	1134
SA41	Salado Warm Spring	s	Sandoval		25.0	35.5368	106.8467	2	15	1	16	1112
SA42	San Ysidro Warm Spring	s	Sandoval		24	35.5478	106.8256	2	15	1	10	1
SA43	Swimming Pool Spring	s	Sandoval		24.0	35.6015	106.8555	2	16	1	20	4123
SA44	Jemez/PC-1 at 1712 ft (w/drilling fluid)	w	Sandoval			35.8758	106.6617					
SF1	Guaje #3 Well	w	Santa Fe	88.4	30.5	35.9089	106.2122	2	19	7	4	133
SF2	Los Alamos #1B Well	w	Santa Fe	694	30.5	35.8833	106.1564	2	19	7	13	114
SF3	Los Alamos #G6 Well	w	Santa Fe	617	30.5	35.9108	106.2353	2	19	7	6	2
SF4	Los Alamos #6 Well	w	Santa Fe	46.9	30	35.8772	106.1742	2	19	7	14	312
SF5	Los Alamos #G2 Well	w	Santa Fe	617	30.0	35.9061	106.2025	2	19	7	4	
SI1	TorC well	w	Sierra		45.5	33.2228	107.2561	3	13	4	33	0
SI2	TorC artesian well	w	Sierra		45	33.1350	107.2533	3	13	4	33	
SI3	TorC Blackstone Mineral Bath	w	Sierra		45.0	33.1350	107.2533	3	13	4	33	41
SI4	TorC well	w	Sierra		44.5	33.1358	107.2553	3	13	4	33	0
SI5	TorC Sierra Grande Bath	w	Sierra		44	33.1350	107.2533	3	13	4	33	
SI6	TorC Yucca Lodge well 14 ft	w	Sierra	4.5	43.33	33.1350	107.2517	3	13	4	33	
SI7	TorC Yucca Lodge	w	Sierra		43	33.1350	107.2533	3	13	4	33	
SI8	TorC Yucca Lodge outdoor pool	w	Sierra		41.67	33.1350	107.2517	3	13	4	33	
SI9	TorC Sierra Mineral Bath	w	Sierra		41.0	33.1367	107.2483	3	13	4	33	24
SI10	TorC warm spring	s	Sierra		41.0	33.1333	107.2417	3	13	4	34	32
SI11	TorC Yucca Lodge	w	Sierra		41.0	33.1350	107.2517	3	13	4	33	41
SI12	TorC Old Government Spring	s	Sierra		40	33.1333	107.2333	3	13	4	34	0
SI13	TorC well	w	Sierra		40	33.1294	107.2572	3	13	4	33	344
SI14	TorC well	w	Sierra	30.5	40	33.1300	107.2525	3	13	4	33	434
SI15	TorC Ponce De Leon Spring	w	Sierra	75.3	40	33.1278	107.2531	3	14	4	4	412
SI16	TorC Geronimo (State) Springs	s	Sierra		38.5	33.1294	107.2550	3	13	4	33	433
SI17	Hillsboro Warm Spring	s	Sierra		34.5	32.9533	107.5817	3	15	7	5	21
SI18	Victorio Land and Cattle Co. #1	w	Sierra		34.4	33.4100	106.7900	3	10	1	25	1
SI19	Sun Oil Test Well	w	Sierra		34	33.4250	107.0167	3	10	2	25	100
SI20	Derry Warm Springs	s	Sierra		34	32.7917	107.2717	3	17	4	32	213
SI21	well	w	Sierra		34	32.7953	107.2769	3	17	4	29	343
SI22	well	w	Sierra		31	32.6333	107.3167	3	19	5	25	131A
SI23	warm spring	s	Sierra			33.2783	107.5633	3	12	7	9	
SI24	TorC "warm spring"	s	Sierra			33.1350	107.2533	3	13	4	33	
SI25	Barney Iorio #1 Fee	w	Sierra	466.3		33.0600	107.0300	3	14	5	25	41
SJ1	well	w	San Juan	1738.6	62	36.0469	107.7881	1	21	9	16	44233
SJ2	well	w	San Juan	1547.2	57	36.0536	107.7928	1	21	9	16	23233
SJ3	Navajo well	w	San Juan		51.8	36.2578	108.3247					
SJ4	Dome Well Chaco	w	San Juan		42	36.0622	107.8656	1	21	10	11	431
SJ5	ARCO WS-2 well	w	San Juan		39.9	36.8658	108.5561	1	31	16	30	4442
SJ6	Navajo well	w	San Juan	932.7	35.5	36.0922	108.2744					
SJ7	Navajo 12T-630 Well	w	San Juan		33	36.7153	108.6369					
SJ8	well	w	San Juan		32.8	36.0311	107.9039	1	21	10	21	3444
SJ9	Navajo well	w	San Juan	524.3	32	36.7889	108.6806					
SJ10	Navajo 12T-520 Well	w	San Juan	542.5	31	36.7764	108.6939					
SJ11	well	w	San Juan		30.5	36.3792	108.2267	1	25	13	28	1212
SJ12	Navajo 12T-629 Well	w	San Juan		30.5	36.6822	108.6572	1	29	17	32	31
SM1	Montezuma Hot Spring #1	w	San Miguel		55.17	35.6533	105.2900	2	17	13	36	44
SM2	Montezuma Hot Spring #6	w	San Miguel		50.56	35.6533	105.2900	2	17	13	36	44
SM3	Montezuma Hot Spring	w	San Miguel		49	35.6533	105.2900	2	17	15	36	44
SM4	Montezuma Hot Spring #13	w	San Miguel		41.11	35.6533	105.2900	2	17	13	36	44
SM5	Montezuma Hot Spring #15	w	San Miguel			35.6533	105.2900	2	17	13	36	44
SM6	Montezuma Hot Spring #16	w	San Miguel			35.6533	105.2900	2	17	13	36	44
SM7	Montezuma Hot Spring #18	w	San Miguel			35.6533	105.2900	2	17	13	36	44
SM8	Montezuma Hot Spring #19	w	San Miguel			35.6533	105.2900	2	17	13	36	44
SM9	Montezuma Hot Spring #2	w	San Miguel			35.6533	105.2900	2	17	13	36	44

SITE ID	NAME	W/S	COUNTY	DEPTH m	TEMP C	LATITUDE	LONGITUDE	QUAD	TWN	RNG	SEC	QTR
SM10	Montezuma Hot Spring #20	w	San Miguel			35.6533	105.2900	2	17	13	36	44
SO1	core hole	w	Socorro	205.7	42.2	34.0800	106.9500	3	3	1	4	433
SO2	warm well	w	Socorro	66.5	36	34.1006	107.5419	3	2	7	27	444
SO3	Welty Salty Well	w	Socorro	234.7	35	33.7997	107.6839	3	6	8	8	432
SO4	Bosque del Apache Well #13	w	Socorro		33	33.7900	106.8600	4	6	1	17	213
SO5	warm well	w	Socorro	30.5	33	33.8058	106.8761	4	6	1	7	213
SO6	Blue Canyon Well	w	Socorro	91.4	32.4	34.0467	106.9508	3	3	1	16	323
SO7	Socorro Gallery Spring	s	Socorro		32	34.0403	106.9383	3	3	1	22	113
SO8	Socorro/Sedilla Gallery Spring	s	Socorro		30	34.0378	106.9386	3	3	1	22	1131
SO9	well	w	Socorro		30.0	33.7633	107.3500	3	6	5	27	32
SO10	well	w	Socorro		30	34.1706	106.7522	4	2	2	5	223
SO11	Monticello Box Warm Spring	s	Socorro		29.0	33.3933	107.5817	3	8	7	31	24
SO12	Monticello Box Warm Spring	s	Socorro		28.0	33.5733	107.6017	3	8	7	31	41
SO13	artesian well	w	Socorro		26	34.5700	107.4400	1	4	6	14	31
SO14	Field Artesian Well	w	Socorro		25	34.5300	107.4700	1	4	6	33	34
SO15	Ojo Saladito Spring	s	Socorro		24	34.5100	107.1300	1	3	3	4	24
SO16	Cook Spring	s	Socorro			34.0467	106.9367	3	3	1	17	31
TS1	Hondo Hot Spring	s	Taos		40.6	36.5283	105.7150	2	27	12	36	42
TS2	Mamby Hot Spring	s	Taos		38	36.5222	105.7222	2	26	11	1	120
TS3	warm spring	w	Taos		37	36.5308	105.7117	2	27	12	31	311
TS4	Rancho Del Rio Grande Well	w	Taos		32	36.3236	105.6056					
TS5	Ponce de Leon Hot Spring	s	Taos			36.3233	105.6083	2	24	13	7	333
VA1	well	w	Valencia	219.5	80	34.7800	106.6400	2	6	3	5	234
VA2	well	w	Valencia	801	32.5	34.8536	106.7781	2	7	2	7	

APPENDIX 2

TABLES OF COMPLETE CHEMICAL ANALYSES

NOTES:

SITE ID	geothermal site number
SAMPLE	cited or assigned sample number or designation (see Appendix 4 for dates and data source
NAME	well or spring name
TEMP	temperature °C
CHEMISTRY	units as shown
mg/L	milligrams per liter
uS/cm	microsiemens per centimeter
TDS	analytical total dissolved solids
TDS (sum)	arithmetic sum dissolved constituents/total dissolved solids
CHARG BAL %	charge balance (see Reed and Mariner, 1991)
COND BAL %	conductance balance (see Reed and Mariner, 1991)
MASS BAL %	mass balance (see Reed and Mariner, 1991)

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	TDS (sum)	Na mg/L	K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br g/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 g/L	CHRG BAL %	COND BAL %	MASS BAL %
BE10	209	well	30.0	8.9		524	340	430	110	2	6.1	0.4			165	84	13	1.1		0.26	0.03	7.97	40	2.94	1.27	26.43
CA1	GILA7	hot spring	64.8		7.92		548	620	151.5	3.5	15.4	0.1	0.43	0.03	131.1	118	104.3	9.5		0.07			85.9	3.40		13.11
CA3	LFHS12-74	Lower Frisco Hot Spring	35.2	6.5		1200		855	236	7.5	11	7.8	0.41		167	40	327	1.5	0.61				56	4.77	2.44	
CA3	M77-CT2	Lower Frisco Hot Spring	37.0	7.35			1015	1013	270	15	46	6.2	0.43		121	39	430	1.4		0.26			84	0.01		0.17
CA3	SNM-19	Lower Frisco Hot Spring	50.5	6.80	7.64	1894	1142.9	1144	307	19	49.4	5.7	0.53	0.37	131	43	499	0.51		0.23			88	0.84	10.99	0.07
CA4	J3	Lower Frisco Hot Spring	43.3		7.89		992	1090	307.2	15.6	49.7	6.8	0.48	0.33	129.4	57.6	445.3	1.43	0.56	0.28			75.2	2.78		9.86
CA4	J5	Lower Frisco Hot Spring	48.9		7.79		1280	1353	406	18.8	54.3	6.9	0.65	0.43	107.4	90.3	574.3	1.8	0.56	0.38			90.9	3.81		5.68
CA4	SNM-18	Lower Frisco Hot Spring	45.0	6.80	7.64	1495	925.8	924	232	10.8	46.3	7.2	0.4	0.35	138	35.6	372	1.5		0.13			80	0.89	10.79	0.16
CA6	J4	Lower Frisco Hot Spring	40.0		7.95		768	817	215.6	11.3	39.3	7.4	0.34	0.28	136.7	44.2	294.6	1.49	0.43	0.22			64.8	3.09		6.34
CA7	J2	Upper Frisco Hot Spring	36.7		9.60		156	202	62.8	0.4	1.2		0.01		72	19.2	0.4	0.72	0.31	0.03			45.4	26.38		29.76
CA7	SNM-20	Upper Frisco Hot Spring	37.0	8.80	9.67	261	211.6	135	65.1	0.4	1.3	0.04			14.6	1.5	2	0.75					49	77.63	11.50	36.35
CA8	MFG3	Gila Middle Fork Hot Spring	36.0		8.09		192	297	43.7	1.2	16.8	1.6			139.7	28.3	3.9	5.28		0.07			56.5	5.92		54.71
CA10	DL-32-NM	Pueblo Windmill	33.8	6.00				1270	140	13	130	29			561	310	68	3.4		0.36	1.6		14	7.42		
CA13	GS54856	test well	32.2		8.70	2710	2540	2430	224	1.6	505				15	1604	52	7.8		0.39			20	0.76	29.09	4.34
CA14	130	well	32.0	9		330	256	283	65	2.7	0.9	0.1			120	23	13	1.4		0.1	0.05	3.99	53	1.09	10.62	10.64
CA15	119	well	32.0	8.7		2710	2540	2417	220	1.6	500				15	1600	52	7.8		0.39	0.03	0.2	20	1.25	27.53	4.84
CA16	MFG1	Gila Middle Fork Hot Spring	31.0		8.08		196	299	40	1.6	20.4	2.6			145.8	29.8	3.2	4.86		0.05			51	5.39		52.71
CA18	MEAD-10	Gila Middle Fork Meadows HS	27.5		7.60	215	150	167	25	2	17	1.8			94	11	10	3.4					2.8	2.19	0.70	11.33
CA18	MEAD-12	Gila Middle Fork Meadows HS	29.5		7.10	220	150	171	25	1.8	17	1.8			82	11	12	3.4					17	0.93	3.19	14.00
CA18	MEAD-14	Gila Middle Fork Meadows HS	32.5		7.60	215	145	174	25	1.7	19	1.8			92	10	6	3.4					15	3.79	3.59	19.93
CA18	MEAD-19	Gila Middle Fork Meadows HS	27.5		7.70	215	155	171	27	1.8	18	1.7			88	5.5	6	3.4					20	8.49	5.05	10.58
CA18	MEAD-5	Gila Middle Fork Meadows HS	28.0		7.50	220	160	173	24	1.8	17	1.8			90	5.5	8	3.4					21	2.26	5.16	7.81
CA20	US107	Zuni Salt Lake Warm Spring	26.0		8.24		220152	202370	66205	1173	195.2	4885			238	28722	100938	0.73		3			10	1.89		8.08
CA21	GS62058	Gila Middle Fork Pool HS			7.90	771	508	607	177	4.1	16	0.1	0.2	0.2	128	84	108	9.6		0.12			80	7.76	12.12	19.55
CA21	M77-CT1	Gila Middle Fork Pool HS	66.0	7.78			587	581	150	3.1	14	0.1	0.36		135	79	105	9.5		0.11			85	0.30		0.99
CA21	PHS-SUM	Gila Middle Fork Pool HS	65.3		8.20	720	514	479	146	3.9	16	0.1	0.4		94	20	107	3.4	0.25	0.1			88	17.30	1.60	6.78
CA21	SNM-14	Gila Middle Fork Pool HS	65.5	6.80	7.90	777	580.8	580	145	3	16.6	0.13	0.38	0.23	139	79.9	108	9.4		0.05			78	1.35	6.26	0.19
CA22	MFG2	Gila Middle Fork Hot Spring	37.0		8.07		188	289	41.8	0.8	19.2	1.6			128.1	31.7	4.2	5.28		0.02			56	3.74		53.56
CA23	MFG4	Gila Middle Fork Hot Spring	26.0		8.15		168	267	37.5	0.8	14.8	1.5			131.2	19.2	3.2	5.07					54	7.26		59.09
CA23	SW307	Gila Middle Fork Hot Spring	32.0		8.44		224	227	34	0.8	14	1.3			97.6	23.2	1.1	5.01					50	1.55		1.34
CA23	SW306	Gila Middle Fork Hot Spring	34.0		8.12		192	233	35.2	0.8	14.2	1.3			82	44	1.4	5.01					49.5	3.98		21.57
CB2	210	well	52.8	6.3	7.2	7000	5450	6652	1100	47	730	110	4	8.6	1320	2000	1300	0.6	3	3.2	2		24	2.41	36.14	22.06
CB6	178	well	36.0			989		797	42	7	120	36	0.05		257	300	19	0.7		0.03			15	0.31	10.84	
CB9	193	well	34.0	6.8		25200	18500	19156	5600	55	460	460	0.81		1360	4300	6900	1.6			3.4	0.6	15	0.10	21.40	3.55
CB9	197	well	31.5	6.7		18000		14600	4100	59	320	330			1770	4300	3700	2.9		3.5		0.3	14	0.02	23.87	
CB13	LUC-11	Salado Spring	25.0	6.46		3800		3583	195	21	670	92.4	0.52	9.42	425	1990	156	1.87		0.68	5.83		15	2.47	32.48	
DA1	CHAF55-25	Chaffee 55-25	69.0		7.46	2300	1480	1642	350.8	53.2	96.9	33			373.4	198	482.2	2.41			0.1		51.5	0.41	5.09	10.91
DA2	SNM-5	Radium Hot Springs Bailey Well #15	70.0	6.00	7.11	7050	3944.3	3942	1140	164	131	11.2	1.26	2.33	438	253	1720	5.44		0.82			75	0.18	12.80	0.06
DA4	CHF35-25	Chaffee 35-25	68.0		8.05	2580	1626	1871	397.5	54.7	129.2	31.2			394.2	300	496.3	2.16		0.36	0.22	8.37	56.5	1.62	7.38	15.05
DA7	CHF12-24	Chaffee 12-24	65.0		7.57	3000	1968	1809	392.4	58.3	107.4	28			448.7	220.8	499.2	2.2		0.18	0.13	0.31	50.9	0.14	12.59	8.10
DA9	S76BAILEY	Radium Hot Springs Bailey's bathhouse	60.8		7.96	5600	3731	4615	1212	182	142	11.7	1.18		350	232	2400	3.61	2.35	0.82			77.5	8.95	17.13	23.70
DA12	B2	Radium Hot Springs Hotel Well #2	53.0		8.16		3532	3752	1135.9	167	118.6	15.2	1.18	2.49	378.3	263.2	1593.6	4.44	1.54	0.86			69.9	3.55		6.23
DA12	M77-DA1	Radium Hot Springs Hotel Well #2	52.0	7.13			3857	3804	1100	160	120	15	1.2		414	260	1650	4.8		0.68			78	0.29		1.38
DA12	RHSHOT2	Radium Hot Springs Hotel Well #2	60.0		8.33	5800		4253	1373	164	65	11	1.01		253	208	2100	3.02	2.5	1.06			71	0.22	17.61	
DA12	S76HRSW2	Radium Hot Springs Hotel Well #2	60.0	6.70				3930	1120	150	127	13.5	1.5		480	300	1680	5.1	0.1	0.9			52	1.28		
DA12	SNM-6	Radium Hot Springs Hotel Well #2	43.0	7.00	7.41	6530	3728.4	3727	1070	146	136	13	1.27	2.33	438	263	1580	4.73		0.77			72	0.77	10.61	0.03
DA13	280LC1	LC-1	67.9		8.29	922	576	730	214.5	6.2	10.2	1			219.7	149.8	102.1	1.9		0.45		0.09	24.3	1.92	9.33	26.78
DA14	SNM-7	Radium Hot Springs Roy Smith Well	50.0	6.70	7.01	5230	2978.5	2973	842	114	120	12.9	0.98	2	348	250	1220	3.97		0.6			59	1.35	10.56	0.17
DA15	NMSU81479	NMSU PG-2			8.35	2480	1704	1819	381.6	175	19.2	27			508.9	226.2	421.9	1.31		0.23	0.55		57.5	1.57	2.22	6.76
DA15	SNM-9	NMSU PG-2	43.0	6.50	7.49	3290	2232.6	2215	447	47	145	38.5	0.49	3.96	734	135	590	0.92		0.3			73	0.52	5.14	0.78
DA17	LASALTNA	Nations Well	45.1		8.07	2400	1983	2340	488	55	142	32	0.46		348	223	980	1.62	1.61	0.6			68	8.05	35.08	18.02
DA17	NATIONW81	Nations Well	43.0		7.60	3040		2311	450	46	190	34			700	250	580	1.4			2	0.01	58	0.13	8.65	
DA18	47	well	43.0	7.6		3040		2309	450	46	190	34			700	250	580	1.4			0.01	0.04	58	0.13	8.65	

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	TDS (sum)	Na mg/L	K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br g/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 g/L	CHRG BAL %	COND BAL %	MASS BAL %
DA19	LASALTHU	Husand Well	42.5		8.02	2000	1706	1785	413	43	107	29	0.36		115	214	800	1.84	0.86	1.03			60	3.89	34.21	4.64
DA21	LASALTRO	Rowan well	36.8		8.10	1500	1093	1660	284	29	80	13.3	0.24		383	123	700	1.77	1.85	0.21			44	22.35	21.44	51.91
DA22	TELLYER2	Tellyer Well	36.5		8.20	1110		836	160	17	55	9.9			283	140	130	1.6			1.8		38	1.58	1.32	
DA23	GS28934	Running Indian Well	36.1		8.60	2310		1494	460	3.2	23	0.3			47	610	320	6					24	3.52	7.95	
DA23	S7623S2W	Running Indian Well	35.0		7.74	2200	1450	1429	410	2.75	24	0.15			46	565	328	3.2	2.31	1.77			45.5	6.94	13.11	1.47
DA24	SD1	well	36.0		7.49		2020	1969	269.4	20.7	291.4	34.9			102.5	979	255.3	0.77		0.37			14.3	0.60		2.54
DA26	1GD1	NMSU GD-1	35.0	6.70	7.37	2370		1663	321.4	33.6	131.7	23			547.9	147.5	391.4	1.52		0.09	3.95	0.01	60.9	0.28	1.67	
DA27	NPHL870	White well			8.00	1665	1020	1134	253	25	88	17			362	158	229	2.4						4.89	4.71	11.22
DA28	72	well	34.0	7.5		488		468	58	12	29	6.7			200	33	18	0.9		0.12		16.8	93	3.29	1.06	
DA29	23	well	33.5	8.1		950	554	645	170	4.1	20	4.8	0.09	0.47	161	150	98	1.4		0.15	0.04	0.66	34	1.81	6.14	16.37
DA30	9	well	30.5	7.6		890		628	170	1.8	6.3	0.7			207	140	59	2.1		0.36	0.03	0.31	40	1.70	12.21	
DA30	10	well	33.3	7.4		490		352	87	1.3	7.3	0.5			95	84	35	1.5		0.18	0.02	0.18	40	1.73	13.81	
DA33	44	well	36.0	8.6		2310		1494	460	3.2	23	0.3			47	610	320	6			0.02	0.49	24	3.52	7.95	
DA36	24	Berino Well	31.0	7.7		1120		896	220	8.1	25	3.6			359	170	73	1.1			0.06	0.04	36	0.96	1.08	
DA36	GS29520	Berino Well	31.1		7.70	1120		896	220	8.1	25	3.6			359	170	73	1.1					36	0.96	1.08	
DA37	SD22	Souse Springs	31.0		7.46		312	437	62.3	5.5	29.7	8.8			231.9	20	17	0.7		0.08			61	3.30		40.06
DA39	29	well	31.0	8.2		778		626	140	14	17	4.6			261	100	56	0.2		0.06		0.04	33	1.76	1.35	
DA39	GS221153	well	31.1		8.20	778		626	140	14	17	4.6			261	100	56	0.2		0.06			33	1.76	1.35	
DA42	93	well	31.0	7.3		2070		1293	360	3.9	71	2.7			48	360	410	1.5				0.89	35	1.02	5.68	
DA43	COLM1	Pol Ranch Windmill	30.5		8.20		512	749	174.5	43.8	4.6	5.3			380.7	70	34.7	1.02		0.34			34	3.57		46.28
DA45	13	well	32.0	8.6	8.2	600	475	323	110	1.5	9.5	0.1			8	130	40	1.7			0.02		22	13.35	11.57	32.04
DA47	38	Dominguez Bros Well	30.0			3350		2397	510	48	170	42			547	390	610	1.8		0.82		25.2	52	1.38	5.52	
DA47	39	Dominguez Bros Well	31.5	7.7		2870		2074	420	40	170	30			612	270	470	1.4				7.53	53	2.13	5.38	
DA49	NMPLH997	Railroad Well			8.00	2270		1251	377	4.1	39	4.9			169	174	477	5.8						3.33	16.94	
DA51	GS2053	Radium Hot Springs Hotel Well #1					3738	3924	1164	111	138	17			429	253	1752						60	0.03		4.98
DA51	SCOTTRHS	Radium Hot Springs Hotel Well #1	53.3		7.20	6100	3620	3801	1100	161	126	12			417	255	1650	4.8					75	0.25	2.88	4.99
DA52	86MASS21	Radium Springs Masson 21		6.10	8.34		3682		1156.5	161	133.3	12.6	0.88		399.1	250	1685.8			0.98	0.19		70.8	2.42		5.14
DA53	AA03261	Radium Springs Masson 23			8.12	5960			860.7	117	204.4	23.6	0.92		396.6	292.2	1525	5.19		0.68	0.22		53.2	2.93	11.59	
DA55	AA03262	Radium Springs Masson 26			7.94	6030			990.2	129	141.7	22.2	0.96		424.7	249	1632	5.45		0.75	0.36		61.9	2.68	8.10	
DA57	JET468	NMSU GD-2		7.65	7.90	3120	1948	1974	427.6	43.8	130	36			422.2	315	573.7	1.29		0.3	1.28	0.02	23.2	0.95	6.51	1.35
DA57	JET840	NMSU GD-2		7.80	7.91	2680	1787	1829	386.2	34.8	114.5	36.6			494.2	280	440.3	0.55		0.3	6	0.02	36	0.07	1.44	2.38
DA59	NMSU9430	NMSU PG-1			7.25	2800	1820	1827	372	41.4	124	25.4			579.7	52	571.1	1.22		0.34	0.1		59.5	2.37	8.87	0.37
DA59	PG1COMP	NMSU PG-1	60.6	6.80	7.95	3110		2285	488	57.9	138	19			612.6	285	590.6	1.31		0.1	0.28	0.02	92	2.42	0.19	
DA59	SNM-8	NMSU PG-1	58.5	7.20	7.68	3350	2273.5	2273	482	49	152	34.5	0.53	4.16	636	242	590	1.07		0.28			81	1.00	2.05	0.04
GR1	MIML3-12-7	Mimbres Hot Springs #3		8.75				377	113	1.2	3.1	0.03	0.14		104	69	20	14	0.73				52	7.02		
GR1	MIML3-WR	Mimbres Hot Springs #3			9.00	444		296	96	2.9	4.8				42	65	15	17		0.11			53	14.40	1.12	
GR2	EI3024	Gila Hot Springs Doyle Well	74.0		8.23			519	134.8	1.6	12.3	0.4			118.4	80.4	98			0.09			73.2	1.33		
GR3	GILA20	Turkey Creek Hot Spring	74.0		8.66		236	311	61.1	1.5	6.8	1.6	0.06		94	64.8	4.2	9.45		0.08			67.7	4.94		31.88
GR3	GILA22	Turkey Creek Hot Spring	69.8		9.10		260	275	69.2	1.2	2.8		0.11		40.3	75.9	5	11.85		0.12			68.9	3.08		5.92
GR3	SNM-16	Turkey Creek Hot Spring	65.0	7.50	9.08	326	260.4	216	71.6	1	3.6	0.13	0.09	0.05	3.7	53	6.5	11.8					65	25.90	2.60	16.87
GR3	SNM-17	Turkey Creek Hot Spring	73.0	8.50	9.10	329	258.8	213	71.6	1	3.7	0.07	0.09	0.05		53.1	6.6	11.8					65	27.23	1.66	17.69
GR4	EI6968	Gila Hot Springs Campbell #4 Well	72.0		8.29			478	120.4	1.2	11.3	0.1	0.2		117.2	41	101.5	9.55		1.2			74.8	2.26		
GR4	SNM-12	Gila Hot Springs Campbell #4 Well	71.1	7.00	8.18	659	495.8	482	129	2.6	1.5	0.1	0.25	0.18	122	45.7	102	9.1		0.02			70	4.18	11.97	2.69
GR5	GHS0925	Gila Spring Hot Spring #14	66.0	7.75			445	484	125	3.8	10.6	0.05	0.25		76	110	84.8					0.31	73	1.46		8.72
GR7	116	Gila Hot Springs	64.0	7.5		638	421	469	121	3.6	12		0.03		110	45	100	9				0.7	68	0.63	6.60	11.48
GR7	GILA5	Gila Hot Springs	62.8		8.19		408	426	123	3.1	10.6	0.1	0.26	0.02	108.6		99.4	8.7		0.03			72.3	8.72		4.43
GR7	GILA6	Gila Hot Springs	66.3		8.15		416	509	129.7	3.1	10.4	0.2	0.26	0.02	115.9	67.2	100.1	8.7		0.02			73.3	2.22		22.33
GR7	GS31051	Gila Hot Springs	63.9	8.6				541	148	2.91	20	0.06	0.32		104	97	106	8.5	0.85				53	2.64		
GR7	GS4897	Gila Hot Springs	63.9		7.50	638	421	467	121	3.6	12		0.03		106	45	102	9					68	0.56	6.60	10.84
GR7	M77-GR1	Gila Hot Springs	68.0	8.13			468	499	125	30	9.9		0.23		101	45	105	9.1		0.1			74	5.47		6.69
GR7	SNM-13	Gila Hot Springs	65.2	7.00	8.21	642	483.5	478	128	2.6	11.6	0.11	0.26	0.18	116	43.4	102	8.5					65	1.08	2.43	1.21
GR10	GHS0700	Gila Hot Springs Campbell #2 Well	61.0		8.10		423	462	118	4.5	10.2	0.09	0.25		76	100	86.5					0.1	66	0.28		9.13
GR10	GHS1400F	Gila Hot Springs Campbell #2 Well	62.0	7.72			411	449	106	3.4	10.6	0.09	0.25		76	100	83.1						70	3.67		9.35

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	TDS (sum)	Na mg/L	K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br g/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 g/L	CHRG BAL %	COND BAL %	MASS BAL %
GR10	GHS1400F	Gila Hot Springs Campbell #2 Well	62.0	7.72			411	449	106	3.4	10.6	0.09	0.25		76	100	83.1						70	3.67		9.35
GR10	GHS1445	Gila Hot Springs Campbell #2 Well	61.0	7.97			418	457	120	3.4	10.6	0.08	0.25		76	100	86.5						60	0.95		9.29
GR10	GHS1610	Gila Hot Springs Campbell #2 Well	62.0	7.97			415	454	118	3.4	10.2	0.08	0.25		76	100	81.4						65	1.30		9.48
GR10	GHS1610	Gila Hot Springs Campbell #2 Well	62.0	7.97			415	455	118	3.4	10.2	0.08	0.25		76	100	81.8						65	1.19		9.57
GR10	GHS2252	Gila Hot Springs Campbell #2 Well	60.0		7.70		428	467	120	3.9	11	0.09	0.25		76	103	84.8					0.27	68	1.11		9.18
GR13	GHS0935	Gila Spring Hot Spring #41	58.0	7.85			426	465	121	3.6	10.2	0.08	0.25		76	103	83.1					0.28	67	1.48		9.04
GR14	86	Mimbres Hot Springs	60.5	8.3		455		363	94	1.3	3.3	0.6	0.1		107	65	17	18		0.05		0.97	56	2.06	4.38	
GR14	GILA4	Mimbres Hot Springs	58.2		8.97		320	333	91.7	1.2	2.4		0.11		67.1	84	14.5	16					55.6	0.67		3.93
GR16	MIM-L12	Mimbres Hot Springs #12	56.4	8.24				286	115	1.1	3		0.13		89	9	20	3.2	0.2	0.12			45	37.17		
GR19	73	Faywood Hot Springs	53.0	7.4		605	384	534	85	7.8	38	7.3			278	52	16	6.8			0.01	0.2	43	0.43	5.68	39.09
GR19	74	Faywood Hot Springs	53.5	7.1		603		518	79	7.6	34	7.4	0.13		277	49	17	5.9	0.1	0.07	0.06	0.18	41	3.22	1.25	
GR19	FAY-S76-1	Faywood Hot Springs		6.95				581	100	7.1	36	9.1	0.19		292	76	15	6	0.38				39	0.06		
GR19	FAY-WRD	Faywood Hot Springs			8.40	504	330	443	87	11	14	6.3	0.07		197	55	19	6.3		0.26			47	0.49	5.01	34.22
GR19	GILA2	Faywood Hot Springs	53.8		7.74		492	564	90.8	8.2	35.6	7.6	0.16	0.1	283	72	15.2	6.1		0.01			45.2	2.23		14.62
GR19	GS15112	Faywood Hot Springs		7.10		603		518	79	7.6	34	7.4	0.13		277	49	17	5.9	0.1	0.07			41	3.22	1.25	
GR19	GS1856	Faywood Hot Springs	53.3		7.40	605	384	534	85	7.8	38	7.3			278	52	16	6.8					43	0.43	5.68	39.04
GR22	GILA8	Gila River Waterfall HS	43.6		8.08		516	593	141.9	2.7	18.4	0.8	0.31	0.02	125	93.6	115.7	8.7		0.11			85.9	2.99		14.95
GR22	M77-GR2	Gila River Waterfall HS	43.0	7.88			558	563	145	2.7	16	0.7	0.25		130	67	120	8.9		0.14			72	0.76		0.84
GR23	EFGR-NM	Gila East Fork no name spring	41.4		8.1	581	369	431	116	1.5	9.7	0.6			99	31	103	6.6					64	0.87	3.31	16.91
GR25	M77-GR3	Gila East Fork Hot Spring	36.0	8.27			385	388	100	1.5	9.7	0.6	0.17		89	27	92	6.1		0.12			62	0.09		0.83
GR32	LD2	Muir Ranch well	33.0		7.86		816	893	216.1	11.7	28	2.7	0.31	0.15	314.8	223.8	47.5	6.9	0.67	0.46			39.6	0.72		9.40
GR39	GILA23	Riverside Well	29.0		8.53		292	324	77.9	1.5	10.4	0.6	0.13		75.7	99.4	25.9	10.5		0.92			21.4	6.73		11.08
GR39	GILA24	Spring Canyon Warm Spring	31.0		8.13		332	444	92.4	1.5	18.4	1.3	0.08		234.3	49	6.4	5.85		0.16			34.5	2.44		33.70
GR41	GILA29	Mangas Springs	27.0		8.00		544	649	34.9	7.8	87	16.5	0.02		390.5	35	18.8	0.49		0.14			57.8	1.76		19.28
GR42	J1	Allen Spring	25.6		8.12		492	582	8.3	1.6	77.8	38.2	0.02	0.12	389.3	48	2.5	1.05	0.54	0.04			14.5	0.54		18.29
GR43	J7	Cliff Warm Spring	25.0		7.89		164	237	27.4	2.7	13	6.9	0.03	0.04	140.3	15.4	1.4	0.62	0.27	0.04			29.3	4.12		44.76
HD1	SNM-11	Lightning Dock Burgett Well #1	104.0	7.80	8.45	1666	1180.5	1123	324	20	20	0.18	0.69	0.05		510	90.7	11.6	0.2	0.36			145	6.54	5.65	4.89
HD2	GS59532	Lightning Dock hot well			9.10	1560		1063	302	16	18	0.1	0.66		32	490	89	12		0.45			103	2.39	6.75	
HD2	S76LD-12	Lightning Dock hot well			8.75	1500	1057	1136	348	24	16	0.1	0.8		94	469	88	3.7		0.34			92	8.78	11.16	7.47
HD4	36	Lightning Dock hot well	95.5	9.1		1560		1058	300	16	18	0.1			32	490	89	12		0.45	0.05	0.2	100	1.76	7.91	
HD4	S76LD-10	Lightning Dock hot well			8.40	1580	1160	1217	324	21	21	0.7			145	474	83	9.9					138	2.04	0.40	4.88
HD5	SNM-10	Lighting Dock Burgett Well #10	95.2	8.70	9.06	1621	1136.6	1082	312	20	11.4	0.2	0.67	0.4		492	88.7	11.1	0.2	0.33			145	5.13	8.86	4.80
HD7	P2	Lightning Dock hot well	85.0		7.71		1116	1232	333.6	23.5	22	0.5			106.8	497.1	88.3	12.6		0.48			148	3.16		10.43
HD8	P3	Lightning Dock McCants Well	81.0		8.16		1024	1192	318.6	21.1	23.2	0.8	0.64	0.47	103.7	480	87.6	12	0.56	0.5			143	3.02		16.42
HD9	P4	Lightning Dock hot well	71.0		7.84		1608	1840	493.1	27.8	67.3	5.3			118.9	893.4	111.3	7.25		0.42			116	3.77		14.45
HD10	33	Lightning Dock hot well	52.0	7.7		2310		1707	420	15	68	4.9			140	830	110	6.6		0.43	0.58	1.3	110	1.27	2.81	
HD10	GS59533	Lightning Dock hot well			7.70	2310	1680	1698	420	15	68	4.9	0.98		135	832	108	6.6		0.43			107	0.74	2.20	1.07
HD10	S76LD-5	Lightning Dock hot well			8.14	2260	1732	1778	440	31	71	5.6	1		109	886	113	3.2		0.45			118	1.03	6.55	2.67
HD10	S76LD-6	Lightning Dock hot well			8.07	2200	1786	1696	472	18	70	4.5	1.1		113	834	77	3.3	0.61	0.37			102	7.39	13.70	5.05
HD12	34	Lightning Dock hot well	33.5	8		1960		1461	360	16	61	6.6			210	540	150	6.4		0.52	0.05	10	100	1.04	0.29	
HD12	GS59534	Lightning Dock hot well			8.00	1960	1380	1446	356	16	61	6.6	0.72		211	536	152	6.4		0.52			100	0.88	0.07	4.80
HD12	S76LD-1	Lightning Dock hot well			8.25	1760	1295	1570	410	17	64	6.8	0.8		223	542	198	3.4	1.5	0.29			103	3.30	25.78	21.22
LA1	385	Pueblo Canyon #7 Well	31.0	7.7		766		722	182	0.5	10				428	43	16	2.5				1.1	39	0.38	10.04	
LA1	386	Pueblo Canyon #7 Well	30.5	7.8		729		680	170	0.4	9.8				399	42	16	2.5				1.2	39	0.65	8.29	
LU7	PAL4	well	31.5		8.07		700	876	234.5	19.6	31.5	5.1			201.4	265	54.6	5.07		0.24			59	8.87		25.14
LU8	W86	well	31.1		7.82		732	997	244.6	18	26.4	4.2			346.6	245.9	52.8	5		0.4			53	0.83		36.19
LU14	W69	well	30.0		8.70		1168	1309	416.1	3.9	1.4	0.2			367.3	236.8	234.7	8.25		1.56			39	0.77		12.09
MK3	DL-4-NM	Ya-Ta-Hey Well	45.5	7.20				684	205.33	0.64	1.65	0.04	0.1	0.07	222	214.5	15.4	0.33		0.06	0		23.6	2.81		
MK4	430	well	42.2	8.2	8.7	1800		1169	360	2.1	13	0.09	0.11	2.4	189	560	14	1.5	0.16		0.16		26	3.81	8.66	
MK4	432	well	37.4	8.3	8.4	1600		1169	340	2	13	0.15	0.11	2.2	188	580	17	1.6	0.08		0.1		25	0.49	2.70	
MK7	299	Navajo well	36.0	8.4		594		479	130	0.6	1.4	0.1			200	120	4.8	0.4			0.02		22	1.58	3.23	
MK8	DL-15-NM	Toh Sah Toh	37.0	8.90				492	144	0.52	1.54		0.16	0.08	180.56	138.11	5.9	0.4		0.14	0.01		20.5	2.88		
MK9	239	well	36.0	7.9		1570		1166	300	5	37	8.9			290	410	98	1.1				0.2	16	1.12	0.36	

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	TDS (sum)	Na mg/L	K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br g/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 g/L	CHRG BAL %	COND BAL %	MASS BAL %
MK9	240	well	34.0	7.9		1360		1009	240	6	46	9.5			280	330	86	1.1				0.2	10	0.99	0.52	
MK12	296	Pure Oil Navajo #1 (Tohachi Well)	35.0	9.1		644		484	140	1.1	1.8	0.2			184	130	5.8	0.3				0.22	21	2.66	3.35	
MK12	GS44727	Pure Oil Navajo #1 Well (Tohachi Well)	36.1		8.40	594	390	474	132	0.6	1.4	0.1			198	115	4.8	0.4					22	0.34	1.76	21.62
MK12	NM51	Pure Oil Navajo #1 Well (Tohachi Well)			8.92		376	503	152.4	0.8	1.2	0.01			181.8	142.2	2.5	0.29		0.05			21.5	5.37		33.71
MK17	243	well	32.5	8.5		1500	906	1006	310	2.7	12	2.1			223	380	60	0.8		0.11	0.16	0.35	15	3.71	4.50	11.06
MK18	422	well	32.7	8.6	8.5	2900		2019	670	2.3	7	1.2	0.07	0.28	239	1000	81	0.7	0.16		0.04		17	4.60	2.30	
MK20	241	well	32.0	8.4		1280	860	947	273	2.7	11	3			284	306	50	0.8		0.14	0.06		16	1.04	0.47	10.08
MK21	237	well	31.5	8.1		1220	802	929	230	3	14	3.8			270	370	20	0.4			0.04	0.1	18	6.81	9.07	15.88
MK23	256	well	30.5	9.1	9	800		682	200	0.9	1.4	0.32	0.03	0.1	308	150	6.5	0.4	0.03		0.01		14	2.62	10.33	
OT5	S76GART4	Garton Well	33.7		8.00	10000	9086	9329	2225	170	745	176	0.32		120	2854	3000	2.9	4.9	1.2			30	2.21	52.83	2.68
OT5	SA1	Garton Well	34.0		7.12		9140	8491	2032.4	37	645.3	186			130.6	2958.7	2476.7	3.15		0.75			20	1.14		7.11
RA1	GS13378	Ojo Caliente Hot Spring Soda Spring			7.2	3910		3724	997	29	25	9			2180	162	240	16					66	0.66	17.90	
RA1	HILLEBRD	Ojo Caliente Hot Spring Soda Spring						3670	995.7	31.4	22.8	9.5	3.4	1.4	2153.5	151	231.4	5.2		4.2			60.2	1.43		
RA1	OC-17	Ojo Caliente Hot Spring Soda Spring	27.3	6.86		4220	3673	3673	950	28	20	7	3.5	1.44	2190	154	240	14.4	1.14	1.39			62	2.74	4.63	0.00
RA2	NM21	Ojo Caliente Hot Spring Well	55.6		7.74		2576	12717	10018	34.8	11.6	4.8			2123.4	196.9	251.7	1.12		1.35			74	80.95		393.69
RA2	OC-18	Ojo Caliente Hot Spring Well	53.6	7.98		4560	3724	3724	1000	28	8	3.9	3.64	0.65	2190	164	253	17.9	1.01	1.46			52	2.07	0.27	0.01
RA2	OC-25	Ojo Caliente Hot Spring Well	54.2	7.14		4440	3618	3618	940	30	17	5.4	3.17	1.28	2130	160	246	17.3	1.22	1.41			65	2.98	2.17	0.01
RA2	OC-4	Ojo Caliente Hot Spring Well	54.0	6.75		3900	3344	3344	927	27.8	7.3	2.9	5.5	0.48	1870	195	242	20.8		1.54			43.4	0.22	8.82	0.01
RA3	GS13193	Ojo Caliente Arsenic Hot Spring	45.0		7.10	3930		3627	928	30	25	8.9			2160	156	238	16		1.6			63	3.46	9.71	
RA3	NM19	Ojo Caliente Arsenic Hot Spring	43.5		7.03		2652	3739	993.1	36	21.6	7.6	3.86	0.28	2172.2	187.3	235.4	14.7	0.42	1.3			65	0.57		40.98
RA3	OC-14	Ojo Caliente Arsenic Hot Spring	38.3	7.44		4200	3665	3665	950	30	22	8.1	3.59	1.49	2180	157	238	13.1	0.93	1.4			59	2.21	5.73	0.01
RA3	OC-5	Ojo Caliente Arsenic Hot Spring	43.5	6.60		4000	3131	3130	914	31	22	7.8	0.38	1.22	1690	150	235	16.1		1.6			61	5.05	5.93	0.03
RA3	S76ARSEN	Ojo Caliente Arsenic Hot Spring	38.3	7.10				3667	1000	30.6	28	7.8	4.3		2135	149	242	12.8	0.15	1.37			56	1.45		
RA5	OC-13	Ojo Caliente HS Lithia Spring	41.9	7.08		4190	3630	3630	950	30	26	9.5	3.57	1.48	2160	151	227	11.8	1.02	1.4			57	0.96	6.73	0.01
RA5	OC-2	Ojo Caliente HS Lithia Spring	38.0	6.55		3900	3475	3295	687	28.5	23.6	8.7	2.7	1.16	2070	173	227	13.5		1.47			58.5	15.11	15.58	5.18
RA6	GS13192	Ojo Caliente HS Sodium Sulfate Spring	40.6		6.90	3920		3633	933	34	24	7.6			2160	156	238	16		1.7			63	3.27	10.40	
RA6	NM20	Ojo Caliente HS Sodium Sulfate spring	41.1		7.20		2668	3795	993.1	36	20.3	7.4			2245.4	187.3	237.2	1.01		1.5			66	1.83		42.25
RA6	OC-16	Ojo Caliente HS Sodium Sulfate Spring	41.3	7.02		4250	3628	3627	950	28	20	7.1	3.64	1.49	2150	153	237	14		1.41			61	1.85	3.96	0.04
RA6	OC-3	Ojo Caliente HS Sodium Sulfate Spring	40.0	6.20		4100	3533	3533	866	31.3	20.6	6.6	2.4	1.04	2100	187	237	15.5		1.5			64.3	6.27	1.43	0.01
RA7	OC-1	Ojo Caliente Hot Spring Iron Spring	43.0	6.40		4100	3578	3578	953	29	21	6.6	2.2	1.14	2090	171	229	14.2		1.53			58.9	1.00	7.64	0.01
RA7	OC-15	Ojo Caliente Hot Spring Iron Spring	42.2	7.26		4250	3674	3674	950	30	22	8.1	3.38	1.45	2190	154	238	14.1	1.02	1.42			61	2.41	4.42	0.01
RA7	S76IRON1	Ojo Caliente Hot Spring Iron Spring			9.09	3300	2438	3141	993	36	6	7.7	2.7		1642	132	246	3		1.1			71	10.56	37.69	28.81
RA7	S76IRON2	Ojo Caliente Hot Spring Iron Spring	42.8	6.65				3582	980	31.5	29	8.5	4.3		2073	149	237	13.5	0.66	1			55	1.89		
RA8	OC-26	Statue Spring	29.2	6.26		1660	1386	1386	160	15	126	48	0.41	1.15	649	254	108	1.44		0.41			23	3.77	6.41	0.03
RA9	OC-20	Ojo Caliente Hot Spring Well #1	34.3	6.88		3000	2586	2586	620	18	70	21.6	2.04	1.34	1410	193	190	8.4	0.83	0.91			50	0.13	10.08	0.00
RA9	PH65-524	Ojo Caliente Hot Spring Well #1			7.80	2375	1515	1787	496	16	40	16			907	155	149	7.5						5.43	6.51	17.92
RA11	NM18	spring	25.5		6.62		1072	1443	183.2	16.8	138.9	56.5	0.54	0.85	695.6	219	107.4	1.31	0.97	0.33			21.5	2.56		34.60
RA12	PH65-523	Ojo Caliente Hot Spring Well #2			7.80	1050	665	1134	102	407	80	29			274	158	83	0.55						35.29	102.11	70.46
SA1	BA-7	Jemez/Baca # 15	267.0	7.61		10400	5735	6430	1950	330	13.6		23.1	0.25	89	45	3257	6.9	9.56	25.4			680	1.31	6.47	12.12
SA1	BA-8	Jemez/Baca # 15	326.0	7.12		10600	5783	6443	1910	350	14.2		24.3	0.23	75	37	3302	6.8	9.2	25			689	0.33	9.20	11.41
SA2	BA-5	Jemez/Baca # 4	297.0	7.20		9100	4719	5565	1560	280	3.7		20	0.1	190	49	2670	6.8	7.83	17.9			760	1.15	14.19	17.93
SA3	BA-2	Jemez/Baca # 4	294.0	7.28		9100	4769	5518	1570	285	3.6		20.6	0.1	215	49	2640	6.6	7.8				720	0.46	13.48	15.70
SA4	BA-4	Jemez/Baca # 13	279.0	7.20		8900	4644	5412	1540	255	4.3	0.19	20.5	0.22	236	47	2594	9.6	7.01	18			680	1.23	13.82	16.53
SA5	BA-1	Jemez/Baca #13	278.0	7.30		8500	4529	5279	1550	255	3.5		24.7	0.21	221	49	2501	9.4	7	18.6			640	1.24	8.61	16.57
SA6	BA-3	Jemez/Baca #24	260.0	7.25		10600	5328	6091	1870	230	17.2		23.2	0.11	89	48	3151	6.4	9.36	26.3			620	0.20	13.75	14.31
SA6	BA-6	Jemez/Baca #24	261.0	7.43		10400	5339	6034	1850	235	17.1		23.2	0.12	90	48	3128	6.6	9.42	26.5			600	0.27	12.80	13.02
SA7	VA-116	Jemez/GRI WC 23-4 at 6300 ft depth	232.6	7.10		30800	18100	18050	5890	1020	46	0.45	68	1.98	382	95	9960	13.8	27	96.2			450	0.72	4.39	0.27
SA8	BA-9	Jemez/Baca # 19	223.0	8.45		10900	6147	5841	1920	310	13.1	0.02	25.6	0.3	139	48	3340	6.9	10.9	26.8				1.14	12.11	4.99
SA9	VA-113	Jemez/GRI WC 23-4 at 4800 ft depth	214.0	8.03		13720	8580	8582	2800	470	80.5	2.89	28.3	2.29	360	33	4350	6.9	14	39.3			395	4.54	3.65	0.03
SA12	VA-121	Jemez HS Jemez Springs #1 Well	73.3	6.50		4280	2530	2529	583	62	121	4.55	6.8	0.67	698	39	909	6.4	2.2	7.11			89	5.38	19.74	0.05
SA12	VA-144	Jemez HS Jemez Springs #1 Well	72.2	6.40		4670	3005	2635	630	61	126	4.23	8.5	1.22	714	41	941	5.38	2.6	6.5			94	3.36	21.09	12.30
SA12	VA-15	Jemez HS Jemez Springs #1 Well 152 m	60.5	6.69		1700	1140	1136	185	29.9	120	9.31	2.27	0.4	479	38	243	3.3		2.2			24	0.73	6.46	0.32
SA12	VA-19	Jemez HS Jemez Springs #1 Well 24 m	68.0	6.64		3300	2220	2215	546	61.6	122	5.76	6.96	0.54	642	45	705	4.42		6.1			70	2.05	0.29	0.21

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	TDS (sum)	Na mg/L	K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br g/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 g/L	CHRG BAL %	COND BAL %	MASS BAL %
SA12	VA-21	Jemez HS Jemez Springs #1 Well 152 m	61.0	6.55		1830	1200	1229	193	35.4	122	9.25	3.6	0.4	492	49.9	281	3.5		2.5			36	1.58	8.87	2.38
SA12	VA-25	Jemez HS Jemez Springs #1 Well 24 m	73.3	6.55		3500	2560	2555	610	68	180	4.6	8.4	0.86	705	53	836	3.52		6.8			79	3.24	11.04	0.19
SA13	VA-123	Jemez HS Travertine Mound Spring	72.6	6.59		4360	2550	2545	596	62	129	4.49	6.1	0.57	697	38	906	6.3	2.3	7.02			90	3.99	19.24	0.20
SA13	VA-142	Jemez HS Travertine Mound Spring	72.9	6.20		4740	2630	2634	610	58	132	4.3	8.6	1.22	757	40	917	4.31	2.7	6.7			92	4.16	23.57	0.15
SA13	VA-17	Jemez HS Travertine Mound Spring	72.0	6.66		4100	2600	2599	612	70.3	114	4.48	8.46	0.54	714	43.2	936	5.05		7.9			83	4.75	12.91	0.04
SA13	VA-66	Jemez HS Travertine Mound Spring	72.0	6.66		3400	1700	2251	558	62	122	5.4	9	0.59	436	42.4	910	4	2.6	7			92	0.36	0.88	32.41
SA13	VA-7	Jemez HS Travertine Mound Spring	70.0	6.28		4200	7580	2579	614	75.2	182	4.56	8.2	0.6	723	36.1	829	5.21		7.8			93	4.00	6.47	65.98
SA13	VA-71	Jemez HS Travertine Mound Spring	72.0	6.12		3900	2520	2515	540	73	135	4.75	8.7	0.34	712	41	894	4.4	2.8	7.19			92	5.94	13.47	0.19
SA14	272	Jemez HS Soda Spring	65.5	7.2		3560	2150	2476	572	70	138	6.6			735	49	795	5.2		11	0.03	0.8	93	2.39	4.21	15.15
SA16	267	Jemez Hot Springs	49.0	6.7		3550		2548	550	68	170	9.2			800	49	800	4.6	1	6.5	1	0.04	89	2.85	1.68	
SA16	269	Jemez Hot Springs	58.0	7.1		3460		2350	510	63	160	6.6	7.8		773	43	700	4.4	3	7.4	0.45	0.35	71	0.20	3.33	
SA16	JEMEZ5	Jemez Hot Springs	56.0		6.89		1952	2378	603.5	63.7	129.1	5.2			685.8	53	740.6	4.62		7			85.9	1.86		21.85
SA16	JEMEZ6	Jemez Hot Springs	53.0		6.90		1884	2373	608.8	64.1	103	5.3			691.9	53	748.4	4.64		6.9			87.4	0.15		25.98
SA16	JEMEZ7	Jemez Hot Springs	74.0		7.01		2156	2547	668.8	70.8	97.2	4.5			738.3		859.7	5.2		7.2			95.4	0.69		18.14
SA18	91TDI1	Jemez Pueblo #1 Well	57.8	6.90			3366	3853	1187.5	58.6	67.6	3.19	4.7	3.19	1047	347.3	1086.4	6.8		6.78			34.1	1.90		14.47
SA18	91TDI3	Jemez Pueblo #1 Well	58.2	6.69			3349	4036	1043.5	637	57.5	8.2	5.1	3.1	789.5	268.4	1191.8	7.3		7.14			17.6	11.38		20.52
SA18	JP91-2	Jemez Pueblo # 1 Well	57.8	7.00		5560	3947	3946	1148	67	69.5	12.7	6.09	2.76	1132	254	1196	6.68	3.33	8.46			39	0.76	2.71	0.04
SA19	VA-10	Jemez HS Gazebo Spring	55.0	7.01		4200	2660	2660	656	74.2	152	5.4	10.1	0.56	711	40.9	904	5.19		7.9			93	2.11	4.93	0.01
SA19	VA-122	Jemez HS Gazebo Spring	74.9	6.57		4380	2540	2536	583	62	126	4.57	6.8	0.57	698	39	909	6.4	2.2	7.11			91	5.02	21.00	0.17
SA19	VA-143	Jemez HS Gazebo Spring	74.7	6.50		4460	2640	2637	610	58	130	4.55	8.4	1.18	746	42	932	4.64	2.7	6.4			91	4.69	19.02	0.12
SA19	VA-18	Jemez HS Gazebo Spring	36.0	7.51		4250	2700	2704	690	74	115	4.52	9	0.6	699	45.4	968	5.19		8			85	0.82	7.46	0.14
SA20	247	Kaseman #2 Well (Zia Hot Well)	54.4	7.3		15300		11888	3600	88	350	56			1460	3300	3000	2.8				0.2	31	0.98	18.25	
SA20	252	Kaseman #2 Well (Zia Hot Well)	52.0	6.8		15700		11859	3500	88	350	61			1410	3300	3100	3.4	8.1	7.5	1.4	0.09	30	0.72	12.73	
SA20	88TDI1	Kaseman #2 Well (Zia Hot Well)	53.0	7.31	6.70		10720	11339	3006	66.8	291.5	50.3	3.55	8.01	1667	3283	2919.8	2.97		6.25			33.9	7.98		5.77
SA20	E	Kaseman #2 Well (Zia Hot Well)	52.0		6.87		11300	12229	3720.4	92.7	417.8	73.4			1464.4	3343	3067.4	4.8		6.96			37.9	2.88		8.22
SA20	VA-125	Kaseman #2 Well (Zia Hot Well)	53.0	6.98		15700	11400	11351	3080	63.4	364	62.8	5.2	8.7	1398	3338	2984	2.47	3.4	7.8			33	5.02	1.83	0.43
SA20	VA-34	Kaseman #2 Well (Zia Hot Well)	56.0	6.29		16600	12200	11343	2650	66.7	302	90	6.7	9	1440	3740	3000	2.4		6.52			30	13.95	15.29	7.02
SA20	VA-53	Kaseman #2 Well (Zia Hot Well)	54.0	6.53		16000	11700	11667	3440	77	321	61	6	4.75	1068	3430	3210	4.51	4.2	7.41			33	1.74	8.51	0.28
SA20	VA-67	Kaseman #2 Well (Zia Hot Well)	53.0	6.72		15800	11300	11311	3180	64	320	71.5	6.3	9.55	1400	3280	2930	3.8	4.2	6.6			35	3.32	3.13	0.10
SA20	VA-74	Kaseman #2 Well (Zia Hot Well)	53.0	6.40		15600	12800	12897	3700	54	354	21.8	5.52	6.87	1400	4100	3210	2.67	1.1	6.9			34	4.26	17.14	0.76
SA21	VA-16	Jemez HS Buddhist Spring	50.0	6.59		3300	2550	2177	494	57.8	128	7.5	6.06	0.52	708	40.6	653	3.76		5.7			72	0.34	6.50	14.63
SA21	VA-8	Jemez HS Buddhist Spring	49.0	6.38		3300	2160	2161	458	53	154	9.57	7.56	0.56	697	37.6	653	3.86		5.7			81	0.03	6.51	0.04
SA22	VA-12	Jemez HS Marsh Spring	49.0	6.35		4100	2620	2620	609	70	129	7.82	8.18	0.64	738	41.8	903	4.56		7.5			100	2.82	10.84	0.02
SA23	JEMEZ2	Jemez/Soda Dam Hot Spring	47.0		7.06		3496	4641	1087.9	185	285.6	24.1			1526.6	50	1420.2	3.5		12.5			46.4	1.46		32.76
SA23	VA-109	Jemez/Soda Dam Hot Spring	46.8	6.21		7090	4570	4564	1030	160	245	17.4	12.7	1.39	1458	34	1536	3.28	4.07	15.7			46.8	2.82	9.15	0.12
SA23	VA-132	Jemez/Soda Dam Hot Spring	47.0	7.19		6800	4590	4585	980	186	315	22.7	15.8	1.4	1488	35	1477	3.51	4.6	13.9			42	0.19	1.06	0.11
SA23	VA-140	Jemez/Soda Dam Hot Spring	46.8	6.71		7300	4570	4570	960	160	342	21.9	13.8	2.84	1488	34	1480	3.33	4.6	12.1			47	0.23	8.53	0.01
SA23	VA-26	Jemez/Soda Dam Hot Spring	47.0	5.52		6600	4630	4625	920	177	429	21.4	13.6	2.02	1490	49.4	1460	3.57		12.8			46	2.12	5.64	0.11
SA23	VA-51	Jemez/Soda Dam Hot Spring	47.0	6.35		5900	4150	4153	990	183	314	24	13.5	0.89	1000	39.1	1520	3.55	3.84	15			46	5.51	14.16	0.07
SA23	VA-6	Jemez/Soda Dam Hot Spring	47.0	6.20			4014	4014	1010	174	328	26	13.2	1.38	886	37	1480	4.1		11.5			43	9.17		0.00
SA23	VA-64	Jemez/Soda Dam Hot Spring	47.0	6.28		5600	4200	4199	825	120	300	25	13.7	1.48	1250	36.1	1560	2.8	6.7	13.9			44	6.06	3.55	0.03
SA23	VA-70	Jemez/Soda Dam Hot Spring	47.0	6.28		6700	4380	4381	860	170	331	23.8	13.5	0.56	1390	41	1480	5	5.6	13.4			47	2.76	7.18	0.02
SA23	VA-73	Jemez/Soda Dam Hot Spring	47.0	6.30		6700	4539	4584	840	186	346	24.6	13.7	1.2	1500	36.7	1570	3.6	5.6	8.5			48	5.52	6.59	0.99
SA23	VA-9	Jemez/Soda Dam Hot Spring	48.0	6.40		7050	4620	4616	938	183	340	24.4	13.2	1.5	1510	38.4	1500	3.67		13.8			50	1.24	5.83	0.09
SA25	A	Jemez/Spence Hot Spring	42.0		8.09		297	312	58.4	1.6	5.6	1.7			142.8	24	9.6	0.54		0.1			67.4	2.26		4.96
SA25	VA-1	Jemez/Spence Hot Spring	45.0	6.70			294	294	50	1.3	5.5	1.9	0.66	0.03	144	16	8	0.55		0.15			66	3.75		0.03
SA25	VA-120	Jemez/Spence Hot Spring	42.3	7.60		293	292	292	50	1.4	5.9	1.57	0.58	0.08	140	17.1	8.2	0.76	0.1	0.12			66	3.61	7.18	0.07
SA25	VA-68	Jemez/Spence Hot Spring	42.0	7.01		280	297	297	52	1.6	7.2	1.87	0.71	0.02	135	18	11	0.59		0.15			69	0.17	4.24	0.05
SA25	VA-72	Jemez/Spence Hot Spring	42.0	7.45		275	276	276	44	1.4	6.4	1.76	0.74	0.04	138	2.8	11.2	0.69		0.17			69	2.90	8.31	0.07
SA27	88TDI10	Jemez Pueblo Indian Hot Spring	36.0	6.91	6.70		3176	4300	1141	50.2	96.5	13.1	4	2.48	1300	295.1	1328.5	6.68		6.58			55.8	6.39		35.39
SA27	88TDI9	Jemez Pueblo Indian Hot Spring	43.0	6.90	6.73		3572	4082	983	51.3	75.4	11.1	4.4	2.29	1411.9	308.8	1165.9	7.5		7.49			52.6	11.95		14.27
SA28	287	Jemez/McCauley Hot Spring	30.0	8		140		197	19	0.9	8.7	4.7			94	6.6	3.8	1			0.02	1.86	56	4.78	19.30	
SA28	289	Jemez/McCauley Hot Spring	31.0			165		224	25	1.4	12	4.8	0.27		88	6.8	28	0.9	0.1		0.02	2.21	54	5.82	30.66	

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	TDS (sum)	Na mg/L	K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br g/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 g/L	CHRG BAL %	COND BAL %	MASS BAL %
SA28	B	Jemez/McCauley Hot Spring	32.0		7.67		220	195	20.9	0.8	8.4	4.4			81.7	19	2.1	0.86		0.01			56.7	3.62		11.42
SA28	VA-119	Jemez/McCauley Hot Spring	31.9	8.23		173	186	186	20	1	8.5	4.32	0.22	0.04	86.6	5.8	4.4	0.95					54	0.19	1.29	0.09
SA28	VA-3	Jemez/McCauley Hot Spring	31.0	6.20			189	268	18	0.8	8.5	4.9	0.24	0.02	86	86	6	0.85		0.24			56	34.42		41.56
SA29	424	Jemez/San Antonio Hot Springs	40.0	7.7		110		181	23	2	4.7	0.3			61	8.8	2.3	0.8	0.06	0.04	0.16	1.64	76	0.77	19.17	
SA29	F	Jemez/San Antonio Hot Spring	56.0		8.02		148	180	23.2	2	3.2	0.5			59.8		5	0.8		0.02			85.8	4.04		21.84
SA29	VA-128	Jemez/San Antonio Hot Spring	41.3	7.88		127	167	177	23	1.8	3	0.5	0.06	0.06	57.3	9.5	7	0.76					74	4.85	1.78	5.98
SA29	VA-4	Jemez/San Antonio Hot Spring	42.0	6.80		150	170	170	21	1.7	2.3	0.3		0.02	56	7	2	0.8					79	2.89	26.88	0.07
SA29	VA-96	Jemez/San Antonio Hot Spring	40.8	7.26		140	168	168	21	1.8	2.7	0.28	0.12	0.02	50	7.6	2.2	2.2					80	0.90	18.93	0.05
SA32	VA-5	Jemez/Soda Dam Grotto Spring	38.0	6.80			3950	3948	1000	174	324	27	13.2	1.4	834	41	1480	4		11.8			38	9.45		0.04
SA33	VA-94	Jemez/Bathhouse HS	37.4	7.72		178	261	224	27	4.04	5.3	0.4	0.09	0.04	61	12.7	8.6	1.84					103	0.46	10.73	14.17
SA33	VA-126	Jemez/Bathhouse HS	38.1	7.61		166	498	243	27	4.2	6	1	0.08	0.09	75.6	15.2	6.9	1.46	0.2				105	4.35	1.03	51.26
SA33	VA-20	Jemez/Bathhouse HS	38.0	6.10		163	220	226	24.5	3.7	4.98	0.4	6	0.02	71	15	2.4	1.6					96	17.26	41.53	2.55
SA35	VA-2	Jemez/Little Spence Hot Spring	34.0	6.70			321	321	56	1.5	8.8	1.9	0.66	0.04	152	25	7	0.7		0.13			67	1.25		0.08
SA36	436	Star Lake #2 Ojo Encino Well	33.0	8.2		3000	2190	2407	710	5.4	26	5.8	0.2	1.6	223	1300	120	0.8		0.08	0.02	0.04	14	1.92	9.54	9.91
SA37	VA-110	Jemez/Soda Dam Hidden Warm Spring	32.3	6.13		6150	3930	3934	817	130	226	15.3	10.5	1.34	1324	53	1294	3.21	3.27	13.4			43	5.85	13.91	0.10
SA37	VA-141	Jemez/Soda Dam Hidden Warm Spring	32.2	6.42		6260	4020	4018	780	125	305	20	11.1	2.55	1425	49	1240	3.04	3.8	10.6			43	3.40	11.10	0.05
SA37	VA-27	Jemez/Soda Dam Hidden Warm Spring	29.0	6.28		5700	3990	3990	720	141	376	18.8	10.8	1.9	1400	69.1	1195	2.71		10.6			44	1.22	0.29	0.00
SA38	228	well	32.0	9.5		3140	2460	1274	740	22	1.2	0.3			334	49	97	3.4		2.2	0.8		24	55.45	4.58	48.22
SA39	88TDI4	Penasco #3 Spring	27.0	6.79	6.64		9672	10400	2371	98.5	396.4	51.1	5.25	6.63	1592.5	3438	2405.8	3.59		7.9			23	11.88		7.52
SA40	88TDI6	Penasco #4 Spring	27.0	6.56	6.54		9924	10741	2554	98.1	386	48.8	5.45	6.62	1876.9	3430	2301.5	3.53		7.9			22	9.66		8.23
SA41	88TDI8	Salado Warm Spring	25.0	6.79	6.54		9608	10742	2463	82.8	352.2	52.9	4.4	7.68	2174.6	3215	2365.5	3.9		6.6			13	12.44		11.80
SA41	M77-SA2	Salado Warm Spring	25.0	6.25			10465	10432	3000	91	390	65	5.2		1855	2600	2400	4		6.9			15	1.91		0.31
SA42	VA-130	San Ysidro Warm Spring	22.0	6.97		9400	6810	6814	1720	77	305	71.3	8.1	4.62	1740	1183	1671	3.32	5	9.77			16.3	0.69	5.47	0.06
SA42	VA-33	San Ysidro Warm Spring	27.0	6.57		11550	7170	7173	1710	75.3	375	128	5.3	7.7	1860	1165	1820	3.95		8.32			14	0.09	7.80	0.04
SA43	88TDI3	Swimming Pool Spring	24.0	7.27	7.21		7420	8305	2066	57.8	267	48.1	3.25	6.64	1545	1896	2373.6	3.59		4.95			32.9	9.41		11.92
SA44	PC1-1	Jemez/PC-1 at 1712 ft (w/drilling fluid)		7.21		9500	7510	7508	1390	153	762	52.8	10.8	3.52	1133	2157	1602	1.06	4.3	13.4			225	0.18	14.09	0.03
SA44	PC2-6	Jemez/PC-2 at 1335 ft (w/drilling fluid)	40.0	7.17		4980	5577	2863	670	69	646	215	1.86	3.46	1102	28.7	57	1.34		2.3			66	59.93	63.01	48.67
SF2	362	Los Alamos #1B Well	31.0	7.7		766		726	182	4.1	10	0.5			428	43	16	2.5				1.1	39	0.40	11.78	
SF2	363	Los Alamos #1B Well	31.0	7.7		766		726	180	4	10	0.5			430	43	16	2.5				1.1	39	0.31	10.61	
SF2	364	Los Alamos #1B Well	30.5	7.8		729		684	170	3.9	9.8	0.4			399	42	16	2.5				1.2	39	0.12	9.97	
SF2	365	Los Alamos #1B Well	30.5	7.8		729		685	170	4	9.8	0.4			400	42	16	2.5				1.2	39	0.04	10.00	
SF2	366	Los Alamos #1B Well	30.5	7.8		720		680	169	3.9	9.4	0.6			394	41	16	2.5				1.2	42	0.48	10.69	
SF2	LA-7	Los Alamos #1B Well	30.0	7.20			559	559	138	2	6.5	0.3	0.11	0.14	326	32	15	2.3		0.45			36	1.01		0.04
SF3	LA-12	Los Alamos #G6 Well	30.5	6.50			191	191	15	2	15	2.3		0.06	94	5	2	0.27					55	2.16		0.19
SF5	LA-16	Los Alamos #G2 Well	30.0	6.50			256	256	33	2.5	11	0.61	0.02	0.08	122	5	4	1		0.12			77	3.80		0.13
SI2	SNM-3	TorC Artesian well	41.2	7.00	7.34	5140	2697.5	2696	751	56	163	15.3	1.3	3.82	220	75.1	1360	3.06	2.6	0.25			45	0.04	14.85	0.04
SI3	B9	TorC Blackstone Mineral Bath	45.0		7.79		2608	2739	817.5	61.4	143.9	18	1.21	4.1	164.7	196	1285.2	1.49	0.77	0.38			44.3	3.29		5.02
SI6	S76TRC14A	TorC Yucca Lodge well 14 ft	42.8		7.30	4510	2670	2615	735	61	154	21			216	93	1290	3.8					41	1.03	4.78	2.07
SI6	S76TRC14B	TorC Yucca Lodge well 14 ft	40.0	6.70		4500		2749	742	57	175	18.8	1.5		250	120	1340	3.5		0.2			41	0.40	1.71	
SI9	B10	TorC Sierra Mineral Bath	41.0		7.80		2688	2755	791.5	63	143.9	17.9	1.23	4.12	162.3	169.1	1353.6	3.1	0.77	0.35			44.3	0.48		2.50
SI10	B11	TorC warm spring	41.0		7.88		2640	2657	764.6	62.6	136.5	17.1	1.24	4.19	136.7	115.3	1370.3	3.1	0.75	0.35			44.3	0.13		0.65
SI11	B19	TorC Yucca Lodge	41.0		7.98		2708	2718	785.6	62.6	164.1	18.7	1.2	4.08	224.5	107	1314.2	3.2	0.82	0.38			31.3	2.93		0.36
SI12	GS20949	TorC Old Government Spring				4520	2560	2571	731	39	154	14			215	79	1300	3					36	0.44	7.89	0.43
SI14	108	TorC well	40.0					2582	731	39	150	14			220	79	1300	3			0.01	10	36	0.78		
SI14	113	TorC well	44.5			4410	2490	2465	690	45	150	16			220	100	1200	3.4			0.1	2	38	0.31	9.37	1.02
SI15	98	TorC Ponce De Leon Spring	39.0			4400	2440	2480	710	43	150	15			220	100	1200	3.2			0.53	6.2	32	1.24	7.49	1.64
SI16	106	TorC Geronimo (State) Springs	38.5					2416	678	36	150	16			210	81	1200	3			0.08	5	37	0.10		
SI16	GS20948	TorC Geronimo (State) Springs				4290	2418	2421	678	36	148	16			212	81	1210	3					37	0.43	8.82	0.12
SI16	SNM-4	TorC Geronimo (State) Springs	42.0	7.00	7.47	5120	2696.6	2696	750	58	159	14.6	1.3	4.04	212	74.9	1370	3.2	2.6	0.23			46	0.41	14.99	0.03
SI17	JUST1	Hillsboro Warm Spring	34.5				568	778	168.5	10.9	5.4	0.4			275.8	129	21.6	14.8		0.01			152	4.14		36.97
SI19	B5	Derry Warm Springs			8.23		1240	1339	323.9	18.8	47.1	15.8	0.36	0.86	366.1	376.6	151	5.9	0.94	0.34			31.3	0.36		7.98
SI19	B6	Derry Warm Springs			8.62		1228	1302	340	19.2	47.1	16	0.35	0.83	311.2	374.6	153.2	5.9	0.85	0.37			32.3	4.03		6.02
SI19	GS1510	Derry Warm Springs		7.20		1660		1234	300	18	45	15	0.31		355	290	170	7.3	0.5	0.33			33	0.02	2.62	

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	TDS (sum)	Na mg/L	K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br g/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 g/L	CHRG BAL %	COND BAL %	MASS BAL %
SI19	S76DWS-65	Derry Warm Springs	33.8		8.39	1420	823	1121	303	17	32.8	12.9	0.32		295	257	162	3.67	1.42	0.38			36	4.44	15.21	36.27
SI19	S76DWS-74	Derry Warm Springs	33.8					1311	340	17	40	15	0.4		397	309	155	6	0.21	0.6			31	2.44		
SI21	92	well	34.0	7.2		1660		1235	300	18	45	15	0.31		355	290	170	7.3	0.5	0.33		0.49	33	0.02	2.62	
SI22	83	well	31.0	8.3		1350	953	985	280	5.1	5.9	0.2			171	430	30	5.3		1.3	0.25	4.87	51	1.02	6.51	3.35
SI23	B12	warm spring			7.90		1392	1597	387.4	21.5	110.4	9.5	0.42	2.21	211.1	211.1	602.7	2.46	0.78	0.2			37.3	2.45		14.73
SI23	S76AFTER	Barney Iorio #1 Fee	33.0		7.38	5600	4931	4694	1280	7.8	375	0.46	0.91		17	2721	262	3.5	1.72	0.49			23.9	7.35	33.50	4.81
SJ1	440	well	62.0	7.8		11400		10933	3600	22	71	14		4.1	232	6400	550	3.6		1.5	0.03	0.04	35	2.92	42.06	
SJ2	441	well	57.0			4350		3626	770	8	340	5			57	2400	14	2.3			0.03	0.04	30	0.33	17.42	
SJ2	442	well	48.0	8		4000	3620	3404	760	9.1	320	4	0.27		60	2200	19	2.8		0.18		0.04	29	2.22	24.07	5.96
SJ3	446	Navajo well	61.0	8.1		1390	880	1009	250	2.5	39	0.5			166	490	17	1				0.13	43	2.00	7.01	14.67
SJ4	443	Dome Well Chaco	42.0	8.3		10000		8611	2800	15	70	8.3			570	4300	810	5.3		1.9		0.18	30	1.76	26.36	
SJ8	437	well	32.8	8.2	8.3	2720		1998	630	3.3	11	2.1	0.1	0.35	375	910	47	1.6	0.18		0.31		17	3.16	3.80	
SJ8	439	well	32.9	8.3	8.4	2800		2184	670	3.2	7.4	2.4	0.12	0.35	334	1100	49	1.6	0.06		0.25		16	0.04	6.50	
SM3	NM1	Montezuma Hot Spring	53.8		9.09		432	589	180.5	5.9	4.8	0.1	0.44	0.03	69.5	80.7	153.1	20.7	0.58	0.47			72.5	0.48		36.42
SM3	NM2	Montezuma Hot Spring	48.0		9.10		452	566	180.5	5.9	3.6	0.1			72	79.7	151	0.67		0.5			72.5	6.89		25.33
SM3	NM3	Montezuma Hot Spring	34.3		8.16		464	606	173.8	5.9	5.8	0.2			120.8	80.7	148.9	0.64		0.56			69	0.77		30.67
SM3	NM4	Montezuma Hot Spring	53.0		9.01		460	578	185.3	5.9	3.6	0.1			78.1	80.7	152.1	0.66		0.7			71	7.10		25.69
SM3	NM5	Montezuma Hot Spring	58.5		9.03		448	579	186.2	5.9	3.2	0.1	0.44	0.02	73.2	78.8	153.9	0.67	0.8	0.67			75	7.99		29.22
SM3	NM6	Montezuma Hot Spring	35.6		9.10		400	572	184.1	5.9	3.2	0.1			73.2	81.6	151	0.67		0.5			72	7.30		43.07
SO1	CH823-66	core hole	42.2		7.70	3460		1968	626	38	68	2.1			101	163	945	1.1		0.62			23	0.01	8.18	
SO2	166	warm well	36.0	8.3		430		356	82	1.7	8.4	1.5			124	50	24	3.2		0.14	0.2	7.09	54	2.90	3.42	
SO3	126	Welty Salty Well	35.0	7.5		2100	1440	1503	290	29	160	11			120	580	280	3.6		0.19	0.18	0.09	29	0.26	5.93	4.38
SO5	127	warm well	33.0	7.4		4600		2984	810	31	120	41			410	560	980	1		0.88	1.3	4.87	24	0.75	1.33	
SO6	163	Blue Canyon Well	31.8	8.1		380		337	56	3	21	4			170	39	13	0.6		0.08	0.05	1.3	29	1.36	2.36	
SO6	BLUE12-74	Blue Canyon Well			7.40			342	68	2.5	16	4.3	0.08		167	40	16	0.8	0.54				27	1.40		
SO6	GS-BLUE	Blue Canyon Well	32.2		7.60	375		324	56	3	20	4.6			163	36	14						27	0.95	3.71	
SO6	GS54325	Blue Canyon Well	32.2		8.10	380		331	56	2.8	21	4			166	39	13	0.6		0.08			29	0.59	2.22	
SO7	140	Socorro Gallery Spring	32.0	7.8		348	224	251		2.8	18	3.9			154	28	15	0.6				1.2	27	46.80	62.91	11.83
SO7	148	Socorro Gallery Spring	30.0	7.8		348	224	297	52	2.8	18	3.9			150	28	15	0.6					27	0.80	2.09	32.72
SO7	154	Socorro Gallery Spring	30.5	8.4				243	53	3	18	4			130		16	0.5		0.07	0.13		18	16.10		
SO7	GS110-64	Socorro Gallery Spring			7.80	356	236	317	52	3	18	4.6			164	31	13	0.6					31	1.58	1.55	34.41
SO7	JONES04	Socorro Gallery Spring						345	27	56	22	3			114	79	16						28	0.17		
SO7	SCTTBRK	Socorro Gallery Spring			7.00	348	224	301	52	2.8	18	3.9			154	28	15	0.6					27	0.13	2.09	34.51
SO8	133	Socorro/Sedilla Gallery Spring	30.0	7.9		352	237	315	54	3	20	3.2			160	31	12	0.6		0.08	0.07		31	0.67	4.74	32.89
SO8	137	Socorro/Sedilla Gallery Spring	30.5	7.9		340		288	51	3.3	17	4.4			150	22	15			0.12			25	2.53	3.33	
SO8	138	Socorro/Sedilla Gallery Spring	32.0	7.9		352		320	54	3	20	3.2			164	31	12	0.6		0.08	0.07	1	31	0.22	4.74	
SO8	B13	Socorro/Sedilla Gallery Spring	34.0		8.48		284	331	56.1	3.1	17.2	4.3	0.06	0.35	162.3	50	10.3	2.02	0.28	0.09			25.3	4.50		16.69
SO8	GS54324	Socorro/Sedilla Gallery Spring	32.2		7.90	352		319	54	3	20	3.2			164	31	12	0.6		0.08			31	0.22	4.74	
SO8	SNM-21	Socorro/Sedilla Gallery Spring	32.0	6.50	7.73	338	319.6	318	54.3	2.4	18.4	3.9	0.06	0.38	170	29.9	11.7	0.61					26	1.23	8.87	0.61
SO9	B28	well	30.0		7.84		192	239	24.1	0.8	23.4	1.7			108.5	26.4	1.4	2.7					50.1	2.73		24.54
SO11	B25	Monticello Box Warm Spring	29.0		8.10		516	595	137.7	5.5	44.2	1.7			124.4	107.5	150.1	0.25		0.02			23.6	0.29		15.30
SO12	B17	Monticello Box Warm Spring	28.0		8.24		468	538	125.5	5.1	34.9	1.3	0.11	0.28	131.8	96.1	104.2	3.1	0.23	0.09			35.3	1.32		14.96
SO13	LUC-17	artesian well	26.0	6.82		4000		3770	475	10.3	450	85.7	0.94	8.04	475	2070	145	2.1		1.03	31.7		15	4.10	26.87	
SO14	LUC-19	Field Artesian Well	25.0	6.30		3700		3652	214	22	624	93.1	0.77	9.33	376	2080	211	2.4		0.78	4.7		14	6.27	32.41	
SO15	LUC-25	Ojo Saladito Spring	24.0	6.82		12000		7413	1990	46	355	123	1.3	7.17	740	1170	2960	2	1.6	1.69	0.11	3.2	12	1.78	3.40	
SP16	B14	Cook Spring			8.33		348	378	68.5	3.1	16.4	4.3	0.08	0.39	181.8	69.2	12.1	0.69	0.37	0.09			21.3	6.09		8.71
TS1	NM31	Hondo Hot Spring	40.6		8.14		584	652	149.2	12.5	22.8	5.2	0.37	0.12	196.5	137.4	57.1	2.49	0.75	0.23			67	3.68		11.59
TS2	457	Mamby Hot Spring	38.0	9		736	504	585	140	9.8	13	3.6		0.4	160	140	55	3.1		0.29			60	0.29	0.89	16.11
TS2	458	Mamby Hot Spring	34.0	6.9		794		624	130	9.2	27	5.7	0.29		202	130	56	3.8	0.5	0.27	0.04	1.51	58	0.36	2.42	
TS2	459	Mamby Hot Spring	38.0	8.4		736	491	585	140	10	13	3.6			160	140	55	3.1		0.29			60	0.27	0.94	19.14
TS2	GS15113	Mamby Hot Spring			6.90	794		623	130	9.2	27	5.7	0.29		202	130	56	3.8	0.5	0.27			58	0.36	2.42	
TS2	NM29	Mamby Hot Spring	38.3		7.36		552	622	128	8.6	27.4	5.1	0.35	0.13	217.2	121	52.1	2.74		0.29			59.5	0.42		12.76
TS2	NM30	Mamby Hot Spring	32.8		7.43		396	454	72.4	6.6	28.8	5.5	0.19	0.15	192.8	60.5	24.8	1.64	0.57	0.22			60	0.25		14.69

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	TDS (sum)	Na mg/L	K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br g/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 g/L	CHRG BAL %	COND BAL %	MASS BAL %
TS2	S76MAM2	Mamby Hot Spring	37.8		8.60	729	491	581	138	9.8	13	3.6	0.17		160	138	55	3.1		0.29			60	0.09	0.92	18.32
TS2	S76MAM3	Mamby Hot Spring	34.4	6.90				646	156	8.2	29	4.6			207	139	45	3.6	0.12				53	6.48		
TS3	460	warm spring	37.0	8		760		660	145	11	21	4.6	0.27		200	150	58	2.9		0.25			67	0.84	5.97	
TS4	451	Rancho Del Rio Grande Well	32.0	7.8		786		531	150	4.6	11	1.2	0.25		79	120	92	18	0.7	0.5	0.02		54	0.13	6.79	
TS5	NM22	Ponce de Leon Hot Spring	34.4		8.56		512	589	160.2	4.3	10	0.6	0.31	0.05	112.3	144.1	89	12.6	0.56	0.55			54.5	2.22		15.05
TS5	S76SITE6	Ponce de Leon Hot Spring	34.0		7.20			561	164	3.8	11	0.5	0.36		104	118	96	12.5	0.32	0.45			50	2.22		
VA2	172	well	32.5	9		625	468	572	150	2.4	4.3	0.6			280	66	8	1.6		0.54	0.21	0.09	58	4.40	9.60	22.17

APPENDIX 3

TABLES OF PARTIAL CHEMICAL ANALYSES

NOTES:

SITE ID	geothermal site number
SAMPLE	cited or assigned sample number or designation (see Appendix 4 for dates and data source
DATE	month/day/yr that sample was taken or reported
NAME	well or spring name
TEMP	temperature °C
CHEMISTRY	units as shown
mg/L	milligrams per liter
uS/cm	microsiemens per centimeter
TDS	analytical total dissolved solids
Na+K	many older analyses report total sodium and potassium

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	Na mg/L	K mg/L	Na+K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br mg/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 mg/L
BE1	219	well	40.5			423							0.05							0.26			
BE2	217	well	34.5			402							0.05							0.23			
BE2	JIREC-2	West Mesa #1	32.2				348	114	1		2	1						0.96					23
BE3	220	well	33	7.9	8.2	1160		250	8.1		22	5.1				270	100	0.9		0.43	0.099		48
BE3	221	well	32	7.8	7.9	1250		240	7.4		22	5.2				220	100	0.8			0.5	0.8	49
BE3	222	well	30.5	7.6	8.1	1125		230	6.2		21	4.5				240	91	0.8			0.083		25
BE5	GJIR988	West Mesa #4	32.1					117	0.8		1.8	0.1						0.83					38.3
BE5	JIREC-4	West Mesa #4	31.7				356	37	0.2		4.7	1						0.96					
BE6	211	well	32	8.9		520		120	1.9		6.3	0.8				130	21	0.9			0.03	7.09	46
BE7	JIREC-1	Don #1	31.4				420	143	2		3.2	1						1.55					32
BE8	212	well	31	9.1		495	332				1.1	0.6			150	69	8.7	1			0.02	6.4	42
BE9	JIREC-3	West Mesa #2	30.6				330	102	2		4	1						1.1					36
BE11	223	well	30	8.7		660												1.8		0.38	0.06	3.23	
BE11	224	well	30	8.6		657												2.2		0.36	0.02	2.97	
BE12	225	well	30	8.8		456												1.2		0.26	0.01	11.1	
BE13	227	College #2	30	8.5		440		100	1.4		2.5	0.2				62	6.9	1			0.03	10.6	30
CA2	120	hot spring	60.6	7.8		767	505				16	0.5			128	79	107	9.5				0.4	81
CA3	GS22690	Lower Frisco Hot Spring				1930									130	45	512	1.6					85
CA3	GS31052	Lower Frisco Hot Spring	35.22	7.3		1200		200	0.2				0.31		135		310		0.4	0.2			73
CA3	GS38864	Lower Frisco Hot Spring			7.6	1660		280	16						132	41	134	1.8		0.1			76
CA3	GS42605	Lower Frisco Hot Spring	46.11		7.8	1780	1020	289			49	40			127		460						
CA3	LFHS66-1	Lower Frisco Hot Spring	37.39					193	17		55	9	0.24										
CA3	LFHS66-11	Lower Frisco Hot Spring	45.56					350	23		103	8	0.59										
CA3	LFHS66-3B	Lower Frisco Hot Spring	39.56					215	16		50	7	0.39										
CA3	LFHS66-4	Lower Frisco Hot Spring	41.22					275	19		58	12	0.46										
CA3	LFHS66-7	Lower Frisco Hot Spring	45.11					265	23		100	10	0.5										
CA3	LFHS66-8	Lower Frisco Hot Spring	46.94					300	19		65	6.4	0.54										
CA3	LFHS66-9	Lower Frisco Hot Spring	49.44		8.01	1940		307	22		65	5.7	0.59		88			1.8		0.078			93
CA3	NB82-34	Lower Frisco Hot Spring	49	7.6				296	17		51		0.46										80
CA5	121	Lower Frisco Hot Spring	43	7.6		1660		280	16						132	41	434	1.8		0.001		1.3	76
CA7	129	Upper Frisco Hot Spring	36.5	9.7		284		66	0.5						57	6.6	5	1		0.04		0.6	58
CA7	GS38851	Upper Frisco Hot Spring	36.67		9.7	284		66	0.5						57	6.6	5	1		0.04			58
CA7	NB82-35	Upper Frisco Hot Spring	39	8.1				71	0.24		0.8		0.01										49
CA7	UFHS2-66	Upper Frisco Hot Spring	36.67		9.15	242	223	69	0.15		3	0.1	0.1		97		12	2	0.76	0.037			40
CA9	122	Lower Frisco Hot Spring	35	7.3		1200		200	12				0.31		135		310		0.4	0.2			73
CA10	168	Pueblo Windmill	33.8				950	170	13		130	29				310	68	3.4		0.36	1.6		14
CA10	169	Pueblo Windmill	34	6.7	7.2	1600		150	13		150	31				280	68			0.28	1.3		15
CA10	MYERS1	Pueblo Windmill	34		7.2	1600		150	13		150	31				280	68						
CA11	FCS2-66	Frieborn Canyon Hot Spring	33.33		8.44	150	151	39	0.2		7	0.17			37		7.4	1.3		0.072			31
CA12	NNS-BOIL	hot spring	32.8					39	1		15	0.93	0.1										
CA12	NNS-CAS	hot spring	34.4					39	1		16.4	0.84	0.1										
CA17	MYERS2	well	28		7.3	1440		88	9.7		180	41				280	63	1					
CA17	MYERS3	well	29		7	1300		86	9.3		180	40				290	63	0.9					
CA19	MGSEEP	warm seep	27.2					43	1.1		14.1	0.73	0.05										
CA21	GS36104	Gila Middle Fork Pool HS	52.2		8.1	422									108	22	59						
CA21	NB82-33	Gila Middle Fork Pool HS	65	7.6				164	3.9		17		0.45										73
CB3	180	Acoma #1 Well	41.5	6.9	7.3	1300		88	7.4		140	39				290	72	0.7		0.28	0.72		18
CB3	181	Acoma #1 Well	41.7	7	7	1350		91	7.1		140	40				290	73	0.7		0.27	0.32		18
CB3	183	Acoma #1 Well	40.5		7.3	1270		91	7.3		140	40				300	70	0.6		0.25	0.49		18

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	Na mg/L	K mg/L	Na+K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br mg/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 mg/L
CB4	170	well	41	6.18	7.06	2800	2320	220	16		350	77	0.73	4.7		940	210	1.2	0.55	0.61	2.3		21
CB5	177	well	38.1	6.45	6.87	3300	3180	110	13		670	110	0.34	6.4		2000	110	1.6	0.27	0.43	3.8		16
CB7	184	well	34.5	6.42	7.44	5500	5360	810	35		540	130	1.1	7.8		3200	250	2.9	0.34	1.1	5.5		15
CB8	171	well	34	6.44	6.77	8000	6280	1600	75		580	110	6.1	6.3		1400	1600	0.8	4.2	5.5	0.04		16
CB10	179	well	33.1	6.65	7.22	4450	3910	610	48		450	100	0.74	8.6		2400	180	3.4	0.34	1.2	10		15
CB12	226	well	32	8		550	340	12	2		74	25			250	84	7.5	0.4				0.62	
CV1	95	well	33	7.1	7.9	900	651	16	1.2		120	45				270	12	1.5		0.03	0.68	0.53	12
DA1	GROSS3	Chaffee 55-25	68					350.8	53.2		96.9	33											51.5
DA1	GROSS4	Chaffee 55-25	68					383.5	52		156.7	33.5											54.5
DA3	CLARYST	Clary and Ruther State 1	69.4																	0.15			
DA4	GROSS1	Chaffee 35-25	68					391.5	54.7		129.2	31.2											56.5
DA5	280LC2	LC-2	52.5		7.41	2530	2004	376.3	5.5		161.9	0.7			543	294.9	346.7				7.13	1.28	
DA5	GROSS8	LC-2	68					214.5	6.2		10.2	1											24.3
DA6	EXXONOLE	Exxon Beard Ole Federal	65.5																				
DA7	GROSS2	Chaffee 12-24	65					392.4	58.3		107.4	28											50.9
DA8	12581PG3	NMSU PG-3	63.3				1981	488	52		138	17.4					546				0.2		
DA8	1980PG3	NMSU PG-3			6.25	3130		488	52		141	18.8			610	240	546				5	0.02	73
DA8	GROSS6	NMSU PG-3	63					488	52		141	18.8											73
DA8	NDPG3	NMSU PG-3					1748								596.7	343		2.28			0.15		
DA9	BTHSE	Radium Hot Springs Bailey's bathhouse			7.7		874	1090			136	68.5				259	1890	2.6					
DA9	NMPHL316	Radium Hot Springs Bailey's bathhouse			7.2	6100		1100	163		131	15			341	269	1677	5.3					
DA10	BINNS1	Certified Sand Well	58.8																				
DA12	69	Radium Hot Springs Hotel Well #2	85.5	6.9		6060				1200	140	23			430	260	1700	4.6				2	71
DA12	70	Radium Hot Springs Hotel Well #2	52.5	6.7		6100		1100	170				1.1		444		1600		2.8	0.78			74
DA12	71	Radium Hot Springs Hotel Well #2	53	8.2		6210									420	263	1630						
DA12	GS10160	Radium Hot Springs Hotel Well #2	85.56		6.9	6060					142	23			427	265	1660	4.6					71
DA12	GS31053	Radium Hot Springs Hotel Well #2		6.7		6100		1100	170				1.1		444		1600		2.8	0.78			74
DA12	GS35979	Radium Hot Springs Hotel Well #2			8.2	6210									420	263	1630						
DA12	GS38867	Radium Hot Springs Hotel Well #2			7.2	5540		1100	155						424	277	1660	5.2		0.32			66
DA12	NB82-21	Radium Hot Springs Hotel Well #2	53	6.8				1120	173				1.2										64
DA12	S76RSNMS	Radium Hot Springs Hotel Well #2					3460				130	13	4		436	806	1610	5.3					70
DA15	4681PG2	NMSU PG-2	47.7				2070	450	51		188	21			508.9	226.2	610						
DA15	NB82-23	NMSU PG-2	59	7.1				450	55		105		0.48										71
DA16	11	Pure Oil Federal "H" 1	45	7.3		7380		1400							930	860	1600						
DA16	GS48858	Pure Oil Federal "H" 1	45			7380																	
DA20	17	well	42.5	8.6	7.9	10900	6990	2100	19		290	10				1700	2700	2.6					63
DA20	18	well	35	8.7	8.8	2100	1350	370	13		20	12				180	400	0.9			0.29		52
DA20	19	well	31.5	8.6	8.7	1580	955	280	6.6		25	16				160	200	0.9					67
DA22	46	Tellyer Well	36.5	7.5		1020		180			66	13			319	140	170						
DA22	TELLYER1	Tellyer Well	36.5		7.5	1020		180			66	13			319		170				2		
DA25	S76NMS112	well	35.56		7.5	1800	1020	375	15						222	168	401						
DA26	2GD1	NMSU GD-1					1550	280	12		185	16				185	432						12
DA26	3GD1	NMSU GD-1					1200	288	39							292	375						
DA26	4GD1	NMSU GD-1						184	22		57	7.2					137				0.26		
DA26	5GD1	NMSU GD-1									60	7.5									9.8		
DA26	NB82XX	NMSU GD-1	30					240	26		680		0.26										50
DA27	S76LASWH	White well	34.5		8.15	1460	1000	275	32		17	12.3	0.25		242		580	2.7	1.11	0.35			49
DA33	GS28683	well	32.22		8.6	4640	2930				110	1.1			27	927	910						19
DA34	43	well	32	8.7		2320					24	1.9			33	590	320	5.9			0.03	1.3	31

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	Na mg/L	K mg/L	Na+K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br mg/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 mg/L
DA36	S76BERING	Berino Well			7.9	1080	740	202.4	0.58		30				367.5	155	68.1	1.25		0.31			
DA40	21	well	31	7.8		804					20	0.5			160	140	79						
DA41	2	well	31	7.8	7.8	5700	3780	1200	9.1		84	24				1000	1200	1			0.03		34
DA44	48	SC2	30.5			270																	
DA45	12	well	30.5	8	7.4	2200	1300	390	3.4		76	0.6				300	460	0.8			0.03		45
DA45	14	well	30.5	8.9	8.6	1000	656	210	2.8		9.7	1.1				190	44	2.2			0.021		42
DA46	52	T-18	30	7.4	7.9	686		110	3.2		32	3.2				150	43	4.5		0.1	0.036	0.49	26
DA46	53	T-18	30		7.9	710																	
DA50	HUNTWATW	Radium Springs College Ranch Windmill			7.69			250.4	6.6		75.4	2.7			97.6	616.9							
DA52	21H0600	Radium Springs Masson 21			8			1100	166		129	13	1.19		444	283	1550	5.6		0.82	0.32		
DA52	21H0900	Radium Springs Masson 21			8.1			1025	164		128	13	1.19		441	265	1600	5.5		0.77	0.14		
DA52	21H1800	Radium Springs Masson 21			8			1050	162		128	13	1.18		444	248	1610	5.7		0.78	0.34		
DA52	21TRUN	Radium Springs Masson 21			7.9			1075	161		126	13	1.2		454	262	1710	6.2		0.8	0.27		
DA53	89MASS22	Radium Springs Masson 22															1683						
DA53	SWL1295	Radium Springs Masson 22															1720						
DA54	87MASS23	Radium Springs Masson 23															1764.4						
DA54	89MASS23	Radium Springs Masson 23															1669						
DA54	SWL1296	Radium Springs Masson 23															1764						
DA54	SWL5478	Radium Springs Masson 23						1250.2	144.7		128.4	12.9			454	266.9	1823						
DA55	311801	Radium Springs Masson 26			6.66			863	163		94.6	15.4					1833	4.6		0.83	0.036		
DA56	1RYAN7235	Radium Springs Ryan 72-35					2584	690	115		117	14	0.68		286	239		4.64		0.61			50.3
DA57	GROSS7	NMSU GD-2	42					386.2	34.8		114.5	36.6											36
DA58	NMSUOW1	NMSU OW-1					1765	424			110						466	1.48			0.81		
DA59	GROSS5	NMSU PG-1	61					480.2	57.9		155.7	29.7											92
DA59	N10PG1	NMSU PG-1			6.45	3720	2044	500.7	54.1		232.7	43.2			458.8	308	847.1	2.54			7.71		
DA59	N4PG1	NMSU PG-1			6.17	6590	4220	627.2	80.5		538.4	108			134.2	645	1714.8	3.51			81.6	0.04	
DA59	N7PG1	NMSU PG-1			6.6	4510	2868	536.3	61.1		325.9	60.4			341.7	402.5	1123.2	2.7			13.03		
DA59	N8PG1	NMSU PG-1			6.64	4050	2416	504.6	55.2		267.6	49.4			433.2	292.5	963	2.41			9.31		
DA59	NB82-22	NMSU PG-1	61	6.8				386	54		82		0.51										73
DA59	PG1PART1	NMSU PG-1					1936	484	54		116	19											70
DA59	PG1PART2	NMSU PG-1					1904	488				19											68
DA59	PG1PART3	NMSU PG-1			6.3	3110		488	54		143	18.6			620	250	584	1.3			2.8	0.03	
DA60	BAIL370	NMSU PG-4			8.47	2450	1636	389	35		107	25.1			593	250	341	1.57			0.83	0.54	
DA60	DRILL13	NMSU PG-4		6.55	6.72	2800	1818	428	74		132	32.1			487	251	570	1.78			0.22		
DA60	DST1PG4	NMSU PG-4	63		7.7	2720	1695	430.9	59		102.9	31.4			462.5	232.4	528.3	2			0.05	0.05	
DA60	DST4PG4	NMSU PG-4	63		7.56	2790	1854	449.1	48.8		107.4	32.6			489.4	289.2	528.3	2.08				0.03	
DA60	IWEINC1	NMSU PG-4			6.6	2520		280.7			152	57.1			442	100	533				0.13		22.9
DA60	PT0PG4	NMSU PG-4			6.64		1770	428	49.2		158.7	31.2			603	248	541	2.16			1.17		
ED1	81	Clayton Well	31			3030											210						
ED1	82	Clayton Well	31			3030											210						
GR1	GS15106	Mimbres Hot Springs #3	61.11	8.3		450		94	1.3		3.3	0.6	0.1		107	65	17	18		0.05			56
GR1	MIML3-12-65	Mimbres Hot Springs #3	62.28		8.56	430	221	138	0.96		3		0.12		85		22	3.17	0.92	2.04			60
GR1	MIML3-8-65	Mimbres Hot Springs #3			8.73	422	285	95	0.9		2.25		0.09		89		20	3.05	0.12				51
GR5	GHS0920	Gila Spring Hot Spring #14	66	7.75		640									109								65
GR6	NB82-32	Gila HS northern artesian well	65	7.6				148	3.7		10		0.24										71
GR7	115	Gila Hot Springs	64	8.2		653	369				11	0.2			110	40	100	12		0.07	0.04	0.5	33
GR7	117	Gila Hot Springs	61	7.5		620		120	3.5				0.22		101		100		0.2	0.1			72
GR7	GHS-66	Gila Hot Springs	41.5		8.10	560	496	127	3.6		11		0.27		96		104	3.4	0.18	0.19			74
GR7	GHS-74	Gila Hot Springs	63.89	7.5		620		120	3.5				0.22		101				0.2	0.1			72

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	Na mg/L	K mg/L	Na+K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br mg/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 mg/L
GR7	GS36105	Gila Hot Springs	63.9		8.20	653	369				11	0.2			109	40	104	12		0.07			33
GR7	NB82-31	Gila Hot Springs	59	7.4				135	3.4		13		0.26										68
GR9	NB82-30	Gila HS middle artesian well	62	7.6				142	3.5		57		0.26										71
GR10	GHS0711	Gila Hot Springs Campbell #2 Well	61																				
GR10	GHS14006	Gila Hot Springs Campbell #2 Well	62	7.72		550									99								63
GR10	GHS1445	Gila Hot Springs Campbell #2 Well	61	7.97		620									102								66
GR10	GHS1610	Gila Hot Springs Campbell #2 Well	62	7.97		590									102								68
GR10	GHS2252	Gila Hot Springs Campbell #2 Well	60																				
GR11	MIM-L25	Mimbres Hot Springs #25	59		8.31			113	1.2		2.5		0.12		89		19	3.1	0.47	0.15			56
GR12	MIM-L28	Mimbres Hot Springs #28	58.06			452	308				12	2.6			77	65	17	16					53
GR12	MIM-L32	Mimbres Hot Springs #28	45.33		8.35			112	0.95		3		0.13		65		21	3.2	0.28				45
GR13	GHS0929	Gila Spring Hot Spring #41	58	7.85		560									104								56
GR14	85	Mimbres Hot Springs	58			450					12	2.6			75		16	16					53
GR14	NB82-25	Mimbres Hot Springs	58	7.9				111	1.3		2.4		0.13										55
GR15	GS19645	Mimbres Hot Springs #8	57.5			450									75		16	16					
GR17	MIM-L21	Mimbres Hot Springs #21	55		8.34			81	1.1		1				85		20	3.3	0.31	1.11			46
GR18	MIM-L23	Mimbres Hot Springs #23	54.44					127	2.7		10	0.2	0.15										
GR19	75	Faywood Hot Springs	52			560																	
GR19	FAY-S76-2	Faywood Hot Springs			8.7	560	384	94	8		36.9	6.9	0.17		214		22	3.3	1.97	0.15			67
GR19	GS19824	Faywood Hot Springs				606									282	50	18	7					
GR19	GS27917	Faywood Hot Springs	53.33			600					37	8.5			282		17						
GR19	NB82-26	Faywood Hot Springs	55	8				98	7.7		47		0.15										40
GR20	GS36104	Gila Lyons Lodge swimming pool HS			8.1	432									108	22	59						
GR20	SPS-LL66	Gila Lyons Lodge swimming pool HS	51.7		8.35	390	335	105	2		10	0.1	0.13		101		67	3.4	0.67	1.72			58
GR21	114	well	52	8.1		432									108	22	59						
GR22	WFALLHS	Gila River Waterfall HS	44.72		8.31	680	518	150	3.9		18	0.35	0.25		112			2.9	0.37	0.28			70
GR23	EFGR-SUM	Gila East Fork no name spring	41.39		8.45	560	367	111	1.7		11	0.2	0.23		77			3.6	0.23	0.33			74
GR26	EFS-LL66	Gila Lyons Lodge East Fork Hot Springs	35.56		8.09	500	358	105	3.8		14	0.65	0.2		85		91	3.2	0.11	0.083			49
GR26	WSC-LL66	Gila Lyons Lodge HS composite			8.25	580	407	126	1.3		10		0.26		83			3.5	0.28	3.4			67
GR26	WSD-LL66	Gila Lyons Lodge HS downstream						128	1.7		9	0.1	0.21										
GR26	WSM-LL66	Gila Lyons Lodge HS midpoint	45.56					119	1.7		10.1	0.1	0.21										
GR26	WSU-LL66	Gila Lyons Lodge HS upstream						117	1.7		20	0.1	0.21										
GR27	KWS-W3-1	Kennecott Warm Spring Well #3	34.55		8.29	350	281	40	5.2		37	13			205		14	2.2	1.5	0.23			50
GR27	KWS-W3-2	Kennecott Warm Spring Well #3			8.00	482	320	33.4	4.3	46	10.9			185.4		10.9	2						
GR29	NB82-27	Kennecott Warm Spring Well #3	34	6.7				51	4.6		53		0.07										50
GR30	94	Cliff Warm Well	33.5	9		665	435				3	0.1			130	100	18	21				0.1	48
GR30	GS50019	Cliff Warm Well	33.3		9.00	665	435				3	0.1			130	103	18	21					48.00
GR30	S76CLIFF	Cliff Warm Well	35.0		8.50	610	439	153	1		2		0.2		177		20	3.4	0.53	0.75			44.4
GR34	87	well	32			754					86	19			240	190	11	1.6			0.03	0.8	18
GR35	84	well	31.1	7.1		421	272	34			38	12			202	31	11	1.2				3.4	35
GR36	GS29750	Spring Canyon Warm Spring	28.89		7.9	472	311				18	3			232	38	8.5	6					32
GR39	GS29790	Riverside Well	30		7.9	551	363				7.5	1			241	51	16	8					48
GR39	NB82-28	Riverside Well	38	6.8				138	1.8		21		0.14										39
GR43	T72P193	Cliff Warm Spring	25		8.7	256									123		5.2						
GR44	ATWS-W4-1	Apache Tejo Warms Springs Well #4			8.43	520	370	48	4.6		34	17	0.1		216		19	2.7	0.72	0.84			36
GR44	ATWS-W4-2	Apache Tejo Warms Springs Well #4			7.9	634	868	44.9	3.5		72	10.4			268.9	70	16.3	1.9		1			
GR45	ATWS-W5	Apache Tejo Warms Springs Well #5						47	4.6		44	17											
HD2	35	Lightning Dock hot well	98			1540					19	1.2			170	460	78	11		0.45		0.9	140
HD3	NB82-40	Lightning Dock hot well	96	6.8				299	22		29		0.74										106

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	Na mg/L	K mg/L	Na+K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br mg/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 mg/L
HD6	37	Lightning Dock hot well	94	7.6		1510					22	1.5			160	460	80	13				0.2	140
HD10	S76LD-2	Lightning Dock hot well			8.25		1055									480	100						
HD10	S76LD-3	Lightning Dock hot well			7.1	1577	1112	300	25		28	11			198	463	102						
HD10	S76LD-4	Lightning Dock hot well			8.25	2200	1761	370	32		70	4.9	0.9				113		0.37	0.37			106
HD11	S76P15-1	warm well	35																				
HD11	S76P15-2	warm well	31.1		7.8	1590									431		102						
HD11	S76P15-3	warm well	31.39					91	2.1		265	6.9											
HD13	1	well	32	7.4		1020									340		55						
HD14	63	Blowing Well	31	7.8		1590									430		100						
HD15	68	well	30	7.9	7.7	460		40	2.4		31	10				12	17	0.5		0.05	0.023	8.41	38
HD17	S76LD-11	Lightning Dock hot well			7.6	1510	1110				22	1.5			157	459	80	13					135
HD18	S76LD-13	Lightning Dock hot well						347	24		20	0.1	0.8										
HD19	S76LD-14	Lightning Dock hot well			7.8	835	620	150	8		28	11			228	169	42						
HD20	S76LD-7A	Lightning Dock hot well				1650	1020				24	1.5			146	509	85						
HD20	S76LD-7B	Lightning Dock hot well				1540	1130				19	1.2			181	460	78	11		0.45			141
HD20	S76LD-8	Lightning Dock hot well				1600									163		81						
HD20	S76LD-9	Lightning Dock hot well			8.2	1600									163		82						
LU1	42	Smyer Well	39	9.6		439				100	4	0.6			120	34	9	1.7				3.2	73
LU1	S76-24SR7W	Smyer Well	38.89		9.6	439					4	0.6			0.23	34	9	1.7					73
LU3	41	well	34.5			515				100	11	2			150	66	30	3.2				3	
LU4	6	well	33			1620					5.2	3.6			420	230	130	9				1.6	66
LU6	40	well	31.5			824				180	6.5	3.5			210	77	53	18				1.9	95
LU9	7	well	31			1850					4	2.3			390	240	200	11				1.6	66
LU9	8	well	30.5	8.6		1860	1130				5.2	0.2			438	241	204	13		0.48		0.2	48
LU13	50	Little Ed Well	30	7.7	8.3	500		68	8.3		25	7.3				35	24	1.7			0.81	26.1	79
LU15	5	well	30	8	8.3	1100		230	7.3		8	2.2				170	46	7				1.86	41
MK1	234	Fort Wingate Well/Santa Fe 'Spring'	55			730									325		7						
MK1	GS64891	Fort Wingate Well/Santa Fe 'Spring'	61.11		7.3	5520		1100	21		264	59			110	2990	63	0.4		1.1			
MK2	229	well	46			3110																	
MK4	431	well	42.2	8.2		1800															0.16		
MK5	231	well	40.2	6.49	6.9	2850	2330	370	14		260	79	1	4.6		1000	240	0.4	0.52	1.1	12		22
MK6	242	well	39	8.5		890	565	190			11	2.6			240	187	28	0.5			0.09	0.1	20
MK7	298	Navajo well	37.5	8.9		703									200	130	2	3.2				0.8	
MK10	264	NTUA #2 Well	36	8.5	8.6	500		120	0.9		2.4	0.1				58	4.4	0.2			0.02	0.09	18
MK11	261	well	35.5	8.1	8.4	450		110	1.1		2.4	0.2				55	3.4	0.2			0.02	0.49	18
MK12	297	Pure Oil Navajo #1 (Tohachi Well)	37	8.4	9.2	655		140	0.6		1.5	0.05				130	5.8	0.4			0.009		22
MK12	GS52896	Pure Oil Navajo #1 (Tohachi Well)	35.56		8.3	606					5.2				212	122	5.2	0.3					22
MK13	S76NAVAJO	Pure Oil Navajo #3 Well	35																				
MK14	265	Mobil Well Crown Point	33.5	8.4	8.9	415		100	1		2.5	0.2				39	3.3	0.2		0.06	0.11		18
MK15	420	well	33.5	8.6		951									330	240	5.7						
MK16	262	well	33	7.9	8.3	450		110	1.5		4.7	1.2				62	3.5	0.4			0.05	0.53	19
MK18	421	well	35.5			2910											79						
MK18	423	well	32.5	8.55		2900															0.05		
MK19	235	well	32								110	55			210	560	5						
MK22	202	well	30.5	7.9		1140	730	93	10		120	26			220	400	18			0.5	0.01	0.25	
MK24	260	well	30	8	8.2	675		150	2.1		12	5.1				140	3.2	0.6			0.06	0.53	19
OT1	45N9	N-9 Well	71.1				12500				542	108				820	6590					80	58
OT2	57N11	N-11 Well	61.1		6.8	14500	8980			2530	403	80			240	859	4060	4.7					53
OT3	26	M-11	33.5	7.7		1980	1040				31	5.5			120	85	500	2.4				1.8	14

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	Na mg/L	K mg/L	Na+K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br mg/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 mg/L
OT3	56M11A	M-11(DST 465-504 ft) Well	50.0		8.00	2050	1120			386	29	4.7			86	133	505	3.6				1.6	18
OT3	56M11B	M-11 Well	hot		7.7	2030	1170			401	9.9	9.5			223	99	445	1.6				1.2	44
OT4	64	FLOUR-1 Well	33.5		7.4	18000		3900	18		570	210				4500	4100	1.2					29
OT4	65	FLOUR-1 Well	30		7.5	18400		3800	17		580	220	0.46	11		4500		1.2		2.3	0.024		29
OT5	S76GART1	Garton Well					7580				759	288				3033	3450						50
OT5	S76GART2	Garton Well					9111				947	89				3115	2880						36
OT5	S76GART3	Garton Well			7.1	16000	10240	2050	50			1662			70	2150	4250						
OT6	OLDN8	N-8 Well	hot (?)																				
OT7	27	N-11	61	6.8		14500	9010				400	80			240	860	4100	4.7					53
RA1	GS9877	Ojo Caliente Hot Spring Soda Spring	35			3890					28	8.7			2200	168	232	16					60
RA4	NB82-4	Ojo Caliente Hot Spring	43	7.8				938	40		32		3.5										65
RA6	GS8978	Ojo Caliente HS Sodium Sulfate Spring				3890					28	8.7			2210	165	245	16		4.6			56
RA7	450	Ojo Caliente Hot Spring Iron Spring	40	6.6		390		890					3.3		207		270		1.4	1.5			
RA7	GS15115	Ojo Caliente Hot Spring Iron Spring	42.78	6.6		3900		890					3.3		2073		270		1.4	1.5			63
RA8	452	Statue Spring	36			1740					145	59			698	270	110	1.4				0.2	22
RA8	NB82-3	Statue Spring	29	7				187	16		21		0.45										21
SA9	VA-114	Jemez/GRI WC 23-4 at 4800 ft depth	214.0	6.92				2880	499		64.3	3.4	37.4	2.54						33.2			
SA10	S-6-80	Jemez/Sulphur Springs Women's Bathhouse	88.0	4.30		12800	6850	18.9	72		131	50	0.17	0.065		6400		5.2		0.2			168
SA10	VA-76	Jemez/Sulphur Springs Women's Bathhouse	89.0	<2.5																			
SA11	VA-80	Jemez/Sulphur Springs main fumarole	88.0	4.30		70	95.3	0.08								4.5							
SA13	VA-91	Jemez HS Travertine Mound Spring	72.3	6.47		4540									715	39.8	869	5.13	3.01				
SA15	VA14	Jemez/Sulphur Springs unnamed HS	63.0	2.38		5800	2490	14.6	18.7		90.8	16.2	0.05	0.22		2110	3.72	0.61					230
SA16	266	Jemez Hot Springs	52				2184				166	9			791	42	820				1.2	5	91
SA16	268	Jemez Hot Springs	31.5																				16
SA16	270	Jemez Hot Springs	72	8.7		3250											832						
SA16	274	Jemez Hot Springs	73	7.2		3700					137	4.4			750	44	855	7.1		0.006		0.4	64
SA16	NB82-8	Jemez Hot Springs	53	7.2				638	78		92		9.1										91
SA17	393	Jemez/Sulphur Springs Lemonade Spring	53	2		3760					150	73				1190	65	1			1.8	0.3	162
SA17	S-10-80	Jemez/Sulphur Springs Lemonade Spring	58.0	2.30			3220	7.7	5.6		168	42	0.14	0.06		2740	17	0.52		0.03			238
SA19	VA-147	Jemez HS Gazebo Spring		7.09		3900											922	2.4	3.9	5.18			90
SA19	VA-93	Jemez HS Gazebo Spring	46.3	6.66		4270									720	45.5	926	5.18	2.86				
SA20	245	Kaseman #2 Well (Zia Hot Well)	32				11200				400	73			1500	3700	2700				2.3		18
SA20	249	Kaseman #2 Well (Zia Hot Well)	50			15400											3100						
SA20	250	Kaseman #2 Well (Zia Hot Well)	59	6.8		15400					370	73			1480	3600	3000	2.6		6.6			27
SA20	253	Kaseman #2 Well (Zia Hot Well)	52											10						2.6	0.85		
SA20	254	Kaseman #2 Well (Zia Hot Well)	51																				7
SA20	NB82-10	Kaseman #2 Well (Zia Hot Well)	54	6.8				3700	121		341		5.7										39
SA20	VA-149	Kaseman #2 Well (Zia Hot Well)		6.81		15500									1429	3350	3020	2.89	3.5				34
SA21	VA-92	Jemez HS Buddhist Spring	43.2	6.49		3200									660	35.1	617	3.66	1.85				
SA23	279	Jemez/Soda Dam Hot Spring	46													40	1500		0.02	14			
SA23	280	Jemez/Soda Dam Hot Spring	46			6500										43	1500		0.9	13			
SA23	358	Jemez/Soda Dam Hot Spring	76	7.7		13000		3200	150		22	20	12	0.11		1200	1800	16	8.3	15	0.03	0.04	76
SA23	NB82-7	Jemez/Soda Dam Hot Spring	45	7.7				995	211		187		15										30
SA23	VA-146	Jemez/Soda Dam Hot Spring		6.95		6700									1476	35	1567	3.85	4.6				46
SA23	VA-89	Jemez/Soda Dam Hot Spring	47.0	6.45		6700									1490	35.5	1480	3.71	5.46				
SA23	VA-99	Jemez/Soda Dam Hot Spring	47.5			6900									1455	37.5	1614	3.68	6	14.1			
SA24	283	Jemez/Soda Dam Hot Springs (west spring)	46	6.8		5780											1490						
SA24	284	Jemez/Soda Dam Hot Springs (west spring)	50	7		5760											1510						
SA25	291	Jemez/Spence Hot Spring	44	7.3		283					8	2			139	17	11	0.8					71

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	Na mg/L	K mg/L	Na+K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br mg/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 mg/L
SA25	292	Jemez/Spence Hot Spring	39.5			276																	
SA25	293	Jemez/Spence Hot Spring	41			282	224	55	1.8		6	2	0.69	0.03	144	18	12	0.7	0.1	0.07			
SA25	294	Jemez/Spence Hot Spring	39.5			295									148								
SA25	NB82-6	Jemez/Spence Hot Spring	42	7.6				61	1.5		17		0.76										69
SA25	VA-105	Jemez/Spence Hot Spring	42.5			315	161								134	18.4	7.91	0.8	0.15	0.02			
SA25	VA-83	Jemez/Spence Hot Spring	41.5	7.87		275	161								135	18	7.2	0.9	0.11				
SA26	387	Jemez/Sulphur Springs Men's Bathhouse	43.5				7887				303	33				6156	54						324
SA26	389	Jemez/Sulphur Springs Men's Bathhouse	87	1.8		13800		24	31		7	10	0.07			35100	24	1.2			11.5		190
SA26	391	Jemez/Sulphur Springs Men's Bathhouse	81	1.4		17300		25	34		72	18				4500	20	0.9		0.1	76		180
SA26	392	Jemez/Sulphur Springs Men's Bathhouse	70	2				9	11		13	1				676	5						
SA26	S-7-80	Jemez/Sulphur Springs Men's Bathhouse	82.0	2.00		10300	2597	6	35		10	6.5	0.04	0.113		2500				0.1			246
SA26	VA-13	Jemez/Sulphur Springs Men's Bathhouse	78.0	2.52		4050	822	2.1	8.2		2.1	1.25	0.02	0.03		786	2.48	6.36					221
SA26	VA-75	Jemez/Sulphur Springs Men's Bathhouse	72.0	<2.5																			
SA26	VA-81	Jemez/Sulphur Springs Men's Bathhouse	73.6	2.88		1300	5.51	0.08								2.2		0.59					
SA27	238	Jemez Pueblo Indian Hot Spring	35	8		5680				1240	100	8.6			1280	286	1140	7.3		6.1		0.3	48
SA28	285	Jemez/McCauley Hot Spring	43	8.1		198					11	4			87	8	8	1.6					53
SA28	286	Jemez/McCauley Hot Spring	31.5			165																	
SA28	VA-87	Jemez/McCauley Hot Spring	31.5	7.87		190									80.5	6.6	3.2	1.31					
SA29	NB82-5	Jemez/San Antonio Hot Spring	42	7.4				23	1.8		5		0.05										80
SA30	399	Jemez/Sulphur Springs Footbath Spring	40.5	1.9		4370	1730	13			45	12				1440					92	0.7	174
SA30	S-4-80	Jemez/Sulphur Springs Footbath Spring	33.0	1.10		30200	8310	10.8	94		56	26.5	0.1	0.098		7900		10.6		0.2			214
SA31	434	Jemez/San Antonio Warm Springs	38.5	6.7		167					7	1			77	15	17	1.6					103
SA34	396	Jemez/Sulphur Springs Electric Spring	39	1.4		12700	3160	9.6	42		101	23				3820	2.5	1			81		206
SA34	S-5-80	Jemez/Sulphur Springs Electric Spring	36.0	1.50		12800	4580	8.5	66		114	23	0.06	0.14		4100		5.2					228
SA37	VA-90	Jemez/Soda Dam Hidden Warm Spring	32.0	6.20		6000									1370	48.3	1240	3.31	4.11				
SA42	NB82-9	San Ysidro Warm Spring	24	7.6				1780	81		323		5.8										18
SA42	VA-148	San Ysidro Warm Spring		6.50		10000									1961	1181	1862	4.52	4.3				20
SF1	401	Guaje #3 Well	30.5	8.1		192					13	1.4			114	3.7	3	0.4			0.02	1	52
SF2	359	Los Alamos #1B Well	30.5	7.8		743	522	170	3.3						400	46	16	2.8				2.8	
SF2	361	Los Alamos #1B Well	31.5	7.8		778		188							437		13	2.6				2.6	
SF2	367	Los Alamos #1B Well	30.5	7.9		775		180							428		15	2.7				0.9	
SF2	368	Los Alamos #1B Well	32	7.8		876		210	3.4						489	51	16	2.7				0.8	42
SF4	301	Los Alamos #6 Well	30	8.5		504					3.1	0.2			275	12	6.5	2.4				1.9	38
SF4	305	Los Alamos #6 Well	30			513									281		9	2.8				0.7	
SF4	326	Los Alamos #6 Well	30	8.6		517		124							310		7	2				1.8	
SF4	349	Los Alamos #6 Well	30	8.5		529		128							297		11	2.6				1.8	
SF4	355	Los Alamos #6 Well	30.5	8.4		635		159	1.4						372	18	7.4	2.4				1.9	41
SI1	118	TorC well	45.5			4380					150	18			210	74	1300	2.6			0.07		
SI2	NB82-19	TorC artesian well	45	7.6				864	65		148		1.3										42
SI4	112	TorC well	44.5			4400					160	17			210	73	1300	3.2			0.42		
SI5	NB82-18	TorC Sierra Grande Bath	44	7.6				853	64		152		1.3										43
SI6	GS15117	TorC Yucca Lodge well 14 ft		6.8		4500		740					1.1		213		1400		1.9	0.3			41
SI6	GS18840	TorC Yucca Lodge well 14 ft	43.33		7.2	4430					174	25			221	98	1240	2.8					39
SI6	GS27039	TorC Yucca Lodge well 14 ft				4420					156	20			220	95	1290						
SI6	GS31092	TorC Yucca Lodge well 14 ft	43.33		7.4	4450									221	91	1300						
SI6	GS33929	TorC Yucca Lodge well 14 ft	43.61		7.3	4450									216		1290						
SI6	GS38827	TorC Yucca Lodge well 14 ft	42.22		7.2	4400									228		1280						
SI6	GS38930	TorC Yucca Lodge well 14 ft	40		7.2	4460									227		1280						
SI6	GS43047	TorC Yucca Lodge well 14 ft	41.67		7.2	4450									221		1290						

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SI6	GS44734	TorC Yucca Lodge well 14 ft	40		7.5	4450									220	96	1300						
SI6	GS50301	TorC Yucca Lodge well 14 ft	41.94		7.2	4480									220		1310						
SI6	GS52617	TorC Yucca Lodge well 14 ft	42.22		7.2	4490									222		1300						
SI6	GS54863	TorC Yucca Lodge well 14 ft	41.67		7.8	4520									222		1280						
SI6	GS653	TorC Yucca Lodge well 14 ft	43														1285						
SI6	S76W14-65	TorC Yucca Lodge well 14 ft	40.83		8.17	4300	2621	786	65		121	15.5	1.01		111		1400	2.93	1.13	0.56			44.9
SI6	T41-YLW14	TorC Yucca Lodge well 14 ft	43.33								154	19			218	86	1290	3.2					
SI7	NB82-17	TorC Yucca Lodge	43	7.2				746	65		165		1.2										41
SI8	S76YUCCA	TorC Yucca Lodge outdoor pool	41.67					828	64		160	15.6	1.11										
SI12	111	TorC Old Government Spring	40			4480				748	158	22			225	89	1300					1	
SI12	GS684	TorC Old Government Spring				4590					168	36			217	95	1314						
SI13	107	TorC well	40			4410				760	150	19			210	76	1300	3.2				2.7	
SI15	96	TorC Ponce De Leon Spring	40			4480									220		1300						
SI15	97	TorC Ponce De Leon Spring	40			4470					160	20			220	78	1300	3.1				5.7	45
SI15	99	TorC Ponce De Leon Spring	42			4470				750	150	21			210	72	1300	1.7				3.3	42
SI15	100	TorC Ponce De Leon Spring	40			4350					150	16			210	75	1200	2.8			0.08		
SI15	102	TorC Ponce De Leon Spring	40	7.2		4460									230		1300						
SI15	103	TorC Ponce De Leon Spring	41.5	7.2		4480									220		1300						
SI15	104	TorC Ponce De Leon Spring	40	6.8		4500		740					1.1		213		1400		1.9	0.3			
SI15	105	TorC Ponce De Leon Spring	42	7.2		4400									230		1300						
SI16	GS3932	TorC Geronimo (State) Springs													224	90	1350						
SI17	NB82-24	Hillsboro Warm Spring	34	6.8				186	14		10		0.28										135
SI19	124	Sun Oil Test Well	34	7.2		2600									136	1660	22						
SI20	88	Derry Warm Springs	34			1660					48	20			372	306	141	6				1.3	32
SI20	89	Derry Warm Springs	34	7.4		1660									368	303	158						
SI20	CON54DWS	Derry Warm Springs	33.89		7.5	1650	1030				52	19			370	309	160	5.8					
SI20	GS18725	Derry Warm Springs	34			1660					48	20			372	306	141	6					32
SI20	GS35977	Derry Warm Springs	33.89		7.4	1660	823								368	303	158						
SI21	90	well	34			1650					52	19			370	309	160	5.8				2	
SI21	91	well	34			1660					48	20			372	306	141	6				1.3	32
SI21	125	well	34			1660					48	20			372	306	141	6				1.3	32
SI24	HAREMIT	TorC "warm spring"					2635	381	29		156	18			175	60	1225						45
SI25	GS44137	Barney Iorio #1 Fee			8.50	5600		1180	4.4						34	2860	262	6.8		3.9			42
SJ3	448	Navajo well	51.8	7.88	8.3	1200		240	2.3		27	0.42	0.07	1.1		430	19	1.2	0.1		0.14		35
SJ5	474	ARCO WS-2 well	39.9	7.52	7.6	8000		1700	18		50	28	0.84	6.7		3800	210	1.6	0.38		0.3		33
SJ6	444	Navajo well	35.5			2320					4.5	2.1			480	480	200	2.6				0.8	20
SJ7	464	Navajo 12T-630 Well	33	7.6	7.8	6000		1400	19		78	31	0.54	10		3200	190	2.1	0.2		0.99		16
SJ7	466	Navajo 12T-630 Well	31	7.8	7.7	4930		890	10		160	15		9		2500	120	2.1		0.3	0.47		14
SJ8	438	well	32.8	8.21		2720															0.25		
SJ9	471	Navajo well	30.5			5050					190	36			130	2500	63	1.7				0.2	17
SJ9	473	Navajo well	32			4110				850	140	25			80	2000	70	1.8				0.3	17
SJ10	467	Navajo 12T-520 Well	30	7.8		4050					120	16			78	2000	59	2.2			0.02	0.1	14
SJ10	468	Navajo 12T-520 Well	31	8	8	4000		800	7.7		58	14	0.3	12		1600	110	2	0.13		0.17		14
SJ10	470	Navajo12T-520 Well	31.1	8.03	8.1	4300		810	7.2		110	14		11		2100	57	1.9		0.15	0.17		14
SJ11	453	well	30.5	7.7		8610									290		370	2					
SJ12	463	Navajo 12T-629 Well	30.5	8.03	8	4200		690	8.2		160	23		9.8		2000	83	2		0.15	0.24		16
SM1	GS2083	Montezuma Hot Spring #1				878	554				14	8.3				66	154						
SM1	GS4801	Montezuma Hot Spring #1				870	537				8.5	0.7			92	49	158						
SM1	GS5233	Montezuma Hot Spring #1				878	531								82		160						

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	Na mg/L	K mg/L	Na+K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br mg/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 mg/L
SM1	S76MNTZ1	Montezuma Hot Spring #1	55.17		8.38	810		200	6.9		5		0.36		82		160	3.4	3.6	0.44			80
SM2	GS18609	Montezuma Hot Spring #6	50.56		9	876	530				4.5	1.1			66	42	155	20					59
SM3	NB82-11	Montezuma Hot Spring	49	7.7				203	6.3		11		0.41										68
SM4	GS18610	Montezuma Hot Spring #13	41.11		8.8	876	528				4.5	1			77	42	155	20					68
SM6	S76MNTZ16	Montezuma Hot Spring #16						192	7.8		8	0.1	0.4										
SM9	S76MNTZ2	Montezuma Hot Spring #2						169	7.4		5	0.1	0.39										
SM10	S76MNTZ20	Montezuma Hot Spring #20						176	7.2		6	0.1	0.42										
SM15	S76MNTZ15	Montezuma Hot Spring #15						175	7.5		4	0.1	0.39										
SM18	S76MNTZ18	Montezuma Hot Spring #18						180	8.1		10	0.3	0.4										
SM19	S76MNTZ19	Montezuma Hot Spring #19						184	6.9		5	0.1	0.4										
SO4	NB82-16	Bosque del Apache Well #13	33	7.4				810	8.4		120		1.1										67
SO5	128	warm well	33	7.22	7.4	4450	2870	790	35		120	41			400	550	910			0.89		4.43	
SO6	159	Blue Canyon Well	32.4	8.5		380				53					140	37	14	0.6		0.76		1	26
SO6	160	Blue Canyon Well	31.5	7.1		360		57					0.06		157		16		0.5	0.09			
SO6	161	Blue Canyon Well	30			380									140	37	14	0.6		0.08			26
SO6	BLUE10-65	Blue Canyon Well			8.62	365	145	55	3.3		27	4.3	0.07		124		20		0.2	0.18			28
SO6	GS15116	Blue Canyon Well		7.1		360		57					0.06		157		16		0.5	0.09			
SO6	GS3372	Blue Canyon Well	33.33		8.5	380									145	37	14	0.6		0.76			26
SO6	HALL4	Blue Canyon Well			8						18	5			166	32	12						
SO6	NB82-12	Blue Canyon Well	33	7.2				55	3.3		27		0.06										28
SO7	141	Socorro Gallery Spring	31.5	8.4		362			3						160	33	16	0.7		0.06		1.1	39
SO7	142	Socorro Gallery Spring	33.5	7.8		346					18	4.4			160								
SO7	149	Socorro Gallery Spring	30	8.4		362	231	55	3						160	33	16	0.7		0.06			39
SO7	150	Socorro Gallery Spring	31	8.1		370		50			18	5			160	28	8						
SO7	151	Socorro Gallery Spring	30	7.8		356		52			13	5			160	20	12						
SO7	153	Socorro Gallery Spring	30.5	7.8		346					4.4				150								18
SO7	155	Socorro Gallery Spring	30			370		79	4		11	3.6			110	75	20						
SO7	157	Socorro Gallery Spring	32.5	8.1	8.1	352	224	54	3.2		18	4				31	13	0.7		0.12		1.59	26
SO7	158	Socorro Gallery Spring	33	8.2			234				19	5			160	30	13						
SO7	CLKPRST	Socorro Gallery Spring					318				42	27			85	102	38						33
SO7	GS38854	Socorro Gallery Spring			8.4	362		55	3						160	33	16	0.7		0.06			39
SO7	GS410-65	Socorro Gallery Spring	33.11		7.8	346					18	4.4			155								
SO7	HALL1	Socorro Gallery Spring	33		8.1	370					18	5			163	28	8						
SO7	HALL2	Socorro Gallery Spring			7.8	356					13	5			156	20	12						
SO7	NB82-13	Socorro Gallery Spring	32	7.2				53	3		18		0.05										26
SO7	NMHSS-SC	Socorro Gallery Spring			8.35	330	220	52.4	2.73		22	3.1			156.6	29.5	13.4	0.22					
SO7	S76FIG27-1	Socorro Gallery Spring	32.56		8.4	335	249	56	3		18	3.9	0.06		142		12	1.5	0.17	0.11			24
SO7	S76FIG27-2	Socorro Gallery Spring	33.56		8.54	340	234	53	3		18	4	0.06		129		16		0.38	0.03			21
SO7	S76FIG27-3	Socorro Gallery Spring	32.44		8.44	334	245	56	3		14	4	0.06		127		16	1.1	0.17	0.04			22
SO7	S76FIG27-4	Socorro Gallery Spring	33.11		8.43	339	232	53	3		18	3.9	0.06		126		16	0.77	0.27	0.05			26
SO7	S76GS2-48	Socorro Gallery Spring				352					20	4.7			165	31	13						28
SO7	SCOFLD1	Socorro Gallery Spring				340		55	5		19	4			168	30	14						
SO7	SCOFLD2	Socorro Gallery Spring				347					18	5			159	30	13	0.09					
SO7	SCOFLD3	Socorro Gallery Spring				348					18	5			156	30	13	1					
SO7	SETTLING	Socorro Gallery Spring			8.42		232	53	3		18	4	0.01		133		16	0.55	0.2	0.07			18
SO7	WALD1956	Socorro Gallery Spring	32.78		8.2						19	5			163	30	13						
SO8	139	Socorro/Sedilla Gallery Spring	30	8.5		331	255	53	3		18	4.2				31	13	0.7		0.12		1.15	26
SO8	GS38853	Socorro/Sedilla Gallery Spring			8.2			54	2.9						159	23	14	0.8		0.05			27
SO8	HALL3	Socorro/Sedilla Gallery Spring	31.11		8.4	370					18	5			154	24	10						

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	Na mg/L	K mg/L	Na+K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br mg/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 mg/L
SO8	NMHSS-SD	Socorro/Sedilla Gallery Spring			8.25	343	298	51.3	4.9		18	4.9			158.6	30.1	12	0.29					
SO8	S76SEDI	Socorro/Sedilla Gallery Spring			8.63	336	249	55	3.1		18	4	0.01		109				0.27	0.1			17
SO10	167	well	30	8.3		4000	4220	190	12		560	280				2600	68	0.8		0.48	0.04	4.3	20
TS1	S76JDUN	Hondo Hot Spring	36.94		8.49	740	505	130	12		29	4.9	0.28		181		55	2.3	2.3	0.18			103
TS2	NB82-1	Mamby Hot Spring	38	7.6				153	8.9		28		0.31										57
TS2	S76MAM1	Mamby Hot Spring	37.78		8.33	660	520	134	9.8		34	5	0.28		165		59	2.7	2.4	0.48			86
TS5	GS15114	Ponce de Leon Hot Spring		7.80		786			4.6		11	1.2	0.25		79	120	92	18	0.7	0.5			54
TS5	NB82-2	Ponce de Leon Hot Spring	34	7.4				157	4.5		2.3		0.3										49
TS5	S76SITE2	Ponce de Leon Hot Spring	34.56		8.14	740	486	135	4.6		12	0.48	0.27		76		78	3.1	2.1	0.5			86
VA1	S76-52270	well	80		7.4	3450	3440				415	176			51	2090	42	0.8					29

APPENDIX 4

SITE AND SAMPLE INFORMATION TABLES

NOTES:

SITE ID	geothermal site number
SAMPLE	cited or assigned sample number or designation
DATE	month/day/yr that sample was taken or reported
NAME	well or spring name
TEMP	temperature °C
COND	conductance (uS/cm - microsiemens per centimeter)
TDS	analytical total dissolved solids (mg/L - milligrams per liter)
FLOW	flow rate (L/min - liters per minute)
REFERENCE	sample information and chemical analysis source

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
BE1	219	4/14/75	well	40.5	423			WATSTORE 1993
BE2	JIREC-2	?/?/83	West Mesa #1	32.2		348		Jiracek (1983)
BE2	217	4/11/75	well	34.5	402			WATSTORE 1993
BE3	222	1/25/83	well	30.5	1125			WATSTORE 1993
BE3	221	1/17/83	well	32.0	1250			WATSTORE 1993
BE3	220	11/13/81	well	33.0	1160			WATSTORE 1993
BE5	JIREC-4	?/?/83	West Mesa #4	31.7		356		Jiracek (1983)
BE5	GJIR988	?/?/83	West Mesa #4	32.1				Jiracek (1983)
BE6	211	5/9/80	well	32.0	520		12415	WATSTORE 1993
BE7	JIREC-1	?/?/83	Don #1	31.4		420		Jiracek (1983)
BE8	212	4/6/65	well	31.0	495	332		WATSTORE 1993
BE9	JIREC-3	?/?/83	West Mesa #2	30.6		330		Jiracek (1983)
BE10	209	8/25/73	well	30	524	340		WATSTORE 1993
BE11	223	6/28/72	well	30.0	660			WATSTORE 1993
BE11	224	6/28/72	well	30.0	657			WATSTORE 1993
BE12	225	6/28/72	well	30.0	456			WATSTORE 1993
BE13	227	12/1/78	College #2	30.0	440		8327	WATSTORE 1993
CA1	GILA7	?/?/75-80	hot spring	64.8		548		Swanberg (1980)
CA2	120	7/24/62	hot spring	60.6	767	505		WATSTORE 1993
CA3	GS31052	12/5/74	Lower Frisco Hot Spring	35.2	1200			Summers (1976)
CA3	LFHS12-74	12/5/74	Lower Frisco Hot Spring	35.22	1200			Summers (1976)
CA3	M77-CT2	?/?/77	Lower Frisco Hot Spring	37.0		1015	20	Mariner and others (1977)
CA3	LFHS66-1	2/15/66	Lower Frisco Hot Spring	37.4			36.72	Summers (1976)
CA3	LFHS66-3B	2/15/66	Lower Frisco Hot Spring	39.6			140.06	Summers (1976)
CA3	LFHS66-4	2/15/66	Lower Frisco Hot Spring	41.2			3.78	Summers (1976)
CA3	LFHS66-7	2/15/66	Lower Frisco Hot Spring	45.1			3.78	Summers (1976)
CA3	LFHS66-11	2/15/66	Lower Frisco Hot Spring	45.6				Summers (1976)
CA3	GS42605	6/11/59	Lower Frisco Hot Spring	46.1	1780	1020		Summers (1976)
CA3	LFHS66-8	2/15/66	Lower Frisco Hot Spring	46.9			3.78	Summers (1976)
CA3	NB82-34	?/?/80-82	Lower Frisco Hot Spring	49.0				Norman and Bernhardt (1982)
CA3	LFHS66-9	2/15/66	Lower Frisco Hot Spring	49.4	1940		11.36	Summers (1976)
CA3	SNM-19	6/4/87	Lower Frisco Hot Spring	50.5	1894	1142.9		Shevenell (1987)
CA3	GS22690	6/16/53	Lower Frisco Hot Spring		1930		75.71	Summers (1976)
CA3	GS38864	6/13/58	Lower Frisco Hot Spring		1660			Summers (1976)
CA4	J3	?/?/75-80	Lower Frisco Hot Spring	43.3		992		Swanberg (1980)
CA4	SNM-18	6/4/87	Lower Frisco Hot Spring	45.0	1495	925.8		Shevenell (1987)
CA4	J5	?/?/75-80	Lower Frisco Hot Spring	48.9		1280		Swanberg (1980)
CA5	121	6/13/58	Lower Frisco Hot Spring	43.0	1660			WATSTORE 1993
CA6	J4	?/?/75-80	Lower Frisco Hot Spring	40.0		768		Swanberg (1980)

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
CA7	129	5/22/58	Upper Frisco Hot Spring	36.5	284			WATSTORE 1993
CA7	GS38851	5/22/58	Upper Frisco Hot Spring	36.7	284			Summers (1976)
CA7	UFHS2-66	2/18/66	Upper Frisco Hot Spring	36.7	242	223	26.12	Summers (1976)
CA7	J2	?/?/75-80	Upper Frisco Hot Spring	36.7		156		Swanberg (1980)
CA7	SNM-20	6/4/87	Upper Frisco Hot Spring	37.0	261	211.6		Shevenell (1987)
CA7	NB82-35	?/?/80-82	Upper Frisco Hot Spring	39.0				Norman and Bernhardt (1982)
CA8	MFG3	?/?/75-80	Gila Middle Fork Hot Spring	36.0		192		Swanberg (1980)
CA9	122	12/5/74	Lower Frisco Hot Spring	35.0	1200			WATSTORE 1993
CA10	168	8/4/79	Pueblo Windmill	33.8		950		WATSTORE 1993
CA10	DL-32-NM	8/?/79	Pueblo Windmill	33.8				Levitte and Gambill (1980)
CA10	169	10/30/80	Pueblo Windmill	34.0	1600		45.42	WATSTORE 1993
CA10	MYERS1	10/30/80	Pueblo Windmill	34.0	1600			Myers (1992)
CA11	FCS2-66	2/18/66	Frieborn Canyon Hot Spring	33.3	150	151		Summers (1976)
CA12	NNS-BOIL	2/26/66	hot spring	32.8			204.41	Summers (1976)
CA12	NNS-CAS	2/26/66	hot spring	34.4			204.41	Summers (1976)
CA13	GS54856	7/31/64	test well	32.2	2710	2540		Summers (1976)
CA14	130	7/13/79	well	32	330	256		WATSTORE 1993
CA15	119	7/31/64	well	32	2710	2540	15.14	WATSTORE 1993
CA16	MFG1	?/?/75-80	Gila Middle Fork Hot Spring	31.0		196		Swanberg (1980)
CA17	MYERS2	10/29/80	well	28.0	1440			Myers (1992)
CA17	MYERS3	11/20/80	well	29.0	1300			Myers (1992)
CA18	MEAD-10	11/12/69	Gila Middle Fork Meadows HS	27.5	215	150	129	Summers (1976)
CA18	MEAD-19	11/12/69	Gila Middle Fork Meadows HS	27.5	215	155	129	Summers (1976)
CA18	MEAD-5	11/12/69	Gila Middle Fork Meadows HS	28.0	220	160	76.5	Summers (1976)
CA18	MEAD-12	11/12/69	Gila Middle Fork Meadows HS	29.5	220	150	3.6	Summers (1976)
CA18	MEAD-14	11/12/69	Gila Middle Fork Meadows HS	32.5	215	145		Summers (1976)
CA19	MGSEEP	2/26/66	warm seep	27.2				Summers (1976)
CA20	US107	?/?/75-80	Zuni Salt Lake Warm Spring	26.0		220152		Swanberg (1980)
CA21	GS36104	6/23/57	Gila Middle Fork Pool HS	52.2	422			Summers (1976)
CA21	NB82-33	?/?/80-82	Gila Middle Fork Pool HS	65.0				Norman and Bernhardt (1982)
CA21	PHS-SUM	2/21/66	Gila Middle Fork Pool HS	65.3	720	514	178.2	Summers (1976)
CA21	SNM-14	6/2/87	Gila Middle Fork Pool HS	65.5	777	580.8		Shevenell (1987)
CA21	M77-CT1	?/?/77	Gila Middle Fork Pool HS	66.0		587		Mariner and others (1977)
CA21	GS62058	2/21/66	Gila Middle Fork Pool HS		771	508		Summers (1976)
CA22	MFG2	?/?/75-80	Gila Middle Fork Hot Spring	37.0		188		Swanberg (1980)
CA23	MFG4	?/?/75-80	Gila Middle Fork Hot Spring	26.0		168		Swanberg (1980)
CA23	SW307	?/?/75-80	Gila Middle Fork Hot Spring	32.0		224		Swanberg (1980)
CA23	SW306	?/?/75-80	Gila Middle Fork Hot Spring	34.0		192		Swanberg (1980)
CB2	210	7/10/86	well	52.8	7000	5450		WATSTORE 1993

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
CB3	183	2/15/89	Acoma #1 Well	40.5	1270			WATSTORE 1993
CB3	180	9/21/84	Acoma #1 Well	41.5	1300		1892.5	WATSTORE 1993
CB3	181	10/4/84	Acoma #1 Well	41.7	1350		1797.9	WATSTORE 1993
CB4	170	12/15/86	well	41.0	2800	2320		WATSTORE 1993
CB5	177	12/6/86	well	38.1	3300	3180		WATSTORE 1993
CB6	178	5/14/75	well	36	989		261.17	WATSTORE 1993
CB7	184	11/17/86	well	34.5	5500	5360		WATSTORE 1993
CB8	171	11/26/86	well	34.0	8000	6280		WATSTORE 1993
CB9	197	11/10/64	well	31.5	18000			WATSTORE 1993
CB9	193	10/7/63	well	34	25200	18500		WATSTORE 1993
CB10	179	11/18/86	well	33.1	4450	3910		WATSTORE 1993
CB12	226	9/30/75	well	32.0	550	340		WATSTORE 1993
CB13	LUC-11	5/?/80	Salado Spring	25	3800			Goff and others (1983)
CV1	95	7/23/81	well	33.0	900	651		WATSTORE 1993
DA1	GROSS3	?/?/81-86	Chaffee 55-25	68.0				Gross (1988)
DA1	GROSS4	?/?/81-86	Chaffee 55-25	68.0				Gross (1988)
DA1	CHAF55-25	?/?/81	Chaffee 55-25	69.0	2300	1480		Files SWTDI
DA2	SNM-5	6/1/87	Radium Hot Springs Bailey Well #15	70.0	7050	3944.3		Shevenell (1987)
DA3	CLARYST	?/?/49	Clary and Ruther State 1	69.4				Files SWTDI
DA4	CHF35-25	12/?/81	Chaffee 35-25	68	2580	1626		Icerman and Lohse (1983)
DA4	GROSS1	?/?/81-86	Chaffee 35-25	68.0				Gross (1988)
DA5	280LC2	2/?/80	LC-2	52.5	2530	2004		Files SWTDI
DA5	GROSS8	?/?/81-86	LC-2	68.0				Gross (1988)
DA6	EXXONOLE	12/6/83	Exxon Beard Ole Federal	65.5				Files SWTDI
DA7	CHF12-24	1/?/82	Chaffee 12-24	65	3000	1968		Icerman and Lohse (1983)
DA7	GROSS2	?/?/81-86	Chaffee 12-24	65.0				Gross (1988)
DA8	GROSS6	?/?/81-86	NMSU PG-3	63.0				Gross (1988)
DA8	12581PG3	1/25/81	NMSU PG-3	63.3		1981	757.2	Cunniff and others (1981)
DA8	1980PG3	?/?/80	NMSU PG-3		3130			Cunniff and others (1984)
DA8	NDPG3	?/?/80-84	NMSU PG-3			1748		Cunniff and others (1984)
DA9	S76BAILEY	2/7/66	Radium Hot Springs Bailey's bathhouse	60.8	5600	3731		Summers (1976)
DA9	BTHSE	7/10/81	Radium Hot Springs Bailey's bathhouse			874		Files SWTDI
DA9	NMPHL316	5/4/62	Radium Hot Springs Bailey's bathhouse		6100			Summers (1976)
DA10	BINNS1	?/?/87	Certified Sand Well	58.8			12.62	Files SWTDI
DA12	SNM-6	6/1/87	Radium Hot Springs Hotel Well #2	43.0	6530	3728.4		Shevenell (1987)
DA12	M77-DA1	?/?/77	Radium Hot Springs Hotel Well #2	52.0		3857		Mariner and others (1977)
DA12	70	12/4/74	Radium Hot Springs Hotel Well #2	52.5	6100			WATSTORE 1993
DA12	71	4/29/57	Radium Hot Springs Hotel Well #2	53.0	6210			WATSTORE 1993
DA12	B2	?/?/75-80	Radium Hot Springs Hotel Well #2	53.0		3532		Swanberg (1980)

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
DA12	NB82-21	?/?/80-82	Radium Hot Springs Hotel Well #2	53.0				Norman and Bernhardt (1982)
DA12	RHSHOT2	12/16/65	Radium Hot Springs Hotel Well #2	60.0	5800			Summers (1976)
DA12	S76HRSW2	12/4/74	Radium Hot Springs Hotel Well #2	60.0				Summers (1976)
DA12	69	5/17/48	Radium Hot Springs Hotel Well #2	85.5	6060			WATSTORE 1993
DA12	GS10160	5/17/48	Radium Hot Springs Hotel Well #2	85.6	6060			Summers (1976)
DA12	GS35979	4/29/57	Radium Hot Springs Hotel Well #2		6210			Summers (1976)
DA12	GS31053	12/4/74	Radium Hot Springs Hotel Well #2		6100			Summers (1976)
DA12	GS38867	4/24/58	Radium Hot Springs Hotel Well #2		5540			Summers (1976)
DA12	S76RSNMS	?/?/?	Radium Hot Springs Hotel Well #2			3460		Summers (1976)
DA13	280LC1	2/?/80	LC-1	67.9	922	576		Files SWTDI
DA14	SNM-7	6/1/87	Radium Hot Springs Roy Smith Well	50.0	5230	2978.5		Shevenell (1987)
DA15	SNM-9	6/1/87	NMSU PG-2	43.0	3290	2232.6		Shevenell (1987)
DA15	4681PG2	4/6/81	NMSU PG-2	47.7		2070		Cunniff (1981)
DA15	NB82-23	?/?/80-82	NMSU PG-2	59.0				Norman and Bernhardt (1982)
DA15	NMSU81479	8/14/79	NMSU PG-2		2480	1704		Files SWTDI
DA16	11	11/25/61	Pure Oil Federal "H" 1	45.0	7380		1892.5	WATSTORE 1993
DA16	GS48858	10/25/61	Pure Oil Federal "H" 1	45.0	7380			Summers (1976)
DA17	NATIONW81	12/1/72	Nations Well	43.0	3040			Wilson and others (1981)
DA17	LASALTNA	2/6/66	Nations Well	45.1	2400	1983		Summers (1976)
DA18	47	12/1/72	well	43	3040			WATSTORE 1993
DA19	LASALTHU	2/6/66	Husand Well	42.5	2000	1706		Summers (1976)
DA20	19	7/17/86	well	31.5	1580	955		WATSTORE 1993
DA20	18	7/16/86	well	35.0	2100	1350		WATSTORE 1993
DA20	17	7/16/86	well	42.5	10900	6990		WATSTORE 1993
DA21	LASALTRO	2/6/66	Rowan well	36.8	1500	1093		Summers (1976)
DA22	46	9/8/75	Tellyer Well	36.5	1020		151.4	WATSTORE 1993
DA22	TELLYER1	9/8/75	Tellyer Well	36.5	1020			Wilson and others (1981)
DA22	TELLYER2	12/1/72	Tellyer Well	36.5	1110			Wilson and others (1981)
DA23	S7623S2W	2/5/66	Running Indian Well	35.0	2200	1450		Summers (1976)
DA23	GS28934	1/11/73	Running Indian Well	36.1	2310			Summers (1976)
DA24	SD1	?/?/75-80	well	36.0		2020		Swanberg (1980)
DA25	S76NMS112	11/?/63	well	35.6	1800	1020		Summers (1976)
DA26	NB82XX	?/?/82	NMSU GD-1	30.0				Norman and Bernhardt (1982
DA26	1GD1	?/?/82	NMSU GD-1	35.0	2370		965.4	Cunniff (1982)
DA26	2GD1	1/13/61	NMSU GD-1			1550		Cunniff (1981)
DA26	3GD1	2/1/62	NMSU GD-1			1200		Cunniff (1981)
DA26	4GD1	1/13/81	NMSU GD-1					Cunniff (1981)
DA26	5GD1	2/13/81	NMSU GD-1					Cunniff (1981)
DA27	S76LASWH	2/6/66	White well	34.5	1460	1000		Summers (1976)

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
DA27	NPHL870	7/2/65	White well		1665	1020		Summers (1976)
DA28	72	7/31/80	well	34	488			WATSTORE 1993
DA29	23	5/6/76	well	33.5	950	554		WATSTORE 1993
DA30	9	7/24/75	well	30.5	890		121.12	WATSTORE 1993
DA30	10	7/24/75	well	33.3	490		113.55	WATSTORE 1993
DA33	GS28683	2/1/55	well	32.2	4640	2930	49.97	Summers (1976)
DA33	44	1/11/73	well	36	2310			WATSTORE 1993
DA34	43	3/16/55	well	32.0	2320		11.36	WATSTORE 1993
DA36	24	3/28/73	Berino Well	31	1120			WATSTORE 1993
DA36	GS29520	3/28/73	Berino Well	31.1	1120			Summers (1976)
DA36	S76BERING	1/24/73	Berino Well		1080	740		Summers (1976)
DA37	SD22	?/?/75-80	Souse Springs	31.0		312		Swanberg (1980)
DA39	29	7/28/73	well	31	778			WATSTORE 1993
DA39	GS221153	7/28/73	well	31.1	778			Summers (1976)
DA40	21	1/10/78	well	31.0	804			WATSTORE 1993
DA41	2	8/29/86	well	31.0	5700	3780		WATSTORE 1993
DA42	93	2/5/73	well	31	2070			WATSTORE 1993
DA43	COLM1	?/?/75-80	Pol Ranch Windmill	30.5		512		Swanberg (1980)
DA44	48	10/22/90	SC2	30.5	270			WATSTORE 1993
DA45	12	8/17/86	well	30.5	2200	1300		WATSTORE 1993
DA45	14	8/19/86	well	30.5	1000	656		WATSTORE 1993
DA45	13	8/19/86	well	32	600	475		WATSTORE 1993
DA46	52	7/31/81	T-18	30.0	686		30.28	WATSTORE 1993
DA46	53	8/10/82	T-18	30.0	710			WATSTORE 1993
DA47	38	6/19/75	Dominguez Bros Well	30	3350			WATSTORE 1993
DA47	39	11/1/72	Dominguez Bros Well	31.5	2870			WATSTORE 1993
DA49	NMPLH997	8/16/60	Railroad Well		2270			Summers (1976)
DA50	HUNTWATW	8/26/88	Radium Springs College Ranch Windmill					Files SWTDI
DA51	SCOTTRHS	11/17/54	Radium Hot Springs Hotel Well #1	53.3	6100	3620		Summers (1976)
DA51	GS2053	8/?/22	Radium Hot Springs Hotel Well #1			3738		Summers (1976)
DA52	21H0600	3/30/93	Radium Springs Masson 21					Files SWTDI
DA52	21H0900	3/30/93	Radium Springs Masson 21					Files SWTDI
DA52	21H1800	3/30/93	Radium Springs Masson 21					Files SWTDI
DA52	21TRUN	3/30/93	Radium Springs Masson 21					Files SWTDI
DA52	86MASS21	8/11/86	Radium Springs Masson 21			3682		Files SWTDI
DA53	89MASS22	4/?/89	Radium Springs Masson 22					Files SWTDI
DA53	SWL1295	2/1/88	Radium Springs Masson 22					Files SWTDI
DA53	AA03261	7/16/92	Radium Springs Masson 23		5960			Files SWTDI
DA54	87MASS23	4/?/87	Radium Springs Masson 23					Files SWTDI

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
DA54	89MASS23	4/?/89	Radium Springs Masson 23					Files SWTDI
DA54	SWL1296	2/1/88	Radium Springs Masson 23					Files SWTDI
DA54	SWL5478	12/13/88	Radium Springs Masson 23					Files SWTDI
DA55	311801	4/30/93	Radium Springs Masson 26					Files SWTDI
DA55	AA03262	7/16/92	Radium Springs Masson 26		6030			Files SWTDI
DA56	1RYAN7235	12/20/86	Radium Springs Ryan 72-35			2584		Files SWTDI
DA57	GROSS7	?/?/81-88	NMSU GD-2	42.0				Gross (1988)
DA57	JET468	9/?/82	NMSU GD-2		3120	1948		Cunniff and others (1983)
DA57	JET840	9/?/82	NMSU GD-2		2680	1787		Cunniff and others (1983)
DA58	NMSUOW1	12/10/81	NMSU OW-1			1765		Cunniff (1981)
DA59	SNM-8	6/1/87	NMSU PG-1	58.5	3350	2273.5		Shevenell (1987)
DA59	PG1COMP	?/?/82	NMSU PG-1	60.6	3110			Cunniff (1982)
DA59	GROSS5	?/?/81-88	NMSU PG-1	61.0				Gross (1988)
DA59	NB82-22	?/?/80-82	NMSU PG-1	61.0				Norman and Bernhardt (1982)
DA59	N10PG1	?/?/80-84	NMSU PG-1		3720	2044		Cunniff and others (1984)
DA59	N4PG1	?/?/80-84	NMSU PG-1		6590	4220		Cunniff and others (1984)
DA59	N7PG1	?/?/80-84	NMSU PG-1		4510	2868		Cunniff and others (1984)
DA59	N8PG1	?/?/80-84	NMSU PG-1		4050	2416		Cunniff and others (1984)
DA59	NMSU9430	?/?/86	NMSU PG-1		2800	1820		Files SWTDI
DA59	PG1PART1	10/24/80	NMSU PG-1			1936		Cunniff (1981)
DA59	PG1PART2	7/21/80	NMSU PG-1			1904		Cunniff (1981)
DA59	PG1PART3	?/?/80	NMSU PG-1		3110			Cunniff and others (1984)
DA60	DST1PG4	4/?/86	NMSU PG-4	63.0	2720	1695		Files SWTDI
DA60	DST4PG4	4/?/86	NMSU PG-4	63.0	2790	1854		Files SWTDI
DA60	BAIL370	11/?84	NMSU PG-4		2450	1636		Cunniff and Chintawong (1985)
DA60	DRILL13	10/?/84	NMSU PG-4		2800	1818		Cunniff and Chintawong (1985)
DA60	IWEINC1	1/25/91	NMSU PG-4		2520			Files SWTDI
DA60	PT0PG4	8/?/86	NMSU PG-4			1770		Files SWTDI
ED1	81	7/27/61	Clayton Well	31.0	3030			WATSTORE 1993
ED1	82	7/27/61	Clayton Well	31.0	3030			WATSTORE 1993
GR1	GS15106	12/5/74	Mimbres Hot Springs #3	61.1	450			Summers (1976)
GR1	MIML3-12-65	12/29/65	Mimbres Hot Springs #3	62.3	430	221		Summers (1976)
GR1	MIML3-WR	10/3/65	Mimbres Hot Springs #3		444			Summers (1976)
GR1	MIML3-12-74	12/5/74	Mimbres Hot Springs #3					Summers (1976)
GR1	MIML3-8-65	8/28/65	Mimbres Hot Springs #3		422	285		Summers (1976)
GR2	EI3024	10/?/85	Gila Hot Springs Doyle Well	74.0				Files SWTDI
GR3	SNM-16	6/3/87	Turkey Creek Hot Spring	65.0	326	260.4		Shevenell (1987)
GR3	GILA22	?/?/75-80	Turkey Creek Hot Spring	69.8		260		Swanberg (1980)
GR3	SNM-17	6/3/87	Turkey Creek Hot Spring	73.0	329	258.8		Shevenell (1987)

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
GR3	GILA20	?/?/75-80	Turkey Creek Hot Spring	74.0		236		Swanberg (1980)
GR4	SNM-12	6/2/87	Gila Hot Springs Campbell #4 Well	71.1	659	495.8		Shevenell (1987)
GR4	EI6968	10/10/86	Gila Hot Springs Campbell #4 Well	72.0				Files SWTDI
GR5	GHS0920	10/6/81	Gila Spring Hot Spring #14	66.0	640			Schwab and others (1982)
GR5	GHS0925	10/6/81	Gila Spring Hot Spring #14	66.0		445	3.16	Schwab and others (1982)
GR6	NB82-32	?/?/80-82	Gila HS northern artesian well	65.0				Norman and Bernhardt (1982)
GR7	GHS-66	2/17/66	Gila Hot Springs	41.5	560	496		Summers (1976)
GR7	NB82-31	?/?/80-82	Gila Hot Springs	59.0				Norman and Bernhardt (1982)
GR7	117	12/5/74	Gila Hot Springs	61.0	620			WATSTORE 1993
GR7	GILA5	?/?/75-80	Gila Hot Springs	62.8		408		Swanberg (1980)
GR7	GHS-74	12/5/74	Gila Hot Springs	63.9	620			Summers (1976)
GR7	GS31051	12/5/74	Gila Hot Springs	63.89				Summers (1976)
GR7	GS36105	6/23/57	Gila Hot Springs	63.9	653	369	94.64	Summers (1976)
GR7	GS4897	7/25/62	Gila Hot Springs	63.9	638	421	378.54	Summers (1976)
GR7	115	6/23/57	Gila Hot Springs	64.0	653	369	567.75	WATSTORE 1993
GR7	116	7/25/62	Gila Hot Springs	64	638	421		WATSTORE 1993
GR7	SNM-13	6/2/87	Gila Hot Springs	65.2	642	483.5		Shevenell (1987)
GR7	GILA6	?/?/75-80	Gila Hot Springs	66.3		416		Swanberg (1980)
GR7	M77-GR1	?/?/77	Gila Hot Springs	68.0		468		Mariner and others (1977)
GR9	NB82-30	?/?/80-82	Gila HS middle artesian well	62.0				Norman and Bernhardt (1982)
GR10	GHS2252	10/7/81	Gila Hot Springs Campbell #2 Well	60.0		428	3.28	Schwab and others (1982)
GR10	GHS0700	10/8/81	Gila Hot Springs Campbell #2 Well	61.0		423	3.27	Schwab and others (1982)
GR10	GHS0711	10/8/81	Gila Hot Springs Campbell #2 Well	61.0				Schwab and others (1982)
GR10	GHS1445	10/7/81	Gila Hot Springs Campbell #2 Well	61.0	620	418	3.268	Schwab and others (1982)
GR10	GHS14006	10/9/81	Gila Hot Springs Campbell #2 Well	62.0	550		3.16	Schwab and others (1982)
GR10	GHS1400F	10/9/81	Gila Hot Springs Campbell #2 Well	62.0		411		Schwab and others (1982)
GR10	GHS1610	10/7/81	Gila Hot Springs Campbell #2 Well	62.0	590	415	3.16	Schwab and others (1982)
GR11	MIM-L25	12/29/65	Mimbres Hot Springs #25	59.0				Summers (1976)
GR12	MIM-L32	12/29/65	Mimbres Hot Springs #28	45.3				Summers (1976)
GR12	MIM-L28	6/5/52	Mimbres Hot Springs #28	58.1	452	308		Summers (1976)
GR13	GHS0929	10/6/81	Gila Spring Hot Spring #41	58.0	560			Schwab and others (1982)
GR13	GHS0935	10/6/81	Gila Spring Hot Spring #41	58.0		426	0.06	Schwab and others (1982)
GR14	85	6/5/52	Mimbres Hot Springs	58.0	450			WATSTORE 1993
GR14	NB82-25	?/?/80-82	Mimbres Hot Springs	58.0				Norman and Bernhardt (1982)
GR14	GILA4	?/?/75-80	Mimbres Hot Springs	58.2		320		Swanberg (1980)
GR14	86	12/5/74	Mimbres Hot Springs	60.5	455			WATSTORE 1993
GR15	GS19645	6/5/52	Mimbres Hot Springs #8	57.5	450			Summers (1976)
GR16	MIM-L12	12/29/65	Mimbres Hot Springs #12	56.4				Summers (1976)
GR17	MIM-L21	12/29/65	Mimbres Hot Springs #21	55.0				Summers (1976)

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GR18	MIM-L23	12/29/65	Mimbres Hot Springs #23	54.4			9.84	Summers (1976)
GR19	75	2/5/76	Faywood Hot Springs	52.0	560			WATSTORE 1993
GR19	73	4/19/57	Faywood Hot Springs	53	605	384	189.25	WATSTORE 1993
GR19	GS1856	4/19/57	Faywood Hot Springs	53.3	605	384	189.27	Summers (1976)
GR19	GS27917	11/9/54	Faywood Hot Springs	53.3	600		189.27	Summers (1976)
GR19	74	12/5/74	Faywood Hot Springs	53.5	603			WATSTORE 1993
GR19	GILA2	?/?/75-80	Faywood Hot Springs	53.8		492		Swanberg (1980)
GR19	NB82-26	?/?/80-82	Faywood Hot Springs	55.0				Norman and Bernhardt (1982)
GR19	FAY-S76-2	12/26/65	Faywood Hot Springs		560	384		Summers (1976)
GR19	FAY-WRD	12/26/65	Faywood Hot Springs		504	330		Summers (1976)
GR19	GS19824	6/2/52	Faywood Hot Springs		606			Summers (1976)
GR19	FAY-S76-1	12/5/74	Faywood Hot Springs					Summers (1976)
GR19	GS15112	12/5/74	Faywood Hot Springs		603			Summers (1976)
GR20	SPS-LL66	2/20/66	Gila Lyons Lodge swimming pool HS	51.7	390	335	18.93	Summers (1976)
GR20	GS36104	6/23/57	Gila Lyons Lodge swimming pool HS		432		37.85	Summers (1976)
GR21	114	6/23/57	well	52.0	432		37.85	WATSTORE 1993
GR22	M77-GR2	?/?/77	Gila River Waterfall HS	43.0		558		Mariner and others (1977)
GR22	GILA8	?/?/75-80	Gila River Waterfall HS	43.6		516		Swanberg (1980)
GR22	WFALLHS	3/27/66	Gila River Waterfall HS	44.7	680	518	75.7	Summers (1976)
GR23	EFGR-NM	2/22/66	Gila East Fork no name spring	41.39	581	369	111.35	Summers (1976)
GR23	EFGR-SUM	2/22/66	Gila East Fork no name spring	41.4	560	367	117.35	Summers (1976)
GR25	M77-GR3	?/?/77	Gila East Fork Hot Spring	36.0		385		Mariner and others (1977)
GR26	EFS-LL66	2/20/66	Gila Lyons Lodge East Fork Hot Springs	35.6	500	358		Summers (1976)
GR26	WSM-LL66	2/20/66	Gila Lyons Lodge HS midpoint	45.6				Summers (1976)
GR26	WSC-LL66	2/20/66	Gila Lyons Lodge HS composite		580	407	75.7	Summers (1976)
GR26	WSD-LL66	2/20/66	Gila Lyons Lodge HS downstream					Summers (1976)
GR26	WSU-LL66	2/20/66	Gila Lyons Lodge HS upstream					Summers (1976)
GR27	KWS-W3-1	965-196	Kennecott Warm Spring Well #3	34.6	350	281		Summers (1976)
GR27	KWS-W3-2	5/17/72	Kennecott Warm Spring Well #3		482	320		Summers (1976)
GR29	NB82-27	?/?/80-82	Kennecott Warm Spring Well #3	34.0				Norman and Bernhardt (1982)
GR30	GS50019	7/14/62	Cliff Warm Well	33.3	665	435		Summers (1976)
GR30	94	7/14/62	Cliff Warm Well	33.5	665	435	37.85	WATSTORE 1993
GR30	S76CLIFF	3/3/66	Cliff Warm Well	35.0	610	439		Summers (1976)
GR32	LD2	?/?/75-80	Muir Ranch well	33.0		816		Swanberg (1980)
GR34	87	9/22/54	well	32.0	754		1892.5	WATSTORE 1993
GR35	84	5/13/65	well	31.1	421	272		WATSTORE 1993
GR36	GS29750	4/26/55	Spring Canyon Warm Spring	28.9	472	311		Summers (1976)
GR39	GILA23	?/?/75-80	Riverside Well	29.0		292		Swanberg (1980)
GR39	GS29790	6/6/55	Riverside Well	30.0	551	363		Summers (1976)

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GR39	GILA24	?/?/75-80	Spring Canyon Warm Spring	31.0		332		Swanberg (1980)
GR39	NB82-28	?/?/80-82	Riverside Well	38.0				Norman and Bernhardt (1982)
GR41	GILA29	?/?/75-80	Mangas Springs	27.0		544		Swanberg (1980)
GR42	J1	?/?/75-80	Allen Spring	25.6		492		Swanberg (1980)
GR43	J7	?/?/75-80	Cliff Warm Spring	25.0		164		Swanberg (1980)
GR43	T72P193	9/14/55	Cliff Warm Spring	25.0	256			Summers (1976)
GR44	ATWS-W4-1	5/12/72	Apache Tejo Warms Springs Well #4		520	370		Summers (1976)
GR44	ATWS-W4-2	5/12/72	Apache Tejo Warms Springs Well #4		634	868		Summers (1976)
GR45	ATWS-W5	5/12/72	Apache Tejo Warms Springs Well #5					Summers (1976)
HD1	SNM-11	6/2/87	Lightning Dock Burgett Well #1	104.0	1666	1180.5		Shevenell (1987)
HD2	35	4/28/49	Lightning Dock hot well	98.0	1540			WATSTORE 1993
HD2	GS59532	4/30/66	Lightning Dock hot well		1560			Summers (1976)
HD2	S76LD-12	4/30/66	Lightning Dock hot well		1500	1057		Summers (1976)
HD3	NB82-40	?/?/80-82	Lightning Dock hot well	96.0				Norman and Bernhardt (1982)
HD4	36	4/30/66	Lightning Dock hot well	95.5	1560			WATSTORE 1993
HD4	S76LD-10	4/27/54	Lightning Dock hot well		1580	1160		Summers (1976)
HD5	SNM-10	6/2/87	Lighting Dock Burgett Well #10	95.2	1621	1136.6		Shevenell (1987)
HD6	37	4/10/55	Lightning Dock hot well	94.0	1510		757	WATSTORE 1993
HD7	P2	?/?/75-80	Lightning Dock hot well	85.0		1116		Swanberg (1980)
HD8	P3	?/?/75-80	Lightning Dock McCants Well	81.0		1024		Swanberg (1980)
HD9	P4	?/?/75-80	Lightning Dock hot well	71.0		1608		Swanberg (1980)
HD10	33	4/30/66	Lightning Dock hot well	52	2310			WATSTORE 1993
HD10	GS59533	4/30/66	Lightning Dock hot well		2310	1680		Summers (1976)
HD10	S76LD-5	3/2/66	Lightning Dock hot well		2260	1732		Summers (1976)
HD10	S76LD-2	12/12/58	Lightning Dock hot well			1055		Summers (1976)
HD10	S76LD-3	4/5/60	Lightning Dock hot well		1577	1112		Summers (1976)
HD10	S76LD-4	8/2//65	Lightning Dock hot well		2200	1761		Summers (1976)
HD10	S76LD-6	4/30/66	Lightning Dock hot well		2200	1786		Summers (1976)
HD11	S76P15-2	7/8/55	warm well	31.1	1590			Summers (1976)
HD11	S76P15-3	6/20/66	warm well	31.4			37	Summers (1976)
HD11	S76P15-1	6/14/55	warm well	35.0				Summers (1976)
HD12	34	4/30/66	Lightning Dock hot well	33.5	1960			WATSTORE 1993
HD12	GS59534	4/30/66	Lightning Dock hot well		1960	1380		Summers (1976)
HD12	S76LD-1	4/30/66	Lightning Dock hot well		1760	1295		Summers (1976)
HD13	1	8/22/56	well	32.0	1020			WATSTORE 1993
HD14	63	7/8/55	Blowing Well	31.0	1590		18.93	WATSTORE 1993
HD15	68	8/17/81	well	30.0	460			WATSTORE 1993
HD17	S76LD-11	4/10/55	Lightning Dock hot well		1510	1110		Summers (1976)
HD18	S76LD-13	4/30/66	Lightning Dock hot well					Summers (1976)

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HD19	S76LD-14	4/4/60	Lightning Dock hot well		835	620		Summers (1976)
HD20	S76LD-7A	2/1/49	Lightning Dock hot well		1650	1020		Summers (1976)
HD20	S76LD-7B	4/28/49	Lightning Dock hot well		1540	1130		Summers (1976)
HD20	S76LD-8	7/30/51	Lightning Dock hot well		1600			Summers (1976)
HD20	S76LD-9	3/28/52	Lightning Dock hot well		1600			Summers (1976)
LA1	386	1/15/61	Pueblo Canyon #7 Well	30.5	729		1816.8	WATSTORE 1993
LA1	385	1/10/61	Pueblo Canyon #7 Well	31	766		1816.8	WATSTORE 1993
LU1	S76-24SR7W	8/4/69	Smyer Well	38.9	439			Summers (1976)
LU1	42	8/4/69	Smyer Well	39.0	439			WATSTORE 1993
LU3	41	2/1/45	well	34.5	515			WATSTORE 1993
LU4	6	8/8/52	well	33.0	1620		1400.5	WATSTORE 1993
LU6	40	1/5/54	well	31.5	824			WATSTORE 1993
LU7	PAL4	?/?/75-80	well	31.5		700		Swanberg (1980)
LU8	W86	?/?/75-80	well	31.1		732		Swanberg (1980)
LU9	8	5/22/58	well	30.5	1860	1130		WATSTORE 1993
LU9	7	8/8/52	well	31.0	1850		832.7	WATSTORE 1993
LU13	50	9/2/82	Little Ed Well	30.0	500		3.79	WATSTORE 1993
LU14	W69	?/?/75-80	well	30.0		1168		Swanberg (1980)
LU15	5	8/26/82	well	30.0	1100		378.5	WATSTORE 1993
MK1	234	8/4/50	Fort Wingate Well/Santa Fe 'Spring'	55.0	730		87.06	WATSTORE 1993
MK1	GS64891	10/2/68	Fort Wingate Well/Santa Fe 'Spring'	61.1	5520			Summers (1976)
MK2	229	11/21/56	well	46.0	3110		809.99	WATSTORE 1993
MK3	DL-4-NM	4/?/79	Ya-Ta-Hey Well	45.5				Levitte and Gambill (1980)
MK4	432	10/22/87	well	37.4	1600			WATSTORE 1993
MK4	430	4/24/86	well	42.2	1800			WATSTORE 1993
MK4	431	4/24/86	well	42.2	1800			WATSTORE 1993
MK5	231	3/5/86	well	40.2	2850	2330		WATSTORE 1993
MK6	242	1/31/68	well	39.0	890	565		WATSTORE 1993
MK7	299	4/1/60	Navajo well	36	594		3785	WATSTORE 1993
MK7	298	4/28/54	Navajo well	37.5	703		3785	WATSTORE 1993
MK8	DL-15-NM	6/?/79	Toh Sah Toh	37.0			1135	Levitte and Gambill (1980)
MK9	240	1/24/69	well	34	1360			WATSTORE 1993
MK9	239	1/12/69	well	36	1570			WATSTORE 1993
MK10	264	7/14/81	NTUA #2 Well	36.0	500			WATSTORE 1993
MK11	261	7/14/81	well	35.5	450			WATSTORE 1993
MK12	296	3/12/75	Pure Oil Navajo #1 (Tohachi Well)	35	644			WATSTORE 1993
MK12	GS52896	9/9/63	Pure Oil Navajo #1 (Tohachi Well)	35.6	606		3406.9	Summers (1976)
MK12	GS44727	4/1/60	Pure Oil Navajo #1 Well (Tohachi Well)	36.1	594	390	3406.9	Summers (1976)
MK12	297	8/28/85	Pure Oil Navajo #1 (Tohachi Well)	37.0	655		1922.8	WATSTORE 1993

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MK12	NM51	?/?/75-80	Pure Oil Navajo #1 Well (Tohachi Well)			376		Swanberg (1980)
MK13	S76NAVAJO	3/13/75	Pure Oil Navajo #3 Well	35.0				Summers (1976)
MK14	265	8/17/82	Mobil Well Crown Point	33.5	415			WATSTORE 1993
MK15	420	5/10/67	well	33.5	951			WATSTORE 1993
MK16	262	7/15/81	well	33.0	450			WATSTORE 1993
MK17	243	6/26/75	well	32.5	1500	906	2267.2	WATSTORE 1993
MK18	423	4/21/86	well	32.5	2900			WATSTORE 1993
MK18	422	4/21/86	well	32.7	2900			WATSTORE 1993
MK18	421	5/10/67	well	35.5	2910			WATSTORE 1993
MK19	235	12/22/33	well	32.0				WATSTORE 1993
MK20	241	7/31/70	well	32	1280	860	2649.5	WATSTORE 1993
MK21	237	12/6/55	well	31.5	1220	802	946.25	WATSTORE 1993
MK22	202	5/6/64	well	30.5	1140	730		WATSTORE 1993
MK23	256	10/2/87	well	30.5	800			WATSTORE 1993
MK24	260	7/14/81	well	30.0	675			WATSTORE 1993
OT1	45N9	?/?/45	N-9 Well	71.1		12500		Henry and Gluck (1981)
OT2	57N11	1/?/57	N-11 Well	61.1	14500	8980		Henry and Gluck (1981)
OT3	26	10/18/56	M-11	33.5	1980	1040		WATSTORE 1993
OT3	56M11A	10/?/56	M-11(DST 465-504 ft) Well	50.0	2050	1120		Henry and Gluck (1981)
OT3	56M11B	12/?/56	M-11 Well	hot	2030	1170		Henry and Gluck (1981)
OT4	65	8/2/87	FLOUR-1 Well	30.0	18400		1199.9	WATSTORE 1993
OT4	64	7/15/87	FLOUR-1 Well	33.5	18000			WATSTORE 1993
OT5	S76GART4	12/17/65	Garton Well	33.7	10000	9086		Summers (1976)
OT5	SA1	?/?/75-80	Garton Well	34.0		9140		Swanberg (1980)
OT5	S76GART1	?/?/29	Garton Well			7580	4164	Summers (1976)
OT5	S76GART2	3/29/35	Garton Well			9111	75	Summers (1976)
OT5	S76GART3	8/12/64	Garton Well		16000	10240	30	Summers (1976)
OT6	OLDN8	1900 (?)	N-8 Well	hot (?)				Henry and Gluck (1981)
OT7	27	1/28/57	N-11	61.0	14500	9010	132.48	WATSTORE 1993
RA1	OC-17	4/?/82	Ojo Caliente Hot Spring Soda Spring	27.3	4220	3673		Vuataz and others (1984)
RA1	GS9877	10/1/74	Ojo Caliente Hot Spring Soda Spring	35.0	3890			Summers (1976)
RA1	GS13378	10/6/49	Ojo Caliente Hot Spring Soda Spring		3910			Summers (1976)
RA1	HILLEBRD	?/?/?	Ojo Caliente Hot Spring Soda Spring					Summers (1976)
RA2	OC-18	5/?/82	Ojo Caliente Hot Spring Well	53.6	4560	3724		Vuataz and others (1984)
RA2	OC-4	12/?/79	Ojo Caliente Hot Spring Well	54.0	3900	3344		Vuataz and others (1984)
RA2	OC-25	4/?/82	Ojo Caliente Hot Spring Well	54.2	4440	3618		Vuataz and others (1984)
RA2	NM21	?/?/75-80	Ojo Caliente Hot Spring Well	55.6		2576		Swanberg (1980)
RA3	OC-14	4/?/82	Ojo Caliente Arsenic Hot Spring	38.3	4200	3665		Vuataz and others (1984)
RA3	S76ARSEN	12/3/74	Ojo Caliente Arsenic Hot Spring	38.3				Summers (1976)

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
RA3	NM19	?/?/75-80	Ojo Caliente Arsenic Hot Spring	43.5		2652		Swanberg (1980)
RA3	OC-5	7/?/80	Ojo Caliente Arsenic Hot Spring	43.5	4000	3131	20	Vuataz and others (1984)
RA3	GS13193	10/6/49	Ojo Caliente Arsenic Hot Spring	45.0	3930			Summers (1976)
RA4	NB82-4	?/?/80-82	Ojo Caliente Hot Spring	43.0				Norman and Bernhardt (1982)
RA5	OC-2	12/?/79	Ojo Caliente HS Lithia Spring	38.0	3900	3475		Vuataz and others (1984)
RA5	OC-13	4/?/82	Ojo Caliente HS Lithia Spring	41.9	4190	3630		Vuataz and others (1984)
RA6	OC-3	12/?/79	Ojo Caliente HS Sodium Sulfate Spring	40.0	4100	3533	15	Vuataz and others (1984)
RA6	GS13192	10/6/49	Ojo Caliente HS Sodium Sulfate Spring	40.6	3920			Summers (1976)
RA6	NM20	?/?/75-80	Ojo Caliente HS Sodium Sulfate spring	41.1		2668		Swanberg (1980)
RA6	OC-16	4/?/82	Ojo Caliente HS Sodium Sulfate Spring	41.3	4250	3628	45	Vuataz and others (1984)
RA6	GS8978	10/1/47	Ojo Caliente HS Sodium Sulfate Spring		3890			Summers (1976)
RA7	450	12/3/74	Ojo Caliente Hot Spring Iron Spring	40.0	390			WATSTORE 1993
RA7	OC-15	4/?/82	Ojo Caliente Hot Spring Iron Spring	42.2	4250	3674		Vuataz and others (1984)
RA7	GS15115	12/3/74	Ojo Caliente Hot Spring Iron Spring	42.8	3900			Summers (1976)
RA7	S76IRON2	12/3/74	Ojo Caliente Hot Spring Iron Spring	42.8				Summers (1976)
RA7	OC-1	12/?/79	Ojo Caliente Hot Spring Iron Spring	43.0	4100	3578	40	Vuataz and others (1984)
RA7	S76IRON1	11/30/65	Ojo Caliente Hot Spring Iron Spring		3300	2438		Summers (1976)
RA8	NB82-3	?/?/80-82	Statue Spring	29.0				Norman and Bernhardt (1982)
RA8	OC-26	6/?/82	Statue Spring	29.2	1660	1386	110	Vuataz and others (1984)
RA8	452	9/5/52	Statue Spring	36.0	1740			WATSTORE 1993
RA9	OC-20	4/?/82	Ojo Caliente Hot Spring Well #1	34.3	3000	2586		Vuataz and others (1984)
RA9	PH65-524	4/8/65	Ojo Caliente Hot Spring Well #1		2375	1515		Summers (1976)
RA11	NM18	?/?/75-80	spring	25.5		1072		Swanberg (1980)
RA12	PH65-523	4/8/65	Ojo Caliente Hot Spring Well #2		1050	665		Summers (1976)
SA1	BA-7	7/?/82	Jemez/Baca # 15	267.0	10400	5735		Shevenell and others (1987)
SA1	BA-8	9/?/82	Jemez/Baca # 15	326.0	10600	5783		Shevenell and others (1987)
SA2	BA-5	7/?/82	Jemez/Baca # 4	297.0	9100	4719		Shevenell and others (1987)
SA3	BA-2	6/?/82	Jemez/Baca # 4	294.0	9100	4769		Shevenell and others (1987)
SA4	BA-4	7/?/82	Jemez/Baca # 13	279.0	8900	4644		Shevenell and others (1987)
SA5	BA-1	6/?/82	Jemez/Baca #13	278.0	8500	4529		Shevenell and others (1987)
SA6	BA-3	6/?/82	Jemez/Baca #24	260.0	10600	5328		Shevenell and others (1987)
SA6	BA-6	7/?/82	Jemez/Baca #24	261.0	10400	5339		Shevenell and others (1987)
SA7	VA-116	1/?/83	Jemez/GRI WC 23-4 at 6300 ft depth	232.6	30800	18100		Shevenell and others (1987)
SA8	BA-9	10/?/82	Jemez/Baca # 19	223.0	10900	6147		Shevenell and others (1987)
SA9	VA-113	1/?/83	Jemez/GRI WC 23-4 at 4800 ft depth	214.0	13720	8580		Shevenell and others (1987)
SA9	VA-114	1/?/83	Jemez/GRI WC 23-4 at 4800 ft depth	214.0				Shevenell and others (1987)
SA10	S-6-80	3/?/82	Jemez/Sulphur Springs Women's Bathhouse	88.0	12800	6850		Shevenell and others (1987)
SA10	VA-76	1/?/82	Jemez/Sulphur Springs Women's Bathhouse	89.0				Shevenell and others (1987)
SA11	VA-80	3/?/80	Jemez/Sulphur Springs main fumarole	88.0	70	95.3		Shevenell and others (1987)

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
SA12	VA-15	1/?/79	Jemez HS Jemez Springs #1 Well 152 m	60.5	1700	1140	80	Shevenell and others (1987)
SA12	VA-21	2/?/79	Jemez HS Jemez Springs #1 Well 152 m	61.0	1830	1200	20	Shevenell and others (1987)
SA12	VA-19	1/?/79	Jemez HS Jemez Springs #1 Well 24 m	68.0	3300	2220	120	Shevenell and others (1987)
SA12	VA-144	2/?/84	Jemez HS Jemez Springs #1 Well	72.2	4670	3005		Shevenell and others (1987)
SA12	VA-121	1/?/83	Jemez HS Jemez Springs #1 Well	73.3	4280	2530	64	Shevenell and others (1987)
SA12	VA-25	5/?/79	Jemez HS Jemez Springs #1 Well 24 m	73.3	3500	2560	8	Shevenell and others (1987)
SA13	VA-7	1/?/79	Jemez HS Travertine Mound Spring	70.0	4200	7580	4	Shevenell and others (1987)
SA13	VA-17	1/?/79	Jemez HS Travertine Mound Spring	72.0	4100	2600	4	Shevenell and others (1987)
SA13	VA-66	12/?/80	Jemez HS Travertine Mound Spring	72.0	3400	1700	4	Shevenell and others (1987)
SA13	VA-71	6/?/81	Jemez HS Travertine Mound Spring	72.0	3900	2520	4	Shevenell and others (1987)
SA13	VA-91	3/?/82	Jemez HS Travertine Mound Spring	72.3	4540		4	Shevenell and others (1987)
SA13	VA-123	1/?/83	Jemez HS Travertine Mound Spring	72.6	4360	2550	3	Shevenell and others (1987)
SA13	VA-142	2/?/84	Jemez HS Travertine Mound Spring	72.9	4740	2630		Shevenell and others (1987)
SA14	272	8/31/49	Jemez HS Soda Spring	65.5	3560	2150	37.85	WATSTORE 1993
SA15	VA14	1/?/79	Jemez/Sulphur Springs unnamed HS	63.0	5800	2490	2	Shevenell and others (1987)
SA16	268	2/7/74	Jemez Hot Springs	31.5				WATSTORE 1993
SA16	267	5/18/73	Jemez Hot Springs	49	3550			WATSTORE 1993
SA16	266	8/21/24	Jemez Hot Springs	52.0		2184		WATSTORE 1993
SA16	JEMEZ6	?/?/75-80	Jemez Hot Springs	53.0		1884		Swanberg (1980)
SA16	NB82-8	?/?/80-82	Jemez Hot Springs	53.0				Norman and Bernhardt (1982)
SA16	JEMEZ5	?/?/75-80	Jemez Hot Springs	56.0		1952		Swanberg (1980)
SA16	269	5/30/74	Jemez Hot Springs	58	3460			WATSTORE 1993
SA16	270	7/15/75	Jemez Hot Springs	72.0	3250			WATSTORE 1993
SA16	274	8/1/47	Jemez Hot Springs	73.0	3700			WATSTORE 1993
SA16	JEMEZ7	?/?/75-80	Jemez Hot Springs	74.0		2156		Swanberg (1980)
SA17	393	8/13/47	Jemez/Sulphur Springs Lemonade Spring	53.0	3760			WATSTORE 1993
SA17	S-10-80	9/?/80	Jemez/Sulphur Springs Lemonade Spring	58.0		3220	0.5	Shevenell and others (1987)
SA18	JP91-2	11/11/91	Jemez Pueblo # 1 Well	57.8	5560	3947		Goff (1991)
SA18	91TDI1	1/5/91	Jemez Pueblo #1 Well	57.8		3366	567.81	Witcher (1991)
SA18	91TDI3	6/15/91	Jemez Pueblo #1 Well	58.2		3349	567.81	Witcher and others (1992)
SA19	VA-18	1/?/79	Jemez HS Gazebo Spring	36.0	4250	2700		Shevenell and others (1987)
SA19	VA-93	3/?/82	Jemez HS Gazebo Spring	46.3	4270		20	Shevenell and others (1987)
SA19	VA-10	1/?/79	Jemez HS Gazebo Spring	55.0	4200	2660	20	Shevenell and others (1987)
SA19	VA-143	2/?/84	Jemez HS Gazebo Spring	74.7	4460	2640		Shevenell and others (1987)
SA19	VA-122	1/?/83	Jemez HS Gazebo Spring	74.9	4380	2540	3	Shevenell and others (1987)
SA19	VA-147	4/?/84	Jemez HS Gazebo Spring		3900			Shevenell and others (1987)
SA20	245	9/29/26	Kaseman #2 Well (Zia Hot Well)	32.0		11200		WATSTORE 1993
SA20	249	4/2/45	Kaseman #2 Well (Zia Hot Well)	50.0	15400			WATSTORE 1993
SA20	254	1/25/74	Kaseman #2 Well (Zia Hot Well)	51.0				WATSTORE 1993

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
SA20	252	6/5/73	Kaseman #2 Well (Zia Hot Well)	52	15700		321.73	WATSTORE 1993
SA20	253	6/6/73	Kaseman #2 Well (Zia Hot Well)	52.0				WATSTORE 1993
SA20	E	?/?/75-80	Kaseman #2 Well (Zia Hot Well)	52.0		11300		Swanberg (1980)
SA20	88TDI1	8/?/88	Kaseman #2 Well (Zia Hot Well)	53.0		10720		Witcher (1988a)
SA20	VA-125	2/?/83	Kaseman #2 Well (Zia Hot Well)	53.0	15700	11400	320	Shevenell and others (1987)
SA20	VA-67	3/?/81	Kaseman #2 Well (Zia Hot Well)	53.0	15800	11300	150	Shevenell and others (1987)
SA20	VA-74	10/?/81	Kaseman #2 Well (Zia Hot Well)	53.0	15600	12800	240	Shevenell and others (1987)
SA20	NB82-10	?/?/80-82	Kaseman #2 Well (Zia Hot Well)	54.0				Norman and Bernhardt (1982)
SA20	VA-53	4/?/80	Kaseman #2 Well (Zia Hot Well)	54.0	16000	11700	150	Shevenell and others (1987)
SA20	247	3/14/64	Kaseman #2 Well (Zia Hot Well)	54.4	15300		5677.5	WATSTORE 1993
SA20	VA-34	8/?/79	Kaseman #2 Well (Zia Hot Well)	56.0	16600	12200	150	Shevenell and others (1987)
SA20	250	9/29/48	Kaseman #2 Well (Zia Hot Well)	59.0	15400		1695.7	WATSTORE 1993
SA20	VA-149	4/?/84	Kaseman #2 Well (Zia Hot Well)		15500			Shevenell and others (1987)
SA21	VA-92	3/?/82	Jemez HS Buddhist Spring	43.2	3200		15	Shevenell and others (1987)
SA21	VA-8	1/?/79	Jemez HS Buddhist Spring	49.0	3300	2160	4	Shevenell and others (1987)
SA21	VA-16	1/?/79	Jemez HS Buddhist Spring	50.0	3300	2550	4	Shevenell and others (1987)
SA22	VA-12	1/?/79	Jemez HS Marsh Spring	49.0	4100	2620	4	Shevenell and others (1987)
SA23	NB82-7	?/?/80-82	Jemez/Soda Dam Hot Spring	45.0				Norman and Bernhardt (1982)
SA23	279	3/8/73	Jemez/Soda Dam Hot Spring	46.0				WATSTORE 1993
SA23	280	6/29/73	Jemez/Soda Dam Hot Spring	46.0	6500			WATSTORE 1993
SA23	VA-109	1/?/83	Jemez/Soda Dam Hot Spring	46.8	7090	4570	60	Shevenell and others (1987)
SA23	VA-140	2/?/84	Jemez/Soda Dam Hot Spring	46.8	7300	4570		Shevenell and others (1987)
SA23	JEMEZ2	?/?/75-80	Jemez/Soda Dam Hot Spring	47.0		3496		Swanberg (1980)
SA23	VA-132	5/?/83	Jemez/Soda Dam Hot Spring	47.0	6800	4590		Shevenell and others (1987)
SA23	VA-26	5/?/79	Jemez/Soda Dam Hot Spring	47.0	6600	4630	60	Shevenell and others (1987)
SA23	VA-51	4/?/80	Jemez/Soda Dam Hot Spring	47.0	5900	4150	60	Shevenell and others (1987)
SA23	VA-6	7/?/78	Jemez/Soda Dam Hot Spring	47.0		4014	60	Shevenell and others (1987)
SA23	VA-64	12/?/80	Jemez/Soda Dam Hot Spring	47.0	5600	4200	60	Shevenell and others (1987)
SA23	VA-70	6/?/81	Jemez/Soda Dam Hot Spring	47.0	6700	4380	60	Shevenell and others (1987)
SA23	VA-73	10/?/81	Jemez/Soda Dam Hot Spring	47.0	6700	4539	40	Shevenell and others (1987)
SA23	VA-89	3/?/82	Jemez/Soda Dam Hot Spring	47.0	6700		40	Shevenell and others (1987)
SA23	VA-99	8/?/82	Jemez/Soda Dam Hot Spring	47.5	6900			Shevenell and others (1987)
SA23	VA-9	1/?/79	Jemez/Soda Dam Hot Spring	48.0	7050	4620	60	Shevenell and others (1987)
SA23	358	5/14/74	Jemez/Soda Dam Hot Spring	76.0	13000			WATSTORE 1993
SA23	VA-146	4/?/84	Jemez/Soda Dam Hot Spring		6700			Shevenell and others (1987)
SA24	283	7/15/75	Jemez/Soda Dam Hot Springs (west spring)	46.0	5780			WATSTORE 1993
SA24	284	8/7/75	Jemez/Soda Dam Hot Springs (west spring)	50.0	5760			WATSTORE 1993
SA25	292	11/7/72	Jemez/Spence Hot Spring	39.5	276		147.62	WATSTORE 1993
SA25	294	3/15/73	Jemez/Spence Hot Spring	39.5	295			WATSTORE 1993

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
SA25	293	12/1/72	Jemez/Spence Hot Spring	41.0	282	224	166.54	WATSTORE 1993
SA25	VA-83	3/?/82	Jemez/Spence Hot Spring	41.5	275	161	160	Shevenell and others (1987)
SA25	A	?/?/75-80	Jemez/Spence Hot Spring	42.0		297		Swanberg (1980)
SA25	NB82-6	?/?/80-82	Jemez/Spence Hot Spring	42.0				Norman and Bernhardt (1982)
SA25	VA-68	6/?/81	Jemez/Spence Hot Spring	42.0	280	297	80	Shevenell and others (1987)
SA25	VA-72	10/?/81	Jemez/Spence Hot Spring	42.0	275	276	20	Shevenell and others (1987)
SA25	VA-120	1/?/83	Jemez/Spence Hot Spring	42.3	293	292	160	Shevenell and others (1987)
SA25	VA-105	9/?/82	Jemez/Spence Hot Spring	42.5	315	161		Shevenell and others (1987)
SA25	291	8/1/47	Jemez/Spence Hot Spring	44.0	283			WATSTORE 1993
SA25	VA-1	7/?/78	Jemez/Spence Hot Spring	45.0		294	60	Shevenell and others (1987)
SA26	387	8/31/24	Jemez/Sulphur Springs Men's Bathhouse	43.5		7887		WATSTORE 1993
SA26	392	12/2/74	Jemez/Sulphur Springs Men's Bathhouse	70.0				WATSTORE 1993
SA26	VA-75	1/?/82	Jemez/Sulphur Springs Men's Bathhouse	72.0				Shevenell and others (1987)
SA26	VA-81	3/?/82	Jemez/Sulphur Springs Men's Bathhouse	73.6	1300	5.51		Shevenell and others (1987)
SA26	VA-13	7/?/79	Jemez/Sulphur Springs Men's Bathhouse	78.0	4050	822		Shevenell and others (1987)
SA26	391	7/21/67	Jemez/Sulphur Springs Men's Bathhouse	81.0	17300			WATSTORE 1993
SA26	S-7-80	9/?/80	Jemez/Sulphur Springs Men's Bathhouse	82.0	10300	2597		Shevenell and others (1987)
SA26	389	11/4/63	Jemez/Sulphur Springs Men's Bathhouse	87.0	13800			WATSTORE 1993
SA27	238	8/30/62	Jemez Pueblo Indian Hot Spring	35.0	5680		7.57	WATSTORE 1993
SA27	88TDI10	8/?/88	Jemez Pueblo Indian Hot Spring	36.0		3176		Witcher (1988b)
SA27	88TDI9	8/?/88	Jemez Pueblo Indian Hot Spring	43.0		3572		Witcher (1988b)
SA28	287	1/16/73	Jemez/McCauley Hot Spring	30	140		1313.4	WATSTORE 1993
SA28	289	12/13/74	Jemez/McCauley Hot Spring	31	165			WATSTORE 1993
SA28	VA-3	7/?/78	Jemez/McCauley Hot Spring	31.0		189	140	Shevenell and others (1987)
SA28	286	1/16/73	Jemez/McCauley Hot Spring	31.5	165		1392.9	WATSTORE 1993
SA28	VA-87	3/?/82	Jemez/McCauley Hot Spring	31.5	190		400	Shevenell and others (1987)
SA28	VA-119	1/?/83	Jemez/McCauley Hot Spring	31.9	173	186	960	Shevenell and others (1987)
SA28	B	?/?/75-80	Jemez/McCauley Hot Spring	32.0		220		Swanberg (1980)
SA28	285	8/1/47	Jemez/McCauley Hot Spring	43.0	198			WATSTORE 1993
SA29	424	5/16/73	Jemez/San Antonio Hot Springs	40	110		1222.6	WATSTORE 1993
SA29	VA-96	3/?/82	Jemez/San Antonio Hot Spring	40.8	140	168	125	Shevenell and others (1987)
SA29	VA-128	3/?/83	Jemez/San Antonio Hot Spring	41.3	127	167		Shevenell and others (1987)
SA29	NB82-5	?/?/80-82	Jemez/San Antonio Hot Spring	42.0				Norman and Bernhardt (1982)
SA29	VA-4	7/?/78	Jemez/San Antonio Hot Spring	42.0	150	170	150	Shevenell and others (1987)
SA29	F	?/?/75-80	Jemez/San Antonio Hot Spring	56.0		148		Swanberg (1980)
SA30	S-4-80	9/?/80	Jemez/Sulphur Springs Footbath Spring	33.0	30200	8310		Shevenell and others (1987)
SA30	399	8/31/49	Jemez/Sulphur Springs Footbath Spring	40.5	4370	1730		WATSTORE 1993
SA31	434	8/1/47	Jemez/San Antonio Warm Springs	38.5	167		94.63	WATSTORE 1993
SA32	VA-5	7/?/78	Jemez/Soda Dam Grotto Spring	38.0		3950	12	Shevenell and others (1987)

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
SA33	VA-94	3/?/82	Jemez/Bathhouse HS	37.4	178	261	18	Shevenell and others (1987)
SA33	VA-20	2/?/79	Jemez/Bathhouse HS	38.0	163	220	12	Shevenell and others (1987)
SA33	VA-126	3/?/83	Jemez/Bathhouse HS	38.1	166	498		Shevenell and others (1987)
SA34	S-5-80	9/?/80	Jemez/Sulphur Springs Electric Spring	36.0	12800	4580	0.5	Shevenell and others (1987)
SA34	396	8/31/49	Jemez/Sulphur Springs Electric Spring	39.0	12700	3160		WATSTORE 1993
SA35	VA-2	7/?/78	Jemez/Little Spence Hot Spring	34.0		321		Shevenell and others (1987)
SA36	436	1/23/78	Star Lake #2 Ojo Encino Well	33	3000	2190	757	WATSTORE 1993
SA37	VA-27	5/?/79	Jemez/Soda Dam Hidden Warm Spring	29.0	5700	3990	2	Shevenell and others (1987)
SA37	VA-90	3/?/82	Jemez/Soda Dam Hidden Warm Spring	32.0	6000		6	Shevenell and others (1987)
SA37	VA-141	2/?/84	Jemez/Soda Dam Hidden Warm Spring	32.2	6260	4020		Shevenell and others (1987)
SA37	VA-110	1/?/83	Jemez/Soda Dam Hidden Warm Spring	32.3	6150	3930	8	Shevenell and others (1987)
SA38	228	8/26/72	well	32	3140	2460		WATSTORE 1993
SA39	88TDI4	8/?/88	Penasco #3 Spring	27.0		9672		Witcher (1988a)
SA40	88TDI6	8/?/88	Penasco #4 Spring	27.0		9924		Witcher (1988a)
SA41	88TDI8	8/?/88	Salado Warm Spring	25.0		9608		Witcher (1988a)
SA41	M77-SA2	?/?/77	Salado Warm Spring	25.0		10465		Mariner and others (1977)
SA42	VA-130	5/?/83	San Ysidro Warm Spring	22.0	9400	6810		Shevenell and others (1987)
SA42	NB82-9	?/?/80-82	San Ysidro Warm Spring	24.0				Norman and Bernhardt (1982)
SA42	VA-33	8/?/79	San Ysidro Warm Spring	27.0	11550	7170	1	Shevenell and others (1987)
SA42	VA-148	4/?/84	San Ysidro Warm Spring		10000			Shevenell and others (1987)
SA43	88TDI3	8/?/88	Swimming Pool Spring	24.0		7420		Witcher (1988b)
SA44	PC2-6	9/?/84	Jemez/PC-2 at 1335 ft (w/drilling fluid)	40.0	4980	5577		Shevenell and others (1987)
SA44	PC1-1	4/?/84	Jemez/PC-1 at 1712 ft (w/drilling fluid)		9500	7510		Shevenell and others (1987)
SF1	401	7/19/51	Guaje #3 Well	30.5	192		2407.3	WATSTORE 1993
SF2	LA-7	9/?/78	Los Alamos #1B Well	30.0		559	2180	Shevenell and others (1987)
SF2	359	3/16/60	Los Alamos #1B Well	30.5	743	522		WATSTORE 1993
SF2	364	1/15/61	Los Alamos #1B Well	30.5	729		1816.8	WATSTORE 1993
SF2	365	1/15/61	Los Alamos #1B Well	30.5	729		1816.8	WATSTORE 1993
SF2	366	1/19/61	Los Alamos #1B Well	30.5	720		1816.8	WATSTORE 1993
SF2	367	2/8/61	Los Alamos #1B Well	30.5	775		2271	WATSTORE 1993
SF2	362	1/10/61	Los Alamos #1B Well	31	766		1816.8	WATSTORE 1993
SF2	363	1/10/61	Los Alamos #1B Well	31	766		1816.8	WATSTORE 1993
SF2	361	8/31/60	Los Alamos #1B Well	31.5	778			WATSTORE 1993
SF2	368	6/9/61	Los Alamos #1B Well	32.0	876		2271	WATSTORE 1993
SF3	LA-12	9/?/78	Los Alamos #G6 Well	30.5		191	1100	Shevenell and others (1987)
SF4	301	9/26/51	Los Alamos #6 Well	30.0	504		2259.7	WATSTORE 1993
SF4	305	6/25/54	Los Alamos #6 Well	30.0	513			WATSTORE 1993
SF4	326	6/19/58	Los Alamos #6 Well	30.0	517		2271	WATSTORE 1993
SF4	349	7/7/59	Los Alamos #6 Well	30.0	529		2214.2	WATSTORE 1993

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
SF4	355	6/9/61	Los Alamos #6 Well	30.5	635		2271	WATSTORE 1993
SF5	LA-16	9/?/78	Los Alamos #G2 Well	30.0		256	1820	Shevenell and others (1987)
SI1	118	2/9/39	TorC well	45.5	4380		3.79	WATSTORE 1993
SI2	SNM-3	5/31/87	TorC Artesian well	41.2	5140	2697.5		Shevenell (1987)
SI2	NB82-19	?/?/80-82	TorC artesian well	45.0				Norman and Bernhardt (1982)
SI3	B9	?/?/75-80	TorC Blackstone Mineral Bath	45.0		2608		Swanberg (1980)
SI4	112	2/9/39	TorC well	44.5	4400		189.25	WATSTORE 1993
SI5	NB82-18	?/?/80-82	TorC Sierra Grande Bath	44.0				Norman and Bernhardt (1982)
SI6	GS38930	4/15/58	TorC Yucca Lodge well 14 ft	40.0	4460			Summers (1976)
SI6	GS44734	4/4/60	TorC Yucca Lodge well 14 ft	40.0	4450			Summers (1976)
SI6	S76TRC14B	12/4/74	TorC Yucca Lodge well 14 ft	40.0	4500			Summers (1976)
SI6	S76W14-65	12/14/65	TorC Yucca Lodge well 14 ft	40.8	4300	2621		Summers (1976)
SI6	GS43047	8/3/59	TorC Yucca Lodge well 14 ft	41.7	4450			Summers (1976)
SI6	GS54863	8/8/64	TorC Yucca Lodge well 14 ft	41.7	4520		29.15	Summers (1976)
SI6	GS50301	3/13/62	TorC Yucca Lodge well 14 ft	41.9	4480			Summers (1976)
SI6	GS38827	8/5/57	TorC Yucca Lodge well 14 ft	42.2	4400		32.18	Summers (1976)
SI6	GS52617	8/5/63	TorC Yucca Lodge well 14 ft	42.2	4490			Summers (1976)
SI6	S76TRC14A	5/28/54	TorC Yucca Lodge well 14 ft	42.8	4510	2670	4.16	Summers (1976)
SI6	GS653	4/28/43	TorC Yucca Lodge well 14 ft	43.0				Summers (1976)
SI6	GS18840	3/31/52	TorC Yucca Lodge well 14 ft	43.3	4430		7.57	Summers (1976)
SI6	GS31092	8/2/55	TorC Yucca Lodge well 14 ft	43.3	4450		2.91	Summers (1976)
SI6	T41-YLW14	2/?/39	TorC Yucca Lodge well 14 ft	43.3				Summers (1976)
SI6	GS33929	9/17/56	TorC Yucca Lodge well 14 ft	43.6	4450		2.91	Summers (1976)
SI6	GS15117	12/4/74	TorC Yucca Lodge well 14 ft		4500			Summers (1976)
SI6	GS27039	7/12/54	TorC Yucca Lodge well 14 ft		4420		1.89	Summers (1976)
SI7	NB82-17	?/?/80-82	TorC Yucca Lodge	43.0				Norman and Bernhardt (1982)
SI8	S76YUCCA	12/14/65	TorC Yucca Lodge outdoor pool	41.7				Summers (1976)
SI9	B10	?/?/75-80	TorC Sierra Mineral Bath	41.0		2688		Swanberg (1980)
SI10	B11	?/?/75-80	TorC warm spring	41.0		2640		Swanberg (1980)
SI11	B19	?/?/75-80	TorC Yucca Lodge	41.0		2708		Swanberg (1980)
SI12	111	9/15/44	TorC Old Government Spring	40.0	4480		4.92	WATSTORE 1993
SI12	GS20949	2/9/39	TorC Old Government Spring		4520	2560		Summers (1976)
SI12	GS684	6/23/38	TorC Old Government Spring		4590			Summers (1976)
SI13	107	7/19/45	TorC well	40.0	4410		3.03	WATSTORE 1993
SI14	108	2/9/39	TorC well	40				WATSTORE 1993
SI14	113	2/9/39	TorC well	44.5	4410	2490	257.38	WATSTORE 1993
SI15	98	2/9/39	TorC Ponce De Leon Spring	39	4400	2440	473.13	WATSTORE 1993
SI15	96	4/18/50	TorC Ponce De Leon Spring	40.0	4480		605.6	WATSTORE 1993
SI15	97	4/18/50	TorC Ponce De Leon Spring	40.0	4470			WATSTORE 1993

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
SI15	100	2/10/39	TorC Ponce De Leon Spring	40.0	4350			WATSTORE 1993
SI15	102	4/15/58	TorC Ponce De Leon Spring	40.0	4460			WATSTORE 1993
SI15	104	12/4/74	TorC Ponce De Leon Spring	40.0	4500			WATSTORE 1993
SI15	103	8/13/62	TorC Ponce De Leon Spring	41.5	4480			WATSTORE 1993
SI15	99	10/6/50	TorC Ponce De Leon Spring	42.0	4470		113.55	WATSTORE 1993
SI15	105	8/5/57	TorC Ponce De Leon Spring	42.0	4400		32.17	WATSTORE 1993
SI16	106	2/9/39	TorC Geronimo (State) Springs	38.5				WATSTORE 1993
SI16	SNM-4	5/31/87	TorC Geronimo (State) Springs	42.0	5120	2696.6		Shevenell (1987)
SI16	GS20948	2/9/39	TorC Geronimo (State) Springs		4290	2418		Summers (1976)
SI16	GS3932	3/20/26	TorC Geronimo (State) Springs					Summers (1976)
SI17	NB82-24	?/?/80-82	Hillsboro Warm Spring	34.0				Norman and Bernhardt (1982)
SI17	JUST1	?/?/75-80	Hillsboro Warm Spring	34.5		568		Swanberg (1980)
SI19	S76DWS-65	12/16/65	Derry Warm Springs	33.8	1420	823		Summers (1976)
SI19	S76DWS-74	12/4/74	Derry Warm Springs	33.8				Summers (1976)
SI19	124	7/8/55	Sun Oil Test Well	34.0	2600		3406.5	WATSTORE 1993
SI19	B5	?/?/75-80	Derry Warm Springs			1240		Swanberg (1980)
SI19	B6	?/?/75-80	Derry Warm Springs			1228		Swanberg (1980)
SI19	GS1510	12/4/74	Derry Warm Springs		1660			Summers (1976)
SI20	CON54DWS	4/17/47	Derry Warm Springs	33.9	1650	1030		Summers (1976)
SI20	GS35977	4/30/57	Derry Warm Springs	33.9	1660	823		Summers (1976)
SI20	88	3/7/52	Derry Warm Springs	34.0	1660		37.85	WATSTORE 1993
SI20	89	4/30/57	Derry Warm Springs	34.0	1660			WATSTORE 1993
SI20	GS18725	3/7/52	Derry Warm Springs	34.0	1660		189	Summers (1976)
SI21	90	4/17/47	well	34.0	1650			WATSTORE 1993
SI21	91	3/7/52	well	34.0	1660		30.28	WATSTORE 1993
SI21	92	12/4/74	well	34	1660			WATSTORE 1993
SI21	125	3/7/52	well	34.0	1660			WATSTORE 1993
SI22	83	9/9/71	well	31	1350	953		WATSTORE 1993
SI23	S76AFTER	12/15/65	Barney Iorio #1 Fee	33.0	5600	4931	88	Summers (1976)
SI23	B12	?/?/75-80	warm spring			1392		Swanberg (1980)
SI24	HAREMIT	12/?/1901	TorC "warm spring"			2635		Summers (1976)
SI25	GS44137	12/2/59	Barney Iorio #1 Fee		5600			Summers (1976)
SJ1	440	7/22/78	well	62	11400		1514	WATSTORE 1993
SJ2	442	1/6/76	well	48	4000	3620		WATSTORE 1993
SJ2	441	5/5/75	well	57	4350		1135.5	WATSTORE 1993
SJ3	448	6/11/87	Navajo well	51.8	1200			WATSTORE 1993
SJ3	446	9/24/73	Navajo well	61	1390	880		WATSTORE 1993
SJ4	443	3/28/78	Dome Well Chaco	42	10000			WATSTORE 1993
SJ5	474	7/21/87	ARCO WS-2 well	39.9	8000			WATSTORE 1993

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
SJ6	444	9/12/49	Navajo well	35.5	2320		75.7	WATSTORE 1993
SJ7	466	6/10/87	Navajo 12T-630 Well	31.0	4930			WATSTORE 1993
SJ7	464	6/19/86	Navajo 12T-630 Well	33.0	6000			WATSTORE 1993
SJ8	437	4/22/86	well	32.8	2720			WATSTORE 1993
SJ8	438	4/22/86	well	32.8	2720			WATSTORE 1993
SJ8	439	10/21/87	well	32.9	2800			WATSTORE 1993
SJ9	471	8/29/49	Navajo well	30.5	5050		567.75	WATSTORE 1993
SJ9	473	10/9/52	Navajo well	32.0	4110		567.75	WATSTORE 1993
SJ10	467	3/9/61	Navajo 12T-520 Well	30.0	4050		586.68	WATSTORE 1993
SJ10	468	6/16/86	Navajo 12T-520 Well	31.0	4000			WATSTORE 1993
SJ10	470	6/9/87	Navajo12T-520 Well	31.1	4300			WATSTORE 1993
SJ11	453	4/15/54	well	30.5	8610			WATSTORE 1993
SJ12	463	6/10/87	Navajo 12T-629 Well	30.5	4200			WATSTORE 1993
SM1	S76MNTZ1	1/3/66	Montezuma Hot Spring #1	55.2	810			Summers (1976)
SM1	GS2083	5/16/39	Montezuma Hot Spring #1		878	554		Summers (1976)
SM1	GS4801	7/2/40	Montezuma Hot Spring #1		870	537		Summers (1976)
SM1	GS5233	8/20/40	Montezuma Hot Spring #1		878	531		Summers (1976)
SM2	GS18609	3/11/52	Montezuma Hot Spring #6	50.6	876	530		Summers (1976)
SM3	NM3	?/?/75-80	Montezuma Hot Spring	34.3		464		Swanberg (1980)
SM3	NM6	?/?/75-80	Montezuma Hot Spring	35.6		400		Swanberg (1980)
SM3	NM2	?/?/75-80	Montezuma Hot Spring	48.0		452		Swanberg (1980)
SM3	NB82-11	?/?/80-82	Montezuma Hot Spring	49.0				Norman and Bernhardt (1982)
SM3	NM4	?/?/75-80	Montezuma Hot Spring	53.0		460		Swanberg (1980)
SM3	NM1	?/?/75-80	Montezuma Hot Spring	53.8		432		Swanberg (1980)
SM3	NM5	?/?/75-80	Montezuma Hot Spring	58.5		448		Swanberg (1980)
SM4	GS18610	3/11/52	Montezuma Hot Spring #13	41.1	876	528		Summers (1976)
SM6	S76MNTZ16	2/11/66	Montezuma Hot Spring #16					Summers (1976)
SM9	S76MNTZ2	2/11/66	Montezuma Hot Spring #2					Summers (1976)
SM10	S76MNTZ20	2/11/66	Montezuma Hot Spring #20					Summers (1976)
SM15	S76MNTZ15	2/11/66	Montezuma Hot Spring #15					Summers (1976)
SM18	S76MNTZ18	2/11/66	Montezuma Hot Spring #18					Summers (1976)
SM19	S76MNTZ19	2/11/66	Montezuma Hot Spring #19					Summers (1976)
SO1	CH823-66	8/23/66	core hole	42.2	3460			Summers (1976)
SO2	166	5/7/79	warm well	36	430		11.36	WATSTORE 1993
SO3	126	8/24/79	Welty Salty Well	35	2100	1440	18.93	WATSTORE 1993
SO4	NB82-16	?/?/80-82	Bosque del Apache Well #13	33.0				Norman and Bernhardt (1982)
SO5	127	7/2/80	warm well	33	4600			WATSTORE 1993
SO5	128	2/24/88	warm well	33.0	4450	2870		WATSTORE 1993
SO6	161	7/24/56	Blue Canyon Well	30.0	380			WATSTORE 1993

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
SO6	160	12/4/74	Blue Canyon Well	31.5	360			WATSTORE 1993
SO6	163	1/22/64	Blue Canyon Well	31.8	380		15.14	WATSTORE 1993
SO6	GS-BLUE	4/10/65	Blue Canyon Well	32.2	375		18.93	Summers (1976)
SO6	GS54325	1/22/64	Blue Canyon Well	32.2	380		18.93	Summers (1976)
SO6	159	7/24/56	Blue Canyon Well	32.4	380		75.7	WATSTORE 1993
SO6	NB82-12	?/?/80-82	Blue Canyon Well	33.0				Norman and Bernhardt (1982)
SO6	GS3372	7/24/56	Blue Canyon Well	33.3	380		71.92	Summers (1976)
SO6	BLUE12-74	12/4/74	Blue Canyon Well				18.93	Summers (1976)
SO6	GS15116	12/4/74	Blue Canyon Well		360			Summers (1976)
SO6	HALL4	12/20/61	Blue Canyon Well					Summers (1976)
SO6	BLUE10-65	10/22/65	Blue Canyon Well		365	145		Summers (1976)
SO7	148	1/24/57	Socorro Gallery Spring	30	348	224		WATSTORE 1993
SO7	149	3/20/58	Socorro Gallery Spring	30.0	362	231		WATSTORE 1993
SO7	151	2/5/63	Socorro Gallery Spring	30.0	356			WATSTORE 1993
SO7	155	2/4/77	Socorro Gallery Spring	30.0	370			WATSTORE 1993
SO7	153	4/10/65	Socorro Gallery Spring	30.5	346			WATSTORE 1993
SO7	154	10/23/65	Socorro Gallery Spring	30.5				WATSTORE 1993
SO7	150	12/12/61	Socorro Gallery Spring	31.0	370			WATSTORE 1993
SO7	141	3/20/58	Socorro Gallery Spring	31.5	362		832.7	WATSTORE 1993
SO7	140	1/24/57	Socorro Gallery Spring	32	348	224	1336.1	WATSTORE 1993
SO7	NB82-13	?/?/80-82	Socorro Gallery Spring	32.0				Norman and Bernhardt (1982)
SO7	S76FIG27-3	10/23/65	Socorro Gallery Spring	32.4	334	245		Summers (1976)
SO7	157	10/30/80	Socorro Gallery Spring	32.5	352	224		WATSTORE 1993
SO7	S76FIG27-1	10/23/65	Socorro Gallery Spring	32.6	335	249		Summers (1976)
SO7	WALD1956	?/?/52	Socorro Gallery Spring	32.8				Summers (1976)
SO7	158	1/1/51	Socorro Gallery Spring	33.0		234		WATSTORE 1993
SO7	HALL1	12/12/61	Socorro Gallery Spring	33.0	370			Summers (1976)
SO7	GS410-65	4/10/65	Socorro Gallery Spring	33.1	346			Summers (1976)
SO7	S76FIG27-4	10/23/65	Socorro Gallery Spring	33.1	339	232		Summers (1976)
SO7	142	4/10/65	Socorro Gallery Spring	33.5	346			WATSTORE 1993
SO7	S76FIG27-2	10/23/65	Socorro Gallery Spring	33.6	340	234		Summers (1976)
SO7	GS110-64	1/10/64	Socorro Gallery Spring		356	236		Summers (1976)
SO7	HALL2	2/5/63	Socorro Gallery Spring		356			Summers (1976)
SO7	NMHSS-SC	6/19/73	Socorro Gallery Spring		330	220		Summers (1976)
SO7	S76GS2-48	2/10/48	Socorro Gallery Spring		352			Summers (1976)
SO7	SCOFLD2	12/4/36	Socorro Gallery Spring		347			Summers (1976)
SO7	CLKPRST	5/24/31	Socorro Gallery Spring			318		Summers (1976)
SO7	GS38854	3/20/58	Socorro Gallery Spring		362		832.79	Summers (1976)
SO7	JONES04	?/?/03	Socorro Gallery Spring				1870	Summers (1976)

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
SO7	SCOFLD1	2/17/36	Socorro Gallery Spring		340			Summers (1976)
SO7	SCOFLD3	12/4/36	Socorro Gallery Spring		348			Summers (1976)
SO7	SCTTBRK	1/24/57	Socorro Gallery Spring		348	224	1184.8	Summers (1976)
SO7	SETTLING	10/23/65	Socorro Gallery Spring			232	1105.3	Summers (1976)
SO8	133	1/22/64	Socorro/Sedilla Gallery Spring	30	352	237		WATSTORE 1993
SO8	139	9/4/80	Socorro/Sedilla Gallery Spring	30.0	331	255		WATSTORE 1993
SO8	137	7/1/77	Socorro/Sedilla Gallery Spring	30.5	340			WATSTORE 1993
SO8	HALL3	12/12/61	Socorro/Sedilla Gallery Spring	31.1	370			Summers (1976)
SO8	138	1/22/64	Socorro/Sedilla Gallery Spring	32	352		643.45	WATSTORE 1993
SO8	SNM-21	6/5/87	Socorro/Sedilla Gallery Spring	32.0	338	319.6		Shevenell (1987)
SO8	GS54324	1/22/64	Socorro/Sedilla Gallery Spring	32.2	352			Summers (1976)
SO8	B13	?/?/75-80	Socorro/Sedilla Gallery Spring	34.0		284		Swanberg (1980)
SO8	GS38853	3/20/58	Socorro/Sedilla Gallery Spring				908.49	Summers (1976)
SO8	NMHSS-SD	6/19/73	Socorro/Sedilla Gallery Spring		343	298		Summers (1976)
SO8	S76SEDI	10/23/65	Socorro/Sedilla Gallery Spring		336	249		Summers (1976)
SO9	B28	?/?/75-80	well	30.0		192		Swanberg (1980)
SO10	167	7/10/79	well	30.0	4000	4220		WATSTORE 1993
SO11	B25	?/?/75-80	Monticello Box Warm Spring	29.0		516		Swanberg (1980)
SO12	B17	?/?/75-80	Monticello Box Warm Spring	28.0		468		Swanberg (1980)
SO13	LUC-17	5/?/80	artesian well	26	4000		10	Goff and others (1983)
SO14	LUC-19	5/?/80	Field Artesian Well	25	3700		40	Goff and others (1983)
SO15	LUC-25	5/?/80	Ojo Saladito Spring	24	12000		20	Goff and others (1983)
SP16	B14	?/?/75-80	Cook Spring			348		Swanberg (1980)
TS1	S76JDUN	12/4/65	Hondo Hot Spring	36.9	740	505	1.89	Summers (1976)
TS1	NM31	?/?/75-80	Hondo Hot Spring	40.6		584		Swanberg (1980)
TS2	NM30	?/?/75-80	Mamby Hot Spring	32.8		396		Swanberg (1980)
TS2	458	12/3/74	Mamby Hot Spring	34	794			WATSTORE 1993
TS2	S76MAM3	12/3/74	Mamby Hot Spring	34.4				Summers (1976)
TS2	S76MAM1	12/3/65	Mamby Hot Spring	37.8	660	520	113	Summers (1976)
TS2	S76MAM2	12/3/65	Mamby Hot Spring	37.8	729	491	113	Summers (1976)
TS2	457	7/21/67	Mamby Hot Spring	38	736	504		WATSTORE 1993
TS2	459	7/21/67	Mamby Hot Spring	38	736	491		WATSTORE 1993
TS2	NB82-1	?/?/80-82	Mamby Hot Spring	38.0				Norman and Bernhardt (1982)
TS2	NM29	?/?/75-80	Mamby Hot Spring	38.3		552		Swanberg (1980)
TS2	GS15113	12/3/74	Mamby Hot Spring		794			Summers (1976)
TS3	460	7/22/76	warm spring	37	760			WATSTORE 1993
TS4	451	12/3/74	Rancho Del Rio Grande Well	32	786			WATSTORE 1993
TS5	NB82-2	?/?/80-82	Ponce de Leon Hot Spring	34.0				Norman and Bernhardt (1982)
TS5	S76SITE6	12/3/74	Ponce de Leon Hot Spring	34.0				Summers (1976)

SITE ID	*SAMPLE*	*DATE*	*NAME*	*TMP C*	*COND uS/cm*	*TDS mg/L*	*FLOW L/min*	*REFERENCE*
TS5	NM22	?/?/75-80	Ponce de Leon Hot Spring	34.4		512		Swanberg (1980)
TS5	S76SITE2	12/5/65	Ponce de Leon Hot Spring	34.6	740	486	529.95	Summers (1976)
TS5	GS15114	12/3/74	Ponce de Leon Hot Spring		786			Summers (1976)
VA1	S76-52270	5/22/70	well	80.0	3450	3440		Summers (1976)
VA2	172	7/13/75	well	32.5	625	468		WATSTORE 1993

APPENDIX 5

REFERENCES FOR DATA SOURCES

COMPILED DATA BASE REFERENCES

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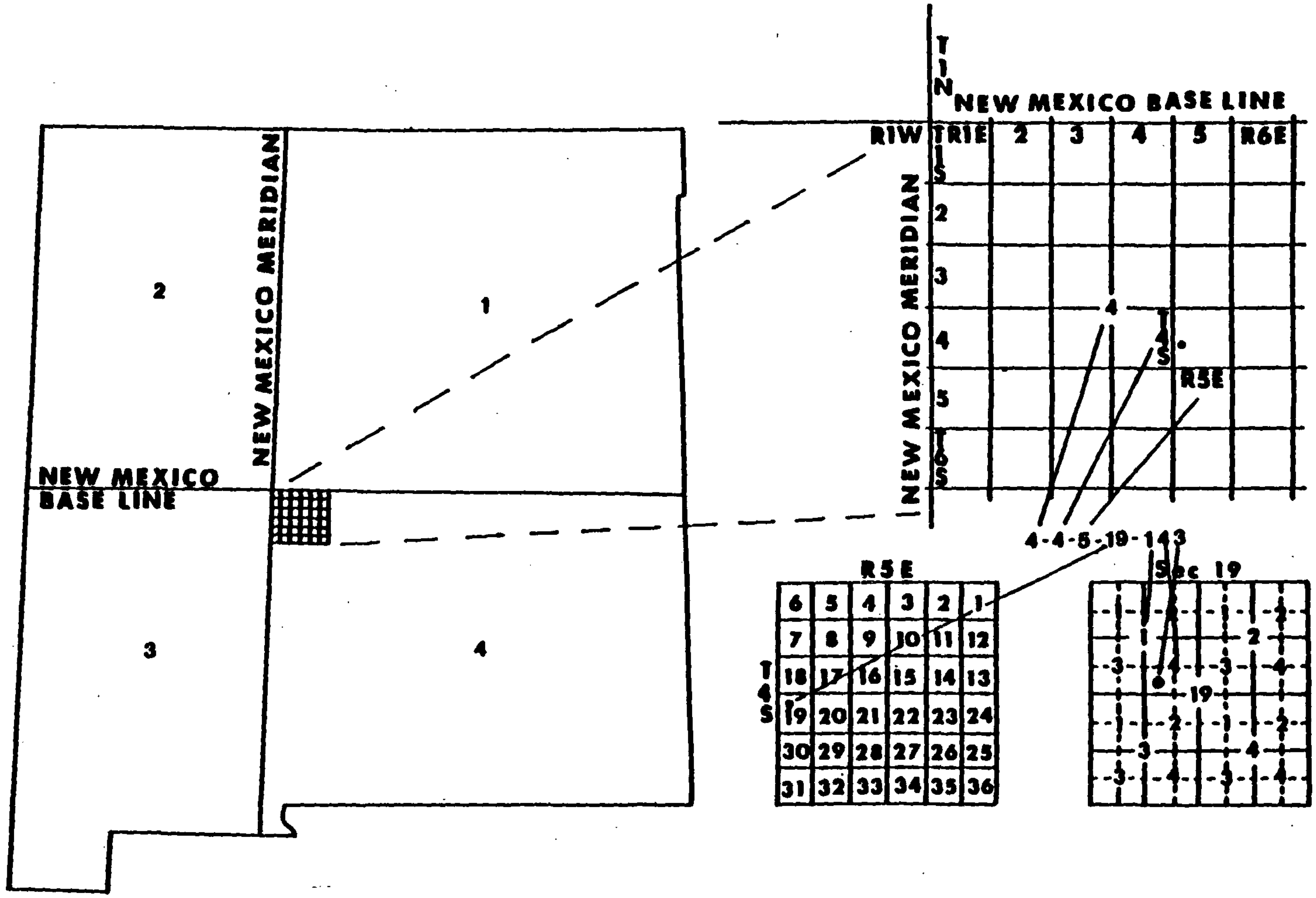
APPENDIX 6

NEW MEXICO WELL AND SPRING LOCATION SYSTEM


NEW MEXICO MERIDIAN
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A GEOTHERMAL RESOURCE DATA BASE NEW MEXICO

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JULY 1995

DISCLAIMER

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INTRODUCTION

This report provides a compilation of geothermal well and spring information in New Mexico up to 1993. Economically important geothermal direct-use development in New Mexico and the widespread use of personal computers (PC) in recent years attest to the need for an easily used and accessible data base of geothermal data in a digital format suitable for the PC. This report and data base are a part of a larger congressionally-funded national effort to encourage and assist geothermal direct-use. In 1991, the U. S Department of Energy, Geothermal Division (DOE/GD) began a Low-Temperature Geothermal Resources and Technology Transfer Program. Phase 1 of this program includes updating the inventory of wells and springs of ten western states and placing these data into a digital format that is universally accessible to the PC. The Oregon Institute of Technology GeoHeat Center (OIT) administers the program and the University of Utah Earth Sciences and Resources Institute (ESRI) provides technical direction.

Since 1980, New Mexico has had significant direct-use geothermal development. In 1982, one of the nation's larger district heating systems began operation at New Mexico State University. In 1986, a geothermally-heated geothermal greenhouse research and business 'incubator' facility came on line through a combination of private donations and State funds and is operated by the Southwest Technology Development Institute (SWTDI/NMSU), a division of the Engineering College at New Mexico State University (Schoenmackers, 1988). The first client in the NMSU greenhouse now operates the nation's second largest geothermally-heated commercial greenhouse at Radium Springs, New Mexico. Currently, New Mexico has the largest acreage of geothermal greenhouses in the nation with more than 40 acres (161,900 m^2). This acreage is about half of the total greenhouse acreage in New Mexico and represents an estimated capital investment of more than $30 million and the direct creation of nearly 400 jobs.

So far in the 1990's, interest and growth has continued in using geothermal heat in New Mexico. Primary interest is from the agriculture sector, including greenhousing, aquaculture, crop and food processing, and milk and cheese processing. Other interest has included space heating and heated swimming pools. This data base will assist in further direct-use geothermal efforts.

PREVIOUS COMPILATIONS

The first statewide evaluation and compilation of geothermal information for New Mexico was begun in the mid 1960's and resulted in New Mexico Bureau of Mines and Mineral Resources Hydrologic Report 4, 'Catalog of Thermal Waters in New Mexico' (Summers, 1976). Summers (1976) remains the primary source information on New Mexico thermal springs. During the mid 1970's and early 1980's, Federal and State geothermal resource characterization efforts led to additional information collection efforts. Two U. S. Geological Survey (USGS) Circulars provided the initial estimates of resource size and quality (Muffler, 1979; and Reed, 1983). In addition, a cooperative effort between the U. S. Department of Energy (DOE), the National Oceanic and Atmospheric Administration (NOAA), and New Mexico State University resulted in 1:500,000 scale geothermal resource maps (Swanberg, 1980 and Swanberg and Icerman, 1983). Prior to 1983, geothermal data for New Mexico were included in GEOTHERM, a USGS mainframe computer system of geothermal data bases and geothermal evaluation software (Bliss and Rapport, 1983). The USGS discontinued GEOTHERM in 1983. More recently, a relational database system for the PC platform was developed at NMSU for geothermal information covering New Mexico (Witcher and others, 1990). Limited data compilation and new and easier to use relational database software make the 1990 database obsolete.

DATA SOURCES

Major statewide sources of data include Summers (1976), Swanberg (1980), Norman and Bernhardt (1982). A major source of statewide information is contained in the U. S. Geological Survey (USGS) WATSTORE file. WATSTORE has two major databases, the Ground-Water Site Inventory and the Water Quality File. A 1993 commercial version of the WATSTORE Water Quality File on CD ROM was used in this study.

Additional important data for the geothermally significant Jemez Mountains (Valles Caldera) region in north central New Mexico is found in Shevenell and others (1987).

The state geothermal resources maps and the USGS GEOTHERM file were reviewed for data and used to assist in the compilation. However, neither the maps or the GEOTHERM file are primary information sources for the type of data compiled in this study.

Additional information was compiled from published and unpublished site specific geothermal resource investigations at several locations. Other data was compiled from published ground-water studies and government open-file reports. Finally, it should be noted that this study is not an exhaustive compilation of data for geothermal wells and springs in New Mexico. Except for a few sites at high elevations, the only data compiled was for wells and springs with measured discharge temperatures greater than 30 °C. Virtually all wells and springs found at elevations below 5,000 feet (1,524 m) elevation in New Mexico exceed 20 °C.

In addition, sites based upon bottom-hole temperature data are not included in this data base. The 1980 state geothermal map includes bottom-hole temperature data. Also, no heat-flow or temperature-gradient data is included in this compilation. These data sets require analysis and interpretation beyond the scope of this project. The Southwest Technology Development Institute at NMSU has extensive compilations of heat-flow and bottom-temperature data for New Mexico.

DATA FORMAT

Three Excel@ (Microsoft Windows@ software) spreadsheets provided a working medium for data compilation, editing, and sorting. The first spreadsheet (Appendix 1) lists the geothermal sites and provides location information. Location data in many cases is poor quality and may be only accurate to a minute of latitude or longitude. Field experience shows that this is true of some WATSTORE data as well data from other sources. Field checks and determination of UTM coordinates are required to improve the locations at most sites.

The second spreadsheet lists 'complete' chemical analyses for geothermal sites in New Mexico (Appendix 2). Data in the second spreadsheet contains at a minimum a dissolved silica analysis and sufficient major cation (Na, K, Ca, Mg) and major anion (Cl, HCO3, SO4) data to check for analytical charge and mass balance (see Reed and Mariner, 1991). Each analysis for geothermal sites in New Mexico is assigned a unique sample identification if the original data source failed to provide this information. This approach assists in duplicate record checking and provides a foundation to include these data in a relational data base and Geographic Information System (GIS) for New Mexico geothermal information in the future.

The third spreadsheet lists 'partial' chemical analyses (Appendix 3). These data do not satisfy the criteria for the second spreadsheet. Also, the third spreadsheet has an added entry that shows sodium and potassium as a single analysis (Na+K) as is commonly reported in older citations. In general, the third spreadsheet may have lower quality data than those found in the second spreadsheet ('complete analysis'). Caution is advised in applying chemical geothermometers or in assessing potential for corrosion and scaling with the data in the third spreadsheet ('partial analysis'). The same caution applies to using data in the second spreadsheet with significant charge and mass balance errors (greater than 5 or 10 percent).

Except for the GEOTHERM and WATSTORE information, data was manually (keyboard) entered. WATSTORE data was extracted from the CD ROM data base by sequentially retrieving all analytical data for individual sites with measured temperatures greater than 30°C and placing these data in an ASCII master file using software provided by the data vendor. A small FORTRAN program was written and used to read the ASCII master file and retrieve specific analyses and to organize these data into a tabular ASCII file that can be opened by Excel@ and placed directly into the formatted spreadsheets.

OVERVIEW OF THE DATA BASE

The last comprehensive geothermal data compilation in 1980 (state geothermal map - Swanberg, 1980) displayed 312 thermal wells and springs. Many sources shown on the 1980 map are bottom hole temperature (BHT) measured either during geophysical logging of oil and gas exploration wells or from academic heat flow studies. No BHT data are included in this compilation. GEOTHERM lists 65 chemical analysis of New Mexico thermal wells and springs (Reed and others, 1983).

This data base contains 842 chemical analysis for 360 discrete thermal wells and spring discharges. About half of the sites (175 sites) are extracted from WATSTORE. The remaining data are taken from published and unpublished reports.

Figure 1 is a histogram that shows the relative frequency of measured surface discharge temperatures for 308 well and spring sites. Data for high temperature (>150 °C) test wells in the Jemez Mountains (Valles or Baca geothermal system) are excluded from the histogram. A median temperature of about 35 °C is evident. On a percentile basis, measured temperatures above 46 °C score 75 or higher while temperatures above 62 °C score 90 and above. With hot spring data removed, the remaining data for the greater than 62 °C category are from wells in three developing geothermal areas, Lightning Dock, Radium Springs, the Las Cruces East Mesa. Many, if not most, data in the 30 to 40 °C bracket are from deep wells with conductive thermal regimes (normal or slightly above regional temperature gradient averages). It is clear that a developer will need to drill new wells in areas with convective geothermal resources in order to obtain resource temperatures over 45 °C. On the other hand, if temperatures below 45 °C are required, there are many existing sites to evaluate.

Figure 2 is a map of New Mexico which summarizes the locations of thermal (mostly >30 °C) wells and springs. Several areas are notable when Figure 2 is compared to the 1980 and 1983 compilations (Swanberg, 1980 and Swanberg and Icerman, 1983). A new region with low-temperature potential is indicated in the Pecos Valley in southeastern New Mexico in Chaves and Eddy County. Numerous wells between 26 and 29 °C occur in the area of Eddy and Chaves Counties. Two wells, 30 °C or warmer, are shown in Figure 2. Aquaculture is one possible use for the low-grade thermal waters. Recent analysis of oil-and-gas well, temperature data and thermal conductivity measurement of subsurface units across the region by Reiter and Jordan (1995) suggest broad, upward cross-formational flow from depths of 3,000 to 5,000 feet (914 to 1,524 m) beneath the Pecos Valley.

An extensive north-south alignment of saline, travertine-depositing springs in remote western Valencia County are not included in this compilation. However, the springs are shown on the 1980 and 1983 compilations as the Laguna springs and seeps. All of the springs discharge less than 30 °C temperature fluids. Goff and others (1983) discuss these springs in some detail and use fluid chemistry to identify spring origins and hydrogeology.

Also, another new region is compiled in central Cibola County on the Acoma Pueblo lands. Kues (1989) briefly discusses many of the Acoma thermal wells.

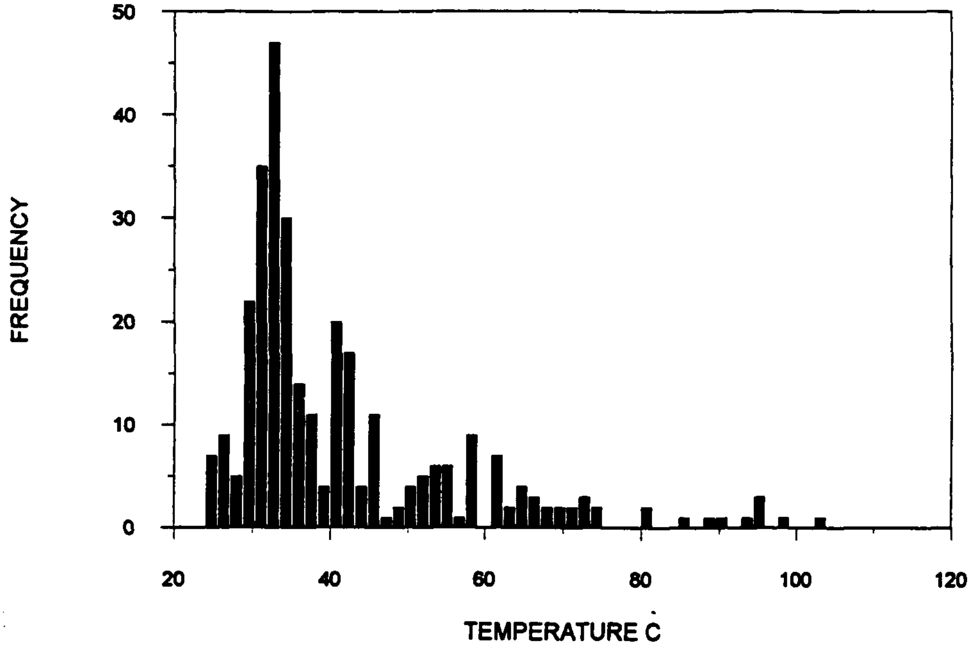

Figure 1 Histogram of well and spring discharge temperatures.

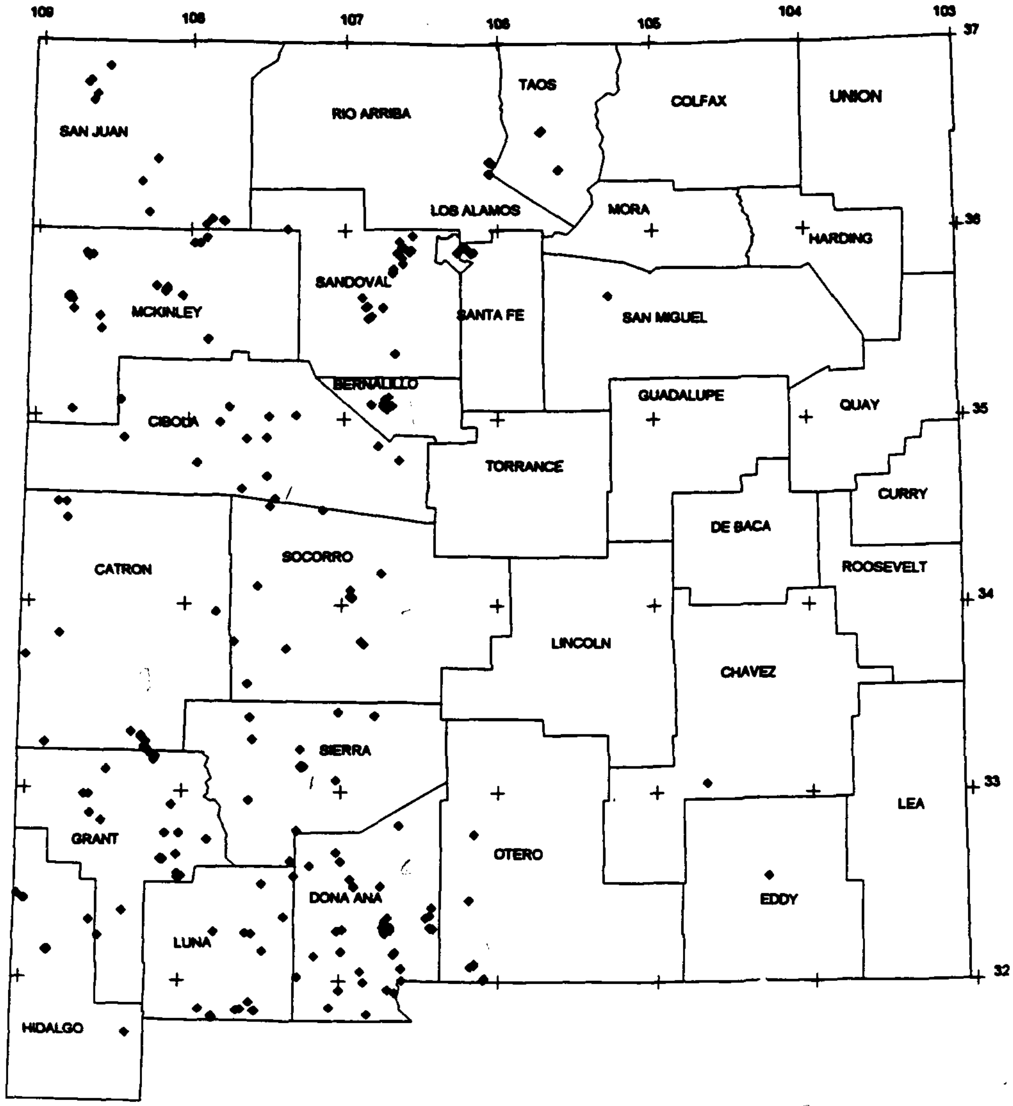

Figure 2 Generalized map of thermal (>30 C wells and springs. Symbols are thermal well and spring sites.

DISCUSSION OF THE RESOURCE BASE

The geothermal potential varies considerably from one area of New Mexico to the next. Regionally, the variation in subsurface temperatures is largely the result of physiographic or tectonic diversity. Physiographic provinces generally have unique geologic histories, structures, topography, hydrology, climate, and rocks. New Mexico includes four major physiographic provinces (Fig. 3). Provinces include the Southern Basin and Range (SBRP), Colorado Plateau (CP) , Southern Rocky Mountains (SRMP), and the Great Plains (GPP). Three subdivisions form the Basin and Range: 1) the Sacramento section; 2) the Mexican Highland section; 3) the Datil-Mogollon section. The eastern and northern portions of the Mexican Highland section of the SBRP and the SRMP are frequently referred to as the Rio Grande rift (RGR) 'tectonic province.'

High-to-moderate heat flow (>80 mWm^{-2}), widely-scattered hot springs and thermal wells, Quaternary volcanism (mostly basalt), recurrent Pleistocene-to-Recent and predominantly-normal faulting indicates, by rank of overall enhanced crustal heat, that the SBRP, SRMP, and CP have elevated subsurface temperatures and significant geothermal resource potential (Swanberg, 1980; Swanberg, 1983; Summers, 1976; Morgan and others, 1986; Reiter and others, 1975, 1978, and 1986; Decker and Smithson, 1975; Reiter and Barrol, 1990; Reiter and Minier, 1989). Crustal thinning in the SBRP and Rio Grande rift has resulted in crustal thicknesses as thin as 26 km (Sinno and others, 1986).

Cenozoic Geology

Cenozoic geology in the geothermally-important, western two-thirds of New Mexico (SBRP, SRMP, RGR, and CP) is dominated by three major tectonic episodes: 1) the Laramide orogeny; 2) a mid-Tertiary extensional and volcanic event; 3) a late Tertiary episode of rifting.

Laramide (Late Cretaceous to Eocene) deformation includes several large north- and west-northwest- trending, basement involved uplifted terranes that exhibit one to five kilometers or more of structural relief. These 'basement-cored' uplifts are frequently large-scale asymmetric homoclines with high-angle reverse faults and drape folds (monoclines) on vergent boundaries. Significant strike-slip movement occurred in other areas during the Laramide and resulted

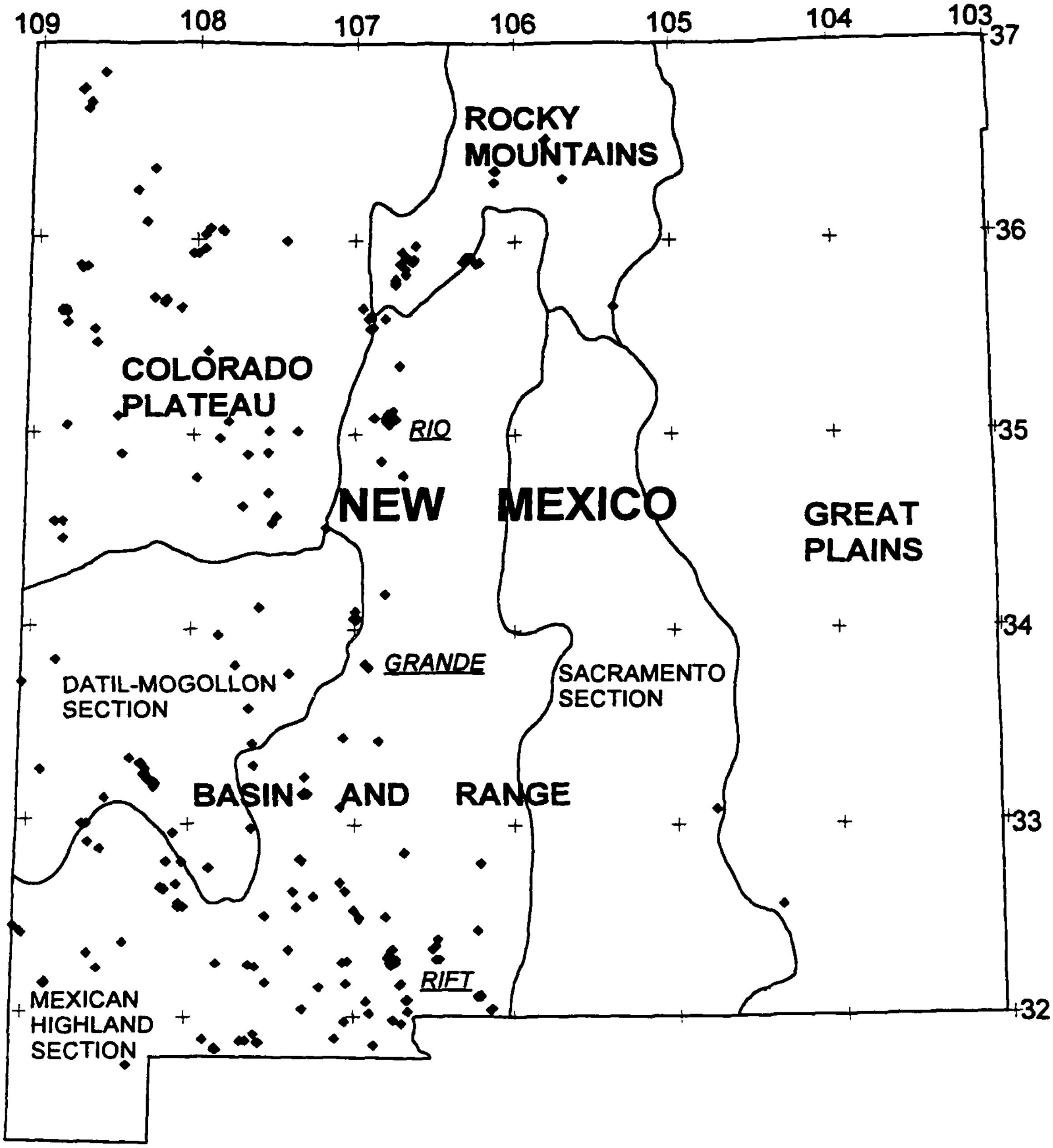

Figure 3 Physiographic provinces of New Mexico. Symbols are thermal well and spring sites.

in large symmetric and asymmetric transpressional structures (flower structures) which also involved basement rocks. Tertiary subcrops over these areas consist of Precambrian crystalline rocks and Paleozoic carbonate rocks. Important fine-grained Mesozoic aquitards are stripped away. Virtually all convective geothermal systems in New Mexico, including the Jemez systems, occur over Laramide structural highs (Witcher, 1987 and 1988).

During the mid-Tertiary much of the Datil-Mogollon and Mexican Highland sections of the SBRP were covered by a blanket of predominantly volcaniclastic sediments and minor volcanic flows averaging one kilometer thickness (Cather and others, 1994). Flows locally dominate near volcanic centers. Regionally extensive volcaniclastic blankets provide important aquitards in the region. Locally, volcanic piles several kilometers thick occur, especially in association with silicic cauldron complexes. Many of the cauldron complexes were also the locus of intense extension (up to 100 percent) along systems of close-spaced, domino-style normal faults (Chamberlin and Osburn, 1986).

Large, widely-spaced normal faults largely blocked out present-day topography from 12 to 9 Ma over the SBRP and RGR in New Mexico up until 4 to 6 Ma (Seager and others, 1984). This late Tertiary rifting continues at lower rates today and has left an en echelon series of north-trending half grabens with extension amounting to no more than 10 or 15 percent. Many of the best geothermal systems in New Mexico occur where late Tertiary horsts intersect older highly-extended cauldron complexes and vergent boundaries of Laramide uplifts (Witcher, 1988). Late Tertiary horsts are frequently stripped of mid-Tertiary volcaniclastic aquitards to expose underlying fractured terranes.

Convective Resources

Occurrence Models

Several models for convective geothermal resource occurrence have been proposed the Rio Grande rift and SBRP. Chapin and others (1978), Elston (1981), Elston and others (1983) show that several systems occur at the intersection highly-faulted ring-fracture zones of mid-Tertiary cauldrons, regional lineaments, and Pleistocene faults. Elston and others (1983), Jiracek and Smith (1976), and Swanberg (1975) observe that late Tertiary fault zones apparently control other geothermal systems.

A model of forced convection through Tertiary basin-fill sediments was presented by Harder others (1980) and Morgan and others (1981). This model places geothermal discharges at surface hydrologic outlets and down-gradient structural boundaries of late Tertiary rift basins. This model is commonly referred as the 'constriction model.' Many systems in the Rio Grande rift appear to occur at basin 'constrictions' and the model is commonly cited in the literature to explain the Rio Grande rift geothermal resource base and associated thermal regimes. Actually, the model poorly predicts discharges on a local scale and fails to explain the predominance of system upflow zones in fractured bedrock. In fact, vertical flow across major regional aquitards, followed by horizontal flow across major fault zones, which usually act as flow-regime boundaries, is required to explain many geothermal system locations relative to a 'constriction model.'

Another model which allows forced, free, or a combination of convective processes is proposed by Witcher (1988). With this model, convective geothermal systems occur in fractured bedrock (structurally-high terrane) at low elevation within horst blocks. Fluid circulation depths are not restricted by graben structural relief and the systems are not confined to areas adjacent to horst-bounding faults, as predicted by a constriction model. A regional view of New Mexico convective occurrences indicates that virtually all known systems occur where aquitards or confining units have been stripped by faulting or by erosion from basement terranes which contain significant vertical fracture permeability. A variety of structures, ranging from faults, folds, and fractured stocks and dikes can provide local vertical permeability and reservoirs. This model is referred to as a 'hydrogeologic window model.'

Conductive Resources

Basin and Range and Rio Grande Rift

Half grabens, forming the southern Basin and Range and Rio Grande rift, may contain several thousand of feet of Cenozoic sediments in various stages of diagenesis, compositional and grain-size ranges, and degrees of structural deformation. Because of the region's high heat flow and general tendency of Cenozoic basin fills to have significant fine-grained lithologies with low thermal conductivity and low vertical permeability, deep-seated and permeable sediments, especially fractured and faulted older basin fill units, provide potential for large-volume conductive geothermal resources. In general, the cost of deep wells is a drawback to the use of the resource. However, existing deep water supply wells and irrigation wells have potential for use.

Colorado Plateau

The eastern Colorado Plateau, including the San Juan Basin and the Mogollon Slope, has generally high flow (Minier and Reiter, 1991, and Reiter and Mansure, 1983). Locally, heat flow can be as high as that observed in the Rio Grande rift and southern Basin and Range. Significant thicknesses of fine-grained Cenozoic and Mesozoic sediments are preserved over permeable lower Mesozoic redbed sands and Paleozoic redbed and carbonate aquifers. Because the bulk of the Cenozoic and Mesozoic fine-grained sequences act as aquitards and have low thermal conductivity, they act as thermal blankets to create a deep-seated conductive geothermal resource. Much of this conductive resource is under sufficient artesian pressure to allow flowing wells to be drilled and developed. A drawback to this resource, however, is fluids with high salinity, few geological alternatives for fluid injection, and the general remoteness of this region of New Mexico. Much of this region is covered by the Navajo, Zuni, Acoma, Laguna, and Jicarilla Reservations.

PRIORITY AREAS AND AREAS WITH NEAR-TERM UTILIZATION POTENTIAL

Several areas in New Mexico are identified as priority sites for near-term, low-to-intermediate temperature geothermal resource utilization. Identified areas should receive additional site specific geologic and feasibility studies. Selection is based upon several criteria. Potential quality of the resource is important. The resource quality is an engineering economics and feasibility problem as much as it is a geologic problem. Higher temperatures and highly productive shallow wells are most favorable. However, many other factors are required for development success. Resource co-location with users and other geographic attributes specific to particular direct-use applications are crucial.

Space heating and district heating are most feasible in areas where the resource is co-located with population and facilities with large heating loads. Geothermal heating has potential to be incorporated without retrofit of existing heating systems in some areas of New Mexico that are experiencing rapid growth.

Geothermal greenhouse heating requires a favorable land status to include costs and ownership, availability of nearby fresh water, a labor force, good transportation infrastructure or nearness to markets. Almost all of New Mexico has the sunshine and climate that growers need. Availability and cost of water rights may be an issue in some areas because New Mexico is an arid region.

While aquaculture is less labor intensive than greenhousing, a favorable land status and transportation or nearness to markets is necessary. Availability and cost of water rights may be an issue in some areas.

New Mexico has a rapidly growing dairy industry. Milk and cheese processing are very energy intensive. A high quality geothermal resource that is easily accessible and near dairies may have much potential energy savings and economic benefits. Other users include chile, onion, and other agricultural processors. Good transportation and year around product availability are desired.

Low-to-intermediate temperature geothermal direct-use utilization has much potential to enhance or create economic opportunities. This makes geothermal energy, a relatively unknown alternative to conventional fossil fuels, much more marketable. Most of the priority areas selected in New Mexico have geothermal resources co-located in areas with many favorable geographic and demographic attributes for specific end users. Most importantly, all of the priority areas have on-going private sector, Indian tribal, and/or municipal development and exploration activities or serious interest in development. Success in these areas will no doubt spawn additional interest and economic development centered on geothermal energy in New Mexico.

Selected areas cover a broad range of representative geologic and hydrologic settings favorable for economic geothermal resources in New Mexico. Areas are located in both southern and northern New Mexico. Figure 4 shows the locations of the areas to be discussed in this report.

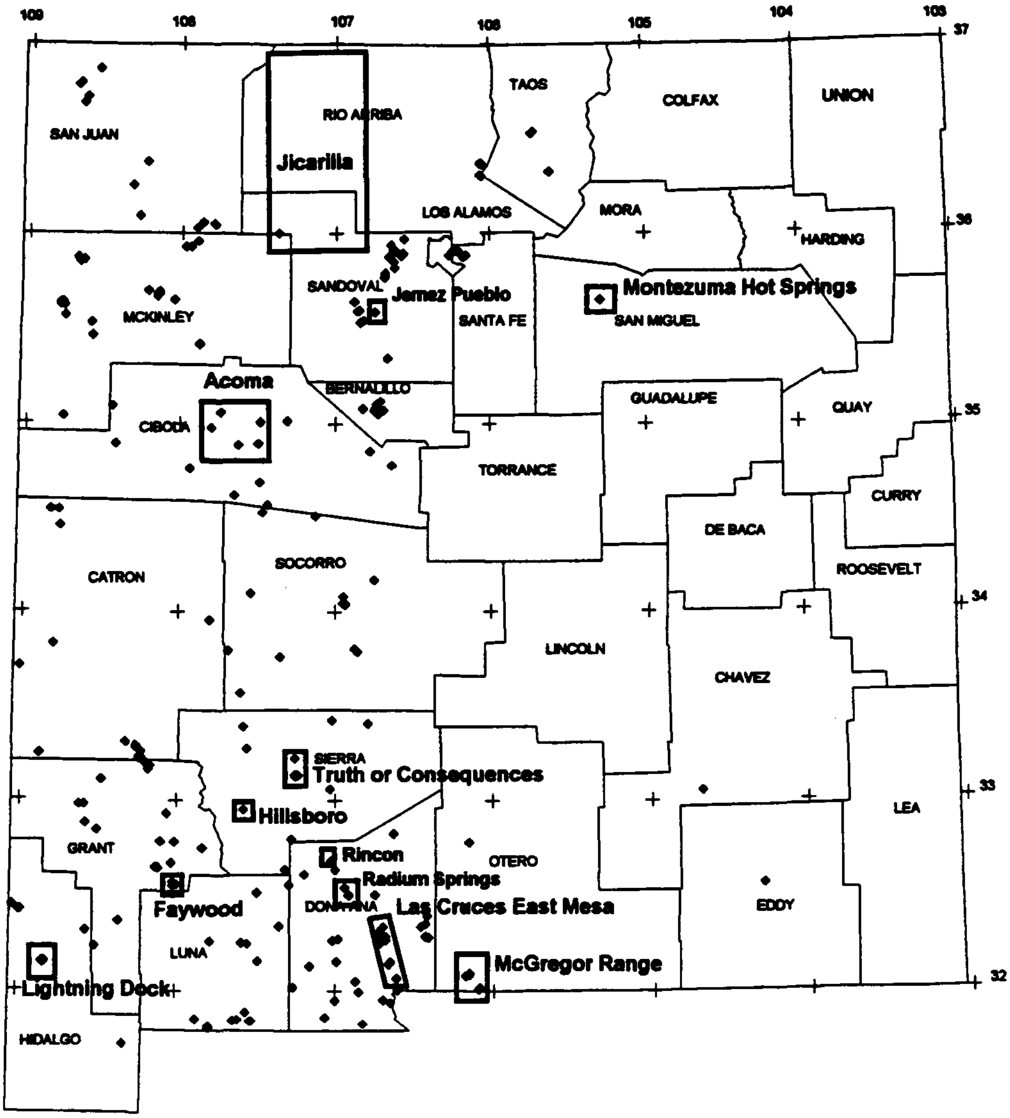

Figure 4 Map with general locations of priority study areas. Symbols are thermal well and spring sites.

Rincon

The Rincon geothermal system is a blind system (no surface hot springs). However, Pleistocene opal beds (fossil siliceous hot spring (?) deposits) are interbedded at this site in ancestral Rio Grande fluvial deposits exposed in escarpments adjacent to the present-day downcut Rio Grande floodplain.

A recently drilled continuous-core (HQ) borehole to 1,218 feet (371 m) at the site indicates a shallow highly-fractured reservoir from 300 to 600 feet (91 to 183 m) depth with a temperature of 85 to 90 °C in pervasively silicified ancestral Rio Grande fluvial deposits (Witcher, in preparation). The top of the reservoir is roughly the same level as the present day water table in the Rio Grande flood plain. The silicified zone is accompanied by adularia and disseminated sulfide mineralization. This zone is a part of the upflow zone for a much hotter and deeper-seated reservoir located in a fault zone dipping east beneath the core hole total depth. Between 600 and 1,218 feet (183 to 371 m), the core hole encountered a relatively unaltered clayey siltstone which acts as an aquitard or aquaclude. Temperature gradients are 250 °C/km in the lower 200 feet (61 m) of the hole. The bottom hole temperature is 100 °C. Geothermometer estimates indicate reservoir temperatures in the fault zone between 120 and 175 °C. The core hole was funded by the State of New Mexico Legislature.

The geothermal area is bounded on the south by Interstate 25 and on the east by an Atchison, Topeka and Santa Fe rail about 25 miles (40 km) north of Las Cruces in southern New Mexico. This area is an important agricultural area along the Rio Grande. The town of Hatch is located 5 miles (8 km) west of the site and is the locus of chile growers. The area is well known for the quality of chile produced. Large dairies are located a few miles west of Hatch. Fresh water is available within one to two kilometers of the Rincon site. Political support for geothermal development at Rincon includes the town of Hatch, the City of Las Cruces, Dona Ana County, and the State of New Mexico.

Reservoir production rates have not been determined at the site and some infrastructure work is needed to include land leveling. The land status is Federal Bureau of Land Management (BLM). Development will require a surface use license and such a license could be the first granted by the BLM for geothermal direct-use. Potential geothermal uses at this site include greenhouses, milk and cheese processing, chile processing, refrigerated warehousing, and binary electrical power. To date, exploration has included a slim-hole continuous core hole, 4 shallow temperature gradient holes (Witcher, 1991), a radon soil-gas survey (Witcher, 1991), a detailed SP survey (Ross and Witcher 1992).

Completion of geologic mapping at 1:6,000 scale and study of the core is needed. A shallow (600 feet or 183 m maximum) production hole is required to begin geothermal development at this site. Also, re-entering the core hole with an NQ drill string (the HQ string is currently in the hole) will determine deeper production and temperatures. Preliminary feasibility studies for direct use application have been performed. Detailed feasibility, production drilling, and infrastructure work is required for geothermal utilization at Rincon.

The Rincon resource has very high priority because it provides a case study for new exploration strategies and geologic occurrence models for 'blind' resources in the Rio Grande rift and southern Basin and Range capable of producing intermediate-temperature fluids for higher-end direct use and binary power production.

Truth or Consequences (T or C)

The town of Truth or Consequences (T or C) was formerly called Hot Springs before being renamed after a 1950's television game show as a part of promotional effort. T or C is a retirement and resort town of about 5,000 located along the Rio Grande near Elephant Butte Reservoir, one of the largest manmade lakes in the Southwest. Numerous shallow hot artesian wells exist in the downtown area of T or C. These wells have been used for most of this century in health spas. Generally, temperatures range from 40 to 43.3 °C. The aggregate flow from this system is estimated at 1,314 acre/ft per year (1.6×10^6 m^3). All of the wells have high-priority water rights and are a part of one of the first State Engineer declared ground-water basins in New Mexico.

Small-scale space heating is done at the Geronimo Springs Museum and the Carre Tinglely veterans center and in the spas around town. In recent years, a citizens group has been interested in using geothermal heat in a heated municipal swimming pool. One of the drawbacks to geothermal development at T or C has centered on the reluctance of spa owners to support additional geothermal use in the downtown area.

A variety of evidence suggests that a larger and hotter geothermal system may exist outside of town and away from the Rio Grande in the vicinity of the

Mud Springs Mountains. The currently known geothermal area probably represents outflow that has mixed with cold shallow ground water that is associated with the Rio Grande. Beds of opal (fossil hot spring (?) deposits) occur near the top of Pleistocene ancestral Rio Grande fluvial deposits. One bed is exposed in a road cut along I-25. Some manganese mineralization also occurs in nearby fluvial sand deposits. Late Pleistocene faults occur near the mineralized area. However, the most important structures are Laramide (Late Cretaceous to early Eocene) reverse faults that extend from T or C westward along the southwest margin of the Mud Springs Mountains. Such structures appear to provide first-order structure and deep plumbing for geothermal systems at Rincon, Radium Springs, Derry Warm Springs, and San Diego Mountain further south along the Rio Grande.

Some exploration has been done in the area including electrical resistivity (Jiracek and Mahoney (1981), heat flow studies (Sanford and others, 1979), reconnaissance geologic mapping in the Mud Springs Mountains and hydrogeologic evaluation (Wells and Granzow, 1981). Reported heat-flow measurements are insufficient to shed much information on the system as they are located far from the noted mineralization and probable structural control. The resistivity surveys map areas of low resistivity and steep resistivity gradients in the area of interest.

A hotter geothermal resource located north and west of T or C has potential for space heating, district heating, geothermal greenhousing and aquaculture. A 'phase 1' exploration effort is required to identify and confirm a probable system outside of downtown T or C. This effort should be concentrated near mineralized Pleistocene sediments of the ancestral Rio Grande. Detailed mapping (1:12,000 scale) of Quaternary geology and bedrock geology at the southeastern end of the Mud Springs Mountains should be performed. A thorough hydrochemical study of the known system in downtown T or C would be useful to evaluate mixing and probable sources of the water. Radon soil-gas, soil mercury, and SP surveys may identify potential upflow zones for shallow temperature gradient evaluation. If a system is found, sufficient local support would likely be generated to pursue use in the near future. In any case, more will be learned on the nature of the known resource in T or C and how to manage the resource so that current users interests are better insured in the future.

Las Cruces East Mesa/Tortugas Mountain

One of the largest 'convective' low-temperature geothermal systems in the United States occurs east of Las Cruces and southward along I-10 and I-25 nearly to the Texas line. This system, as outlined by more than 70 shallow temperature-gradient holes, is nearly 20 miles (32 km) long and 2 to 3 miles (3.2 to 4.8 km) wide over a buried horst block (Lohse and Icerman, 1982). Reservoir temperatures range from 40 to 70 °C. Production wells at New Mexico State University, and various industry exploration wells indicates a highly productive fractured reservoir system in Paleozoic carbonate rocks, Tertiary volcanic rocks, and older Tertiary basin-fill sediments. Production in excess of 1,000 gpm (63 L/s) has been demonstrated by NMSU production well PG-4 and inferred by the Chaffee geothermal test wells (Cunniff and Chintawongvanich, 1985). Available heat-flow data indicates that the total heat loss of the system exceeds 50 MWt with a natural mass flux exceeding 15,000 acre/ft per year (18 x 10^6 m^3) of 70 °C water (Witcher and Schoenmackers, 1990).

Current use of geothermal includes a district heating system for the New Mexico State University campus, a research and business start-up (incubator) greenhouse and aquaculture facility operated by SWDTI at NMSU, and a commercial 2 acre (8,093 m^2) greenhouse operated by J & K Growers. J & K Growers leased the SWTDI/NMSU facility to startup their business prior to moving to their present location. J & K Growers have increased the size of their greenhouse business annually.

Near-term geothermal utilization includes more geothermally-heated commercial greenhouses, aquaculture, and space heating of large buildings to include schools, hotels, and businesses. District residential heating is believed to be only marginally feasible due to generally mild winters. Access to the area is good and much of the resource is adjacent to the city or within the city limits.

The U. S. Bureau of Land Management has recently designated more than 40 km^2 of the area as a KGRA. This action discourages direct-use operators by adding additional time, paper work, and risk to business planning and execution.

A major attribute of this resource is co-location with one of the fastest growing medium-sized cities in the United States. In fact, the city of Las Cruces is growing in the direction of the resource at a rapid rate. Definitive integration of geothermal energy into city and public school planning is needed. Some feasibility studies were conducted in cooperation with the city and SWTDI/NMSU more than 10 years ago for existing large buildings near, but outside, the resource area (Icerman and Whittier, 1983; and CH2MHILL, 1984). These studies need to be updated and applied to plans and projections of growth over the resource area proper. A significant cost-shared drilling or a demonstration project in the commercial or local government sectors and outside of the NMSU area is probably needed to fully realize the potential for Las Cruces. City and county officials are aware of geothermal energy and have been supportive of SWTDI/NMSU initiatives at Rincon and Radium Springs. However, momentum and general awareness needs to be fostered for potential of the Las Cruces East Mesa geothermal resource.

Montezuma Hot Springs/United World College

The Armand Hammer United World College at Montezuma Hot Springs near Las Vegas, New Mexico is interested in using geothermal energy for space heating the college in order to replace a coal-fired boiler. Sandia National Laboratory, Los Alamos National Laboratory and SWTDI/NMSU have teamed up to provide UWC with geotechnical and engineering services.

Initial 'phase 1' work is needed to determine the production potential of the resource and to determine the influence that a production well will have on the long-term flow of Montezuma Hot Springs. Resource quality and degradation potential on natural spring flow rate will dictate the geothermal heating approach. The least expensive alternatives are direct-use space heating or the use of ground water-coupled heat pumps.

The gross structural control for the Montezuma Hot Springs is a southern Rocky Mountain 'front range' structure consisting of a Laramide reverse fault and attendant fold structure that forms the vergent margin the basement-cored Sangre De Cristo uplift (Baltz, 1972; and Bejnar and Bejnar, 1979). This structure and others of similar nature continue northward into Colorado. It is possible that additional geothermal systems occur elsewhere on this trend, especially in the Mora, New Mexico area north of Las Vegas. It is also possible that Montezuma Hot Springs proper represents a larger local geothermal system that could provide geothermal for more users than UWC.

SWTDI/NMSU was recently awarded a contract from the State of New Mexico Department of Economic Development that will be used to provide a state match for a 'phase 1' evaluation of the resource at Montezuma Hot Springs. Sandia and Los Alamos labs have authorization from the U. S. DOE to apply federal funds as a match in the labs joint efforts in the 'phase 1' work.

A successful geothermal heating system at UWC will provide a high visibility demonstration of geothermal technology in northern New Mexico. Also, if the resource base in the area is determined to be larger, significant economic benefits will accrue to this economically depressed region of New Mexico.

Radium Springs

Radium Springs is the site of the second largest geothermally-heated greenhouse in the United States at 9.5 acres (38,440 m^2). At the present time, construction is proceeding on two additional acres (8,000 m^2) and land is being prepared for 4 more acres (16,000 m^2) of greenhouse. Prior to building the facility at Radium Springs, Alexander Masson of Lindeville, Kansas leased space in the SWTDI/NMSU greenhouse facility at Las Cruces in order to assist with business startup in New Mexico.

While the Masson greenhouse at Radium Springs is on private land, most of the area is either a part of the Radium Springs KGRA or the NMSU Research Ranch. The extreme southern and northern areas are located adjacent to fresh water that occurs in Rio Grande flood plain alluvial deposits.

The geothermal resource in the area is extensive across an area 3 miles (4.8 km) wide by 10 miles (16 km) in length, extending from Radium Springs on the south to San Diego Mountain on the north (Witcher and Schoenmackers, 1990). Deep drilling (8,000 to 9,000 feet or 2,438 to 2,743 m) by Hunt Energy indicates a deep reservoir in Paleozoic carbonate and Precambrian granite. Temperatures in the deep reservoir are not known, but they are probably between 100 and 150°C. Several shallow and isolated reservoirs or upflow zones in fractured rhyolite dikes and plugs and fault zones provide discharge to the near surface from the deep system. With wells less than 250 feet (76 m) deep, the Masson greenhouse taps 65 to 70 °C water that is contained in a large rhyolite dike.

Because of the limited extent of the upflow vertical permeability, nearness to the Rio Grande, and increasing geothermal production, studies are needed to detail shallow reservoir interaction with the Rio Grande and coupling of production and injection. These are potential problems that greenhouse operators, with lay knowledge of geology and hydrogeology, have trouble understanding and are generally not receptive to spending money for monitoring and evaluation. This attitude is probably universal in early development experience, even among engineers, geologists, and managers, as experience in over development of ground water in the arid West demonstrates. With direct-use geothermal there are few case studies that directly address these types of sustained production problems. A large geothermally-heated commercial greenhouse is a significant investment and provides much economic benefits through jobs, taxes, and local purchases. Cost-shared private and government funded studies may be a way to quantify and understand the best way to proceed with development and monitor a low-temperature resource that is palatable to pioneer operators in the current early stages of low-temperature geothermal development in the United States.

Jemez Pueblo

A poorly explored resource occurs within 1.5 miles (2.4 km) of the Jemez Pueblo in northcentral New Mexico. This resource represents a distal discharge from the outflow plume of the high-temperature Baca geothermal system in the Jemez Mountains (Witcher and others, 1992). Reconnaissance exploration by SWTDI/NMSU includes geologic mapping, geochemistry, a detailed gravity profile, and one mile (1.6 km) of shallow seismic reflection survey in two profiles, and a State Legislature funded shallow exploratory well (Witcher, 1988, 1990, and 1991). This well produces a 250 gpm (15.8 L/s) artesian flow of 57.8 °C water with 3,366 mg/L TDS. Fresh water is co-located with this shallow resource.

Tribal officials are very interested in using the geothermal resource as a spring board for much needed economic development to provide income and jobs for the Jemez People. The resource is also located near the Pueblo and it may be feasible to economically provide space heating. Potential uses include geothermal greenhousing, a spa/resort, geothermal aquaculture, and district heating.

Drawbacks include slow tribal decision making which results from frequent change over in tribal leadership. Also, resource utilization will require suitable heat exchangers and materials to control corrosion.

SWTDI/NMSU and pueblo officials are currently discussing approaches for detailed feasibility and action/business plans for direct-use geothermal utilization as a next step toward the eventual use of the resource.

Jicarilla Apache Reservation

The Jicarilla Apache are currently working with the NMSU Agriculture College on an Agricultural Sciences Center in northern New Mexico and to economically develop tribal lands. The Jicarilla Apache and the NMSU Agriculture College have invited SWTDI/NMSU to participate in evaluation of the geothermal resource base in this region. In June 1995, the Jicarilla leadership passed a resolution to begin an assessment of the geothermal resources in the region.

The Jicarilla Apache have significant oil and gas production on the southern portion of the reservation. This area is in the eastern portion of the San Juan Basin which has abnormally high heat flow for the Colorado Plateau (Minier and Reiter, 1991, and Reiter and Mansure, 1983). Heat flow is similar to the Rio Grande rift and southern Basin and Range provinces. Many petroleum wells have encountered hot saline water ranging from 50 to 110 °C, indicating a significant deep-seated conductive geothermal resource. Currently, the petroleum industry disposes much of this water in injection wells.

The northern portion of the Jicarilla Apache reservation is bounded on the north by Colorado. The area also is home to most of the tribe. Tribal headquarters are in Dulce which has harsh winters due to its elevation. The area is astride the Archuleta Arch, a northwest trending structure extending northward into Colorado. Several important geothermal occurrences exist along this trend in Colorado, including Pagosa Hot Springs. Numerous Tertiary dikes in the Dulce area may provide vertical permeability for upflow of deep-seated conductive thermal waters.

Potential uses may include geothermal space heating, geothermal greenhousing, aquaculture, and oil field cleanup and disposal with geothermal artificial wetlands.

McGregor Range, New Mexico (Ft Bliss)

An area covering more than 40 km^2 with abnormally high temperature gradients occurs just north of the New Mexico and Texas boundary within the McGregor Range military reservation (Henry and Gluck, 1981; and Taylor, 1981). Ft Bliss (Army), in conjunction with SWTDI/NMSU and the University of Texas at El Paso (UTEP), is currently investigating the resource potential in this area to determine if geothermal can lower energy costs for Army facilities in the region.

Hillsboro Warm Springs

Hillsboro is a small community west of Truth or Consequences in the foothills of the Black Range. Ranching, mining, and tourism provide an economic base for the area. About 3 miles (4.8 km) north of the community, a group of thermal springs occur on private land. Temperature-gradient/heat-flow studies (Files, SWTDI), geothermometry (Swanberg, 1980 and 1984), and preliminary SP studies (Ross and Witcher, in progress) indicate potential for an intermediate temperature (>90 °C) resource at shallow depths. Potential use of a resource in this area may include minerals extraction, greenhousing, small-scale binary electrical power, and district heating. An important porphyry copper deposit occurs at Copper Flat about 2 miles (3.2 km) east of the thermal springs (Dunn, 1982).

Acoma

An potentially important conductive geothermal resource occurs in the San Andres limestone along Interstate 40 about 10 miles (16 km) east of Grants on the Acoma Reservation. Test drilling by the U. S. Geological Survey Water Resources Division (USGS-WRD) shows that flowing artesian thermal wells may be developed in this area (Kues, 1989; White and Kelley, 1980; and Baldwin and Anderholm, 1992). Because this area is also in the heart of the Grants uranium belt, potential uses of geothermal may include greenhousing and algae culture which produces crops suitable for mine reclamation and waste-water cleanup. Small-scale space and district heating is also possible in the near-term, considering the areas local climate and concentration of rural population along the Interstate.

Faywood Hot Springs

Faywood Hot Springs has recently been sold by Phelps Dodge, a major mining company, to a private individual, opening the way for possible small-scale commercial geothermal utilization. The area is well situated with respect to highway transportation.

Lightning Dock

The Lightning Dock geothermal system is certainly a high priority area as past performance in geothermal development will attest. This area currently has the largest geothermally-heated greenhouse complex in the nation at more than 30 acres (121,000 m^2). Burgett Geothermal Greenhouses grow roses that are marketed throughout the Southwest and the rest of the country. From a hydrogeologic standpoint, it is unknown how current or future use will affect sustainable resource use.

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APPENDIX 1

GEOTHERMAL SITES AND LOCATION DATA TABLES

NOTES:

SITE ID	geothermal site number
NAME	well or spring name
W/S	well - w / spring - s
COUNTY	county name
DEPTH	well depth (meters)
TEMP	temperature °C
LATITUDE	degrees
LONGITUDE	degrees
QUAD	quadrant of state (see Appendix 6 for description)
TWN	township (see Appendix 6 for description)
RNG	range (see Appendix 6 for description)
SEC	section (see Appendix 6 for description)
QTR	section quarters (see Appendix 6 for description)

SITE ID	NAME	W/S	COUNTY	DEPTH m	TEMP C	LATITUDE	LONGITUDE	QUAD	TWN	RNG	SEC	QTR
BE1	well	w	Bernalillo	362.1	40.5	35.0797	106.7211	2	10	2	22	143
BE2	well	w	Bernalillo	371.9	34.5	35.0786	106.7319	2	10	2	21	412
BE3	well	w	Bernalillo	373.1	33	35.0803	106.8253	2	10	1	22	322
BE4	West Mesa #1	w	Bernalillo		32.2	35.0750	106.7367					
BE5	West Mesa #4	w	Bernalillo		32.1	35.0800	106.7233					
BE6	well	w	Bernalillo	387.4	32	35.0717	106.8894	2	10	2	25	111
BE7	Don #1	w	Bernalillo	490	31.4	35.0683	106.7517					
BE8	well	w	Bernalillo	359.7	31	35.0722	106.7414	2	10	2	21	343
BE9	West Mesa #2	w	Bernalillo		30.6	35.0850	106.7317					
BE10	well	w	Bernalillo		30	35.0522	106.7261	2	10	2	33	240
BE11	well	w	Bernalillo		30	35.0814	106.7483	2	10	2	28	212
BE12	well	w	Bernalillo		30	35.0853	106.7236	2	10	3	21	213
BE13	College #2	w	Bernalillo	480.1	30	35.1033	106.7358					
BE14	well	w	Bernalillo		29.0	35.1183	106.7100	2	10	2	15	
CA1	hot spring	s	Catron		64.8	33.2333	108.2367	3	12	14	24	44
CA2	hot spring	s	Catron		60.6	33.2333	108.2417	3	12	14	24	411
CA3	Lower Frisco Hot Spring	s	Catron		46.11	33.2450	108.8817	3	12	20	23	12
CA4	Lower Frisco Hot Spring	s	Catron		43.3	33.2450	108.8817	3	12	20	23	32
CA5	Lower Frisco Hot Spring	s	Catron		43	33.2447	108.8811	3	12	20	23	321
CA6	Lower Frisco Hot Spring	s	Catron		40.0	33.2467	108.8783	3	12	20	23	14
CA7	Upper Frisco Hot Spring	s	Catron		36.5	33.8314	108.7994	3	5	19	35	132
CA8	Gila Middle Fork Hot Spring	s	Catron		36.0	33.2900	108.2650	3	11	14	34	24
CA9	Lower Frisco Hot Spring	s	Catron		35	33.2447	108.8811	3	12	20	23	321
CA10	Pueblo Windmill	w	Catron	320	33.8	34.5389	108.7772	1	4	19	25	414
CA11	Frieborn Canyon Hot Spring	s	Catron		33.33	33.7100	109.0100	3	7	21	9	442
CA12	hot spring	s	Catron		32.8	33.2600	108.2300	3	12	13	7	34
CA13	test well	w	Catron	182.9	32.2	33.2200	108.2200	3	12	13	30	231
CA14	well	w	Catron		32	33.9575	107.8014	3	4	9	17	311
CA15	well	w	Catron	182.9	32	33.2250	108.2417	3	12	14	25	231
CA16	Gila Middle Fork Hot Spring	s	Catron		31.0	33.2833	108.2633	3	11	14	35	34
CA17	well	w	Catron	411.5	28	34.5400	108.8300	1	4	19	28	234
CA18	Gila Middle Fork Meadows HS	s	Catron		27.5	33.3100	108.3300	3	11	14	30	2
CA19	warm seep	s	Catron		27.2	33.2900	108.2600	3	11	14	35	4
CA20	Zuni Salt Lake Warm Spring	s	Catron		26.0	34.4550	108.7667	1	3	18	30	31
CA21	Gila Middle Fork Pool HS	s	Catron			33.2333	108.2333	3	12	13	31	1
CA22	Gila Middle Fork Hot Spring	s	Catron		37	33.2833	108.2666	3	11	14	35	32
CA23	Gila Middle Fork Hot Spring	s	Catron		34	33.2666	108.2500	3	12	14	1	33
CB2	well	w	Cibola	884.2	52.8	35.0644	107.7406	1	10	9	25	3241
CB3	Acoma #1 Well	w	Cibola	766.3	41.5	34.9806	107.7983	1	9	9	28	1344
CB4	well	w	Cibola	615.4	41	34.6208	107.6542	1	5	8	35	123
CB5	well	w	Cibola	807.7	38.1	34.8914	107.6278	1	8	8	25	4231
CB6	well	w	Cibola	984.2	36	34.8931	108.4147	1	8	15	27	311
CB7	well	w	Cibola	807.7	34.5	35.0147	107.4836	1	9	6	16	111
CB8	well	w	Cibola	848.3	34	34.7625	107.9356	1	6	10	7	1413
CB9	well	w	Cibola	524.3	34	35.0189	107.3097	1	9	5	12	4424
CB10	well	w	Cibola	671.5	33.1	34.9006	107.4992	1	8	6	20	3334
CB12	well	w	Cibola		32	35.0939	108.4383	1	10	15	17	414
CB13	Salado Spring	s	Cibola		25	34.6900	107.4900	1	5	6	5	42
CV1	well	w	Chaves		33	33.0500	104.6808	4	15	23	6	22
DA1	Chaffee 55-25	w	Dona Ana	806.2	68	32.2781	106.6889	4	23	2	25	4111
DA2	Radium Hot Springs Bailey Well #15	w	Dona Ana		70.0	32.4967	106.9167	3	21	1	10	
DA3	Clary and Ruther State 1	w	Dona Ana	784.3	69.4	32.2717	106.6981	4	23	2	36	1111
DA4	Chaffee 35-25	w	Dona Ana	196.6	68	32.2667	106.6833	4	23	2	25	123
DA5	LC-2	w	Dona Ana	269.8	67.9	32.3333	106.7000	4	23	2	34	
DA6	Exxon Beard Ole Federal	w	Dona Ana	1219.5	65.5	32.3236	106.7128	4	23	2	11	1341
DA7	Chaffee 12-24	w	Dona Ana	400.8	65	32.2833	106.6833	4	23	2	24	311
DA8	NMSU PG-3	w	Dona Ana	265.2	63.3	32.2878	106.7158	4	23	2	22	4442
DA9	Radium Hot Springs Bailey's bathhouse	w	Dona Ana	6.1	60.8	32.4967	106.9167	3	21	1	10	213
DA10	Certified Sand Well	w	Dona Ana	182.9	58.8	32.2833	106.6833	4	23	2	14	431
DA11	T-14	w	Dona Ana	1833	54.4	32.3900	106.4200	4	22	5	15	221
DA12	Radium Hot Springs Hotel Well #2	w	Dona Ana	10.4	52.5	32.5003	106.7503	3	21	1	10	213
DA13	LC-1	w	Dona Ana	239.3	52.5	32.3089	106.7222	4	23	2	15	2334
DA14	Radium Hot Springs Roy Smith Well	w	Dona Ana		50.0	32.4967	106.9167	3	21	1	10	
DA15	NMSU PG-2	w	Dona Ana	153.9	47.7	32.2831	106.7250	4	23	2	27	1243
DA16	Pure Oil Federal "H" 1	w	Dona Ana	207.3	45	31.9494	106.9994	3	28	2	24	213
DA17	Nations Well	w	Dona Ana	108	43	32.2689	106.7194	4	23	2	34	2233
DA18	well	w	Dona Ana	64.6	43	32.2697	106.7217	4	23	2	34	214

SITE ID	NAME	W/S	COUNTY	DEPTH m	TEMP C	LATITUDE	LONGITUDE	QUAD	TWN	RNG	SEC	QTR
DA19	Husand Well	w	Dona Ana	106	42.5	32.2500	106.7167	4	23	2	34	234
DA20	well	w	Dona Ana	471.8	42.5	31.9942	106.8489	4	27	1	4	121A
DA21	Rowan well	w	Dona Ana	100.6	36.8	32.2500	106.7167	4	23	2	34	
DA22	Tellyer Well	w	Dona Ana	148.1	36.5	32.2633	106.7208	4	23	2	34	4123
DA23	Running Indian Well	w	Dona Ana	320	36	32.2625	107.0144	3	23	2	35	411
DA24	well	w	Dona Ana		36.0	32.6333	107.0000					
DA25	well	w	Dona Ana	219.5	35.56	32.0667	106.6139	4	26	3	2	
DA26	NMSU GD-1	w	Dona Ana	185	35	32.2883	106.7325	4	23	2	21	4424
DA27	White well	w	Dona Ana	94.8	34.5	32.2500	106.7167	4	23	2	34	
DA28	well	w	Dona Ana	59.4	34	32.5514	107.2922	3	20	4	19	324
DA29	well	w	Dona Ana	131.1	33.5	32.0525	106.8711	4	26	1	18	222
DA30	well	w	Dona Ana	213.4	33.3	31.9394	106.6547	4	27	3	20	432
DA31	Gardner Well	w	Dona Ana	171.6	33	32.0100	106.0900	3	26	1	25	414
DA32	T-15	w	Dona Ana	623	33	32.3500	106.4300	4	22	5	33	244
DA33	well	w	Dona Ana	365.8	32.22	32.2700	106.9800	3	23	1	31	432
DA34	well	w	Dona Ana	243.8	32	32.2583	107.7833	3	23	2	35	430
DA35	T-17	w	Dona Ana	765	32	32.2800	106.4100	4	23	5	27	142
DA36	Berino Well	w	Dona Ana	152.7	31.1	32.0675	106.6147	4	26	3	11	111
DA37	Souse Springs	s	Dona Ana		31.0	32.6067	107.1950	3	19	3	31	34
DA38	Test Hole	w	Dona Ana		31	32.1300	107.1600	3	25	3	17	111
DA39	well	w	Dona Ana		31	32.1394	106.6647	4	25	1	17	111
DA40	well	w	Dona Ana		31	32.0047	106.6097	4	26	3	35	141
DA41	well	w	Dona Ana	304.5	31	31.8256	106.8261	4	28	1	34	414
DA42	well	w	Dona Ana	306	31	32.8236	106.6319	4	28	3	34	331
DA43	Pol Ranch Windmill	w	Dona Ana		30.5	32.0183	107.2617	3	26	4	28	131
DA44	SC2	w	Dona Ana		30.5	32.2842	106.4314	4	23	5	28	223
DA45	well	w	Dona Ana	549.3	30.5	31.9556	106.6989	4	27	2	13	331
DA46	T-18	w	Dona Ana	72.8	30	32.3361	106.4575	4	23	5	5	321
DA47	Dominguez Brothers Well	w	Dona Ana	76.2	30	32.1522	106.6544	4	25	3	8	214
DA48	well	w	Dona Ana		28.0	32.1533	106.9900	3	25	1	7	11
DA49	Railroad Well	w	Dona Ana			32.6800	107.0300	3	19	2	9	12
DA50	Radium Springs College Ranch Windmill	w	Dona Ana			32.5383	106.9394	3	20	1	27	34
DA51	Radium Hot Springs Hotel Well #1	w	Dona Ana	3.7		32.4967	106.9167	3	21	1	10	213
DA52	Radium Springs Masson 21	w	Dona Ana	85.3	76.1	32.5000	106.9167	3	21	1	10	211
DA53	Radium Springs Masson 22	w	Dona Ana			32.5000	106.9167	3	21	1	10	111
DA54	Radium Springs Masson 23	w	Dona Ana			32.5000	106.9167	3	21	1	10	112
DA55	Radium Springs Masson 26	w	Dona Ana	36.6	76.7	32.5000	106.9167	3	21	1	10	211
DA56	Radium Springs Ryan 72-35	w	Dona Ana	20.7	51.7	32.5000	106.9167	3	21	1	10	223
DA57	NMSU GD-2	w	Dona Ana	302		32.2833	106.7181	4	23	2	27	1133
DA58	NMSU OW-1	w	Dona Ana	262.1		32.2839	106.7164	4	23	2	27	2242
DA59	NMSU PG-1	w	Dona Ana	262.1		32.2842	106.7170	4	23	2	27	2241
DA60	NMSU PG-4	w	Dona Ana	309.4		32.2881	106.7144	4	23	2	23	3314
DA61	Radium Springs Masson 25 (injection)	w	Dona Ana	62.8		32.5000	106.9167	3	21	1	10	
DA62	Radium Springs Masson 27 (injection)	w	Dona Ana	24.4		32.5000	106.9167	3	21	1	10	
DA63	Radium Springs Masson 28	w	Dona Ana	36.6	71.7	32.5000	106.9167	3	21	1	10	211
ED1	Clayton Well	w	Eddy		31	32.5603	104.2942	4	20	27	21	133
GR1	Miimbres Hot Springs #3	s	Grant			32.7483	107.8350	3	18	10	13	11
GR2	Gila Hot Springs Doyle Well	w	Grant	138.7	74	33.1967	108.2035	3	13	13	5	2323
GR3	Turkey Creek Hot Spring	s	Grant		74.0	33.1083	108.4833	3	14	16	3	34
GR4	Gila Hot Springs Campbell #4 Well	w	Grant	72.5	72	33.1983	108.2033	3	13	13	5	2141
GR5	Gila Spring Hot Spring #14	s	Grant		66	33.2000	108.2000	3	13	13	5	2
GR6	Gila HS northern artesian well	w	Grant		65	33.2000	108.2083	3	13	13	5	12
GR7	Gila Hot Springs	s	Grant		64	33.1986	108.2044	3	13	13	5	214
GR8	well	w	Grant	158.5	62.2	32.6700	108.0300	3	19	12	12	
GR9	Gila HS middle artesian well	w	Grant		62	33.2000	108.2083	3	13	13	5	12
GR10	Gila Hot Springs Campbell #2 Well	w	Grant	84.4	61	33.2000	108.2044	3	13	13	5	212
GR11	Miimbres Hot Springs #25	s	Grant		59	32.7483	107.8350	3	18	10	13	11
GR12	Miimbres Hot Springs #28	s	Grant		58.06	32.7483	107.8350	3	18	10	13	11
GR13	Gila Spring Hot Spring #41	s	Grant		58	33.2000	108.2000	3	13	13	5	2
GR14	Mimbres Hot Springs	s	Grant		58	32.7492	107.8344	3	18	10	13	111
GR15	Miimbres Hot Springs #8	s	Grant		57.5	32.7483	107.8350	3	18	10	13	11
GR16	Miimbres Hot Springs #12	s	Grant		56.4	32.7483	107.8350	3	18	10	13	11
GR17	Miimbres Hot Springs #21	s	Grant		55	32.7483	107.8350	3	18	10	13	11
GR18	Miimbres Hot Springs #23	s	Grant		54.44	32.7483	107.8350	3	18	10	13	11
GR19	Faywood Hot Springs	s	Grant		53	32.5547	107.9950	3	20	11	20	243
GR20	Gila Lyons Lodge swimming pool HS	s	Grant		52.2	33.1847	108.1744	3	13	13	10	121
GR21	well	w	Grant		52	33.1847	108.1744	3	13	13	10	121

SITE ID	NAME	W/S	COUNTY	DEPTH m	TEMP C	LATITUDE	LONGITUDE	QUAD	TWN	RNG	SEC	QTR
GR22	Gila River Waterfall HS	s	Grant		43.6	33.1633	108.1833	3	13	13	17	32
GR23	Gila East Fork no name spring	s	Grant		41.39	33.1833	108.1667	3	13	13	10	2
GR24	Kennecott Warms Springs Well #9	w	Grant	36.6	41.1	32.5700	108.0200	3	20	11	18	3133
GR25	Gila East Fork Hot Spring	s	Grant		36.0	33.1917	108.1833	3	13	13	10	121
GR26	Gila Lyons Lodge East Fork Hot Springs	s	Grant		35.56	33.1847	108.1744	3	13	13	10	121
GR27	Kennecott Warm Spring Well #3	w	Grant	68	34.55	32.5700	108.0200	3	20	11	18	310
GR28	Kennecott Warms Springs Well #2	w	Grant	13.4	34.4	32.5700	108.0200	3	20	11	18	31434
GR29	Kennecott Warms Springs Well #3	w	Grant	68	34.4	32.5700	108.0200	3	20	11	18	33221
GR30	Cliff Warm Well	w	Grant	91.4	33.5	32.9758	108.5931	3	15	17	27	111
GR31	Kennecott Warm Springs Well #1	w	Grant	7.6	33.3	32.5700	108.0200	3	20	11	18	332
GR32	Muir Ranch well	w	Grant		33.0	32.2283	108.5117	3	24	16	8	32
GR33	Ground Hog Mine	w	Grant	670	32	32.7800	108.0100	3	17	12	32	44414
GR34	well	w	Grant	609.6	32	32.7797	108.0994					
GR35	well	w	Grant	268.5	31.1	32.6444	108.1278					
GR36	Spring Canyon Warm Spring	s	Grant		31.0	32.8767	108.5833	3	16	17	34	21
GR37	Apache Tejo Warm Springs Well #7	w	Grant	268.5	31	32.6444	108.1278	3	19	12	19	13212
GR38	Kennecott Warms Springs Well #4	w	Grant	89	30.5	32.5700	108.0200	3	20	11	18	133
GR39	Riverside Well	w	Grant	10.9	30	32.9300	108.0600	3	16	17	9	242
GR40	Kennecott Warms Springs Well #6	w	Grant	121.9	30	32.5500	108.0200	3	20	11	19	11133
GR41	Mangas Springs	s	Grant		27.0	32.8417	108.5100	3	17	16	8	24
GR42	Allen Spring	s	Grant		25.6	32.3617	108.3617	3	16	15	26	41
GR43	Cliff Warm Spring	s	Grant		25	32.9750	108.6250	3	15	17	30	222
GR44	Apache Tejo Warms Springs Well #4	w	Grant	236.8		32.6400	108.1200	3	19	12	19	3
GR45	Apache Tejo Warms Springs Well #5	w	Grant	745.2		32.6400	108.1100	3	19	12	19	3
HD1	Lightning Dock Burgett Well #1	w	Hidalgo		104.0	32.1450	108.8317	3	25	19	7	
HD2	Lightning Dock hot well	w	Hidalgo		98	32.1458	108.8325	3	25	19	7	234A
HD3	Lightning Dock hot well	w	Hidalgo		96	32.1450	108.8317	3	25	19	7	134
HD4	Lightning Dock hot well	w	Hidalgo		95.5	32.1458	108.8325	3	25	19	7	234
HD5	Lighting Dock Burgett Well #10	w	Hidalgo		95.2	32.1450	108.8317	3	25	19	7	
HD6	Lightning Dock hot well	w	Hidalgo		94	32.1486	108.8314	3	25	19	7	
HD7	Lightning Dock hot well	w	Hidalgo		85.0	32.1450	108.8317	3	25	19	7	23
HD8	Lightning Dock McCants Well	w	Hidalgo		81.0	32.1483	108.8317	3	25	19	7	21
HD9	Lightning Dock hot well	w	Hidalgo		71.0	32.1450	108.8400	3	25	19	7	14
HD10	Lightning Dock hot well	w	Hidalgo	36.6	52	32.1453	108.8389	3	25	19	7	143
HD11	warm well	w	Hidalgo		35	32.4167	108.9833	3	22	21	3	312
HD12	Lightning Dock hot well	w	Hidalgo	86.3	33.5	32.1453	108.8425	3	25	19	7	133
HD13	well	w	Hidalgo	734.6	32	31.7125	108.3228	3	30	15	12	323
HD14	Blowing Well	w	Hidalgo	136.9	31	32.4178	108.9928	3	22	21	3	3234
HD15	well	w	Hidalgo	169.8	30	32.4433	109.0331	3	21	21	30	444
HD16	Kipp Ranch Hot Well	w	Hidalgo			32.3100	108.5700	3	23	17	10	11
HD17	Lightning Dock hot well	w	Hidalgo			32.1450	108.8317	3	25	19	7	243
HD18	Lightning Dock hot well	w	Hidalgo			32.1450	108.8317	3	25	19	7	234b
HD19	Lightning Dock hot well	w	Hidalgo			32.1450	108.8317	3	25	19	7	342
HD20	Lightning Dock hot well	w	Hidalgo			32.1450	108.8317	3	25	19	7	243
HD21	Lightning Dock Rosette 1	w	Hidalgo	134.1	104.4	32.1300	108.8300	3	25	19	6	4
HD22	Lightning Dock Rosette 1	w	Hidalgo	170.7	107.2	32.1300	108.8300	3	25	19	6	4
HD23	Lightning Dock Rosette 1	w	Hidalgo	134.1	106.7	32.1300	108.8300	3	25	19	6	4
LA1	Pueblo Canyon #7 Well	w	Los Alamos		31	35.8833	106.2636	2	19	6	13	131
LU1	Smyer Well	w	Luna	338.3	39	32.2508	107.5881	3	24	7	5	133
LU2	Nunn Stock Well	w	Luna		38	32.5100	107.4900	3	21	6	6	11332
LU3	well	w	Luna	129.5	34.5	32.2461	107.5506	3	24	7	3	300
LU4	well	w	Luna	161.2	33	31.8500	107.6092	3	28	8	25	211
LU5	well	w	Luna	199	32	31.8600	107.0600	3	28	7	19	2211
LU6	well	w	Luna	304.8	31.5	32.1547	107.4828	3	25	6	8	112
LU7	well	w	Luna		31.5	31.8033	107.7867	3	29	9	8	11
LU8	well	w	Luna		31.1	31.8017	107.7817	3	29	9	8	23
LU9	well	w	Luna	304.8	31	31.8861	107.5597	3	28	7	9	411
LU10	well	w	Luna	213.4	31	31.8400	107.5300	3	28	7	26	4222
LU11	well	w	Luna	142.6	31	31.8511	107.8683	3	29	10	9	3111
LU12	well	w	Luna	335.3	30.7	31.8133	107.7900	3	29	9	8	12134
LU13	Little Ed Well	w	Luna	65.8	30	32.3353	107.3492	3	23	5	3	311
LU14	well	w	Luna		30.0	31.8417	107.5200	3	28	7	26	42
LU15	well	w	Luna	49.4	30	31.8439	107.6361	3	28	8	26	311
MK1	Fort Wingate Well/Santa Fe 'Spring'	w	McKinley	592.3	55	35.4667	108.5744	1	15	16	30	3443
MK2	well	w	McKinley	905.3	46	35.4244	107.8789	1	14	10	22	400
MK3	Ya-Ta-Hey Well	w	McKinley		45.5	35.6400	108.7800					
MK4	well	w	McKinley		42.2	35.9594	107.8981	1	20	10	16	4413

SITE ID	NAME	W/S	COUNTY	DEPTH m	TEMP C	LATITUDE	LONGITUDE	QUAD	TWN	RNG	SEC	QTR
MK5	well	w	McKinley	939.1	40.2	35.4256	107.8803	1	14	10	22	414
MK6	well	w	McKinley	965.3	39	35.6289	108.7764	1	16	18	7	423
MK7	Navajo well	w	McKinley	762	37.5	35.8525	108.6694					
MK8	Toh Sah Toh	w	McKinley		37.0	35.8700	108.6800					
MK9	well	w	McKinley	981.5	36	35.6228	108.7683	1	16	18	17	122
MK10	NTUA #2 Well	w	McKinley		36	35.6953	108.1439	1	17	12	20	1111
MK11	well	w	McKinley		35.5	35.6842	108.1442	1	17	12	20	3313
MK12	Pure Oil Navajo #1 Well (Tohachi Well)	w	McKinley	762	35	35.8511	108.6683	1	19	17	29	230
MK13	Pure Oil Navajo #3 Well	w	McKinley	243.8	35	35.8600	108.6400	1	19	17	22	
MK14	Mobil Well Crown Point	w	McKinley	655.3	33.5	35.7008	108.2158	1	17	13	15	332
MK15	well	w	McKinley		33.5	35.9297	107.9778	1	20	11	26	3414
MK16	well	w	McKinley		33	35.6847	108.1528	1	17	12	19	4314
MK17	well	w	McKinley	654.7	32.5	35.6372	108.7917	1	16	18	7	1111
MK18	well	w	McKinley		32.5	35.9314	107.9397	1	20	10	30	3244
MK19	well	w	McKinley	502.9	32	35.5361	108.5878	1	15	17	13	210
MK20	well	w	McKinley	240.2	32	35.6250	108.7917	1	16	18	7	3333
MK21	well	w	McKinley	877.8	31.5	35.5683	108.7611	1	16	18	32	44
MK22	well	w	McKinley		30.5	35.0372	108.7611	1	9	18	5	324
MK23	well	w	McKinley		30.5	35.6522	108.0450	1	16	11	5	1212
MK24	well	w	McKinley		30	35.6714	108.1561	1	17	12	30	3241
OT1	N-9 Well	w	Otero	137	71.1	32.0931	106.1514	4	26	8	5	332
OT2	N-11 Well	w	Otero	227	61.1	32.0842	106.1514	4	25	8	32	333
OT3	M-11 Well	w	Otero	153	50	32.0789	106.1750	4	26	7	1	241
OT4	FLOUR-1 Well	w	Otero	321.3	33.5	32.4306	106.1811	4	21	7	36	344
OT5	Garton Well	w	Otero	301.5	34	32.7800	106.1500	4	18	8	5	431
OT6	N-8 Well	w	Otero	304		32.0167	106.0833	4	26	8	33	120
OT7	N-11	w	Otero	227.1	61	32.0841	106.1513	4	25	8	32	300
RA1	Ojo Caliente Hot Spring Soda Spring	s	Rio Arriba			36.3050	106.0567	2	24	8	24	11
RA2	Ojo Caliente Hot Spring Well	w	Rio Arriba	26.5	55.6	36.3050	106.0567	2	24	8	24	11
RA3	Ojo Caliente Arsenic Hot Spring	s	Rio Arriba		45.0	36.3050	106.0567	2	24	8	24	11
RA4	Ojo Caliente Hot Spring	s	Rio Arriba		43	36.3050	106.0567	2	24	8	24	11
RA5	Ojo Caliente HS Lithia Spring	s	Rio Arriba		41.9	36.3050	106.0567	2	24	8	24	11
RA6	Ojo Caliente HS Sodium Sulfate Spring	s	Rio Arriba		40.6	36.3050	106.0567	2	24	8	24	11
RA7	Ojo Caliente Hot Spring Iron Spring	s	Rio Arriba		40	36.3044	106.0522	2	24	8	24	11
RA8	Statue Spring	s	Rio Arriba		36	36.3683	106.0583	2	25	8	26	414
RA9	Ojo Caliente Hot Spring Well #1	w	Rio Arriba	14.6	34.3	36.3050	106.0567	2	24	8	24	11
RA10	spring	s	Rio Arriba		27.5	36.3667	106.0450	2	25	8	25	44
RA11	spring	s	Rio Arriba		25.5	36.3633	106.0417	2	25	8	36	22
RA12	Ojo Caliente Hot Spring Well #2	w	Rio Arriba	16.2		36.3050	106.0567	2	24	8	24	11
SA1	Jemez/Baca # 15	w	Sandoval		326.0	35.8933	106.5800					
SA2	Jemez/Baca # 4	w	Sandoval		297.0	35.8892	106.5703					
SA3	Jemez/Baca # 4	w	Sandoval		294.0	35.8892	106.5703					
SA4	Jemez/Baca # 13	w	Sandoval		279.0	35.8964	106.5678					
SA5	Jemez/Baca #13	w	Sandoval		278.0	35.8964	106.5678					
SA6	Jemez/Baca #24	w	Sandoval		261.0	35.8844	106.5825					
SA7	Jemez/GRI WC 23-4 at 6300 ft depth	w	Sandoval		232.6	35.9094	106.6314					
SA8	Jemez/Baca # 19	w	Sandoval		223.0	35.8933	106.5800					
SA9	Jemez/GRI WC 23-4 at 4800 ft depth	w	Sandoval		214.0	35.9094	106.6314					
SA10	Jemez/Sulphur Springs Women's Bathhouse	s	Sandoval		90.0	35.9081	106.6150					
SA11	Jemez/Sulphur Springs main fumarole	s	Sandoval		88.0	35.9081	106.6150					
SA12	Jemez HS Jemez Springs #1 Well	w	Sandoval		73.3	35.7733	106.6889	2	18	2	23	
SA13	Jemez HS Travertine Mound Spring	s	Sandoval		72.6	35.7733	106.6889	2	18	2	23	
SA14	Jemez HS Soda Spring	s	Sandoval		65.5	35.7725	106.6900	2	18	2	23	
SA15	Jemez/Sulphur Springs unnamed HS	s	Sandoval		63.0	35.9081	106.6150					
SA16	Jemez Hot Springs	s	Sandoval		58	35.7706	106.6914	2	18	2	23	432
SA17	Jemez/Sulphur Springs Lemonade Spring	s	Sandoval		58.0	35.9081	106.6150					
SA18	Jemez Pueblo #1 Well	w	Sandoval	73.2	57.8	35.5900	106.7530	2	16	2	29	213
SA19	Jemez HS Gazebo Spring	s	Sandoval		55.0	35.7733	106.6889	2	18	2	23	
SA20	Kaseman #2 Well (Zia Hot Well)	w	Sandoval	612.7	52	35.6456	106.8883	1	16	1	1	4211
SA21	Jemez HS Buddhist Spring	s	Sandoval		50.0	35.7733	106.6889	2	18	2	23	
SA22	Jemez HS Marsh Spring	s	Sandoval		49.0	35.7733	106.6889	2	18	2	23	
SA23	Jemez/Soda Dam Hot Spring	s	Sandoval		46	35.7914	106.6861	2	18	2	14	442
SA24	Jemez/Soda Dam Hot Springs (west spring)	s	Sandoval		46	35.7917	106.6864	2	18	2	14	
SA25	Jemez/Spence Hot Spring	s	Sandoval		44	35.8494	106.6283	2	19	3	28	143
SA26	Jemez/Sulphur Springs Men's Bathhouse	s	Sandoval		43.5	35.9067	106.6153					
SA27	Jemez Pueblo Indian Hot Spring	s	Sandoval		43.0	35.5911	106.7531	2	16	2	29	1423
SA28	Jemez/McCauley Hot Spring	s	Sandoval		43	35.8200	106.6267	2	18	3	4	321

SITE ID	NAME	W/S	COUNTY	DEPTH m	TEMP C	LATITUDE	LONGITUDE	QUAD	TWN	RNG	SEC	QTR
SA29	Jemez/San Antonio Hot Spring	s	Sandoval		41.3	35.9383	106.6456	2	20	3	29	1
SA30	Jemez/Sulphur Springs Footbath Spring	s	Sandoval		40.5	35.9081	106.6150					
SA31	Jemez/San Antonio Warm Springs	s	Sandoval		38.5	35.9711	106.5614					
SA32	Jemez/Soda Dam Grotto Spring	s	Sandoval		38.0	35.7914	106.6864	2	18	2	13	
SA33	Jemez/Bathhouse HS	s	Sandoval		37.4	35.9714	106.5606					
SA34	Jemez/Sulphur Springs Electric Spring	s	Sandoval		36.0	35.9081	106.6150					
SA35	Jemez/Little Spence Hot Spring	s	Sandoval		34.0	35.8494	106.6289	2	19	3	28	
SA36	Star Lake #2 Ojo Encino Well	w	Sandoval		33	36.0047	107.3775	1	21	5	32	424
SA37	Jemez/Soda Dam Hidden Warm Spring	s	Sandoval		32.3	35.7914	106.6864	2	18	2	14	
SA38	well	w	Sandoval		32	35.3494	106.6694	2	13	3	18	330
SA39	Penasco #3 Spring	s	Sandoval		27.0	35.5940	106.8637	2	16	1	29	1143
SA40	Penasco #4 Spring	s	Sandoval		27.0	35.5940	106.8648	2	16	1	29	1134
SA41	Salado Warm Spring	s	Sandoval		25.0	35.5368	106.8467	2	15	1	16	1112
SA42	San Ysidro Warm Spring	s	Sandoval		24	35.5478	106.8256	2	15	1	10	1
SA43	Swimming Pool Spring	s	Sandoval		24.0	35.6015	106.8555	2	16	1	20	4123
SA44	Jemez/PC-1 at 1712 ft (w/drilling fluid)	w	Sandoval			35.8758	106.6617					
SF1	Guaje #3 Well	w	Santa Fe	88.4	30.5	35.9089	106.2122	2	19	7	4	133
SF2	Los Alamos #1B Well	w	Santa Fe	694	30.5	35.8833	106.1564	2	19	7	13	114
SF3	Los Alamos #G6 Well	w	Santa Fe	617	30.5	35.9108	106.2353	2	19	7	6	2
SF4	Los Alamos #6 Well	w	Santa Fe	46.9	30	35.8772	106.1742	2	19	7	14	312
SF5	Los Alamos #G2 Well	w	Santa Fe	617	30.0	35.9061	106.2025	2	19	7	4	
SI1	TorC well	w	Sierra		45.5	33.2228	107.2561	3	13	4	33	0
SI2	TorC artesian well	w	Sierra		45	33.1350	107.2533	3	13	4	33	
SI3	TorC Blackstone Mineral Bath	w	Sierra		45.0	33.1350	107.2533	3	13	4	33	41
SI4	TorC well	w	Sierra		44.5	33.1358	107.2553	3	13	4	33	0
SI5	TorC Sierra Grande Bath	w	Sierra		44	33.1350	107.2533	3	13	4	33	
SI6	TorC Yucca Lodge well 14 ft	w	Sierra	4.5	43.33	33.1350	107.2517	3	13	4	33	
SI7	TorC Yucca Lodge	w	Sierra		43	33.1350	107.2533	3	13	4	33	
SI8	TorC Yucca Lodge outdoor pool	w	Sierra		41.67	33.1350	107.2517	3	13	4	33	
SI9	TorC Sierra Mineral Bath	w	Sierra		41.0	33.1367	107.2483	3	13	4	33	24
SI10	TorC warm spring	s	Sierra		41.0	33.1333	107.2417	3	13	4	34	32
SI11	TorC Yucca Lodge	w	Sierra		41.0	33.1350	107.2517	3	13	4	33	41
SI12	TorC Old Government Spring	s	Sierra		40	33.1333	107.2333	3	13	4	34	0
SI13	TorC well	w	Sierra		40	33.1294	107.2572	3	13	4	33	344
SI14	TorC well	w	Sierra	30.5	40	33.1300	107.2525	3	13	4	33	434
SI15	TorC Ponce De Leon Spring	w	Sierra	75.3	40	33.1278	107.2531	3	14	4	4	412
SI16	TorC Geronimo (State) Springs	s	Sierra		38.5	33.1294	107.2550	3	13	4	33	433
SI17	Hillsboro Warm Spring	s	Sierra		34.5	32.9533	107.5817	3	15	7	5	21
SI18	Victorio Land and Cattle Co. #1	w	Sierra		34.4	33.4100	106.7900	3	10	1	25	1
SI19	Sun Oil Test Well	w	Sierra		34	33.4250	107.0167	3	10	2	25	100
SI20	Derry Warm Springs	s	Sierra		34	32.7917	107.2717	3	17	4	32	213
SI21	well	w	Sierra		34	32.7953	107.2769	3	17	4	29	343
SI22	well	w	Sierra		31	32.6333	107.3167	3	19	5	25	131A
SI23	warm spring	s	Sierra			33.2783	107.5633	3	12	7	9	
SI24	TorC "warm spring"	s	Sierra			33.1350	107.2533	3	13	4	33	
SI25	Barney Iorio #1 Fee	w	Sierra	466.3		33.0600	107.0300	3	14	5	25	41
SJ1	well	w	San Juan	1738.6	62	36.0469	107.7881	1	21	9	16	44233
SJ2	well	w	San Juan	1547.2	57	36.0536	107.7928	1	21	9	16	23233
SJ3	Navajo well	w	San Juan		51.8	36.2578	108.3247					
SJ4	Dome Well Chaco	w	San Juan		42	36.0622	107.8656	1	21	10	11	431
SJ5	ARCO WS-2 well	w	San Juan		39.9	36.8658	108.5561	1	31	16	30	4442
SJ6	Navajo well	w	San Juan	932.7	35.5	36.0922	108.2744					
SJ7	Navajo 12T-630 Well	w	San Juan		33	36.7153	108.6369					
SJ8	well	w	San Juan		32.8	36.0311	107.9039	1	21	10	21	3444
SJ9	Navajo well	w	San Juan	524.3	32	36.7889	108.6806					
SJ10	Navajo 12T-520 Well	w	San Juan	542.5	31	36.7764	108.6939					
SJ11	well	w	San Juan		30.5	36.3792	108.2267	1	25	13	28	1212
SJ12	Navajo 12T-629 Well	w	San Juan		30.5	36.6822	108.6572	1	29	17	32	31
SM1	Montezuma Hot Spring #1	w	San Miguel		55.17	35.6533	105.2900	2	17	13	36	44
SM2	Montezuma Hot Spring #6	w	San Miguel		50.56	35.6533	105.2900	2	17	13	36	44
SM3	Montezuma Hot Spring	w	San Miguel		49	35.6533	105.2900	2	17	15	36	44
SM4	Montezuma Hot Spring #13	w	San Miguel		41.11	35.6533	105.2900	2	17	13	36	44
SM5	Montezuma Hot Spring #15	w	San Miguel			35.6533	105.2900	2	17	13	36	44
SM6	Montezuma Hot Spring #16	w	San Miguel			35.6533	105.2900	2	17	13	36	44
SM7	Montezuma Hot Spring #18	w	San Miguel			35.6533	105.2900	2	17	13	36	44
SM8	Montezuma Hot Spring #19	w	San Miguel			35.6533	105.2900	2	17	13	36	44
SM9	Montezuma Hot Spring #2	w	San Miguel			35.6533	105.2900	2	17	13	36	44

SITE ID	NAME	W/S	COUNTY	DEPTH m	TEMP C	LATITUDE	LONGITUDE	QUAD	TWN	RNG	SEC	QTR
SM10	Montezuma Hot Spring #20	w	San Miguel			35.6533	105.2900	2	17	13	36	44
SO1	core hole	w	Socorro	205.7	42.2	34.0800	106.9500	3	3	1	4	433
SO2	warm well	w	Socorro	66.5	36	34.1006	107.5419	3	2	7	27	444
SO3	Welty Salty Well	w	Socorro	234.7	35	33.7997	107.6839	3	6	8	8	432
SO4	Bosque del Apache Well #13	w	Socorro		33	33.7900	106.8600	4	6	1	17	213
SO5	warm well	w	Socorro	30.5	33	33.8058	106.8761	4	6	1	7	213
SO6	Blue Canyon Well	w	Socorro	91.4	32.4	34.0467	106.9508	3	3	1	16	323
SO7	Socorro Gallery Spring	s	Socorro		32	34.0403	106.9383	3	3	1	22	113
SO8	Socorro/Sedilla Gallery Spring	s	Socorro		30	34.0378	106.9386	3	3	1	22	1131
SO9	well	w	Socorro		30.0	33.7633	107.3500	3	6	5	27	32
SO10	well	w	Socorro		30	34.1706	106.7522	4	2	2	5	223
SO11	Monticello Box Warm Spring	s	Socorro		29.0	33.3933	107.5817	3	8	7	31	24
SO12	Monticello Box Warm Spring	s	Socorro		28.0	33.5733	107.6017	3	8	7	31	41
SO13	artesian well	w	Socorro		26	34.5700	107.4400	1	4	6	14	31
SO14	Field Artesian Well	w	Socorro		25	34.5300	107.4700	1	4	6	33	34
SO15	Ojo Saladito Spring	s	Socorro		24	34.5100	107.1300	1	3	3	4	24
SO16	Cook Spring	s	Socorro			34.0467	106.9367	3	3	1	17	31
TS1	Hondo Hot Spring	s	Taos		40.6	36.5283	105.7150	2	27	12	36	42
TS2	Mamby Hot Spring	s	Taos		38	36.5222	105.7222	2	26	11	1	120
TS3	warm spring	w	Taos		37	36.5308	105.7117	2	27	12	31	311
TS4	Rancho Del Rio Grande Well	w	Taos		32	36.3236	105.6056					
TS5	Ponce de Leon Hot Spring	s	Taos			36.3233	105.6083	2	24	13	7	333
VA1	well	w	Valencia	219.5	80	34.7800	106.6400	2	6	3	5	234
VA2	well	w	Valencia	801	32.5	34.8536	106.7781	2	7	2	7	

APPENDIX 2

TABLES OF COMPLETE CHEMICAL ANALYSES

NOTES:

SITE ID	geothermal site number
SAMPLE	cited or assigned sample number or designation (see Appendix 4 for dates and data source
NAME	well or spring name
TEMP	temperature °C
CHEMISTRY	units as shown
mg/L	milligrams per liter
uS/cm	microsiemens per centimeter
TDS	analytical total dissolved solids
TDS (sum)	arithmetic sum dissolved constituents/total dissolved solids
CHARG BAL %	charge balance (see Reed and Mariner, 1991)
COND BAL %	conductance balance (see Reed and Mariner, 1991)
MASS BAL %	mass balance (see Reed and Mariner, 1991)

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	TDS (sum)	Na mg/L	K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br g/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 g/L	CHRG BAL %	COND BAL %	MASS BAL %
BE10	209	well	30.0	8.9		524	340	430	110	2	6.1	0.4			165	84	13	1.1		0.26	0.03	7.97	40	2.94	1.27	26.43
CA1	GILA7	hot spring	64.8		7.92		548	620	151.5	3.5	15.4	0.1	0.43	0.03	131.1	118	104.3	9.5		0.07			85.9	3.40		13.11
CA3	LFHS12-74	Lower Frisco Hot Spring	35.2	6.5		1200		855	236	7.5	11	7.8	0.41		167	40	327	1.5	0.61				56	4.77	2.44	
CA3	M77-CT2	Lower Frisco Hot Spring	37.0	7.35			1015	1013	270	15	46	6.2	0.43		121	39	430	1.4		0.26			84	0.01		0.17
CA3	SNM-19	Lower Frisco Hot Spring	50.5	6.80	7.64	1894	1142.9	1144	307	19	49.4	5.7	0.53	0.37	131	43	499	0.51		0.23			88	0.84	10.99	0.07
CA4	J3	Lower Frisco Hot Spring	43.3		7.89		992	1090	307.2	15.6	49.7	6.8	0.48	0.33	129.4	57.6	445.3	1.43	0.56	0.28			75.2	2.78		9.86
CA4	J5	Lower Frisco Hot Spring	48.9		7.79		1280	1353	406	18.8	54.3	6.9	0.65	0.43	107.4	90.3	574.3	1.8	0.56	0.38			90.9	3.81		5.68
CA4	SNM-18	Lower Frisco Hot Spring	45.0	6.80	7.64	1495	925.8	924	232	10.8	46.3	7.2	0.4	0.35	138	35.6	372	1.5		0.13			80	0.89	10.79	0.16
CA6	J4	Lower Frisco Hot Spring	40.0		7.95		768	817	215.6	11.3	39.3	7.4	0.34	0.28	136.7	44.2	294.6	1.49	0.43	0.22			64.8	3.09		6.34
CA7	J2	Upper Frisco Hot Spring	36.7		9.60		156	202	62.8	0.4	1.2		0.01		72	19.2	0.4	0.72	0.31	0.03			45.4	26.38		29.76
CA7	SNM-20	Upper Frisco Hot Spring	37.0	8.80	9.67	261	211.6	135	65.1	0.4	1.3	0.04			14.6	1.5	2	0.75					49	77.63	11.50	36.35
CA8	MFG3	Gila Middle Fork Hot Spring	36.0		8.09		192	297	43.7	1.2	16.8	1.6			139.7	28.3	3.9	5.28		0.07			56.5	5.92		54.71
CA10	DL-32-NM	Pueblo Windmill	33.8	6.00				1270	140	13	130	29			561	310	68	3.4		0.36	1.6		14	7.42		
CA13	GS54856	test well	32.2		8.70	2710	2540	2430	224	1.6	505				15	1604	52	7.8		0.39			20	0.76	29.09	4.34
CA14	130	well	32.0	9		330	256	283	65	2.7	0.9	0.1			120	23	13	1.4		0.1	0.05	3.99	53	1.09	10.62	10.64
CA15	119	well	32.0	8.7		2710	2540	2417	220	1.6	500				15	1600	52	7.8		0.39	0.03	0.2	20	1.25	27.53	4.84
CA16	MFG1	Gila Middle Fork Hot Spring	31.0		8.08		196	299	40	1.6	20.4	2.6			145.8	29.8	3.2	4.86		0.05			51	5.39		52.71
CA18	MEAD-10	Gila Middle Fork Meadows HS	27.5		7.60	215	150	167	25	2	17	1.8			94	11	10	3.4					2.8	2.19	0.70	11.33
CA18	MEAD-12	Gila Middle Fork Meadows HS	29.5		7.10	220	150	171	25	1.8	17	1.8			82	11	12	3.4					17	0.93	3.19	14.00
CA18	MEAD-14	Gila Middle Fork Meadows HS	32.5		7.60	215	145	174	25	1.7	19	1.8			92	10	6	3.4					15	3.79	3.59	19.93
CA18	MEAD-19	Gila Middle Fork Meadows HS	27.5		7.70	215	155	171	27	1.8	18	1.7			88	5.5	6	3.4					20	8.49	5.05	10.58
CA18	MEAD-5	Gila Middle Fork Meadows HS	28.0		7.50	220	160	173	24	1.8	17	1.8			90	5.5	8	3.4					21	2.26	5.16	7.81
CA20	US107	Zuni Salt Lake Warm Spring	26.0		8.24		220152	202370	66205	1173	195.2	4885			238	28722	100938	0.73		3			10	1.89		8.08
CA21	GS62058	Gila Middle Fork Pool HS			7.90	771	508	607	177	4.1	16	0.1	0.2	0.2	128	84	108	9.6		0.12			80	7.76	12.12	19.55
CA21	M77-CT1	Gila Middle Fork Pool HS	66.0	7.78			587	581	150	3.1	14	0.1	0.36		135	79	105	9.5		0.11			85	0.30		0.99
CA21	PHS-SUM	Gila Middle Fork Pool HS	65.3		8.20	720	514	479	146	3.9	16	0.1	0.4		94	20	107	3.4	0.25	0.1			88	17.30	1.60	6.78
CA21	SNM-14	Gila Middle Fork Pool HS	65.5	6.80	7.90	777	580.8	580	145	3	16.6	0.13	0.38	0.23	139	79.9	108	9.4		0.05			78	1.35	6.26	0.19
CA22	MFG2	Gila Middle Fork Hot Spring	37.0		8.07		188	289	41.8	0.8	19.2	1.6			128.1	31.7	4.2	5.28		0.02			56	3.74		53.56
CA23	MFG4	Gila Middle Fork Hot Spring	26.0		8.15		168	267	37.5	0.8	14.8	1.5			131.2	19.2	3.2	5.07					54	7.26		59.09
CA23	SW307	Gila Middle Fork Hot Spring	32.0		8.44		224	227	34	0.8	14	1.3			97.6	23.2	1.1	5.01					50	1.55		1.34
CA23	SW306	Gila Middle Fork Hot Spring	34.0		8.12		192	233	35.2	0.8	14.2	1.3			82	44	1.4	5.01					49.5	3.98		21.57
CB2	210	well	52.8	6.3	7.2	7000	5450	6652	1100	47	730	110	4	8.6	1320	2000	1300	0.6	3	3.2	2		24	2.41	36.14	22.06
CB6	178	well	36.0			989		797	42	7	120	36	0.05		257	300	19	0.7		0.03			15	0.31	10.84	
CB9	193	well	34.0	6.8		25200	18500	19156	5600	55	460	460	0.81		1360	4300	6900	1.6			3.4	0.6	15	0.10	21.40	3.55
CB9	197	well	31.5	6.7		18000		14600	4100	59	320	330			1770	4300	3700	2.9		3.5		0.3	14	0.02	23.87	
CB13	LUC-11	Salado Spring	25.0	6.46		3800		3583	195	21	670	92.4	0.52	9.42	425	1990	156	1.87		0.68	5.83		15	2.47	32.48	
DA1	CHAF55-25	Chaffee 55-25	69.0		7.46	2300	1480	1642	350.8	53.2	96.9	33			373.4	198	482.2	2.41			0.1		51.5	0.41	5.09	10.91
DA2	SNM-5	Radium Hot Springs Bailey Well #15	70.0	6.00	7.11	7050	3944.3	3942	1140	164	131	11.2	1.26	2.33	438	253	1720	5.44		0.82			75	0.18	12.80	0.06
DA4	CHF35-25	Chaffee 35-25	68.0		8.05	2580	1626	1871	397.5	54.7	129.2	31.2			394.2	300	496.3	2.16		0.36	0.22	8.37	56.5	1.62	7.38	15.05
DA7	CHF12-24	Chaffee 12-24	65.0		7.57	3000	1968	1809	392.4	58.3	107.4	28			448.7	220.8	499.2	2.2		0.18	0.13	0.31	50.9	0.14	12.59	8.10
DA9	S76BAILEY	Radium Hot Springs Bailey's bathhouse	60.8		7.96	5600	3731	4615	1212	182	142	11.7	1.18		350	232	2400	3.61	2.35	0.82			77.5	8.95	17.13	23.70
DA12	B2	Radium Hot Springs Hotel Well #2	53.0		8.16		3532	3752	1135.9	167	118.6	15.2	1.18	2.49	378.3	263.2	1593.6	4.44	1.54	0.86			69.9	3.55		6.23
DA12	M77-DA1	Radium Hot Springs Hotel Well #2	52.0	7.13			3857	3804	1100	160	120	15	1.2		414	260	1650	4.8		0.68			78	0.29		1.38
DA12	RHSHOT2	Radium Hot Springs Hotel Well #2	60.0		8.33	5800		4253	1373	164	65	11	1.01		253	208	2100	3.02	2.5	1.06			71	0.22	17.61	
DA12	S76HRSW2	Radium Hot Springs Hotel Well #2	60.0	6.70				3930	1120	150	127	13.5	1.5		480	300	1680	5.1	0.1	0.9			52	1.28		
DA12	SNM-6	Radium Hot Springs Hotel Well #2	43.0	7.00	7.41	6530	3728.4	3727	1070	146	136	13	1.27	2.33	438	263	1580	4.73		0.77			72	0.77	10.61	0.03
DA13	280LC1	LC-1	67.9		8.29	922	576	730	214.5	6.2	10.2	1			219.7	149.8	102.1	1.9		0.45		0.09	24.3	1.92	9.33	26.78
DA14	SNM-7	Radium Hot Springs Roy Smith Well	50.0	6.70	7.01	5230	2978.5	2973	842	114	120	12.9	0.98	2	348	250	1220	3.97		0.6			59	1.35	10.56	0.17
DA15	NMSU81479	NMSU PG-2			8.35	2480	1704	1819	381.6	175	19.2	27			508.9	226.2	421.9	1.31		0.23	0.55		57.5	1.57	2.22	6.76
DA15	SNM-9	NMSU PG-2	43.0	6.50	7.49	3290	2232.6	2215	447	47	145	38.5	0.49	3.96	734	135	590	0.92		0.3			73	0.52	5.14	0.78
DA17	LASALTNA	Nations Well	45.1		8.07	2400	1983	2340	488	55	142	32	0.46		348	223	980	1.62	1.61	0.6			68	8.05	35.08	18.02
DA17	NATIONW81	Nations Well	43.0		7.60	3040		2311	450	46	190	34			700	250	580	1.4			2	0.01	58	0.13	8.65	
DA18	47	well	43.0	7.6		3040		2309	450	46	190	34			700	250	580	1.4			0.01	0.04	58	0.13	8.65	

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	TDS (sum)	Na mg/L	K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br g/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 g/L	CHRG BAL %	COND BAL %	MASS BAL %
DA19	LASALTHU	Husand Well	42.5		8.02	2000	1706	1785	413	43	107	29	0.36		115	214	800	1.84	0.86	1.03			60	3.89	34.21	4.64
DA21	LASALTRO	Rowan well	36.8		8.10	1500	1093	1660	284	29	80	13.3	0.24		383	123	700	1.77	1.85	0.21			44	22.35	21.44	51.91
DA22	TELLYER2	Tellyer Well	36.5		8.20	1110		836	160	17	55	9.9			283	140	130	1.6			1.8		38	1.58	1.32	
DA23	GS28934	Running Indian Well	36.1		8.60	2310		1494	460	3.2	23	0.3			47	610	320	6					24	3.52	7.95	
DA23	S7623S2W	Running Indian Well	35.0		7.74	2200	1450	1429	410	2.75	24	0.15			46	565	328	3.2	2.31	1.77			45.5	6.94	13.11	1.47
DA24	SD1	well	36.0		7.49		2020	1969	269.4	20.7	291.4	34.9			102.5	979	255.3	0.77		0.37			14.3	0.60		2.54
DA26	1GD1	NMSU GD-1	35.0	6.70	7.37	2370		1663	321.4	33.6	131.7	23			547.9	147.5	391.4	1.52		0.09	3.95	0.01	60.9	0.28	1.67	
DA27	NPHL870	White well			8.00	1665	1020	1134	253	25	88	17			362	158	229	2.4						4.89	4.71	11.22
DA28	72	well	34.0	7.5		488		468	58	12	29	6.7			200	33	18	0.9		0.12		16.8	93	3.29	1.06	
DA29	23	well	33.5	8.1		950	554	645	170	4.1	20	4.8	0.09	0.47	161	150	98	1.4		0.15	0.04	0.66	34	1.81	6.14	16.37
DA30	9	well	30.5	7.6		890		628	170	1.8	6.3	0.7			207	140	59	2.1		0.36	0.03	0.31	40	1.70	12.21	
DA30	10	well	33.3	7.4		490		352	87	1.3	7.3	0.5			95	84	35	1.5		0.18	0.02	0.18	40	1.73	13.81	
DA33	44	well	36.0	8.6		2310		1494	460	3.2	23	0.3			47	610	320	6			0.02	0.49	24	3.52	7.95	
DA36	24	Berino Well	31.0	7.7		1120		896	220	8.1	25	3.6			359	170	73	1.1			0.06	0.04	36	0.96	1.08	
DA36	GS29520	Berino Well	31.1		7.70	1120		896	220	8.1	25	3.6			359	170	73	1.1					36	0.96	1.08	
DA37	SD22	Souse Springs	31.0		7.46		312	437	62.3	5.5	29.7	8.8			231.9	20	17	0.7		0.08			61	3.30		40.06
DA39	29	well	31.0	8.2		778		626	140	14	17	4.6			261	100	56	0.2		0.06		0.04	33	1.76	1.35	
DA39	GS221153	well	31.1		8.20	778		626	140	14	17	4.6			261	100	56	0.2		0.06			33	1.76	1.35	
DA42	93	well	31.0	7.3		2070		1293	360	3.9	71	2.7			48	360	410	1.5				0.89	35	1.02	5.68	
DA43	COLM1	Pol Ranch Windmill	30.5		8.20		512	749	174.5	43.8	4.6	5.3			380.7	70	34.7	1.02		0.34			34	3.57		46.28
DA45	13	well	32.0	8.6	8.2	600	475	323	110	1.5	9.5	0.1			8	130	40	1.7			0.02		22	13.35	11.57	32.04
DA47	38	Dominguez Bros Well	30.0			3350		2397	510	48	170	42			547	390	610	1.8		0.82		25.2	52	1.38	5.52	
DA47	39	Dominguez Bros Well	31.5	7.7		2870		2074	420	40	170	30			612	270	470	1.4				7.53	53	2.13	5.38	
DA49	NMPLH997	Railroad Well			8.00	2270		1251	377	4.1	39	4.9			169	174	477	5.8						3.33	16.94	
DA51	GS2053	Radium Hot Springs Hotel Well #1					3738	3924	1164	111	138	17			429	253	1752						60	0.03		4.98
DA51	SCOTTRHS	Radium Hot Springs Hotel Well #1	53.3		7.20	6100	3620	3801	1100	161	126	12			417	255	1650	4.8					75	0.25	2.88	4.99
DA52	86MASS21	Radium Springs Masson 21		6.10	8.34		3682		1156.5	161	133.3	12.6	0.88		399.1	250	1685.8			0.98	0.19		70.8	2.42		5.14
DA53	AA03261	Radium Springs Masson 23			8.12	5960			860.7	117	204.4	23.6	0.92		396.6	292.2	1525	5.19		0.68	0.22		53.2	2.93	11.59	
DA55	AA03262	Radium Springs Masson 26			7.94	6030			990.2	129	141.7	22.2	0.96		424.7	249	1632	5.45		0.75	0.36		61.9	2.68	8.10	
DA57	JET468	NMSU GD-2		7.65	7.90	3120	1948	1974	427.6	43.8	130	36			422.2	315	573.7	1.29		0.3	1.28	0.02	23.2	0.95	6.51	1.35
DA57	JET840	NMSU GD-2		7.80	7.91	2680	1787	1829	386.2	34.8	114.5	36.6			494.2	280	440.3	0.55		0.3	6	0.02	36	0.07	1.44	2.38
DA59	NMSU9430	NMSU PG-1			7.25	2800	1820	1827	372	41.4	124	25.4			579.7	52	571.1	1.22		0.34	0.1		59.5	2.37	8.87	0.37
DA59	PG1COMP	NMSU PG-1	60.6	6.80	7.95	3110		2285	488	57.9	138	19			612.6	285	590.6	1.31		0.1	0.28	0.02	92	2.42	0.19	
DA59	SNM-8	NMSU PG-1	58.5	7.20	7.68	3350	2273.5	2273	482	49	152	34.5	0.53	4.16	636	242	590	1.07		0.28			81	1.00	2.05	0.04
GR1	MIML3-12-7	Mimbres Hot Springs #3		8.75				377	113	1.2	3.1	0.03	0.14		104	69	20	14	0.73				52	7.02		
GR1	MIML3-WR	Mimbres Hot Springs #3			9.00	444		296	96	2.9	4.8				42	65	15	17		0.11			53	14.40	1.12	
GR2	EI3024	Gila Hot Springs Doyle Well	74.0		8.23			519	134.8	1.6	12.3	0.4			118.4	80.4	98			0.09			73.2	1.33		
GR3	GILA20	Turkey Creek Hot Spring	74.0		8.66		236	311	61.1	1.5	6.8	1.6	0.06		94	64.8	4.2	9.45		0.08			67.7	4.94		31.88
GR3	GILA22	Turkey Creek Hot Spring	69.8		9.10		260	275	69.2	1.2	2.8		0.11		40.3	75.9	5	11.85		0.12			68.9	3.08		5.92
GR3	SNM-16	Turkey Creek Hot Spring	65.0	7.50	9.08	326	260.4	216	71.6	1	3.6	0.13	0.09	0.05	3.7	53	6.5	11.8					65	25.90	2.60	16.87
GR3	SNM-17	Turkey Creek Hot Spring	73.0	8.50	9.10	329	258.8	213	71.6	1	3.7	0.07	0.09	0.05		53.1	6.6	11.8					65	27.23	1.66	17.69
GR4	EI6968	Gila Hot Springs Campbell #4 Well	72.0		8.29			478	120.4	1.2	11.3	0.1	0.2		117.2	41	101.5	9.55		1.2			74.8	2.26		
GR4	SNM-12	Gila Hot Springs Campbell #4 Well	71.1	7.00	8.18	659	495.8	482	129	2.6	1.5	0.1	0.25	0.18	122	45.7	102	9.1		0.02			70	4.18	11.97	2.69
GR5	GHS0925	Gila Spring Hot Spring #14	66.0	7.75			445	484	125	3.8	10.6	0.05	0.25		76	110	84.8					0.31	73	1.46		8.72
GR7	116	Gila Hot Springs	64.0	7.5		638	421	469	121	3.6	12		0.03		110	45	100	9				0.7	68	0.63	6.60	11.48
GR7	GILA5	Gila Hot Springs	62.8		8.19		408	426	123	3.1	10.6	0.1	0.26	0.02	108.6		99.4	8.7		0.03			72.3	8.72		4.43
GR7	GILA6	Gila Hot Springs	66.3		8.15		416	509	129.7	3.1	10.4	0.2	0.26	0.02	115.9	67.2	100.1	8.7		0.02			73.3	2.22		22.33
GR7	GS31051	Gila Hot Springs	63.9	8.6				541	148	2.91	20	0.06	0.32		104	97	106	8.5	0.85				53	2.64		
GR7	GS4897	Gila Hot Springs	63.9		7.50	638	421	467	121	3.6	12		0.03		106	45	102	9					68	0.56	6.60	10.84
GR7	M77-GR1	Gila Hot Springs	68.0	8.13			468	499	125	30	9.9		0.23		101	45	105	9.1		0.1			74	5.47		6.69
GR7	SNM-13	Gila Hot Springs	65.2	7.00	8.21	642	483.5	478	128	2.6	11.6	0.11	0.26	0.18	116	43.4	102	8.5					65	1.08	2.43	1.21
GR10	GHS0700	Gila Hot Springs Campbell #2 Well	61.0		8.10		423	462	118	4.5	10.2	0.09	0.25		76	100	86.5					0.1	66	0.28		9.13
GR10	GHS1400F	Gila Hot Springs Campbell #2 Well	62.0	7.72			411	449	106	3.4	10.6	0.09	0.25		76	100	83.1						70	3.67		9.35

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	TDS (sum)	Na mg/L	K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br g/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 g/L	CHRG BAL %	COND BAL %	MASS BAL %
GR10	GHS1400F	Gila Hot Springs Campbell #2 Well	62.0	7.72			411	449	106	3.4	10.6	0.09	0.25		76	100	83.1						70	3.67		9.35
GR10	GHS1445	Gila Hot Springs Campbell #2 Well	61.0	7.97			418	457	120	3.4	10.6	0.08	0.25		76	100	86.5						60	0.95		9.29
GR10	GHS1610	Gila Hot Springs Campbell #2 Well	62.0	7.97			415	454	118	3.4	10.2	0.08	0.25		76	100	81.4						65	1.30		9.48
GR10	GHS1610	Gila Hot Springs Campbell #2 Well	62.0	7.97			415	455	118	3.4	10.2	0.08	0.25		76	100	81.8						65	1.19		9.57
GR10	GHS2252	Gila Hot Springs Campbell #2 Well	60.0		7.70		428	467	120	3.9	11	0.09	0.25		76	103	84.8					0.27	68	1.11		9.18
GR13	GHS0935	Gila Spring Hot Spring #41	58.0	7.85			426	465	121	3.6	10.2	0.08	0.25		76	103	83.1					0.28	67	1.48		9.04
GR14	86	Mimbres Hot Springs	60.5	8.3		455		363	94	1.3	3.3	0.6	0.1		107	65	17	18		0.05		0.97	56	2.06	4.38	
GR14	GILA4	Mimbres Hot Springs	58.2		8.97		320	333	91.7	1.2	2.4		0.11		67.1	84	14.5	16					55.6	0.67		3.93
GR16	MIM-L12	Mimbres Hot Springs #12	56.4	8.24				286	115	1.1	3		0.13		89	9	20	3.2	0.2	0.12			45	37.17		
GR19	73	Faywood Hot Springs	53.0	7.4		605	384	534	85	7.8	38	7.3			278	52	16	6.8			0.01	0.2	43	0.43	5.68	39.09
GR19	74	Faywood Hot Springs	53.5	7.1		603		518	79	7.6	34	7.4	0.13		277	49	17	5.9	0.1	0.07	0.06	0.18	41	3.22	1.25	
GR19	FAY-S76-1	Faywood Hot Springs		6.95				581	100	7.1	36	9.1	0.19		292	76	15	6	0.38				39	0.06		
GR19	FAY-WRD	Faywood Hot Springs			8.40	504	330	443	87	11	14	6.3	0.07		197	55	19	6.3		0.26			47	0.49	5.01	34.22
GR19	GILA2	Faywood Hot Springs	53.8		7.74		492	564	90.8	8.2	35.6	7.6	0.16	0.1	283	72	15.2	6.1		0.01			45.2	2.23		14.62
GR19	GS15112	Faywood Hot Springs		7.10		603		518	79	7.6	34	7.4	0.13		277	49	17	5.9	0.1	0.07			41	3.22	1.25	
GR19	GS1856	Faywood Hot Springs	53.3		7.40	605	384	534	85	7.8	38	7.3			278	52	16	6.8					43	0.43	5.68	39.04
GR22	GILA8	Gila River Waterfall HS	43.6		8.08		516	593	141.9	2.7	18.4	0.8	0.31	0.02	125	93.6	115.7	8.7		0.11			85.9	2.99		14.95
GR22	M77-GR2	Gila River Waterfall HS	43.0	7.88			558	563	145	2.7	16	0.7	0.25		130	67	120	8.9		0.14			72	0.76		0.84
GR23	EFGR-NM	Gila East Fork no name spring	41.4		8.1	581	369	431	116	1.5	9.7	0.6			99	31	103	6.6					64	0.87	3.31	16.91
GR25	M77-GR3	Gila East Fork Hot Spring	36.0	8.27			385	388	100	1.5	9.7	0.6	0.17		89	27	92	6.1		0.12			62	0.09		0.83
GR32	LD2	Muir Ranch well	33.0		7.86		816	893	216.1	11.7	28	2.7	0.31	0.15	314.8	223.8	47.5	6.9	0.67	0.46			39.6	0.72		9.40
GR39	GILA23	Riverside Well	29.0		8.53		292	324	77.9	1.5	10.4	0.6	0.13		75.7	99.4	25.9	10.5		0.92			21.4	6.73		11.08
GR39	GILA24	Spring Canyon Warm Spring	31.0		8.13		332	444	92.4	1.5	18.4	1.3	0.08		234.3	49	6.4	5.85		0.16			34.5	2.44		33.70
GR41	GILA29	Mangas Springs	27.0		8.00		544	649	34.9	7.8	87	16.5	0.02		390.5	35	18.8	0.49		0.14			57.8	1.76		19.28
GR42	J1	Allen Spring	25.6		8.12		492	582	8.3	1.6	77.8	38.2	0.02	0.12	389.3	48	2.5	1.05	0.54	0.04			14.5	0.54		18.29
GR43	J7	Cliff Warm Spring	25.0		7.89		164	237	27.4	2.7	13	6.9	0.03	0.04	140.3	15.4	1.4	0.62	0.27	0.04			29.3	4.12		44.76
HD1	SNM-11	Lightning Dock Burgett Well #1	104.0	7.80	8.45	1666	1180.5	1123	324	20	20	0.18	0.69	0.05		510	90.7	11.6	0.2	0.36			145	6.54	5.65	4.89
HD2	GS59532	Lightning Dock hot well			9.10	1560		1063	302	16	18	0.1	0.66		32	490	89	12		0.45			103	2.39	6.75	
HD2	S76LD-12	Lightning Dock hot well			8.75	1500	1057	1136	348	24	16	0.1	0.8		94	469	88	3.7		0.34			92	8.78	11.16	7.47
HD4	36	Lightning Dock hot well	95.5	9.1		1560		1058	300	16	18	0.1			32	490	89	12		0.45	0.05	0.2	100	1.76	7.91	
HD4	S76LD-10	Lightning Dock hot well			8.40	1580	1160	1217	324	21	21	0.7			145	474	83	9.9					138	2.04	0.40	4.88
HD5	SNM-10	Lighting Dock Burgett Well #10	95.2	8.70	9.06	1621	1136.6	1082	312	20	11.4	0.2	0.67	0.4		492	88.7	11.1	0.2	0.33			145	5.13	8.86	4.80
HD7	P2	Lightning Dock hot well	85.0		7.71		1116	1232	333.6	23.5	22	0.5			106.8	497.1	88.3	12.6		0.48			148	3.16		10.43
HD8	P3	Lightning Dock McCants Well	81.0		8.16		1024	1192	318.6	21.1	23.2	0.8	0.64	0.47	103.7	480	87.6	12	0.56	0.5			143	3.02		16.42
HD9	P4	Lightning Dock hot well	71.0		7.84		1608	1840	493.1	27.8	67.3	5.3			118.9	893.4	111.3	7.25		0.42			116	3.77		14.45
HD10	33	Lightning Dock hot well	52.0	7.7		2310		1707	420	15	68	4.9			140	830	110	6.6		0.43	0.58	1.3	110	1.27	2.81	
HD10	GS59533	Lightning Dock hot well			7.70	2310	1680	1698	420	15	68	4.9	0.98		135	832	108	6.6		0.43			107	0.74	2.20	1.07
HD10	S76LD-5	Lightning Dock hot well			8.14	2260	1732	1778	440	31	71	5.6	1		109	886	113	3.2		0.45			118	1.03	6.55	2.67
HD10	S76LD-6	Lightning Dock hot well			8.07	2200	1786	1696	472	18	70	4.5	1.1		113	834	77	3.3	0.61	0.37			102	7.39	13.70	5.05
HD12	34	Lightning Dock hot well	33.5	8		1960		1461	360	16	61	6.6			210	540	150	6.4		0.52	0.05	10	100	1.04	0.29	
HD12	GS59534	Lightning Dock hot well			8.00	1960	1380	1446	356	16	61	6.6	0.72		211	536	152	6.4		0.52			100	0.88	0.07	4.80
HD12	S76LD-1	Lightning Dock hot well			8.25	1760	1295	1570	410	17	64	6.8	0.8		223	542	198	3.4	1.5	0.29			103	3.30	25.78	21.22
LA1	385	Pueblo Canyon #7 Well	31.0	7.7		766		722	182	0.5	10				428	43	16	2.5				1.1	39	0.38	10.04	
LA1	386	Pueblo Canyon #7 Well	30.5	7.8		729		680	170	0.4	9.8				399	42	16	2.5				1.2	39	0.65	8.29	
LU7	PAL4	well	31.5		8.07		700	876	234.5	19.6	31.5	5.1			201.4	265	54.6	5.07		0.24			59	8.87		25.14
LU8	W86	well	31.1		7.82		732	997	244.6	18	26.4	4.2			346.6	245.9	52.8	5		0.4			53	0.83		36.19
LU14	W69	well	30.0		8.70		1168	1309	416.1	3.9	1.4	0.2			367.3	236.8	234.7	8.25		1.56			39	0.77		12.09
MK3	DL-4-NM	Ya-Ta-Hey Well	45.5	7.20				684	205.33	0.64	1.65	0.04	0.1	0.07	222	214.5	15.4	0.33		0.06	0		23.6	2.81		
MK4	430	well	42.2	8.2	8.7	1800		1169	360	2.1	13	0.09	0.11	2.4	189	560	14	1.5	0.16		0.16		26	3.81	8.66	
MK4	432	well	37.4	8.3	8.4	1600		1169	340	2	13	0.15	0.11	2.2	188	580	17	1.6	0.08		0.1		25	0.49	2.70	
MK7	299	Navajo well	36.0	8.4		594		479	130	0.6	1.4	0.1			200	120	4.8	0.4			0.02		22	1.58	3.23	
MK8	DL-15-NM	Toh Sah Toh	37.0	8.90				492	144	0.52	1.54		0.16	0.08	180.56	138.11	5.9	0.4		0.14	0.01		20.5	2.88		
MK9	239	well	36.0	7.9		1570		1166	300	5	37	8.9			290	410	98	1.1				0.2	16	1.12	0.36	

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	TDS (sum)	Na mg/L	K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br g/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 g/L	CHRG BAL %	COND BAL %	MASS BAL %
MK9	240	well	34.0	7.9		1360		1009	240	6	46	9.5			280	330	86	1.1				0.2	10	0.99	0.52	
MK12	296	Pure Oil Navajo #1 (Tohachi Well)	35.0	9.1		644		484	140	1.1	1.8	0.2			184	130	5.8	0.3				0.22	21	2.66	3.35	
MK12	GS44727	Pure Oil Navajo #1 Well (Tohachi Well)	36.1		8.40	594	390	474	132	0.6	1.4	0.1			198	115	4.8	0.4					22	0.34	1.76	21.62
MK12	NM51	Pure Oil Navajo #1 Well (Tohachi Well)			8.92		376	503	152.4	0.8	1.2	0.01			181.8	142.2	2.5	0.29		0.05			21.5	5.37		33.71
MK17	243	well	32.5	8.5		1500	906	1006	310	2.7	12	2.1			223	380	60	0.8		0.11	0.16	0.35	15	3.71	4.50	11.06
MK18	422	well	32.7	8.6	8.5	2900		2019	670	2.3	7	1.2	0.07	0.28	239	1000	81	0.7	0.16		0.04		17	4.60	2.30	
MK20	241	well	32.0	8.4		1280	860	947	273	2.7	11	3			284	306	50	0.8		0.14	0.06		16	1.04	0.47	10.08
MK21	237	well	31.5	8.1		1220	802	929	230	3	14	3.8			270	370	20	0.4			0.04	0.1	18	6.81	9.07	15.88
MK23	256	well	30.5	9.1	9	800		682	200	0.9	1.4	0.32	0.03	0.1	308	150	6.5	0.4	0.03		0.01		14	2.62	10.33	
OT5	S76GART4	Garton Well	33.7		8.00	10000	9086	9329	2225	170	745	176	0.32		120	2854	3000	2.9	4.9	1.2			30	2.21	52.83	2.68
OT5	SA1	Garton Well	34.0		7.12		9140	8491	2032.4	37	645.3	186			130.6	2958.7	2476.7	3.15		0.75			20	1.14		7.11
RA1	GS13378	Ojo Caliente Hot Spring Soda Spring			7.2	3910		3724	997	29	25	9			2180	162	240	16					66	0.66	17.90	
RA1	HILLEBRD	Ojo Caliente Hot Spring Soda Spring						3670	995.7	31.4	22.8	9.5	3.4	1.4	2153.5	151	231.4	5.2		4.2			60.2	1.43		
RA1	OC-17	Ojo Caliente Hot Spring Soda Spring	27.3	6.86		4220	3673	3673	950	28	20	7	3.5	1.44	2190	154	240	14.4	1.14	1.39			62	2.74	4.63	0.00
RA2	NM21	Ojo Caliente Hot Spring Well	55.6		7.74		2576	12717	10018	34.8	11.6	4.8			2123.4	196.9	251.7	1.12		1.35			74	80.95		393.69
RA2	OC-18	Ojo Caliente Hot Spring Well	53.6	7.98		4560	3724	3724	1000	28	8	3.9	3.64	0.65	2190	164	253	17.9	1.01	1.46			52	2.07	0.27	0.01
RA2	OC-25	Ojo Caliente Hot Spring Well	54.2	7.14		4440	3618	3618	940	30	17	5.4	3.17	1.28	2130	160	246	17.3	1.22	1.41			65	2.98	2.17	0.01
RA2	OC-4	Ojo Caliente Hot Spring Well	54.0	6.75		3900	3344	3344	927	27.8	7.3	2.9	5.5	0.48	1870	195	242	20.8		1.54			43.4	0.22	8.82	0.01
RA3	GS13193	Ojo Caliente Arsenic Hot Spring	45.0		7.10	3930		3627	928	30	25	8.9			2160	156	238	16		1.6			63	3.46	9.71	
RA3	NM19	Ojo Caliente Arsenic Hot Spring	43.5		7.03		2652	3739	993.1	36	21.6	7.6	3.86	0.28	2172.2	187.3	235.4	14.7	0.42	1.3			65	0.57		40.98
RA3	OC-14	Ojo Caliente Arsenic Hot Spring	38.3	7.44		4200	3665	3665	950	30	22	8.1	3.59	1.49	2180	157	238	13.1	0.93	1.4			59	2.21	5.73	0.01
RA3	OC-5	Ojo Caliente Arsenic Hot Spring	43.5	6.60		4000	3131	3130	914	31	22	7.8	0.38	1.22	1690	150	235	16.1		1.6			61	5.05	5.93	0.03
RA3	S76ARSEN	Ojo Caliente Arsenic Hot Spring	38.3	7.10				3667	1000	30.6	28	7.8	4.3		2135	149	242	12.8	0.15	1.37			56	1.45		
RA5	OC-13	Ojo Caliente HS Lithia Spring	41.9	7.08		4190	3630	3630	950	30	26	9.5	3.57	1.48	2160	151	227	11.8	1.02	1.4			57	0.96	6.73	0.01
RA5	OC-2	Ojo Caliente HS Lithia Spring	38.0	6.55		3900	3475	3295	687	28.5	23.6	8.7	2.7	1.16	2070	173	227	13.5		1.47			58.5	15.11	15.58	5.18
RA6	GS13192	Ojo Caliente HS Sodium Sulfate Spring	40.6		6.90	3920		3633	933	34	24	7.6			2160	156	238	16		1.7			63	3.27	10.40	
RA6	NM20	Ojo Caliente HS Sodium Sulfate spring	41.1		7.20		2668	3795	993.1	36	20.3	7.4			2245.4	187.3	237.2	1.01		1.5			66	1.83		42.25
RA6	OC-16	Ojo Caliente HS Sodium Sulfate Spring	41.3	7.02		4250	3628	3627	950	28	20	7.1	3.64	1.49	2150	153	237	14		1.41			61	1.85	3.96	0.04
RA6	OC-3	Ojo Caliente HS Sodium Sulfate Spring	40.0	6.20		4100	3533	3533	866	31.3	20.6	6.6	2.4	1.04	2100	187	237	15.5		1.5			64.3	6.27	1.43	0.01
RA7	OC-1	Ojo Caliente Hot Spring Iron Spring	43.0	6.40		4100	3578	3578	953	29	21	6.6	2.2	1.14	2090	171	229	14.2		1.53			58.9	1.00	7.64	0.01
RA7	OC-15	Ojo Caliente Hot Spring Iron Spring	42.2	7.26		4250	3674	3674	950	30	22	8.1	3.38	1.45	2190	154	238	14.1	1.02	1.42			61	2.41	4.42	0.01
RA7	S76IRON1	Ojo Caliente Hot Spring Iron Spring			9.09	3300	2438	3141	993	36	6	7.7	2.7		1642	132	246	3		1.1			71	10.56	37.69	28.81
RA7	S76IRON2	Ojo Caliente Hot Spring Iron Spring	42.8	6.65				3582	980	31.5	29	8.5	4.3		2073	149	237	13.5	0.66	1			55	1.89		
RA8	OC-26	Statue Spring	29.2	6.26		1660	1386	1386	160	15	126	48	0.41	1.15	649	254	108	1.44		0.41			23	3.77	6.41	0.03
RA9	OC-20	Ojo Caliente Hot Spring Well #1	34.3	6.88		3000	2586	2586	620	18	70	21.6	2.04	1.34	1410	193	190	8.4	0.83	0.91			50	0.13	10.08	0.00
RA9	PH65-524	Ojo Caliente Hot Spring Well #1			7.80	2375	1515	1787	496	16	40	16			907	155	149	7.5						5.43	6.51	17.92
RA11	NM18	spring	25.5		6.62		1072	1443	183.2	16.8	138.9	56.5	0.54	0.85	695.6	219	107.4	1.31	0.97	0.33			21.5	2.56		34.60
RA12	PH65-523	Ojo Caliente Hot Spring Well #2			7.80	1050	665	1134	102	407	80	29			274	158	83	0.55						35.29	102.11	70.46
SA1	BA-7	Jemez/Baca # 15	267.0	7.61		10400	5735	6430	1950	330	13.6		23.1	0.25	89	45	3257	6.9	9.56	25.4			680	1.31	6.47	12.12
SA1	BA-8	Jemez/Baca # 15	326.0	7.12		10600	5783	6443	1910	350	14.2		24.3	0.23	75	37	3302	6.8	9.2	25			689	0.33	9.20	11.41
SA2	BA-5	Jemez/Baca # 4	297.0	7.20		9100	4719	5565	1560	280	3.7		20	0.1	190	49	2670	6.8	7.83	17.9			760	1.15	14.19	17.93
SA3	BA-2	Jemez/Baca # 4	294.0	7.28		9100	4769	5518	1570	285	3.6		20.6	0.1	215	49	2640	6.6	7.8				720	0.46	13.48	15.70
SA4	BA-4	Jemez/Baca # 13	279.0	7.20		8900	4644	5412	1540	255	4.3	0.19	20.5	0.22	236	47	2594	9.6	7.01	18			680	1.23	13.82	16.53
SA5	BA-1	Jemez/Baca #13	278.0	7.30		8500	4529	5279	1550	255	3.5		24.7	0.21	221	49	2501	9.4	7	18.6			640	1.24	8.61	16.57
SA6	BA-3	Jemez/Baca #24	260.0	7.25		10600	5328	6091	1870	230	17.2		23.2	0.11	89	48	3151	6.4	9.36	26.3			620	0.20	13.75	14.31
SA6	BA-6	Jemez/Baca #24	261.0	7.43		10400	5339	6034	1850	235	17.1		23.2	0.12	90	48	3128	6.6	9.42	26.5			600	0.27	12.80	13.02
SA7	VA-116	Jemez/GRI WC 23-4 at 6300 ft depth	232.6	7.10		30800	18100	18050	5890	1020	46	0.45	68	1.98	382	95	9960	13.8	27	96.2			450	0.72	4.39	0.27
SA8	BA-9	Jemez/Baca # 19	223.0	8.45		10900	6147	5841	1920	310	13.1	0.02	25.6	0.3	139	48	3340	6.9	10.9	26.8				1.14	12.11	4.99
SA9	VA-113	Jemez/GRI WC 23-4 at 4800 ft depth	214.0	8.03		13720	8580	8582	2800	470	80.5	2.89	28.3	2.29	360	33	4350	6.9	14	39.3			395	4.54	3.65	0.03
SA12	VA-121	Jemez HS Jemez Springs #1 Well	73.3	6.50		4280	2530	2529	583	62	121	4.55	6.8	0.67	698	39	909	6.4	2.2	7.11			89	5.38	19.74	0.05
SA12	VA-144	Jemez HS Jemez Springs #1 Well	72.2	6.40		4670	3005	2635	630	61	126	4.23	8.5	1.22	714	41	941	5.38	2.6	6.5			94	3.36	21.09	12.30
SA12	VA-15	Jemez HS Jemez Springs #1 Well 152 m	60.5	6.69		1700	1140	1136	185	29.9	120	9.31	2.27	0.4	479	38	243	3.3		2.2			24	0.73	6.46	0.32
SA12	VA-19	Jemez HS Jemez Springs #1 Well 24 m	68.0	6.64		3300	2220	2215	546	61.6	122	5.76	6.96	0.54	642	45	705	4.42		6.1			70	2.05	0.29	0.21

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	TDS (sum)	Na mg/L	K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br g/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 g/L	CHRG BAL %	COND BAL %	MASS BAL %
SA12	VA-21	Jemez HS Jemez Springs #1 Well 152 m	61.0	6.55		1830	1200	1229	193	35.4	122	9.25	3.6	0.4	492	49.9	281	3.5		2.5			36	1.58	8.87	2.38
SA12	VA-25	Jemez HS Jemez Springs #1 Well 24 m	73.3	6.55		3500	2560	2555	610	68	180	4.6	8.4	0.86	705	53	836	3.52		6.8			79	3.24	11.04	0.19
SA13	VA-123	Jemez HS Travertine Mound Spring	72.6	6.59		4360	2550	2545	596	62	129	4.49	6.1	0.57	697	38	906	6.3	2.3	7.02			90	3.99	19.24	0.20
SA13	VA-142	Jemez HS Travertine Mound Spring	72.9	6.20		4740	2630	2634	610	58	132	4.3	8.6	1.22	757	40	917	4.31	2.7	6.7			92	4.16	23.57	0.15
SA13	VA-17	Jemez HS Travertine Mound Spring	72.0	6.66		4100	2600	2599	612	70.3	114	4.48	8.46	0.54	714	43.2	936	5.05		7.9			83	4.75	12.91	0.04
SA13	VA-66	Jemez HS Travertine Mound Spring	72.0	6.66		3400	1700	2251	558	62	122	5.4	9	0.59	436	42.4	910	4	2.6	7			92	0.36	0.88	32.41
SA13	VA-7	Jemez HS Travertine Mound Spring	70.0	6.28		4200	7580	2579	614	75.2	182	4.56	8.2	0.6	723	36.1	829	5.21		7.8			93	4.00	6.47	65.98
SA13	VA-71	Jemez HS Travertine Mound Spring	72.0	6.12		3900	2520	2515	540	73	135	4.75	8.7	0.34	712	41	894	4.4	2.8	7.19			92	5.94	13.47	0.19
SA14	272	Jemez HS Soda Spring	65.5	7.2		3560	2150	2476	572	70	138	6.6			735	49	795	5.2		11	0.03	0.8	93	2.39	4.21	15.15
SA16	267	Jemez Hot Springs	49.0	6.7		3550		2548	550	68	170	9.2			800	49	800	4.6	1	6.5	1	0.04	89	2.85	1.68	
SA16	269	Jemez Hot Springs	58.0	7.1		3460		2350	510	63	160	6.6	7.8		773	43	700	4.4	3	7.4	0.45	0.35	71	0.20	3.33	
SA16	JEMEZ5	Jemez Hot Springs	56.0		6.89		1952	2378	603.5	63.7	129.1	5.2			685.8	53	740.6	4.62		7			85.9	1.86		21.85
SA16	JEMEZ6	Jemez Hot Springs	53.0		6.90		1884	2373	608.8	64.1	103	5.3			691.9	53	748.4	4.64		6.9			87.4	0.15		25.98
SA16	JEMEZ7	Jemez Hot Springs	74.0		7.01		2156	2547	668.8	70.8	97.2	4.5			738.3		859.7	5.2		7.2			95.4	0.69		18.14
SA18	91TDI1	Jemez Pueblo #1 Well	57.8	6.90			3366	3853	1187.5	58.6	67.6	3.19	4.7	3.19	1047	347.3	1086.4	6.8		6.78			34.1	1.90		14.47
SA18	91TDI3	Jemez Pueblo #1 Well	58.2	6.69			3349	4036	1043.5	637	57.5	8.2	5.1	3.1	789.5	268.4	1191.8	7.3		7.14			17.6	11.38		20.52
SA18	JP91-2	Jemez Pueblo # 1 Well	57.8	7.00		5560	3947	3946	1148	67	69.5	12.7	6.09	2.76	1132	254	1196	6.68	3.33	8.46			39	0.76	2.71	0.04
SA19	VA-10	Jemez HS Gazebo Spring	55.0	7.01		4200	2660	2660	656	74.2	152	5.4	10.1	0.56	711	40.9	904	5.19		7.9			93	2.11	4.93	0.01
SA19	VA-122	Jemez HS Gazebo Spring	74.9	6.57		4380	2540	2536	583	62	126	4.57	6.8	0.57	698	39	909	6.4	2.2	7.11			91	5.02	21.00	0.17
SA19	VA-143	Jemez HS Gazebo Spring	74.7	6.50		4460	2640	2637	610	58	130	4.55	8.4	1.18	746	42	932	4.64	2.7	6.4			91	4.69	19.02	0.12
SA19	VA-18	Jemez HS Gazebo Spring	36.0	7.51		4250	2700	2704	690	74	115	4.52	9	0.6	699	45.4	968	5.19		8			85	0.82	7.46	0.14
SA20	247	Kaseman #2 Well (Zia Hot Well)	54.4	7.3		15300		11888	3600	88	350	56			1460	3300	3000	2.8				0.2	31	0.98	18.25	
SA20	252	Kaseman #2 Well (Zia Hot Well)	52.0	6.8		15700		11859	3500	88	350	61			1410	3300	3100	3.4	8.1	7.5	1.4	0.09	30	0.72	12.73	
SA20	88TDI1	Kaseman #2 Well (Zia Hot Well)	53.0	7.31	6.70		10720	11339	3006	66.8	291.5	50.3	3.55	8.01	1667	3283	2919.8	2.97		6.25			33.9	7.98		5.77
SA20	E	Kaseman #2 Well (Zia Hot Well)	52.0		6.87		11300	12229	3720.4	92.7	417.8	73.4			1464.4	3343	3067.4	4.8		6.98			37.9	2.88		8.22
SA20	VA-125	Kaseman #2 Well (Zia Hot Well)	53.0	6.98		15700	11400	11351	3080	63.4	364	62.8	5.2	8.7	1398	3338	2984	2.47	3.4	7.8			33	5.02	1.83	0.43
SA20	VA-34	Kaseman #2 Well (Zia Hot Well)	56.0	6.29		16600	12200	11343	2650	66.7	302	90	6.7	9	1440	3740	3000	2.4		6.52			30	13.95	15.29	7.02
SA20	VA-53	Kaseman #2 Well (Zia Hot Well)	54.0	6.53		16000	11700	11667	3440	77	321	61	6	4.75	1068	3430	3210	4.51	4.2	7.41			33	1.74	8.51	0.28
SA20	VA-67	Kaseman #2 Well (Zia Hot Well)	53.0	6.72		15800	11300	11311	3180	64	320	71.5	6.3	9.55	1400	3280	2930	3.8	4.2	6.6			35	3.32	3.13	0.10
SA20	VA-74	Kaseman #2 Well (Zia Hot Well)	53.0	6.40		15600	12800	12897	3700	54	354	21.8	5.52	6.87	1400	4100	3210	2.67	1.1	6.9			34	4.26	17.14	0.76
SA21	VA-16	Jemez HS Buddhist Spring	50.0	6.59		3300	2550	2177	494	57.8	128	7.5	6.06	0.52	708	40.6	653	3.76		5.7			72	0.34	6.50	14.63
SA21	VA-8	Jemez HS Buddhist Spring	49.0	6.38		3300	2160	2161	458	53	154	9.57	7.56	0.56	697	37.6	653	3.86		5.7			81	0.03	6.51	0.04
SA22	VA-12	Jemez HS Marsh Spring	49.0	6.35		4100	2620	2620	609	70	129	7.82	8.18	0.64	738	41.8	903	4.56		7.5			100	2.82	10.84	0.02
SA23	JEMEZ2	Jemez/Soda Dam Hot Spring	47.0		7.06		3496	4641	1087.9	185	285.6	24.1			1526.6	50	1420.2	3.5		12.5			46.4	1.46		32.76
SA23	VA-109	Jemez/Soda Dam Hot Spring	46.8	6.21		7090	4570	4564	1030	160	245	17.4	12.7	1.39	1458	34	1536	3.28	4.07	15.7			46.8	2.82	9.15	0.12
SA23	VA-132	Jemez/Soda Dam Hot Spring	47.0	7.19		6800	4590	4585	980	186	315	22.7	15.8	1.4	1488	35	1477	3.51	4.6	13.9			42	0.19	1.06	0.11
SA23	VA-140	Jemez/Soda Dam Hot Spring	46.8	6.71		7300	4570	4570	960	160	342	21.9	13.8	2.84	1488	34	1480	3.33	4.6	12.1			47	0.23	8.53	0.01
SA23	VA-26	Jemez/Soda Dam Hot Spring	47.0	5.52		6600	4630	4625	920	177	429	21.4	13.6	2.02	1490	49.4	1460	3.57		12.8			46	2.12	5.64	0.11
SA23	VA-51	Jemez/Soda Dam Hot Spring	47.0	6.35		5900	4150	4153	990	183	314	24	13.5	0.89	1000	39.1	1520	3.55	3.84	15			46	5.51	14.16	0.07
SA23	VA-6	Jemez/Soda Dam Hot Spring	47.0	6.20			4014	4014	1010	174	328	26	13.2	1.38	886	37	1480	4.1		11.5			43	9.17		0.00
SA23	VA-64	Jemez/Soda Dam Hot Spring	47.0	6.28		5600	4200	4199	825	120	300	25	13.7	1.48	1250	36.1	1560	2.8	6.7	13.9			44	6.06	3.55	0.03
SA23	VA-70	Jemez/Soda Dam Hot Spring	47.0	6.28		6700	4380	4381	860	170	331	23.8	13.5	0.56	1390	41	1480	5	5.6	13.4			47	2.76	7.18	0.02
SA23	VA-73	Jemez/Soda Dam Hot Spring	47.0	6.30		6700	4539	4584	840	186	346	24.6	13.7	1.2	1500	36.7	1570	3.6	5.6	8.5			48	5.52	6.59	0.99
SA23	VA-9	Jemez/Soda Dam Hot Spring	48.0	6.40		7050	4620	4616	938	183	340	24.4	13.2	1.5	1510	38.4	1500	3.67		13.8			50	1.24	5.83	0.09
SA25	A	Jemez/Spence Hot Spring	42.0		8.09		297	312	58.4	1.6	5.6	1.7			142.8	24	9.6	0.54		0.1			67.4	2.26		4.96
SA25	VA-1	Jemez/Spence Hot Spring	45.0	6.70			294	294	50	1.3	5.5	1.9	0.66	0.03	144	16	8	0.55		0.15			66	3.75		0.03
SA25	VA-120	Jemez/Spence Hot Spring	42.3	7.60		293	292	292	50	1.4	5.9	1.57	0.58	0.08	140	17.1	8.2	0.76	0.1	0.12			66	3.61	7.18	0.07
SA25	VA-68	Jemez/Spence Hot Spring	42.0	7.01		280	297	297	52	1.6	7.2	1.87	0.71	0.02	135	18	11	0.59		0.15			69	0.17	4.24	0.05
SA25	VA-72	Jemez/Spence Hot Spring	42.0	7.45		275	276	276	44	1.4	6.4	1.76	0.74	0.04	138	2.8	11.2	0.69		0.17			69	2.90	8.31	0.07
SA27	88TDI10	Jemez Pueblo Indian Hot Spring	36.0	6.91	6.70		3176	4300	1141	50.2	96.5	13.1	4	2.48	1300	295.1	1328.5	6.68		6.58			55.8	6.39		35.39
SA27	88TDI9	Jemez Pueblo Indian Hot Spring	43.0	6.90	6.73		3572	4082	983	51.3	75.4	11.1	4.4	2.29	1411.9	308.8	1165.9	7.5		7.49			52.6	11.95		14.27
SA28	287	Jemez/McCauley Hot Spring	30.0	8		140		197	19	0.9	8.7	4.7			94	6.6	3.8	1			0.02	1.86	56	4.78	19.30	
SA28	289	Jemez/McCauley Hot Spring	31.0			165		224	25	1.4	12	4.8	0.27		88	6.8	28	0.9	0.1		0.02	2.21	54	5.82	30.66	

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	TDS (sum)	Na mg/L	K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br g/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 g/L	CHRG BAL %	COND BAL %	MASS BAL %
SA28	B	Jemez/McCauley Hot Spring	32.0		7.67		220	195	20.9	0.8	8.4	4.4			81.7	19	2.1	0.86		0.01			56.7	3.62		11.42
SA28	VA-119	Jemez/McCauley Hot Spring	31.9	8.23		173	186	186	20	1	8.5	4.32	0.22	0.04	86.6	5.8	4.4	0.95					54	0.19	1.29	0.09
SA28	VA-3	Jemez/McCauley Hot Spring	31.0	6.20			189	268	18	0.8	8.5	4.9	0.24	0.02	86	86	6	0.85		0.24			56	34.42		41.56
SA29	424	Jemez/San Antonio Hot Springs	40.0	7.7		110		181	23	2	4.7	0.3			61	8.8	2.3	0.8	0.06	0.04	0.16	1.64	76	0.77	19.17	
SA29	F	Jemez/San Antonio Hot Spring	56.0		8.02		148	180	23.2	2	3.2	0.5			59.8		5	0.8		0.02			85.8	4.04		21.84
SA29	VA-128	Jemez/San Antonio Hot Spring	41.3	7.88		127	167	177	23	1.8	3	0.5	0.06	0.06	57.3	9.5	7	0.76					74	4.85	1.78	5.98
SA29	VA-4	Jemez/San Antonio Hot Spring	42.0	6.80		150	170	170	21	1.7	2.3	0.3		0.02	56	7	2	0.8					79	2.89	26.88	0.07
SA29	VA-96	Jemez/San Antonio Hot Spring	40.8	7.26		140	168	168	21	1.8	2.7	0.28	0.12	0.02	50	7.6	2.2	2.2					80	0.90	18.93	0.05
SA32	VA-5	Jemez/Soda Dam Grotto Spring	38.0	6.80			3950	3948	1000	174	324	27	13.2	1.4	834	41	1480	4		11.8			38	9.45		0.04
SA33	VA-94	Jemez/Bathhouse HS	37.4	7.72		178	261	224	27	4.04	5.3	0.4	0.09	0.04	61	12.7	8.6	1.84					103	0.46	10.73	14.17
SA33	VA-126	Jemez/Bathhouse HS	38.1	7.61		166	498	243	27	4.2	6	1	0.08	0.09	75.6	15.2	6.9	1.46	0.2				105	4.35	1.03	51.26
SA33	VA-20	Jemez/Bathhouse HS	38.0	6.10		163	220	226	24.5	3.7	4.98	0.4	6	0.02	71	15	2.4	1.6					96	17.26	41.53	2.55
SA35	VA-2	Jemez/Little Spence Hot Spring	34.0	6.70			321	321	56	1.5	8.8	1.9	0.66	0.04	152	25	7	0.7		0.13			67	1.25		0.08
SA36	436	Star Lake #2 Ojo Encino Well	33.0	8.2		3000	2190	2407	710	5.4	26	5.8	0.2	1.6	223	1300	120	0.8		0.08	0.02	0.04	14	1.92	9.54	9.91
SA37	VA-110	Jemez/Soda Dam Hidden Warm Spring	32.3	6.13		6150	3930	3934	817	130	226	15.3	10.5	1.34	1324	53	1294	3.21	3.27	13.4			43	5.85	13.91	0.10
SA37	VA-141	Jemez/Soda Dam Hidden Warm Spring	32.2	6.42		6260	4020	4018	780	125	305	20	11.1	2.55	1425	49	1240	3.04	3.8	10.6			43	3.40	11.10	0.05
SA37	VA-27	Jemez/Soda Dam Hidden Warm Spring	29.0	6.28		5700	3990	3990	720	141	376	18.8	10.8	1.9	1400	69.1	1195	2.71		10.6			44	1.22	0.29	0.00
SA38	228	well	32.0	9.5		3140	2460	1274	740	22	1.2	0.3			334	49	97	3.4		2.2	0.8		24	55.45	4.58	48.22
SA39	88TDI4	Penasco #3 Spring	27.0	6.79	6.64		9672	10400	2371	98.5	396.4	51.1	5.25	6.63	1592.5	3438	2405.8	3.59		7.9			23	11.88		7.52
SA40	88TDI6	Penasco #4 Spring	27.0	6.56	6.54		9924	10741	2554	98.1	386	48.8	5.45	6.62	1876.9	3430	2301.5	3.53		7.9			22	9.66		8.23
SA41	88TDI8	Salado Warm Spring	25.0	6.79	6.54		9608	10742	2463	82.8	352.2	52.9	4.4	7.68	2174.6	3215	2365.5	3.9		6.6			13	12.44		11.80
SA41	M77-SA2	Salado Warm Spring	25.0	6.25			10465	10432	3000	91	390	65	5.2		1855	2600	2400	4		6.9			15	1.91		0.31
SA42	VA-130	San Ysidro Warm Spring	22.0	6.97		9400	6810	6814	1720	77	305	71.3	8.1	4.62	1740	1183	1671	3.32	5	9.77			16.3	0.69	5.47	0.06
SA42	VA-33	San Ysidro Warm Spring	27.0	6.57		11550	7170	7173	1710	75.3	375	128	5.3	7.7	1860	1165	1820	3.95		8.32			14	0.09	7.80	0.04
SA43	88TDI3	Swimming Pool Spring	24.0	7.27	7.21		7420	8305	2066	57.8	267	48.1	3.25	6.64	1545	1896	2373.6	3.59		4.95			32.9	9.41		11.92
SA44	PC1-1	Jemez/PC-1 at 1712 ft (w/drilling fluid)		7.21		9500	7510	7508	1390	153	762	52.8	10.8	3.52	1133	2157	1602	1.06	4.3	13.4			225	0.18	14.09	0.03
SA44	PC2-6	Jemez/PC-2 at 1335 ft (w/drilling fluid)	40.0	7.17		4980	5577	2863	670	69	646	215	1.86	3.46	1102	28.7	57	1.34		2.3			66	59.93	63.01	48.67
SF2	362	Los Alamos #1B Well	31.0	7.7		766		726	182	4.1	10	0.5			428	43	16	2.5				1.1	39	0.40	11.78	
SF2	363	Los Alamos #1B Well	31.0	7.7		766		726	180	4	10	0.5			430	43	16	2.5				1.1	39	0.31	10.61	
SF2	364	Los Alamos #1B Well	30.5	7.8		729		684	170	3.9	9.8	0.4			399	42	16	2.5				1.2	39	0.12	9.97	
SF2	365	Los Alamos #1B Well	30.5	7.8		729		685	170	4	9.8	0.4			400	42	16	2.5				1.2	39	0.04	10.00	
SF2	366	Los Alamos #1B Well	30.5	7.8		720		680	169	3.9	9.4	0.6			394	41	16	2.5				1.2	42	0.48	10.69	
SF2	LA-7	Los Alamos #1B Well	30.0	7.20			559	559	138	2	6.5	0.3	0.11	0.14	326	32	15	2.3		0.45			36	1.01		0.04
SF3	LA-12	Los Alamos #G6 Well	30.5	6.50			191	191	15	2	15	2.3		0.06	94	5	2	0.27					55	2.16		0.19
SF5	LA-16	Los Alamos #G2 Well	30.0	6.50			256	256	33	2.5	11	0.61	0.02	0.08	122	5	4	1		0.12			77	3.80		0.13
SI2	SNM-3	TorC Artesian well	41.2	7.00	7.34	5140	2697.5	2696	751	56	163	15.3	1.3	3.82	220	75.1	1360	3.06	2.6	0.25			45	0.04	14.85	0.04
SI3	B9	TorC Blackstone Mineral Bath	45.0		7.79		2608	2739	817.5	61.4	143.9	18	1.21	4.1	164.7	196	1285.2	1.49	0.77	0.38			44.3	3.29		5.02
SI6	S76TRC14A	TorC Yucca Lodge well 14 ft	42.8		7.30	4510	2670	2615	735	61	154	21			216	93	1290	3.8					41	1.03	4.78	2.07
SI6	S76TRC14B	TorC Yucca Lodge well 14 ft	40.0	6.70		4500		2749	742	57	175	18.8	1.5		250	120	1340	3.5		0.2			41	0.40	1.71	
SI9	B10	TorC Sierra Mineral Bath	41.0		7.80		2688	2755	791.5	63	143.9	17.9	1.23	4.12	162.3	169.1	1353.6	3.1	0.77	0.35			44.3	0.48		2.50
SI10	B11	TorC warm spring	41.0		7.88		2640	2657	764.6	62.6	136.5	17.1	1.24	4.19	136.7	115.3	1370.3	3.1	0.75	0.35			44.3	0.13		0.65
SI11	B19	TorC Yucca Lodge	41.0		7.98		2708	2718	785.6	62.6	164.1	18.7	1.2	4.08	224.5	107	1314.2	3.2	0.82	0.38			31.3	2.93		0.36
SI12	GS20949	TorC Old Government Spring				4520	2560	2571	731	39	154	14			215	79	1300	3					36	0.44	7.89	0.43
SI14	108	TorC well	40.0					2582	731	39	150	14			220	79	1300	3			0.01	10	36	0.78		
SI14	113	TorC well	44.5			4410	2490	2465	690	45	150	16			220	100	1200	3.4			0.1	2	38	0.31	9.37	1.02
SI15	98	TorC Ponce De Leon Spring	39.0			4400	2440	2480	710	43	150	15			220	100	1200	3.2			0.53	6.2	32	1.24	7.49	1.64
SI16	106	TorC Geronimo (State) Springs	38.5					2416	678	36	150	16			210	81	1200	3			0.08	5	37	0.10		
SI16	GS20948	TorC Geronimo (State) Springs				4290	2418	2421	678	36	148	16			212	81	1210	3					37	0.43	8.82	0.12
SI16	SNM-4	TorC Geronimo (State) Springs	42.0	7.00	7.47	5120	2696.6	2696	750	58	159	14.6	1.3	4.04	212	74.9	1370	3.2	2.6	0.23			46	0.41	14.99	0.03
SI17	JUST1	Hillsboro Warm Spring	34.5				568	778	168.5	10.9	5.4	0.4			275.8	129	21.6	14.8		0.01			152	4.14		36.97
SI19	B5	Derry Warm Springs			8.23		1240	1339	323.9	18.8	47.1	15.8	0.36	0.86	366.1	376.6	151	5.9	0.94	0.34			31.3	0.36		7.98
SI19	B6	Derry Warm Springs			8.62		1228	1302	340	19.2	47.1	16	0.35	0.83	311.2	374.6	153.2	5.9	0.85	0.37			32.3	4.03		6.02
SI19	GS1510	Derry Warm Springs		7.20		1660		1234	300	18	45	15	0.31		355	290	170	7.3	0.5	0.33			33	0.02	2.62	

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	TDS (sum)	Na mg/L	K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br g/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 g/L	CHRG BAL %	COND BAL %	MASS BAL %
SI19	S76DWS-65	Derry Warm Springs	33.8		8.39	1420	823	1121	303	17	32.8	12.9	0.32		295	257	162	3.67	1.42	0.38			36	4.44	15.21	36.27
SI19	S76DWS-74	Derry Warm Springs	33.8					1311	340	17	40	15	0.4		397	309	155	6	0.21	0.6			31	2.44		
SI21	92	well	34.0	7.2		1660		1235	300	18	45	15	0.31		355	290	170	7.3	0.5	0.33		0.49	33	0.02	2.62	
SI22	83	well	31.0	8.3		1350	953	985	280	5.1	5.9	0.2			171	430	30	5.3		1.3	0.25	4.87	51	1.02	6.51	3.35
SI23	B12	warm spring			7.90		1392	1597	387.4	21.5	110.4	9.5	0.42	2.21	211.1	211.1	602.7	2.46	0.78	0.2			37.3	2.45		14.73
SI23	S76AFTER	Barney Iorio #1 Fee	33.0		7.38	5600	4931	4694	1280	7.8	375	0.46	0.91		17	2721	262	3.5	1.72	0.49			23.9	7.35	33.50	4.81
SJ1	440	well	62.0	7.8		11400		10933	3600	22	71	14		4.1	232	6400	550	3.6		1.5	0.03	0.04	35	2.92	42.06	
SJ2	441	well	57.0			4350		3626	770	8	340	5			57	2400	14	2.3			0.03	0.04	30	0.33	17.42	
SJ2	442	well	48.0	8		4000	3620	3404	760	9.1	320	4	0.27		60	2200	19	2.8		0.18		0.04	29	2.22	24.07	5.96
SJ3	446	Navajo well	61.0	8.1		1390	880	1009	250	2.5	39	0.5			166	490	17	1				0.13	43	2.00	7.01	14.67
SJ4	443	Dome Well Chaco	42.0	8.3		10000		8611	2800	15	70	8.3			570	4300	810	5.3		1.9		0.18	30	1.76	26.36	
SJ8	437	well	32.8	8.2	8.3	2720		1998	630	3.3	11	2.1	0.1	0.35	375	910	47	1.6	0.18		0.31		17	3.16	3.80	
SJ8	439	well	32.9	8.3	8.4	2800		2184	670	3.2	7.4	2.4	0.12	0.35	334	1100	49	1.6	0.06		0.25		16	0.04	6.50	
SM3	NM1	Montezuma Hot Spring	53.8		9.09		432	589	180.5	5.9	4.8	0.1	0.44	0.03	69.5	80.7	153.1	20.7	0.58	0.47			72.5	0.48		36.42
SM3	NM2	Montezuma Hot Spring	48.0		9.10		452	566	180.5	5.9	3.6	0.1			72	79.7	151	0.67		0.5			72.5	6.89		25.33
SM3	NM3	Montezuma Hot Spring	34.3		8.16		464	606	173.8	5.9	5.8	0.2			120.8	80.7	148.9	0.64		0.56			69	0.77		30.67
SM3	NM4	Montezuma Hot Spring	53.0		9.01		460	578	185.3	5.9	3.6	0.1			78.1	80.7	152.1	0.66		0.7			71	7.10		25.69
SM3	NM5	Montezuma Hot Spring	58.5		9.03		448	579	186.2	5.9	3.2	0.1	0.44	0.02	73.2	78.8	153.9	0.67	0.8	0.67			75	7.99		29.22
SM3	NM6	Montezuma Hot Spring	35.6		9.10		400	572	184.1	5.9	3.2	0.1			73.2	81.6	151	0.67		0.5			72	7.30		43.07
SO1	CH823-66	core hole	42.2		7.70	3460		1968	626	38	68	2.1			101	163	945	1.1		0.62			23	0.01	8.18	
SO2	166	warm well	36.0	8.3		430		356	82	1.7	8.4	1.5			124	50	24	3.2		0.14	0.2	7.09	54	2.90	3.42	
SO3	126	Welty Salty Well	35.0	7.5		2100	1440	1503	290	29	160	11			120	580	280	3.6		0.19	0.18	0.09	29	0.26	5.93	4.38
SO5	127	warm well	33.0	7.4		4600		2984	810	31	120	41			410	560	980	1		0.88	1.3	4.87	24	0.75	1.33	
SO6	163	Blue Canyon Well	31.8	8.1		380		337	56	3	21	4			170	39	13	0.6		0.08	0.05	1.3	29	1.36	2.36	
SO6	BLUE12-74	Blue Canyon Well			7.40			342	68	2.5	16	4.3	0.08		167	40	16	0.8	0.54				27	1.40		
SO6	GS-BLUE	Blue Canyon Well	32.2		7.60	375		324	56	3	20	4.6			163	36	14						27	0.95	3.71	
SO6	GS54325	Blue Canyon Well	32.2		8.10	380		331	56	2.8	21	4			166	39	13	0.6		0.08			29	0.59	2.22	
SO7	140	Socorro Gallery Spring	32.0	7.8		348	224	251		2.8	18	3.9			154	28	15	0.6				1.2	27	46.80	62.91	11.83
SO7	148	Socorro Gallery Spring	30.0	7.8		348	224	297	52	2.8	18	3.9			150	28	15	0.6					27	0.80	2.09	32.72
SO7	154	Socorro Gallery Spring	30.5	8.4				243	53	3	18	4			130		16	0.5		0.07	0.13		18	16.10		
SO7	GS110-64	Socorro Gallery Spring			7.80	356	236	317	52	3	18	4.6			164	31	13	0.6					31	1.58	1.55	34.41
SO7	JONES04	Socorro Gallery Spring						345	27	56	22	3			114	79	16						28	0.17		
SO7	SCTTBRK	Socorro Gallery Spring			7.00	348	224	301	52	2.8	18	3.9			154	28	15	0.6					27	0.13	2.09	34.51
SO8	133	Socorro/Sedilla Gallery Spring	30.0	7.9		352	237	315	54	3	20	3.2			160	31	12	0.6		0.08	0.07		31	0.67	4.74	32.89
SO8	137	Socorro/Sedilla Gallery Spring	30.5	7.9		340		288	51	3.3	17	4.4			150	22	15			0.12			25	2.53	3.33	
SO8	138	Socorro/Sedilla Gallery Spring	32.0	7.9		352		320	54	3	20	3.2			164	31	12	0.6		0.08	0.07	1	31	0.22	4.74	
SO8	B13	Socorro/Sedilla Gallery Spring	34.0		8.48		284	331	56.1	3.1	17.2	4.3	0.06	0.35	162.3	50	10.3	2.02	0.28	0.09			25.3	4.50		16.69
SO8	GS54324	Socorro/Sedilla Gallery Spring	32.2		7.90	352		319	54	3	20	3.2			164	31	12	0.6		0.08			31	0.22	4.74	
SO8	SNM-21	Socorro/Sedilla Gallery Spring	32.0	6.50	7.73	338	319.6	318	54.3	2.4	18.4	3.9	0.06	0.38	170	29.9	11.7	0.61					26	1.23	8.87	0.61
SO9	B28	well	30.0		7.84		192	239	24.1	0.8	23.4	1.7			108.5	26.4	1.4	2.7					50.1	2.73		24.54
SO11	B25	Monticello Box Warm Spring	29.0		8.10		516	595	137.7	5.5	44.2	1.7			124.4	107.5	150.1	0.25		0.02			23.6	0.29		15.30
SO12	B17	Monticello Box Warm Spring	28.0		8.24		468	538	125.5	5.1	34.9	1.3	0.11	0.28	131.8	96.1	104.2	3.1	0.23	0.09			35.3	1.32		14.96
SO13	LUC-17	artesian well	26.0	6.82		4000		3770	475	10.3	450	85.7	0.94	8.04	475	2070	145	2.1		1.03	31.7		15	4.10	26.87	
SO14	LUC-19	Field Artesian Well	25.0	6.30		3700		3652	214	22	624	93.1	0.77	9.33	376	2080	211	2.4		0.78	4.7		14	6.27	32.41	
SO15	LUC-25	Ojo Saladito Spring	24.0	6.82		12000		7413	1990	46	355	123	1.3	7.17	740	1170	2960	2	1.6	1.69	0.11	3.2	12	1.78	3.40	
SP16	B14	Cook Spring			8.33		348	378	68.5	3.1	16.4	4.3	0.08	0.39	181.8	69.2	12.1	0.69	0.37	0.09			21.3	6.09		8.71
TS1	NM31	Hondo Hot Spring	40.6		8.14		584	652	149.2	12.5	22.8	5.2	0.37	0.12	196.5	137.4	57.1	2.49	0.75	0.23			67	3.68		11.59
TS2	457	Mamby Hot Spring	38.0	9		736	504	585	140	9.8	13	3.6		0.4	160	140	55	3.1		0.29			60	0.29	0.89	16.11
TS2	458	Mamby Hot Spring	34.0	6.9		794		624	130	9.2	27	5.7	0.29		202	130	56	3.8	0.5	0.27	0.04	1.51	58	0.36	2.42	
TS2	459	Mamby Hot Spring	38.0	8.4		736	491	585	140	10	13	3.6			160	140	55	3.1		0.29			60	0.27	0.94	19.14
TS2	GS15113	Mamby Hot Spring			6.90	794		623	130	9.2	27	5.7	0.29		202	130	56	3.8	0.5	0.27			58	0.36	2.42	
TS2	NM29	Mamby Hot Spring	38.3		7.36		552	622	128	8.6	27.4	5.1	0.35	0.13	217.2	121	52.1	2.74		0.29			59.5	0.42		12.76
TS2	NM30	Mamby Hot Spring	32.8		7.43		396	454	72.4	6.6	28.8	5.5	0.19	0.15	192.8	60.5	24.8	1.64	0.57	0.22			60	0.25		14.69

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	TDS (sum)	Na mg/L	K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br g/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 g/L	CHRG BAL %	COND BAL %	MASS BAL %
TS2	S76MAM2	Mamby Hot Spring	37.8		8.60	729	491	581	138	9.8	13	3.6	0.17		160	138	55	3.1		0.29			60	0.09	0.92	18.32
TS2	S76MAM3	Mamby Hot Spring	34.4	6.90				646	156	8.2	29	4.6			207	139	45	3.6	0.12				53	6.48		
TS3	460	warm spring	37.0	8		760		660	145	11	21	4.6	0.27		200	150	58	2.9		0.25			67	0.84	5.97	
TS4	451	Rancho Del Rio Grande Well	32.0	7.8		786		531	150	4.6	11	1.2	0.25		79	120	92	18	0.7	0.5	0.02		54	0.13	6.79	
TS5	NM22	Ponce de Leon Hot Spring	34.4		8.56		512	589	160.2	4.3	10	0.6	0.31	0.05	112.3	144.1	89	12.6	0.56	0.55			54.5	2.22		15.05
TS5	S76SITE6	Ponce de Leon Hot Spring	34.0		7.20			561	164	3.8	11	0.5	0.36		104	118	96	12.5	0.32	0.45			50	2.22		
VA2	172	well	32.5	9		625	468	572	150	2.4	4.3	0.6			280	66	8	1.6		0.54	0.21	0.09	58	4.40	9.60	22.17

APPENDIX 3

TABLES OF PARTIAL CHEMICAL ANALYSES

NOTES:

SITE ID	geothermal site number
SAMPLE	cited or assigned sample number or designation (see Appendix 4 for dates and data source
DATE	month/day/yr that sample was taken or reported
NAME	well or spring name
TEMP	temperature °C
CHEMISTRY	units as shown
mg/L	milligrams per liter
uS/cm	microsiemens per centimeter
TDS	analytical total dissolved solids
Na+K	many older analyses report total sodium and potassium

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	Na mg/L	K mg/L	Na+K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br mg/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 mg/L
BE1	219	well	40.5			423							0.05							0.26			
BE2	217	well	34.5			402							0.05							0.23			
BE2	JIREC-2	West Mesa #1	32.2				348	114	1		2	1						0.96					23
BE3	220	well	33	7.9	8.2	1160		250	8.1		22	5.1				270	100	0.9		0.43	0.099		48
BE3	221	well	32	7.8	7.9	1250		240	7.4		22	5.2				220	100	0.8			0.5	0.8	49
BE3	222	well	30.5	7.6	8.1	1125		230	6.2		21	4.5				240	91	0.8			0.083		25
BE5	GJIR988	West Mesa #4	32.1					117	0.8		1.8	0.1						0.83					38.3
BE5	JIREC-4	West Mesa #4	31.7				356	37	0.2		4.7	1						0.96					
BE6	211	well	32	8.9		520		120	1.9		6.3	0.8				130	21	0.9			0.03	7.09	46
BE7	JIREC-1	Don #1	31.4				420	143	2		3.2	1						1.55					32
BE8	212	well	31	9.1		495	332				1.1	0.6			150	69	8.7	1			0.02	6.4	42
BE9	JIREC-3	West Mesa #2	30.6				330	102	2		4	1						1.1					36
BE11	223	well	30	8.7		660												1.8		0.38	0.06	3.23	
BE11	224	well	30	8.6		657												2.2		0.36	0.02	2.97	
BE12	225	well	30	8.8		456												1.2		0.26	0.01	11.1	
BE13	227	College #2	30	8.5		440		100	1.4		2.5	0.2				62	6.9	1			0.03	10.6	30
CA2	120	hot spring	60.6	7.8		767	505				16	0.5			128	79	107	9.5				0.4	81
CA3	GS22690	Lower Frisco Hot Spring				1930									130	45	512	1.6					85
CA3	GS31052	Lower Frisco Hot Spring	35.22	7.3		1200		200	0.2				0.31		135		310		0.4	0.2			73
CA3	GS38864	Lower Frisco Hot Spring			7.6	1660		280	16						132	41	134	1.8		0.1			76
CA3	GS42605	Lower Frisco Hot Spring	46.11		7.8	1780	1020	289			49	40			127		460						
CA3	LFHS66-1	Lower Frisco Hot Spring	37.39					193	17		55	9	0.24										
CA3	LFHS66-11	Lower Frisco Hot Spring	45.56					350	23		103	8	0.59										
CA3	LFHS66-3B	Lower Frisco Hot Spring	39.56					215	16		50	7	0.39										
CA3	LFHS66-4	Lower Frisco Hot Spring	41.22					275	19		58	12	0.46										
CA3	LFHS66-7	Lower Frisco Hot Spring	45.11					265	23		100	10	0.5										
CA3	LFHS66-8	Lower Frisco Hot Spring	46.94					300	19		65	6.4	0.54										
CA3	LFHS66-9	Lower Frisco Hot Spring	49.44		8.01	1940		307	22		65	5.7	0.59		88			1.8		0.078			93
CA3	NB82-34	Lower Frisco Hot Spring	49	7.6				296	17		51		0.46										80
CA5	121	Lower Frisco Hot Spring	43	7.6		1660		280	16						132	41	434	1.8		0.001		1.3	76
CA7	129	Upper Frisco Hot Spring	36.5	9.7		284		66	0.5						57	6.6	5	1		0.04		0.6	58
CA7	GS38851	Upper Frisco Hot Spring	36.67		9.7	284		66	0.5						57	6.6	5	1		0.04			58
CA7	NB82-35	Upper Frisco Hot Spring	39	8.1				71	0.24		0.8		0.01										49
CA7	UFHS2-66	Upper Frisco Hot Spring	36.67		9.15	242	223	69	0.15		3	0.1	0.1		97		12	2	0.76	0.037			40
CA9	122	Lower Frisco Hot Spring	35	7.3		1200		200	12				0.31		135		310		0.4	0.2			73
CA10	168	Pueblo Windmill	33.8				950	170	13		130	29				310	68	3.4		0.36	1.6		14
CA10	169	Pueblo Windmill	34	6.7	7.2	1600		150	13		150	31				280	68			0.28	1.3		15
CA10	MYERS1	Pueblo Windmill	34		7.2	1600		150	13		150	31				280	68						
CA11	FCS2-66	Frieborn Canyon Hot Spring	33.33		8.44	150	151	39	0.2		7	0.17			37		7.4	1.3		0.072			31
CA12	NNS-BOIL	hot spring	32.8					39	1		15	0.93	0.1										
CA12	NNS-CAS	hot spring	34.4					39	1		16.4	0.84	0.1										
CA17	MYERS2	well	28		7.3	1440		88	9.7		180	41				280	63	1					
CA17	MYERS3	well	29		7	1300		86	9.3		180	40				290	63	0.9					
CA19	MGSEEP	warm seep	27.2					43	1.1		14.1	0.73	0.05										
CA21	GS36104	Gila Middle Fork Pool HS	52.2		8.1	422									108	22	59						
CA21	NB82-33	Gila Middle Fork Pool HS	65	7.6				164	3.9		17		0.45										73
CB3	180	Acoma #1 Well	41.5	6.9	7.3	1300		88	7.4		140	39				290	72	0.7		0.28	0.72		18
CB3	181	Acoma #1 Well	41.7	7	7	1350		91	7.1		140	40				290	73	0.7		0.27	0.32		18
CB3	183	Acoma #1 Well	40.5		7.3	1270		91	7.3		140	40				300	70	0.6		0.25	0.49		18

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	Na mg/L	K mg/L	Na+K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br mg/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 mg/L
CB4	170	well	41	6.18	7.06	2800	2320	220	16		350	77	0.73	4.7		940	210	1.2	0.55	0.61	2.3		21
CB5	177	well	38.1	6.45	6.87	3300	3180	110	13		670	110	0.34	6.4		2000	110	1.6	0.27	0.43	3.8		16
CB7	184	well	34.5	6.42	7.44	5500	5360	810	35		540	130	1.1	7.8		3200	250	2.9	0.34	1.1	5.5		15
CB8	171	well	34	6.44	6.77	8000	6280	1600	75		580	110	6.1	6.3		1400	1600	0.8	4.2	5.5	0.04		16
CB10	179	well	33.1	6.65	7.22	4450	3910	610	48		450	100	0.74	8.6		2400	180	3.4	0.34	1.2	10		15
CB12	226	well	32	8		550	340	12	2		74	25			250	84	7.5	0.4				0.62	
CV1	95	well	33	7.1	7.9	900	651	16	1.2		120	45				270	12	1.5		0.03	0.68	0.53	12
DA1	GROSS3	Chaffee 55-25	68					350.8	53.2		96.9	33											51.5
DA1	GROSS4	Chaffee 55-25	68					383.5	52		156.7	33.5											54.5
DA3	CLARYST	Clary and Ruther State 1	69.4																	0.15			
DA4	GROSS1	Chaffee 35-25	68					391.5	54.7		129.2	31.2											56.5
DA5	280LC2	LC-2	52.5		7.41	2530	2004	376.3	5.5		161.9	0.7			543	294.9	346.7				7.13	1.28	
DA5	GROSS8	LC-2	68					214.5	6.2		10.2	1											24.3
DA6	EXXONOLE	Exxon Beard Ole Federal	65.5																				
DA7	GROSS2	Chaffee 12-24	65					392.4	58.3		107.4	28											50.9
DA8	12581PG3	NMSU PG-3	63.3				1981	488	52		138	17.4					546				0.2		
DA8	1980PG3	NMSU PG-3			6.25	3130		488	52		141	18.8			610	240	546				5	0.02	73
DA8	GROSS6	NMSU PG-3	63					488	52		141	18.8											73
DA8	NDPG3	NMSU PG-3					1748								596.7	343		2.28			0.15		
DA9	BTHSE	Radium Hot Springs Bailey's bathhouse			7.7		874	1090			136	68.5				259	1890	2.6					
DA9	NMPHL316	Radium Hot Springs Bailey's bathhouse			7.2	6100		1100	163		131	15			341	269	1677	5.3					
DA10	BINNS1	Certified Sand Well	58.8																				
DA12	69	Radium Hot Springs Hotel Well #2	85.5	6.9		6060				1200	140	23			430	260	1700	4.6				2	71
DA12	70	Radium Hot Springs Hotel Well #2	52.5	6.7		6100		1100	170				1.1		444		1600		2.8	0.78			74
DA12	71	Radium Hot Springs Hotel Well #2	53	8.2		6210									420	263	1630						
DA12	GS10160	Radium Hot Springs Hotel Well #2	85.56		6.9	6060					142	23			427	265	1660	4.6					71
DA12	GS31053	Radium Hot Springs Hotel Well #2		6.7		6100		1100	170				1.1		444		1600		2.8	0.78			74
DA12	GS35979	Radium Hot Springs Hotel Well #2			8.2	6210									420	263	1630						
DA12	GS38867	Radium Hot Springs Hotel Well #2			7.2	5540		1100	155						424	277	1660	5.2		0.32			66
DA12	NB82-21	Radium Hot Springs Hotel Well #2	53	6.8				1120	173				1.2										64
DA12	S76RSNMS	Radium Hot Springs Hotel Well #2					3460				130	13	4		436	806	1610	5.3					70
DA15	4681PG2	NMSU PG-2	47.7				2070	450	51		188	21			508.9	226.2	610						
DA15	NB82-23	NMSU PG-2	59	7.1				450	55		105		0.48										71
DA16	11	Pure Oil Federal "H" 1	45	7.3		7380		1400							930	860	1600						
DA16	GS48858	Pure Oil Federal "H" 1	45			7380																	
DA20	17	well	42.5	8.6	7.9	10900	6990	2100	19		290	10				1700	2700	2.6					63
DA20	18	well	35	8.7	8.8	2100	1350	370	13		20	12				180	400	0.9			0.29		52
DA20	19	well	31.5	8.6	8.7	1580	955	280	6.6		25	16				160	200	0.9					67
DA22	46	Tellyer Well	36.5	7.5		1020		180			66	13			319	140	170						
DA22	TELLYER1	Tellyer Well	36.5		7.5	1020		180			66	13			319		170				2		
DA25	S76NMS112	well	35.56		7.5	1800	1020	375	15						222	168	401						
DA26	2GD1	NMSU GD-1					1550	280	12		185	16				185	432						12
DA26	3GD1	NMSU GD-1					1200	288	39							292	375						
DA26	4GD1	NMSU GD-1						184	22		57	7.2					137				0.26		
DA26	5GD1	NMSU GD-1									60	7.5									9.8		
DA26	NB82XX	NMSU GD-1	30					240	26		680		0.26										50
DA27	S76LASWH	White well	34.5		8.15	1460	1000	275	32		17	12.3	0.25		242		580	2.7	1.11	0.35			49
DA33	GS28683	well	32.22		8.6	4640	2930				110	1.1			27	927	910						19
DA34	43	well	32	8.7		2320					24	1.9			33	590	320	5.9			0.03	1.3	31

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	Na mg/L	K mg/L	Na+K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br mg/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 mg/L
DA36	S76BERING	Berino Well			7.9	1080	740	202.4	0.58		30				367.5	155	68.1	1.25		0.31			
DA40	21	well	31	7.8		804					20	0.5			160	140	79						
DA41	2	well	31	7.8	7.8	5700	3780	1200	9.1		84	24				1000	1200	1			0.03		34
DA44	48	SC2	30.5			270																	
DA45	12	well	30.5	8	7.4	2200	1300	390	3.4		76	0.6				300	460	0.8			0.03		45
DA45	14	well	30.5	8.9	8.6	1000	656	210	2.8		9.7	1.1				190	44	2.2			0.021		42
DA46	52	T-18	30	7.4	7.9	686		110	3.2		32	3.2				150	43	4.5		0.1	0.036	0.49	26
DA46	53	T-18	30		7.9	710																	
DA50	HUNTWATW	Radium Springs College Ranch Windmill			7.69			250.4	6.6		75.4	2.7			97.6	616.9							
DA52	21H0600	Radium Springs Masson 21			8			1100	166		129	13	1.19		444	283	1550	5.6		0.82	0.32		
DA52	21H0900	Radium Springs Masson 21			8.1			1025	164		128	13	1.19		441	265	1600	5.5		0.77	0.14		
DA52	21H1800	Radium Springs Masson 21			8			1050	162		128	13	1.18		444	248	1610	5.7		0.78	0.34		
DA52	21TRUN	Radium Springs Masson 21			7.9			1075	161		126	13	1.2		454	262	1710	6.2		0.8	0.27		
DA53	89MASS22	Radium Springs Masson 22															1683						
DA53	SWL1295	Radium Springs Masson 22															1720						
DA54	87MASS23	Radium Springs Masson 23															1764.4						
DA54	89MASS23	Radium Springs Masson 23															1669						
DA54	SWL1296	Radium Springs Masson 23															1764						
DA54	SWL5478	Radium Springs Masson 23						1250.2	144.7		128.4	12.9			454	266.9	1823						
DA55	311801	Radium Springs Masson 26			6.66			863	163		94.6	15.4					1833	4.6		0.83	0.036		
DA56	1RYAN7235	Radium Springs Ryan 72-35					2584	690	115		117	14	0.68		286	239		4.64		0.61			50.3
DA57	GROSS7	NMSU GD-2	42					386.2	34.8		114.5	36.6											36
DA58	NMSUOW1	NMSU OW-1					1765	424			110						466	1.48			0.81		
DA59	GROSS5	NMSU PG-1	61					480.2	57.9		155.7	29.7											92
DA59	N10PG1	NMSU PG-1			6.45	3720	2044	500.7	54.1		232.7	43.2			458.8	308	847.1	2.54			7.71		
DA59	N4PG1	NMSU PG-1			6.17	6590	4220	627.2	80.5		538.4	108			134.2	645	1714.8	3.51			81.6	0.04	
DA59	N7PG1	NMSU PG-1			6.6	4510	2868	536.3	61.1		325.9	60.4			341.7	402.5	1123.2	2.7			13.03		
DA59	N8PG1	NMSU PG-1			6.64	4050	2416	504.6	55.2		267.6	49.4			433.2	292.5	963	2.41			9.31		
DA59	NB82-22	NMSU PG-1	61	6.8				386	54		82		0.51										73
DA59	PG1PART1	NMSU PG-1					1936	484	54		116	19											70
DA59	PG1PART2	NMSU PG-1					1904	488				19											68
DA59	PG1PART3	NMSU PG-1			6.3	3110		488	54		143	18.6			620	250	584	1.3			2.8	0.03	
DA60	BAIL370	NMSU PG-4			8.47	2450	1636	389	35		107	25.1			593	250	341	1.57			0.83	0.54	
DA60	DRILL13	NMSU PG-4		6.55	6.72	2800	1818	428	74		132	32.1			487	251	570	1.78			0.22		
DA60	DST1PG4	NMSU PG-4	63		7.7	2720	1695	430.9	59		102.9	31.4			462.5	232.4	528.3	2			0.05	0.05	
DA60	DST4PG4	NMSU PG-4	63		7.56	2790	1854	449.1	48.8		107.4	32.6			489.4	289.2	528.3	2.08				0.03	
DA60	IWEINC1	NMSU PG-4			6.6	2520		280.7			152	57.1			442	100	533				0.13		22.9
DA60	PT0PG4	NMSU PG-4			6.64		1770	428	49.2		158.7	31.2			603	248	541	2.16			1.17		
ED1	81	Clayton Well	31			3030											210						
ED1	82	Clayton Well	31			3030											210						
GR1	GS15106	Mimbres Hot Springs #3	61.11	8.3		450		94	1.3		3.3	0.6	0.1		107	65	17	18		0.05			56
GR1	MIML3-12-65	Mimbres Hot Springs #3	62.28		8.56	430	221	138	0.96		3		0.12		85		22	3.17	0.92	2.04			60
GR1	MIML3-8-65	Mimbres Hot Springs #3			8.73	422	285	95	0.9		2.25		0.09		89		20	3.05	0.12				51
GR5	GHS0920	Gila Spring Hot Spring #14	66	7.75		640									109								65
GR6	NB82-32	Gila HS northern artesian well	65	7.6				148	3.7		10		0.24										71
GR7	115	Gila Hot Springs	64	8.2		653	369				11	0.2			110	40	100	12		0.07	0.04	0.5	33
GR7	117	Gila Hot Springs	61	7.5		620		120	3.5				0.22		101		100		0.2	0.1			72
GR7	GHS-66	Gila Hot Springs	41.5		8.10	560	496	127	3.6		11		0.27		96		104	3.4	0.18	0.19			74
GR7	GHS-74	Gila Hot Springs	63.89	7.5		620		120	3.5				0.22		101				0.2	0.1			72

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	Na mg/L	K mg/L	Na+K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br mg/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 mg/L
GR7	GS36105	Gila Hot Springs	63.9		8.20	653	369				11	0.2			109	40	104	12		0.07			33
GR7	NB82-31	Gila Hot Springs	59	7.4				135	3.4		13		0.26										68
GR9	NB82-30	Gila HS middle artesian well	62	7.6				142	3.5		57		0.26										71
GR10	GHS0711	Gila Hot Springs Campbell #2 Well	61																				
GR10	GHS14006	Gila Hot Springs Campbell #2 Well	62	7.72		550									99								63
GR10	GHS1445	Gila Hot Springs Campbell #2 Well	61	7.97		620									102								66
GR10	GHS1610	Gila Hot Springs Campbell #2 Well	62	7.97		590									102								68
GR10	GHS2252	Gila Hot Springs Campbell #2 Well	60																				
GR11	MIM-L25	Mimbres Hot Springs #25	59		8.31			113	1.2		2.5		0.12		89		19	3.1	0.47	0.15			56
GR12	MIM-L28	Mimbres Hot Springs #28	58.06			452	308				12	2.6			77	65	17	16					53
GR12	MIM-L32	Mimbres Hot Springs #28	45.33		8.35			112	0.95		3		0.13		65		21	3.2	0.28				45
GR13	GHS0929	Gila Spring Hot Spring #41	58	7.85		560									104								56
GR14	85	Mimbres Hot Springs	58			450					12	2.6			75		16	16					53
GR14	NB82-25	Mimbres Hot Springs	58	7.9				111	1.3		2.4		0.13										55
GR15	GS19645	Mimbres Hot Springs #8	57.5			450									75		16	18					
GR17	MIM-L21	Mimbres Hot Springs #21	55		8.34			81	1.1		1				85		20	3.3	0.31	1.11			46
GR18	MIM-L23	Mimbres Hot Springs #23	54.44					127	2.7		10	0.2	0.15										
GR19	75	Faywood Hot Springs	52			560																	
GR19	FAY-S76-2	Faywood Hot Springs			8.7	560	384	94	8		36.9	6.9	0.17		214		22	3.3	1.97	0.15			67
GR19	GS19824	Faywood Hot Springs				606									282	50	18	7					
GR19	GS27917	Faywood Hot Springs	53.33			600					37	8.5			282		17						
GR19	NB82-26	Faywood Hot Springs	55	8				98	7.7		47		0.15										40
GR20	GS36104	Gila Lyons Lodge swimming pool HS			8.1	432									108	22	59						
GR20	SPS-LL66	Gila Lyons Lodge swimming pool HS	51.7		8.35	390	335	105	2		10	0.1	0.13		101		67	3.4	0.67	1.72			58
GR21	114	well	52	8.1		432									108	22	59						
GR22	WFALLHS	Gila River Waterfall HS	44.72		8.31	680	518	150	3.9		18	0.35	0.25		112			2.9	0.37	0.28			70
GR23	EFGR-SUM	Gila East Fork no name spring	41.39		8.45	560	367	111	1.7		11	0.2	0.23		77			3.6	0.23	0.33			74
GR26	EFS-LL66	Gila Lyons Lodge East Fork Hot Springs	35.56		8.09	500	358	105	3.8		14	0.65	0.2		85		91	3.2	0.11	0.083			49
GR26	WSC-LL66	Gila Lyons Lodge HS composite			8.25	580	407	126	1.3		10		0.26		83			3.5	0.28	3.4			67
GR26	WSD-LL66	Gila Lyons Lodge HS downstream						128	1.7		9	0.1	0.21										
GR26	WSM-LL66	Gila Lyons Lodge HS midpoint	45.56					119	1.7		10.1	0.1	0.21										
GR26	WSU-LL66	Gila Lyons Lodge HS upstream						117	1.7		20	0.1	0.21										
GR27	KWS-W3-1	Kennecott Warm Spring Well #3	34.55		8.29	350	281	40	5.2		37	13			205		14	2.2	1.5	0.23			50
GR27	KWS-W3-2	Kennecott Warm Spring Well #3			8.00	482	320	33.4	4.3	46	10.9			185.4		10.9	2						
GR29	NB82-27	Kennecott Warm Spring Well #3	34	6.7				51	4.6		53		0.07										50
GR30	94	Cliff Warm Well	33.5	9		665	435				3	0.1			130	100	18	21				0.1	48
GR30	GS50019	Cliff Warm Well	33.3		9.00	665	435				3	0.1			130	103	18	21					48.00
GR30	S76CLIFF	Cliff Warm Well	35.0		8.50	610	439	153	1		2		0.2		177		20	3.4	0.53	0.75			44.4
GR34	87	well	32			754					86	19			240	190	11	1.6			0.03	0.8	18
GR35	84	well	31.1	7.1		421	272	34			38	12			202	31	11	1.2				3.4	35
GR36	GS29750	Spring Canyon Warm Spring	28.89		7.9	472	311				18	3			232	38	8.5	6					32
GR39	GS29790	Riverside Well	30		7.9	551	363				7.5	1			241	51	16	8					48
GR39	NB82-28	Riverside Well	38	6.8				138	1.8		21		0.14										39
GR43	T72P193	Cliff Warm Spring	25		8.7	256									123		5.2						
GR44	ATWS-W4-1	Apache Tejo Warms Springs Well #4			8.43	520	370	48	4.6		34	17	0.1		216		19	2.7	0.72	0.84			36
GR44	ATWS-W4-2	Apache Tejo Warms Springs Well #4			7.9	634	868	44.9	3.5		72	10.4			268.9	70	16.3	1.9		1			
GR45	ATWS-W5	Apache Tejo Warms Springs Well #5						47	4.6		44	17											
HD2	35	Lightning Dock hot well	98			1540					19	1.2			170	460	78	11		0.45		0.9	140
HD3	NB82-40	Lightning Dock hot well	96	6.8				299	22		29		0.74										106

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	Na mg/L	K mg/L	Na+K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br mg/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 mg/L
HD6	37	Lightning Dock hot well	94	7.6		1510					22	1.5			160	460	80	13				0.2	140
HD10	S76LD-2	Lightning Dock hot well			8.25		1055									480	100						
HD10	S76LD-3	Lightning Dock hot well			7.1	1577	1112	300	25		28	11			198	463	102						
HD10	S76LD-4	Lightning Dock hot well			8.25	2200	1761	370	32		70	4.9	0.9				113		0.37	0.37			106
HD11	S76P15-1	warm well	35																				
HD11	S76P15-2	warm well	31.1		7.8	1590									431		102						
HD11	S76P15-3	warm well	31.39					91	2.1		265	6.9											
HD13	1	well	32	7.4		1020									340		55						
HD14	63	Blowing Well	31	7.8		1590									430		100						
HD15	68	well	30	7.9	7.7	460		40	2.4		31	10				12	17	0.5		0.05	0.023	8.41	38
HD17	S76LD-11	Lightning Dock hot well			7.6	1510	1110				22	1.5			157	459	80	13					135
HD18	S76LD-13	Lightning Dock hot well						347	24		20	0.1	0.8										
HD19	S76LD-14	Lightning Dock hot well			7.8	835	620	150	8		28	11			228	169	42						
HD20	S76LD-7A	Lightning Dock hot well				1650	1020				24	1.5			146	509	85						
HD20	S76LD-7B	Lightning Dock hot well				1540	1130				19	1.2			181	460	78	11		0.45			141
HD20	S76LD-8	Lightning Dock hot well				1600									163		81						
HD20	S76LD-9	Lightning Dock hot well			8.2	1600									163		82						
LU1	42	Smyer Well	39	9.6		439				100	4	0.6			120	34	9	1.7				3.2	73
LU1	S76-24SR7W	Smyer Well	38.89		9.6	439					4	0.6			0.23	34	9	1.7					73
LU3	41	well	34.5			515				100	11	2			150	66	30	3.2				3	
LU4	6	well	33			1620					5.2	3.6			420	230	130	9				1.6	66
LU6	40	well	31.5			824				180	6.5	3.5			210	77	53	18				1.9	95
LU9	7	well	31			1850					4	2.3			390	240	200	11				1.6	66
LU9	8	well	30.5	8.6		1860	1130				5.2	0.2			438	241	204	13		0.48		0.2	48
LU13	50	Little Ed Well	30	7.7	8.3	500		68	8.3		25	7.3				35	24	1.7			0.81	26.1	79
LU15	5	well	30	8	8.3	1100		230	7.3		8	2.2				170	46	7				1.86	41
MK1	234	Fort Wingate Well/Santa Fe 'Spring'	55			730									325		7						
MK1	GS64891	Fort Wingate Well/Santa Fe 'Spring'	61.11		7.3	5520		1100	21		264	59			110	2990	63	0.4		1.1			
MK2	229	well	46			3110																	
MK4	431	well	42.2	8.2		1800															0.16		
MK5	231	well	40.2	6.49	6.9	2850	2330	370	14		260	79	1	4.6		1000	240	0.4	0.52	1.1	12		22
MK6	242	well	39	8.5		890	565	190			11	2.6			240	187	28	0.5			0.09	0.1	20
MK7	298	Navajo well	37.5	8.9		703									200	130	2	3.2				0.8	
MK10	264	NTUA #2 Well	36	8.5	8.6	500		120	0.9		2.4	0.1				58	4.4	0.2			0.02	0.09	18
MK11	261	well	35.5	8.1	8.4	450		110	1.1		2.4	0.2				55	3.4	0.2			0.02	0.49	18
MK12	297	Pure Oil Navajo #1 (Tohachi Well)	37	8.4	9.2	655		140	0.6		1.5	0.05				130	5.8	0.4			0.009		22
MK12	GS52896	Pure Oil Navajo #1 (Tohachi Well)	35.56		8.3	606					5.2				212	122	5.2	0.3					22
MK13	S76NAVAJO	Pure Oil Navajo #3 Well	35																				
MK14	265	Mobil Well Crown Point	33.5	8.4	8.9	415		100	1		2.5	0.2				39	3.3	0.2		0.06	0.11		18
MK15	420	well	33.5	8.6		951									330	240	5.7						
MK16	262	well	33	7.9	8.3	450		110	1.5		4.7	1.2				62	3.5	0.4			0.05	0.53	19
MK18	421	well	35.5			2910											79						
MK18	423	well	32.5	8.55		2900															0.05		
MK19	235	well	32								110	55			210	560	5						
MK22	202	well	30.5	7.9		1140	730	93	10		120	26			220	400	18			0.5	0.01	0.25	
MK24	260	well	30	8	8.2	675		150	2.1		12	5.1				140	3.2	0.6			0.06	0.53	19
OT1	45N9	N-9 Well	71.1				12500				542	108				820	6590					80	58
OT2	57N11	N-11 Well	61.1		6.8	14500	8980			2530	403	80			240	859	4060	4.7					53
OT3	26	M-11	33.5	7.7		1980	1040				31	5.5			120	85	500	2.4				1.8	14

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	Na mg/L	K mg/L	Na+K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br mg/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 mg/L
OT3	56M11A	M-11(DST 465-504 ft) Well	50.0		8.00	2050	1120			386	29	4.7			86	133	505	3.6				1.6	18
OT3	56M11B	M-11 Well	hot		7.7	2030	1170			401	9.9	9.5			223	99	445	1.6				1.2	44
OT4	64	FLOUR-1 Well	33.5		7.4	18000		3900	18		570	210				4500	4100	1.2					29
OT4	65	FLOUR-1 Well	30		7.5	18400		3800	17		580	220	0.46	11		4500		1.2		2.3	0.024		29
OT5	S76GART1	Garton Well					7580				759	288				3033	3450						50
OT5	S76GART2	Garton Well					9111				947	89				3115	2880						36
OT5	S76GART3	Garton Well			7.1	16000	10240	2050	50			1662			70	2150	4250						
OT6	OLDN8	N-8 Well	hot (?)																				
OT7	27	N-11	61	6.8		14500	9010				400	80			240	860	4100	4.7					53
RA1	GS9877	Ojo Caliente Hot Spring Soda Spring	35			3890					28	8.7			2200	168	232	16					60
RA4	NB82-4	Ojo Caliente Hot Spring	43	7.8				938	40		32		3.5										65
RA6	GS8978	Ojo Caliente HS Sodium Sulfate Spring				3890					28	8.7			2210	165	245	16		4.6			56
RA7	450	Ojo Caliente Hot Spring Iron Spring	40	6.6		390		890					3.3		207		270		1.4	1.5			
RA7	GS15115	Ojo Caliente Hot Spring Iron Spring	42.78	6.6		3900		890					3.3		2073		270		1.4	1.5			63
RA8	452	Statue Spring	36			1740					145	59			698	270	110	1.4				0.2	22
RA8	NB82-3	Statue Spring	29	7				187	16		21		0.45										21
SA9	VA-114	Jemez/GRI WC 23-4 at 4800 ft depth	214.0	6.92				2880	499		64.3	3.4	37.4	2.54						33.2			
SA10	S-6-80	Jemez/Sulphur Springs Women's Bathhouse	88.0	4.30		12800	6850	18.9	72		131	50	0.17	0.065		6400		5.2		0.2			168
SA10	VA-76	Jemez/Sulphur Springs Women's Bathhouse	89.0	<2.5																			
SA11	VA-80	Jemez/Sulphur Springs main fumarole	88.0	4.30		70	95.3	0.08								4.5							
SA13	VA-91	Jemez HS Travertine Mound Spring	72.3	6.47		4540									715	39.8	869	5.13	3.01				
SA15	VA14	Jemez/Sulphur Springs unnamed HS	63.0	2.38		5800	2490	14.6	18.7		90.8	16.2	0.05	0.22		2110	3.72	0.61					230
SA16	266	Jemez Hot Springs	52				2184				166	9			791	42	820				1.2	5	91
SA16	268	Jemez Hot Springs	31.5																				16
SA16	270	Jemez Hot Springs	72	8.7		3250											832						
SA16	274	Jemez Hot Springs	73	7.2		3700					137	4.4			750	44	855	7.1		0.006		0.4	64
SA16	NB82-8	Jemez Hot Springs	53	7.2				638	78		92		9.1										91
SA17	393	Jemez/Sulphur Springs Lemonade Spring	53	2		3760					150	73				1190	65	1			1.8	0.3	162
SA17	S-10-80	Jemez/Sulphur Springs Lemonade Spring	58.0	2.30			3220	7.7	5.6		168	42	0.14	0.06		2740	17	0.52		0.03			238
SA19	VA-147	Jemez HS Gazebo Spring		7.09		3900											922	2.4	3.9	5.18			90
SA19	VA-93	Jemez HS Gazebo Spring	46.3	6.66		4270									720	45.5	926	5.18	2.86				
SA20	245	Kaseman #2 Well (Zia Hot Well)	32				11200				400	73			1500	3700	2700				2.3		18
SA20	249	Kaseman #2 Well (Zia Hot Well)	50			15400											3100						
SA20	250	Kaseman #2 Well (Zia Hot Well)	59	6.8		15400					370	73			1480	3600	3000	2.6		6.6			27
SA20	253	Kaseman #2 Well (Zia Hot Well)	52											10						2.6	0.85		
SA20	254	Kaseman #2 Well (Zia Hot Well)	51																				7
SA20	NB82-10	Kaseman #2 Well (Zia Hot Well)	54	6.8				3700	121		341		5.7										39
SA20	VA-149	Kaseman #2 Well (Zia Hot Well)		6.81		15500									1429	3350	3020	2.89	3.5				34
SA21	VA-92	Jemez HS Buddhist Spring	43.2	6.49		3200									660	35.1	617	3.66	1.85				
SA23	279	Jemez/Soda Dam Hot Spring	46													40	1500		0.02	14			
SA23	280	Jemez/Soda Dam Hot Spring	46			6500										43	1500		0.9	13			
SA23	358	Jemez/Soda Dam Hot Spring	76	7.7		13000		3200	150		22	20	12	0.11		1200	1800	16	8.3	15	0.03	0.04	76
SA23	NB82-7	Jemez/Soda Dam Hot Spring	45	7.7				995	211		187		15										30
SA23	VA-146	Jemez/Soda Dam Hot Spring		6.95		6700									1476	35	1567	3.85	4.6				46
SA23	VA-89	Jemez/Soda Dam Hot Spring	47.0	6.45		6700									1490	35.5	1480	3.71	5.46				
SA23	VA-99	Jemez/Soda Dam Hot Spring	47.5			6900									1455	37.5	1614	3.68	6	14.1			
SA24	283	Jemez/Soda Dam Hot Springs (west spring)	46	6.8		5780											1490						
SA24	284	Jemez/Soda Dam Hot Springs (west spring)	50	7		5760											1510						
SA25	291	Jemez/Spence Hot Spring	44	7.3		283					8	2			139	17	11	0.8					71

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	Na mg/L	K mg/L	Na+K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br mg/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 mg/L
SA25	292	Jemez/Spence Hot Spring	39.5			276																	
SA25	293	Jemez/Spence Hot Spring	41			282	224	55	1.8		6	2	0.69	0.03	144	18	12	0.7	0.1	0.07			
SA25	294	Jemez/Spence Hot Spring	39.5			295									148								
SA25	NB82-6	Jemez/Spence Hot Spring	42	7.6				61	1.5		17		0.76										69
SA25	VA-105	Jemez/Spence Hot Spring	42.5			315	161								134	18.4	7.91	0.8	0.15	0.02			
SA25	VA-83	Jemez/Spence Hot Spring	41.5	7.87		275	161								135	18	7.2	0.9	0.11				
SA26	387	Jemez/Sulphur Springs Men's Bathhouse	43.5				7887				303	33				6156	54						324
SA26	389	Jemez/Sulphur Springs Men's Bathhouse	87	1.8		13800		24	31		7	10	0.07			35100	24	1.2			11.5		190
SA26	391	Jemez/Sulphur Springs Men's Bathhouse	81	1.4		17300		25	34		72	18				4500	20	0.9		0.1	76		180
SA26	392	Jemez/Sulphur Springs Men's Bathhouse	70	2				9	11		13	1				676	5						
SA26	S-7-80	Jemez/Sulphur Springs Men's Bathhouse	82.0	2.00		10300	2597	6	35		10	6.5	0.04	0.113		2500				0.1			246
SA26	VA-13	Jemez/Sulphur Springs Men's Bathhouse	78.0	2.52		4050	822	2.1	8.2		2.1	1.25	0.02	0.03		786	2.48	6.36					221
SA26	VA-75	Jemez/Sulphur Springs Men's Bathhouse	72.0	<2.5																			
SA26	VA-81	Jemez/Sulphur Springs Men's Bathhouse	73.6	2.88		1300	5.51	0.08								2.2		0.59					
SA27	238	Jemez Pueblo Indian Hot Spring	35	8		5680				1240	100	8.6			1280	286	1140	7.3		6.1		0.3	48
SA28	285	Jemez/McCauley Hot Spring	43	8.1		198					11	4			87	8	8	1.6					53
SA28	286	Jemez/McCauley Hot Spring	31.5			165																	
SA28	VA-87	Jemez/McCauley Hot Spring	31.5	7.87		190									80.5	6.6	3.2	1.31					
SA29	NB82-5	Jemez/San Antonio Hot Spring	42	7.4				23	1.8		5		0.05										80
SA30	399	Jemez/Sulphur Springs Footbath Spring	40.5	1.9		4370	1730	13			45	12				1440					92	0.7	174
SA30	S-4-80	Jemez/Sulphur Springs Footbath Spring	33.0	1.10		30200	8310	10.8	94		56	26.5	0.1	0.098		7900		10.6		0.2			214
SA31	434	Jemez/San Antonio Warm Springs	38.5	6.7		167					7	1			77	15	17	1.6					103
SA34	396	Jemez/Sulphur Springs Electric Spring	39	1.4		12700	3160	9.6	42		101	23				3820	2.5	1			81		206
SA34	S-5-80	Jemez/Sulphur Springs Electric Spring	36.0	1.50		12800	4580	8.5	66		114	23	0.06	0.14		4100		5.2					228
SA37	VA-90	Jemez/Soda Dam Hidden Warm Spring	32.0	6.20		6000									1370	48.3	1240	3.31	4.11				
SA42	NB82-9	San Ysidro Warm Spring	24	7.6				1780	81		323		5.8										18
SA42	VA-148	San Ysidro Warm Spring		6.50		10000									1961	1181	1862	4.52	4.3				20
SF1	401	Guaje #3 Well	30.5	8.1		192					13	1.4			114	3.7	3	0.4			0.02	1	52
SF2	359	Los Alamos #1B Well	30.5	7.8		743	522	170	3.3						400	46	16	2.8				2.8	
SF2	361	Los Alamos #1B Well	31.5	7.8		778		188							437		13	2.6				2.6	
SF2	367	Los Alamos #1B Well	30.5	7.9		775		180							428		15	2.7				0.9	
SF2	368	Los Alamos #1B Well	32	7.8		876		210	3.4						489	51	16	2.7				0.8	42
SF4	301	Los Alamos #6 Well	30	8.5		504					3.1	0.2			275	12	6.5	2.4				1.9	38
SF4	305	Los Alamos #6 Well	30			513									281		9	2.8				0.7	
SF4	326	Los Alamos #6 Well	30	8.6		517		124							310		7	2				1.8	
SF4	349	Los Alamos #6 Well	30	8.5		529		128							297		11	2.6				1.8	
SF4	355	Los Alamos #6 Well	30.5	8.4		635		159	1.4						372	18	7.4	2.4				1.9	41
SI1	118	TorC well	45.5			4380					150	18			210	74	1300	2.6			0.07		
SI2	NB82-19	TorC artesian well	45	7.6				864	65		148		1.3										42
SI4	112	TorC well	44.5			4400					160	17			210	73	1300	3.2			0.42		
SI5	NB82-18	TorC Sierra Grande Bath	44	7.6				853	64		152		1.3										43
SI6	GS15117	TorC Yucca Lodge well 14 ft		6.8		4500		740					1.1		213		1400		1.9	0.3			41
SI6	GS18840	TorC Yucca Lodge well 14 ft	43.33		7.2	4430					174	25			221	98	1240	2.8					39
SI6	GS27039	TorC Yucca Lodge well 14 ft				4420					156	20			220	95	1290						
SI6	GS31092	TorC Yucca Lodge well 14 ft	43.33		7.4	4450									221	91	1300						
SI6	GS33929	TorC Yucca Lodge well 14 ft	43.61		7.3	4450									216		1290						
SI6	GS38827	TorC Yucca Lodge well 14 ft	42.22		7.2	4400									228		1280						
SI6	GS38930	TorC Yucca Lodge well 14 ft	40		7.2	4460									227		1280						
SI6	GS43047	TorC Yucca Lodge well 14 ft	41.67		7.2	4450									221		1290						

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	Na mg/L	K mg/L	Na+K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br mg/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 mg/L
SI6	GS44734	TorC Yucca Lodge well 14 ft	40		7.5	4450									220	96	1300						
SI6	GS50301	TorC Yucca Lodge well 14 ft	41.94		7.2	4480									220		1310						
SI6	GS52617	TorC Yucca Lodge well 14 ft	42.22		7.2	4490									222		1300						
SI6	GS54863	TorC Yucca Lodge well 14 ft	41.67		7.8	4520									222		1280						
SI6	GS653	TorC Yucca Lodge well 14 ft	43														1285						
SI6	S76W14-65	TorC Yucca Lodge well 14 ft	40.83		8.17	4300	2621	786	65		121	15.5	1.01		111		1400	2.93	1.13	0.56			44.9
SI6	T41-YLW14	TorC Yucca Lodge well 14 ft	43.33								154	19			218	86	1290	3.2					
SI7	NB82-17	TorC Yucca Lodge	43	7.2				746	65		165		1.2										41
SI8	S76YUCCA	TorC Yucca Lodge outdoor pool	41.67					828	64		160	15.6	1.11										
SI12	111	TorC Old Government Spring	40			4480				748	158	22			225	89	1300					1	
SI12	GS684	TorC Old Government Spring				4590					168	36			217	95	1314						
SI13	107	TorC well	40			4410				760	150	19			210	76	1300	3.2				2.7	
SI15	96	TorC Ponce De Leon Spring	40			4480									220		1300						
SI15	97	TorC Ponce De Leon Spring	40			4470					160	20			220	78	1300	3.1				5.7	45
SI15	99	TorC Ponce De Leon Spring	42			4470				750	150	21			210	72	1300	1.7				3.3	42
SI15	100	TorC Ponce De Leon Spring	40			4350					150	16			210	75	1200	2.8			0.08		
SI15	102	TorC Ponce De Leon Spring	40	7.2		4460									230		1300						
SI15	103	TorC Ponce De Leon Spring	41.5	7.2		4480									220		1300						
SI15	104	TorC Ponce De Leon Spring	40	6.8		4500		740					1.1		213		1400		1.9	0.3			
SI15	105	TorC Ponce De Leon Spring	42	7.2		4400									230		1300						
SI16	GS3932	TorC Geronimo (State) Springs													224	90	1350						
SI17	NB82-24	Hillsboro Warm Spring	34	6.8				186	14		10		0.28										135
SI19	124	Sun Oil Test Well	34	7.2		2600									136	1660	22						
SI20	88	Derry Warm Springs	34			1660					48	20			372	306	141	6				1.3	32
SI20	89	Derry Warm Springs	34	7.4		1660									368	303	158						
SI20	CON54DWS	Derry Warm Springs	33.89		7.5	1650	1030				52	19			370	309	160	5.8					
SI20	GS18725	Derry Warm Springs	34			1660					48	20			372	306	141	6					32
SI20	GS35977	Derry Warm Springs	33.89		7.4	1660	823								368	303	158						
SI21	90	well	34			1650					52	19			370	309	160	5.8				2	
SI21	91	well	34			1660					48	20			372	306	141	6				1.3	32
SI21	125	well	34			1660					48	20			372	306	141	6				1.3	32
SI24	HAREMIT	TorC "warm spring"					2635	381	29		156	18			175	60	1225						45
SI25	GS44137	Barney Iorio #1 Fee			8.50	5600		1180	4.4						34	2860	262	6.8		3.9			42
SJ3	448	Navajo well	51.8	7.88	8.3	1200		240	2.3		27	0.42	0.07	1.1		430	19	1.2	0.1		0.14		35
SJ5	474	ARCO WS-2 well	39.9	7.52	7.6	8000		1700	18		50	28	0.84	6.7		3800	210	1.6	0.38		0.3		33
SJ6	444	Navajo well	35.5			2320					4.5	2.1			480	480	200	2.6				0.8	20
SJ7	464	Navajo 12T-630 Well	33	7.6	7.8	6000		1400	19		78	31	0.54	10		3200	190	2.1	0.2		0.99		16
SJ7	466	Navajo 12T-630 Well	31	7.8	7.7	4930		890	10		160	15		9		2500	120	2.1		0.3	0.47		14
SJ8	438	well	32.8	8.21		2720															0.25		
SJ9	471	Navajo well	30.5			5050					190	36			130	2500	63	1.7				0.2	17
SJ9	473	Navajo well	32			4110				850	140	25			80	2000	70	1.8				0.3	17
SJ10	467	Navajo 12T-520 Well	30	7.8		4050					120	16			78	2000	59	2.2			0.02	0.1	14
SJ10	468	Navajo 12T-520 Well	31	8	8	4000		800	7.7		58	14	0.3	12		1600	110	2	0.13		0.17		14
SJ10	470	Navajo12T-520 Well	31.1	8.03	8.1	4300		810	7.2		110	14		11		2100	57	1.9		0.15	0.17		14
SJ11	453	well	30.5	7.7		8610									290		370	2					
SJ12	463	Navajo 12T-629 Well	30.5	8.03	8	4200		690	8.2		160	23		9.8		2000	83	2		0.15	0.24		16
SM1	GS2083	Montezuma Hot Spring #1				878	554				14	8.3				66	154						
SM1	GS4801	Montezuma Hot Spring #1				870	537				8.5	0.7			92	49	158						
SM1	GS5233	Montezuma Hot Spring #1				878	531								82		160						

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	Na mg/L	K mg/L	Na+K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br mg/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 mg/L
SM1	S76MNTZ1	Montezuma Hot Spring #1	55.17		8.38	810		200	6.9		5		0.36		82		160	3.4	3.6	0.44			80
SM2	GS18609	Montezuma Hot Spring #6	50.56		9	876	530				4.5	1.1			66	42	155	20					59
SM3	NB82-11	Montezuma Hot Spring	49	7.7				203	6.3		11		0.41										68
SM4	GS18610	Montezuma Hot Spring #13	41.11		8.8	876	528				4.5	1			77	42	155	20					68
SM6	S76MNTZ16	Montezuma Hot Spring #16						192	7.8		8	0.1	0.4										
SM9	S76MNTZ2	Montezuma Hot Spring #2						169	7.4		5	0.1	0.39										
SM10	S76MNTZ20	Montezuma Hot Spring #20						176	7.2		6	0.1	0.42										
SM15	S76MNTZ15	Montezuma Hot Spring #15						175	7.5		4	0.1	0.39										
SM18	S76MNTZ18	Montezuma Hot Spring #18						180	8.1		10	0.3	0.4										
SM19	S76MNTZ19	Montezuma Hot Spring #19						184	6.9		5	0.1	0.4										
SO4	NB82-16	Bosque del Apache Well #13	33	7.4				810	8.4		120		1.1										67
SO5	128	warm well	33	7.22	7.4	4450	2870	790	35		120	41			400	550	910			0.89		4.43	
SO6	159	Blue Canyon Well	32.4	8.5		380				53					140	37	14	0.6		0.76		1	26
SO6	160	Blue Canyon Well	31.5	7.1		360		57					0.06		157		16		0.5	0.09			
SO6	161	Blue Canyon Well	30			380									140	37	14	0.6		0.08			26
SO6	BLUE10-65	Blue Canyon Well			8.62	365	145	55	3.3		27	4.3	0.07		124		20		0.2	0.18			28
SO6	GS15116	Blue Canyon Well		7.1		360		57					0.06		157		16		0.5	0.09			
SO6	GS3372	Blue Canyon Well	33.33		8.5	380									145	37	14	0.6		0.76			26
SO6	HALL4	Blue Canyon Well			8						18	5			166	32	12						
SO6	NB82-12	Blue Canyon Well	33	7.2				55	3.3		27		0.06										28
SO7	141	Socorro Gallery Spring	31.5	8.4		362			3						160	33	16	0.7		0.06		1.1	39
SO7	142	Socorro Gallery Spring	33.5	7.8		346					18	4.4			160								
SO7	149	Socorro Gallery Spring	30	8.4		362	231	55	3						160	33	16	0.7		0.06			39
SO7	150	Socorro Gallery Spring	31	8.1		370		50			18	5			160	28	8						
SO7	151	Socorro Gallery Spring	30	7.8		356		52			13	5			160	20	12						
SO7	153	Socorro Gallery Spring	30.5	7.8		346					4.4				150								18
SO7	155	Socorro Gallery Spring	30			370		79	4		11	3.6			110	75	20						
SO7	157	Socorro Gallery Spring	32.5	8.1	8.1	352	224	54	3.2		18	4				31	13	0.7		0.12		1.59	26
SO7	158	Socorro Gallery Spring	33	8.2			234				19	5			160	30	13						
SO7	CLKPRST	Socorro Gallery Spring					318				42	27			85	102	38						33
SO7	GS38854	Socorro Gallery Spring			8.4	362		55	3						160	33	16	0.7		0.06			39
SO7	GS410-65	Socorro Gallery Spring	33.11		7.8	346					18	4.4			155								
SO7	HALL1	Socorro Gallery Spring	33		8.1	370					18	5			163	28	8						
SO7	HALL2	Socorro Gallery Spring			7.8	356					13	5			156	20	12						
SO7	NB82-13	Socorro Gallery Spring	32	7.2				53	3		18		0.05										26
SO7	NMHSS-SC	Socorro Gallery Spring			8.35	330	220	52.4	2.73		22	3.1			156.6	29.5	13.4	0.22					
SO7	S76FIG27-1	Socorro Gallery Spring	32.56		8.4	335	249	56	3		18	3.9	0.06		142		12	1.5	0.17	0.11			24
SO7	S76FIG27-2	Socorro Gallery Spring	33.56		8.54	340	234	53	3		18	4	0.06		129		16		0.38	0.03			21
SO7	S76FIG27-3	Socorro Gallery Spring	32.44		8.44	334	245	56	3		14	4	0.06		127		16	1.1	0.17	0.04			22
SO7	S76FIG27-4	Socorro Gallery Spring	33.11		8.43	339	232	53	3		18	3.9	0.06		126		16	0.77	0.27	0.05			26
SO7	S76GS2-48	Socorro Gallery Spring				352					20	4.7			165	31	13						28
SO7	SCOFLD1	Socorro Gallery Spring				340		55	5		19	4			168	30	14						
SO7	SCOFLD2	Socorro Gallery Spring				347					18	5			159	30	13	0.09					
SO7	SCOFLD3	Socorro Gallery Spring				348					18	5			156	30	13	1					
SO7	SETTLING	Socorro Gallery Spring			8.42		232	53	3		18	4	0.01		133		16	0.55	0.2	0.07			18
SO7	WALD1956	Socorro Gallery Spring	32.78		8.2						19	5			163	30	13						
SO8	139	Socorro/Sedilla Gallery Spring	30	8.5		331	255	53	3		18	4.2				31	13	0.7		0.12		1.15	26
SO8	GS38853	Socorro/Sedilla Gallery Spring			8.2			54	2.9						159	23	14	0.8		0.05			27
SO8	HALL3	Socorro/Sedilla Gallery Spring	31.11		8.4	370					18	5			154	24	10						

SITE ID	SAMPLE	NAME	TMP C	pH field	pH lab	COND uS/cm	TDS mg/L	Na mg/L	K mg/L	Na+K mg/L	Ca mg/L	Mg mg/L	Li mg/L	Sr mg/L	HCO3 mg/L	SO4 mg/L	Cl mg/L	F mg/L	Br mg/L	B mg/L	Fe mg/L	NO3 mg/L	SiO2 mg/L
SO8	NMHSS-SD	Socorro/Sedilla Gallery Spring			8.25	343	298	51.3	4.9		18	4.9			158.6	30.1	12	0.29					
SO8	S76SEDI	Socorro/Sedilla Gallery Spring			8.63	336	249	55	3.1		18	4	0.01		109				0.27	0.1			17
SO10	167	well	30	8.3		4000	4220	190	12		560	280				2600	68	0.8		0.48	0.04	4.3	20
TS1	S76JDUN	Hondo Hot Spring	36.94		8.49	740	505	130	12		29	4.9	0.28		181		55	2.3	2.3	0.18			103
TS2	NB82-1	Mamby Hot Spring	38	7.6				153	8.9		28		0.31										57
TS2	S76MAM1	Mamby Hot Spring	37.78		8.33	660	520	134	9.8		34	5	0.28		165		59	2.7	2.4	0.48			86
TS5	GS15114	Ponce de Leon Hot Spring		7.80		786			4.6		11	1.2	0.25		79	120	92	18	0.7	0.5			54
TS5	NB82-2	Ponce de Leon Hot Spring	34	7.4				157	4.5		2.3		0.3										49
TS5	S76SITE2	Ponce de Leon Hot Spring	34.56		8.14	740	486	135	4.6		12	0.48	0.27		76		78	3.1	2.1	0.5			86
VA1	S76-52270	well	80		7.4	3450	3440				415	176			51	2090	42	0.8					29

APPENDIX 4

SITE AND SAMPLE INFORMATION TABLES

<u>NOTES:</u>

SITE ID	geothermal site number
SAMPLE	cited or assigned sample number or designation
DATE	month/day/yr that sample was taken or reported
NAME	well or spring name
TEMP	temperature °C
COND	conductance (uS/cm - microsiemens per centimeter)
TDS	analytical total dissolved solids (mg/L - milligrams per liter)
FLOW	flow rate (L/min - liters per minute)
REFERENCE	sample information and chemical analysis source

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
BE1	219	4/14/75	well	40.5	423			WATSTORE 1993
BE2	JIREC-2	?/?/83	West Mesa #1	32.2		348		Jiracek (1983)
BE2	217	4/11/75	well	34.5	402			WATSTORE 1993
BE3	222	1/25/83	well	30.5	1125			WATSTORE 1993
BE3	221	1/17/83	well	32.0	1250			WATSTORE 1993
BE3	220	11/13/81	well	33.0	1160			WATSTORE 1993
BE5	JIREC-4	?/?/83	West Mesa #4	31.7		356		Jiracek (1983)
BE5	GJIR988	?/?/83	West Mesa #4	32.1				Jiracek (1983)
BE6	211	5/9/80	well	32.0	520		12415	WATSTORE 1993
BE7	JIREC-1	?/?/83	Don #1	31.4		420		Jiracek (1983)
BE8	212	4/6/65	well	31.0	495	332		WATSTORE 1993
BE9	JIREC-3	?/?/83	West Mesa #2	30.6		330		Jiracek (1983)
BE10	209	8/25/73	well	30	524	340		WATSTORE 1993
BE11	223	6/28/72	well	30.0	660			WATSTORE 1993
BE11	224	6/28/72	well	30.0	657			WATSTORE 1993
BE12	225	6/28/72	well	30.0	456			WATSTORE 1993
BE13	227	12/1/78	College #2	30.0	440		8327	WATSTORE 1993
CA1	GILA7	?/?/75-80	hot spring	64.8		548		Swanberg (1980)
CA2	120	7/24/62	hot spring	60.6	767	505		WATSTORE 1993
CA3	GS31052	12/5/74	Lower Frisco Hot Spring	35.2	1200			Summers (1976)
CA3	LFHS12-74	12/5/74	Lower Frisco Hot Spring	35.22	1200			Summers (1976)
CA3	M77-CT2	?/?/77	Lower Frisco Hot Spring	37.0		1015	20	Mariner and others (1977)
CA3	LFHS66-1	2/15/66	Lower Frisco Hot Spring	37.4			36.72	Summers (1976)
CA3	LFHS66-3B	2/15/66	Lower Frisco Hot Spring	39.6			140.06	Summers (1976)
CA3	LFHS66-4	2/15/66	Lower Frisco Hot Spring	41.2			3.78	Summers (1976)
CA3	LFHS66-7	2/15/66	Lower Frisco Hot Spring	45.1			3.78	Summers (1976)
CA3	LFHS66-11	2/15/66	Lower Frisco Hot Spring	45.6				Summers (1976)
CA3	GS42605	6/11/59	Lower Frisco Hot Spring	46.1	1780	1020		Summers (1976)
CA3	LFHS66-8	2/15/66	Lower Frisco Hot Spring	46.9			3.78	Summers (1976)
CA3	NB82-34	?/?/80-82	Lower Frisco Hot Spring	49.0				Norman and Bernhardt (1982)
CA3	LFHS66-9	2/15/66	Lower Frisco Hot Spring	49.4	1940		11.36	Summers (1976)
CA3	SNM-19	6/4/87	Lower Frisco Hot Spring	50.5	1894	1142.9		Shevenell (1987)
CA3	GS22690	6/16/53	Lower Frisco Hot Spring		1930		75.71	Summers (1976)
CA3	GS38864	6/13/58	Lower Frisco Hot Spring		1660			Summers (1976)
CA4	J3	?/?/75-80	Lower Frisco Hot Spring	43.3		992		Swanberg (1980)
CA4	SNM-18	6/4/87	Lower Frisco Hot Spring	45.0	1495	925.8		Shevenell (1987)
CA4	J5	?/?/75-80	Lower Frisco Hot Spring	48.9		1280		Swanberg (1980)
CA5	121	6/13/58	Lower Frisco Hot Spring	43.0	1660			WATSTORE 1993
CA6	J4	?/?/75-80	Lower Frisco Hot Spring	40.0		768		Swanberg (1980)

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
CA7	129	5/22/58	Upper Frisco Hot Spring	36.5	284			WATSTORE 1993
CA7	GS38851	5/22/58	Upper Frisco Hot Spring	36.7	284			Summers (1976)
CA7	UFHS2-66	2/18/66	Upper Frisco Hot Spring	36.7	242	223	26.12	Summers (1976)
CA7	J2	?/?/75-80	Upper Frisco Hot Spring	36.7		156		Swanberg (1980)
CA7	SNM-20	6/4/87	Upper Frisco Hot Spring	37.0	261	211.6		Shevenell (1987)
CA7	NB82-35	?/?/80-82	Upper Frisco Hot Spring	39.0				Norman and Bernhardt (1982)
CA8	MFG3	?/?/75-80	Gila Middle Fork Hot Spring	36.0		192		Swanberg (1980)
CA9	122	12/5/74	Lower Frisco Hot Spring	35.0	1200			WATSTORE 1993
CA10	168	8/4/79	Pueblo Windmill	33.8		950		WATSTORE 1993
CA10	DL-32-NM	8/?/79	Pueblo Windmill	33.8				Levitte and Gambill (1980)
CA10	169	10/30/80	Pueblo Windmill	34.0	1600		45.42	WATSTORE 1993
CA10	MYERS1	10/30/80	Pueblo Windmill	34.0	1600			Myers (1992)
CA11	FCS2-66	2/18/66	Frieborn Canyon Hot Spring	33.3	150	151		Summers (1976)
CA12	NNS-BOIL	2/26/66	hot spring	32.8			204.41	Summers (1976)
CA12	NNS-CAS	2/26/66	hot spring	34.4			204.41	Summers (1976)
CA13	GS54856	7/31/64	test well	32.2	2710	2540		Summers (1976)
CA14	130	7/13/79	well	32	330	256		WATSTORE 1993
CA15	119	7/31/64	well	32	2710	2540	15.14	WATSTORE 1993
CA16	MFG1	?/?/75-80	Gila Middle Fork Hot Spring	31.0		196		Swanberg (1980)
CA17	MYERS2	10/29/80	well	28.0	1440			Myers (1992)
CA17	MYERS3	11/20/80	well	29.0	1300			Myers (1992)
CA18	MEAD-10	11/12/69	Gila Middle Fork Meadows HS	27.5	215	150	129	Summers (1976)
CA18	MEAD-19	11/12/69	Gila Middle Fork Meadows HS	27.5	215	155	129	Summers (1976)
CA18	MEAD-5	11/12/69	Gila Middle Fork Meadows HS	28.0	220	160	76.5	Summers (1976)
CA18	MEAD-12	11/12/69	Gila Middle Fork Meadows HS	29.5	220	150	3.6	Summers (1976)
CA18	MEAD-14	11/12/69	Gila Middle Fork Meadows HS	32.5	215	145		Summers (1976)
CA19	MGSEEP	2/26/66	warm seep	27.2				Summers (1976)
CA20	US107	?/?/75-80	Zuni Salt Lake Warm Spring	26.0		220152		Swanberg (1980)
CA21	GS36104	6/23/57	Gila Middle Fork Pool HS	52.2	422			Summers (1976)
CA21	NB82-33	?/?/80-82	Gila Middle Fork Pool HS	65.0				Norman and Bernhardt (1982)
CA21	PHS-SUM	2/21/66	Gila Middle Fork Pool HS	65.3	720	514	178.2	Summers (1976)
CA21	SNM-14	6/2/87	Gila Middle Fork Pool HS	65.5	777	580.8		Shevenell (1987)
CA21	M77-CT1	?/?/77	Gila Middle Fork Pool HS	66.0		587		Mariner and others (1977)
CA21	GS62058	2/21/66	Gila Middle Fork Pool HS		771	508		Summers (1976)
CA22	MFG2	?/?/75-80	Gila Middle Fork Hot Spring	37.0		188		Swanberg (1980)
CA23	MFG4	?/?/75-80	Gila Middle Fork Hot Spring	26.0		168		Swanberg (1980)
CA23	SW307	?/?/75-80	Gila Middle Fork Hot Spring	32.0		224		Swanberg (1980)
CA23	SW306	?/?/75-80	Gila Middle Fork Hot Spring	34.0		192		Swanberg (1980)
CB2	210	7/10/86	well	52.8	7000	5450		WATSTORE 1993

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
CB3	183	2/15/89	Acoma #1 Well	40.5	1270			WATSTORE 1993
CB3	180	9/21/84	Acoma #1 Well	41.5	1300		1892.5	WATSTORE 1993
CB3	181	10/4/84	Acoma #1 Well	41.7	1350		1797.9	WATSTORE 1993
CB4	170	12/15/86	well	41.0	2800	2320		WATSTORE 1993
CB5	177	12/6/86	well	38.1	3300	3180		WATSTORE 1993
CB6	178	5/14/75	well	36	989		261.17	WATSTORE 1993
CB7	184	11/17/86	well	34.5	5500	5360		WATSTORE 1993
CB8	171	11/26/86	well	34.0	8000	6280		WATSTORE 1993
CB9	197	11/10/64	well	31.5	18000			WATSTORE 1993
CB9	193	10/7/63	well	34	25200	18500		WATSTORE 1993
CB10	179	11/18/86	well	33.1	4450	3910		WATSTORE 1993
CB12	226	9/30/75	well	32.0	550	340		WATSTORE 1993
CB13	LUC-11	5/?/80	Salado Spring	25	3800			Goff and others (1983)
CV1	95	7/23/81	well	33.0	900	651		WATSTORE 1993
DA1	GROSS3	?/?/81-86	Chaffee 55-25	68.0				Gross (1988)
DA1	GROSS4	?/?/81-86	Chaffee 55-25	68.0				Gross (1988)
DA1	CHAF55-25	?/?/81	Chaffee 55-25	69.0	2300	1480		Files SWTDI
DA2	SNM-5	6/1/87	Radium Hot Springs Bailey Well #15	70.0	7050	3944.3		Shevenell (1987)
DA3	CLARYST	?/?/49	Clary and Ruther State 1	69.4				Files SWTDI
DA4	CHF35-25	12/?/81	Chaffee 35-25	68	2580	1626		Icerman and Lohse (1983)
DA4	GROSS1	?/?/81-86	Chaffee 35-25	68.0				Gross (1988)
DA5	280LC2	2/?/80	LC-2	52.5	2530	2004		Files SWTDI
DA5	GROSS8	?/?/81-86	LC-2	68.0				Gross (1988)
DA6	EXXONOLE	12/6/83	Exxon Beard Ole Federal	65.5				Files SWTDI
DA7	CHF12-24	1/?/82	Chaffee 12-24	65	3000	1968		Icerman and Lohse (1983)
DA7	GROSS2	?/?/81-86	Chaffee 12-24	65.0				Gross (1988)
DA8	GROSS6	?/?/81-86	NMSU PG-3	63.0				Gross (1988)
DA8	12581PG3	1/25/81	NMSU PG-3	63.3		1981	757.2	Cunniff and others (1981)
DA8	1980PG3	?/?/80	NMSU PG-3		3130			Cunniff and others (1984)
DA8	NDPG3	?/?/80-84	NMSU PG-3			1748		Cunniff and others (1984)
DA9	S76BAILEY	2/7/66	Radium Hot Springs Bailey's bathhouse	60.8	5600	3731		Summers (1976)
DA9	BTHSE	7/10/81	Radium Hot Springs Bailey's bathhouse			874		Files SWTDI
DA9	NMPHL316	5/4/62	Radium Hot Springs Bailey's bathhouse		6100			Summers (1976)
DA10	BINNS1	?/?/87	Certified Sand Well	58.8			12.62	Files SWTDI
DA12	SNM-6	6/1/87	Radium Hot Springs Hotel Well #2	43.0	6530	3728.4		Shevenell (1987)
DA12	M77-DA1	?/?/77	Radium Hot Springs Hotel Well #2	52.0		3857		Mariner and others (1977)
DA12	70	12/4/74	Radium Hot Springs Hotel Well #2	52.5	6100			WATSTORE 1993
DA12	71	4/29/57	Radium Hot Springs Hotel Well #2	53.0	6210			WATSTORE 1993
DA12	B2	?/?/75-80	Radium Hot Springs Hotel Well #2	53.0		3532		Swanberg (1980)

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
DA12	NB82-21	?/?/80-82	Radium Hot Springs Hotel Well #2	53.0				Norman and Bernhardt (1982)
DA12	RHSHOT2	12/16/65	Radium Hot Springs Hotel Well #2	60.0	5800			Summers (1976)
DA12	S76HRSW2	12/4/74	Radium Hot Springs Hotel Well #2	60.0				Summers (1976)
DA12	69	5/17/48	Radium Hot Springs Hotel Well #2	85.5	6060			WATSTORE 1993
DA12	GS10160	5/17/48	Radium Hot Springs Hotel Well #2	85.6	6060			Summers (1976)
DA12	GS35979	4/29/57	Radium Hot Springs Hotel Well #2		6210			Summers (1976)
DA12	GS31053	12/4/74	Radium Hot Springs Hotel Well #2		6100			Summers (1976)
DA12	GS38867	4/24/58	Radium Hot Springs Hotel Well #2		5540			Summers (1976)
DA12	S76RSNMS	?/?/?	Radium Hot Springs Hotel Well #2			3460		Summers (1976)
DA13	280LC1	2/?/80	LC-1	67.9	922	576		Files SWTDI
DA14	SNM-7	6/1/87	Radium Hot Springs Roy Smith Well	50.0	5230	2978.5		Shevenell (1987)
DA15	SNM-9	6/1/87	NMSU PG-2	43.0	3290	2232.6		Shevenell (1987)
DA15	4681PG2	4/6/81	NMSU PG-2	47.7		2070		Cunniff (1981)
DA15	NB82-23	?/?/80-82	NMSU PG-2	59.0				Norman and Bernhardt (1982)
DA15	NMSU81479	8/14/79	NMSU PG-2		2480	1704		Files SWTDI
DA16	11	11/25/61	Pure Oil Federal "H" 1	45.0	7380		1892.5	WATSTORE 1993
DA16	GS48858	10/25/61	Pure Oil Federal "H" 1	45.0	7380			Summers (1976)
DA17	NATIONW81	12/1/72	Nations Well	43.0	3040			Wilson and others (1981)
DA17	LASALTNA	2/6/66	Nations Well	45.1	2400	1983		Summers (1976)
DA18	47	12/1/72	well	43	3040			WATSTORE 1993
DA19	LASALTHU	2/6/66	Husand Well	42.5	2000	1706		Summers (1976)
DA20	19	7/17/86	well	31.5	1580	955		WATSTORE 1993
DA20	18	7/16/86	well	35.0	2100	1350		WATSTORE 1993
DA20	17	7/16/86	well	42.5	10900	6990		WATSTORE 1993
DA21	LASALTRO	2/6/66	Rowan well	36.8	1500	1093		Summers (1976)
DA22	46	9/8/75	Tellyer Well	36.5	1020		151.4	WATSTORE 1993
DA22	TELLYER1	9/8/75	Tellyer Well	36.5	1020			Wilson and others (1981)
DA22	TELLYER2	12/1/72	Tellyer Well	36.5	1110			Wilson and others (1981)
DA23	S7623S2W	2/5/66	Running Indian Well	35.0	2200	1450		Summers (1976)
DA23	GS28934	1/11/73	Running Indian Well	36.1	2310			Summers (1976)
DA24	SD1	?/?/75-80	well	36.0		2020		Swanberg (1980)
DA25	S76NMS112	11/?/63	well	35.6	1800	1020		Summers (1976)
DA26	NB82XX	?/?/82	NMSU GD-1	30.0				Norman and Bernhardt (1982
DA26	1GD1	?/?/82	NMSU GD-1	35.0	2370		965.4	Cunniff (1982)
DA26	2GD1	1/13/61	NMSU GD-1			1550		Cunniff (1981)
DA26	3GD1	2/1/62	NMSU GD-1			1200		Cunniff (1981)
DA26	4GD1	1/13/81	NMSU GD-1					Cunniff (1981)
DA26	5GD1	2/13/81	NMSU GD-1					Cunniff (1981)
DA27	S76LASWH	2/6/66	White well	34.5	1460	1000		Summers (1976)

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
DA27	NPHL870	7/2/65	White well		1665	1020		Summers (1976)
DA28	72	7/31/80	well	34	488			WATSTORE 1993
DA29	23	5/6/76	well	33.5	950	554		WATSTORE 1993
DA30	9	7/24/75	well	30.5	890		121.12	WATSTORE 1993
DA30	10	7/24/75	well	33.3	490		113.55	WATSTORE 1993
DA33	GS28683	2/1/55	well	32.2	4640	2930	49.97	Summers (1976)
DA33	44	1/11/73	well	36	2310			WATSTORE 1993
DA34	43	3/16/55	well	32.0	2320		11.36	WATSTORE 1993
DA36	24	3/28/73	Berino Well	31	1120			WATSTORE 1993
DA36	GS29520	3/28/73	Berino Well	31.1	1120			Summers (1976)
DA36	S76BERING	1/24/73	Berino Well		1080	740		Summers (1976)
DA37	SD22	?/?/75-80	Souse Springs	31.0		312		Swanberg (1980)
DA39	29	7/28/73	well	31	778			WATSTORE 1993
DA39	GS221153	7/28/73	well	31.1	778			Summers (1976)
DA40	21	1/10/78	well	31.0	804			WATSTORE 1993
DA41	2	8/29/86	well	31.0	5700	3780		WATSTORE 1993
DA42	93	2/5/73	well	31	2070			WATSTORE 1993
DA43	COLM1	?/?/75-80	Pol Ranch Windmill	30.5		512		Swanberg (1980)
DA44	48	10/22/90	SC2	30.5	270			WATSTORE 1993
DA45	12	8/17/86	well	30.5	2200	1300		WATSTORE 1993
DA45	14	8/19/86	well	30.5	1000	656		WATSTORE 1993
DA45	13	8/19/86	well	32	600	475		WATSTORE 1993
DA46	52	7/31/81	T-18	30.0	686		30.28	WATSTORE 1993
DA46	53	8/10/82	T-18	30.0	710			WATSTORE 1993
DA47	38	6/19/75	Dominguez Bros Well	30	3350			WATSTORE 1993
DA47	39	11/1/72	Dominguez Bros Well	31.5	2870			WATSTORE 1993
DA49	NMPLH997	8/16/60	Railroad Well		2270			Summers (1976)
DA50	HUNTWATW	8/26/88	Radium Springs College Ranch Windmill					Files SWTDI
DA51	SCOTTRHS	11/17/54	Radium Hot Springs Hotel Well #1	53.3	6100	3620		Summers (1976)
DA51	GS2053	8/?/22	Radium Hot Springs Hotel Well #1			3738		Summers (1976)
DA52	21H0600	3/30/93	Radium Springs Masson 21					Files SWTDI
DA52	21H0900	3/30/93	Radium Springs Masson 21					Files SWTDI
DA52	21H1800	3/30/93	Radium Springs Masson 21					Files SWTDI
DA52	21TRUN	3/30/93	Radium Springs Masson 21					Files SWTDI
DA52	86MASS21	8/11/86	Radium Springs Masson 21			3682		Files SWTDI
DA53	89MASS22	4/?/89	Radium Springs Masson 22					Files SWTDI
DA53	SWL1295	2/1/88	Radium Springs Masson 22					Files SWTDI
DA53	AA03261	7/16/92	Radium Springs Masson 23		5960			Files SWTDI
DA54	87MASS23	4/?/87	Radium Springs Masson 23					Files SWTDI

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
DA54	89MASS23	4/?/89	Radium Springs Masson 23					Files SWTDI
DA54	SWL1296	2/1/88	Radium Springs Masson 23					Files SWTDI
DA54	SWL5478	12/13/88	Radium Springs Masson 23					Files SWTDI
DA55	311801	4/30/93	Radium Springs Masson 26					Files SWTDI
DA55	AA03262	7/16/92	Radium Springs Masson 26		6030			Files SWTDI
DA56	1RYAN7235	12/20/86	Radium Springs Ryan 72-35			2584		Files SWTDI
DA57	GROSS7	?/?/81-88	NMSU GD-2	42.0				Gross (1988)
DA57	JET468	9/?/82	NMSU GD-2		3120	1948		Cunniff and others (1983)
DA57	JET840	9/?/82	NMSU GD-2		2680	1787		Cunniff and others (1983)
DA58	NMSUOW1	12/10/81	NMSU OW-1			1765		Cunniff (1981)
DA59	SNM-8	6/1/87	NMSU PG-1	58.5	3350	2273.5		Shevenell (1987)
DA59	PG1COMP	?/?/82	NMSU PG-1	60.6	3110			Cunniff (1982)
DA59	GROSS5	?/?/81-88	NMSU PG-1	61.0				Gross (1988)
DA59	NB82-22	?/?/80-82	NMSU PG-1	61.0				Norman and Bernhardt (1982)
DA59	N10PG1	?/?/80-84	NMSU PG-1		3720	2044		Cunniff and others (1984)
DA59	N4PG1	?/?/80-84	NMSU PG-1		6590	4220		Cunniff and others (1984)
DA59	N7PG1	?/?/80-84	NMSU PG-1		4510	2868		Cunniff and others (1984)
DA59	N8PG1	?/?/80-84	NMSU PG-1		4050	2416		Cunniff and others (1984)
DA59	NMSU9430	?/?/86	NMSU PG-1		2800	1820		Files SWTDI
DA59	PG1PART1	10/24/80	NMSU PG-1			1936		Cunniff (1981)
DA59	PG1PART2	7/21/80	NMSU PG-1			1904		Cunniff (1981)
DA59	PG1PART3	?/?/80	NMSU PG-1		3110			Cunniff and others (1984)
DA60	DST1PG4	4/?/86	NMSU PG-4	63.0	2720	1695		Files SWTDI
DA60	DST4PG4	4/?/86	NMSU PG-4	63.0	2790	1854		Files SWTDI
DA60	BAIL370	11/?84	NMSU PG-4		2450	1636		Cunniff and Chintawong (1985)
DA60	DRILL13	10/?/84	NMSU PG-4		2800	1818		Cunniff and Chintawong (1985)
DA60	IWEINC1	1/25/91	NMSU PG-4		2520			Files SWTDI
DA60	PT0PG4	8/?/86	NMSU PG-4			1770		Files SWTDI
ED1	81	7/27/61	Clayton Well	31.0	3030			WATSTORE 1993
ED1	82	7/27/61	Clayton Well	31.0	3030			WATSTORE 1993
GR1	GS15106	12/5/74	Mimbres Hot Springs #3	61.1	450			Summers (1976)
GR1	MIML3-12-65	12/29/65	Mimbres Hot Springs #3	62.3	430	221		Summers (1976)
GR1	MIML3-WR	10/3/65	Mimbres Hot Springs #3		444			Summers (1976)
GR1	MIML3-12-74	12/5/74	Mimbres Hot Springs #3					Summers (1976)
GR1	MIML3-8-65	8/28/65	Mimbres Hot Springs #3		422	285		Summers (1976)
GR2	EI3024	10/?/85	Gila Hot Springs Doyle Well	74.0				Files SWTDI
GR3	SNM-16	6/3/87	Turkey Creek Hot Spring	65.0	326	260.4		Shevenell (1987)
GR3	GILA22	?/?/75-80	Turkey Creek Hot Spring	69.8		260		Swanberg (1980)
GR3	SNM-17	6/3/87	Turkey Creek Hot Spring	73.0	329	258.8		Shevenell (1987)

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
GR3	GILA20	?/?/75-80	Turkey Creek Hot Spring	74.0		236		Swanberg (1980)
GR4	SNM-12	6/2/87	Gila Hot Springs Campbell #4 Well	71.1	659	495.8		Shevenell (1987)
GR4	EI6968	10/10/86	Gila Hot Springs Campbell #4 Well	72.0				Files SWTDI
GR5	GHS0920	10/6/81	Gila Spring Hot Spring #14	66.0	640			Schwab and others (1982)
GR5	GHS0925	10/6/81	Gila Spring Hot Spring #14	66.0		445	3.16	Schwab and others (1982)
GR6	NB82-32	?/?/80-82	Gila HS northern artesian well	65.0				Norman and Bernhardt (1982)
GR7	GHS-66	2/17/66	Gila Hot Springs	41.5	560	496		Summers (1976)
GR7	NB82-31	?/?/80-82	Gila Hot Springs	59.0				Norman and Bernhardt (1982)
GR7	117	12/5/74	Gila Hot Springs	61.0	620			WATSTORE 1993
GR7	GILA5	?/?/75-80	Gila Hot Springs	62.8		408		Swanberg (1980)
GR7	GHS-74	12/5/74	Gila Hot Springs	63.9	620			Summers (1976)
GR7	GS31051	12/5/74	Gila Hot Springs	63.89				Summers (1976)
GR7	GS36105	6/23/57	Gila Hot Springs	63.9	653	369	94.64	Summers (1976)
GR7	GS4897	7/25/62	Gila Hot Springs	63.9	638	421	378.54	Summers (1976)
GR7	115	6/23/57	Gila Hot Springs	64.0	653	369	567.75	WATSTORE 1993
GR7	116	7/25/62	Gila Hot Springs	64	638	421		WATSTORE 1993
GR7	SNM-13	6/2/87	Gila Hot Springs	65.2	642	483.5		Shevenell (1987)
GR7	GILA6	?/?/75-80	Gila Hot Springs	66.3		416		Swanberg (1980)
GR7	M77-GR1	?/?/77	Gila Hot Springs	68.0		468		Mariner and others (1977)
GR9	NB82-30	?/?/80-82	Gila HS middle artesian well	62.0				Norman and Bernhardt (1982)
GR10	GHS2252	10/7/81	Gila Hot Springs Campbell #2 Well	60.0		428	3.28	Schwab and others (1982)
GR10	GHS0700	10/8/81	Gila Hot Springs Campbell #2 Well	61.0		423	3.27	Schwab and others (1982)
GR10	GHS0711	10/8/81	Gila Hot Springs Campbell #2 Well	61.0				Schwab and others (1982)
GR10	GHS1445	10/7/81	Gila Hot Springs Campbell #2 Well	61.0	620	418	3.268	Schwab and others (1982)
GR10	GHS14006	10/9/81	Gila Hot Springs Campbell #2 Well	62.0	550		3.16	Schwab and others (1982)
GR10	GHS1400F	10/9/81	Gila Hot Springs Campbell #2 Well	62.0		411		Schwab and others (1982)
GR10	GHS1610	10/7/81	Gila Hot Springs Campbell #2 Well	62.0	590	415	3.16	Schwab and others (1982)
GR11	MIM-L25	12/29/65	Mimbres Hot Springs #25	59.0				Summers (1976)
GR12	MIM-L32	12/29/65	Mimbres Hot Springs #28	45.3				Summers (1976)
GR12	MIM-L28	6/5/52	Mimbres Hot Springs #28	58.1	452	308		Summers (1976)
GR13	GHS0929	10/6/81	Gila Spring Hot Spring #41	58.0	560			Schwab and others (1982)
GR13	GHS0935	10/6/81	Gila Spring Hot Spring #41	58.0		426	0.06	Schwab and others (1982)
GR14	85	6/5/52	Mimbres Hot Springs	58.0	450			WATSTORE 1993
GR14	NB82-25	?/?/80-82	Mimbres Hot Springs	58.0				Norman and Bernhardt (1982)
GR14	GILA4	?/?/75-80	Mimbres Hot Springs	58.2		320		Swanberg (1980)
GR14	86	12/5/74	Mimbres Hot Springs	60.5	455			WATSTORE 1993
GR15	GS19645	6/5/52	Mimbres Hot Springs #8	57.5	450			Summers (1976)
GR16	MIM-L12	12/29/65	Mimbres Hot Springs #12	56.4				Summers (1976)
GR17	MIM-L21	12/29/65	Mimbres Hot Springs #21	55.0				Summers (1976)

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
GR18	MIM-L23	12/29/65	Mimbres Hot Springs #23	54.4			9.84	Summers (1976)
GR19	75	2/5/76	Faywood Hot Springs	52.0	560			WATSTORE 1993
GR19	73	4/19/57	Faywood Hot Springs	53	605	384	189.25	WATSTORE 1993
GR19	GS1856	4/19/57	Faywood Hot Springs	53.3	605	384	189.27	Summers (1976)
GR19	GS27917	11/9/54	Faywood Hot Springs	53.3	600		189.27	Summers (1976)
GR19	74	12/5/74	Faywood Hot Springs	53.5	603			WATSTORE 1993
GR19	GILA2	?/?/75-80	Faywood Hot Springs	53.8		492		Swanberg (1980)
GR19	NB82-26	?/?/80-82	Faywood Hot Springs	55.0				Norman and Bernhardt (1982)
GR19	FAY-S76-2	12/26/65	Faywood Hot Springs		560	384		Summers (1976)
GR19	FAY-WRD	12/26/65	Faywood Hot Springs		504	330		Summers (1976)
GR19	GS19824	6/2/52	Faywood Hot Springs		606			Summers (1976)
GR19	FAY-S76-1	12/5/74	Faywood Hot Springs					Summers (1976)
GR19	GS15112	12/5/74	Faywood Hot Springs		603			Summers (1976)
GR20	SPS-LL66	2/20/66	Gila Lyons Lodge swimming pool HS	51.7	390	335	18.93	Summers (1976)
GR20	GS36104	6/23/57	Gila Lyons Lodge swimming pool HS		432		37.85	Summers (1976)
GR21	114	6/23/57	well	52.0	432		37.85	WATSTORE 1993
GR22	M77-GR2	?/?/77	Gila River Waterfall HS	43.0		558		Mariner and others (1977)
GR22	GILA8	?/?/75-80	Gila River Waterfall HS	43.6		516		Swanberg (1980)
GR22	WFALLHS	3/27/66	Gila River Waterfall HS	44.7	680	518	75.7	Summers (1976)
GR23	EFGR-NM	2/22/66	Gila East Fork no name spring	41.39	581	369	111.35	Summers (1976)
GR23	EFGR-SUM	2/22/66	Gila East Fork no name spring	41.4	560	367	117.35	Summers (1976)
GR25	M77-GR3	?/?/77	Gila East Fork Hot Spring	36.0		385		Mariner and others (1977)
GR26	EFS-LL66	2/20/66	Gila Lyons Lodge East Fork Hot Springs	35.6	500	358		Summers (1976)
GR26	WSM-LL66	2/20/66	Gila Lyons Lodge HS midpoint	45.6				Summers (1976)
GR26	WSC-LL66	2/20/66	Gila Lyons Lodge HS composite		580	407	75.7	Summers (1976)
GR26	WSD-LL66	2/20/66	Gila Lyons Lodge HS downstream					Summers (1976)
GR26	WSU-LL66	2/20/66	Gila Lyons Lodge HS upstream					Summers (1976)
GR27	KWS-W3-1	965-196	Kennecott Warm Spring Well #3	34.6	350	281		Summers (1976)
GR27	KWS-W3-2	5/17/72	Kennecott Warm Spring Well #3		482	320		Summers (1976)
GR29	NB82-27	?/?/80-82	Kennecott Warm Spring Well #3	34.0				Norman and Bernhardt (1982)
GR30	GS50019	7/14/62	Cliff Warm Well	33.3	665	435		Summers (1976)
GR30	94	7/14/62	Cliff Warm Well	33.5	665	435	37.85	WATSTORE 1993
GR30	S76CLIFF	3/3/66	Cliff Warm Well	35.0	610	439		Summers (1976)
GR32	LD2	?/?/75-80	Muir Ranch well	33.0		816		Swanberg (1980)
GR34	87	9/22/54	well	32.0	754		1892.5	WATSTORE 1993
GR35	84	5/13/65	well	31.1	421	272		WATSTORE 1993
GR36	GS29750	4/26/55	Spring Canyon Warm Spring	28.9	472	311		Summers (1976)
GR39	GILA23	?/?/75-80	Riverside Well	29.0		292		Swanberg (1980)
GR39	GS29790	6/6/55	Riverside Well	30.0	551	363		Summers (1976)

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GR39	GILA24	?/?/75-80	Spring Canyon Warm Spring	31.0		332		Swanberg (1980)
GR39	NB82-28	?/?/80-82	Riverside Well	38.0				Norman and Bernhardt (1982)
GR41	GILA29	?/?/75-80	Mangas Springs	27.0		544		Swanberg (1980)
GR42	J1	?/?/75-80	Allen Spring	25.6		492		Swanberg (1980)
GR43	J7	?/?/75-80	Cliff Warm Spring	25.0		164		Swanberg (1980)
GR43	T72P193	9/14/55	Cliff Warm Spring	25.0	256			Summers (1976)
GR44	ATWS-W4-1	5/12/72	Apache Tejo Warms Springs Well #4		520	370		Summers (1976)
GR44	ATWS-W4-2	5/12/72	Apache Tejo Warms Springs Well #4		634	868		Summers (1976)
GR45	ATWS-W5	5/12/72	Apache Tejo Warms Springs Well #5					Summers (1976)
HD1	SNM-11	6/2/87	Lightning Dock Burgett Well #1	104.0	1666	1180.5		Shevenell (1987)
HD2	35	4/28/49	Lightning Dock hot well	98.0	1540			WATSTORE 1993
HD2	GS59532	4/30/66	Lightning Dock hot well		1560			Summers (1976)
HD2	S76LD-12	4/30/66	Lightning Dock hot well		1500	1057		Summers (1976)
HD3	NB82-40	?/?/80-82	Lightning Dock hot well	96.0				Norman and Bernhardt (1982)
HD4	36	4/30/66	Lightning Dock hot well	95.5	1560			WATSTORE 1993
HD4	S76LD-10	4/27/54	Lightning Dock hot well		1580	1160		Summers (1976)
HD5	SNM-10	6/2/87	Lighting Dock Burgett Well #10	95.2	1621	1136.6		Shevenell (1987)
HD6	37	4/10/55	Lightning Dock hot well	94.0	1510		757	WATSTORE 1993
HD7	P2	?/?/75-80	Lightning Dock hot well	85.0		1116		Swanberg (1980)
HD8	P3	?/?/75-80	Lightning Dock McCants Well	81.0		1024		Swanberg (1980)
HD9	P4	?/?/75-80	Lightning Dock hot well	71.0		1608		Swanberg (1980)
HD10	33	4/30/66	Lightning Dock hot well	52	2310			WATSTORE 1993
HD10	GS59533	4/30/66	Lightning Dock hot well		2310	1680		Summers (1976)
HD10	S76LD-5	3/2/66	Lightning Dock hot well		2260	1732		Summers (1976)
HD10	S76LD-2	12/12/58	Lightning Dock hot well			1055		Summers (1976)
HD10	S76LD-3	4/5/60	Lightning Dock hot well		1577	1112		Summers (1976)
HD10	S76LD-4	8/2//65	Lightning Dock hot well		2200	1761		Summers (1976)
HD10	S76LD-6	4/30/66	Lightning Dock hot well		2200	1786		Summers (1976)
HD11	S76P15-2	7/8/55	warm well	31.1	1590			Summers (1976)
HD11	S76P15-3	6/20/66	warm well	31.4			37	Summers (1976)
HD11	S76P15-1	6/14/55	warm well	35.0				Summers (1976)
HD12	34	4/30/66	Lightning Dock hot well	33.5	1960			WATSTORE 1993
HD12	GS59534	4/30/66	Lightning Dock hot well		1960	1380		Summers (1976)
HD12	S76LD-1	4/30/66	Lightning Dock hot well		1760	1295		Summers (1976)
HD13	1	8/22/56	well	32.0	1020			WATSTORE 1993
HD14	63	7/8/55	Blowing Well	31.0	1590		18.93	WATSTORE 1993
HD15	68	8/17/81	well	30.0	460			WATSTORE 1993
HD17	S76LD-11	4/10/55	Lightning Dock hot well		1510	1110		Summers (1976)
HD18	S76LD-13	4/30/66	Lightning Dock hot well					Summers (1976)

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
HD19	S76LD-14	4/4/60	Lightning Dock hot well		835	620		Summers (1976)
HD20	S76LD-7A	2/1/49	Lightning Dock hot well		1650	1020		Summers (1976)
HD20	S76LD-7B	4/28/49	Lightning Dock hot well		1540	1130		Summers (1976)
HD20	S76LD-8	7/30/51	Lightning Dock hot well		1600			Summers (1976)
HD20	S76LD-9	3/28/52	Lightning Dock hot well		1600			Summers (1976)
LA1	386	1/15/61	Pueblo Canyon #7 Well	30.5	729		1816.8	WATSTORE 1993
LA1	385	1/10/61	Pueblo Canyon #7 Well	31	766		1816.8	WATSTORE 1993
LU1	S76-24SR7W	8/4/69	Smyer Well	38.9	439			Summers (1976)
LU1	42	8/4/69	Smyer Well	39.0	439			WATSTORE 1993
LU3	41	2/1/45	well	34.5	515			WATSTORE 1993
LU4	6	8/8/52	well	33.0	1620		1400.5	WATSTORE 1993
LU6	40	1/5/54	well	31.5	824			WATSTORE 1993
LU7	PAL4	?/?/75-80	well	31.5		700		Swanberg (1980)
LU8	W86	?/?/75-80	well	31.1		732		Swanberg (1980)
LU9	8	5/22/58	well	30.5	1860	1130		WATSTORE 1993
LU9	7	8/8/52	well	31.0	1850		832.7	WATSTORE 1993
LU13	50	9/2/82	Little Ed Well	30.0	500		3.79	WATSTORE 1993
LU14	W69	?/?/75-80	well	30.0		1168		Swanberg (1980)
LU15	5	8/26/82	well	30.0	1100		378.5	WATSTORE 1993
MK1	234	8/4/50	Fort Wingate Well/Santa Fe 'Spring'	55.0	730		87.06	WATSTORE 1993
MK1	GS64891	10/2/68	Fort Wingate Well/Santa Fe 'Spring'	61.1	5520			Summers (1976)
MK2	229	11/21/56	well	46.0	3110		809.99	WATSTORE 1993
MK3	DL-4-NM	4/?/79	Ya-Ta-Hey Well	45.5				Levitte and Gambill (1980)
MK4	432	10/22/87	well	37.4	1600			WATSTORE 1993
MK4	430	4/24/86	well	42.2	1800			WATSTORE 1993
MK4	431	4/24/86	well	42.2	1800			WATSTORE 1993
MK5	231	3/5/86	well	40.2	2850	2330		WATSTORE 1993
MK6	242	1/31/68	well	39.0	890	565		WATSTORE 1993
MK7	299	4/1/60	Navajo well	36	594		3785	WATSTORE 1993
MK7	298	4/28/54	Navajo well	37.5	703		3785	WATSTORE 1993
MK8	DL-15-NM	6/?/79	Toh Sah Toh	37.0			1135	Levitte and Gambill (1980)
MK9	240	1/24/69	well	34	1360			WATSTORE 1993
MK9	239	1/12/69	well	36	1570			WATSTORE 1993
MK10	264	7/14/81	NTUA #2 Well	36.0	500			WATSTORE 1993
MK11	261	7/14/81	well	35.5	450			WATSTORE 1993
MK12	296	3/12/75	Pure Oil Navajo #1 (Tohachi Well)	35	644			WATSTORE 1993
MK12	GS52896	9/9/63	Pure Oil Navajo #1 (Tohachi Well)	35.6	606		3406.9	Summers (1976)
MK12	GS44727	4/1/60	Pure Oil Navajo #1 Well (Tohachi Well)	36.1	594	390	3406.9	Summers (1976)
MK12	297	8/28/85	Pure Oil Navajo #1 (Tohachi Well)	37.0	655		1922.8	WATSTORE 1993

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
MK12	NM51	?/?/75-80	Pure Oil Navajo #1 Well (Tohachi Well)			376		Swanberg (1980)
MK13	S76NAVAJO	3/13/75	Pure Oil Navajo #3 Well	35.0				Summers (1976)
MK14	265	8/17/82	Mobil Well Crown Point	33.5	415			WATSTORE 1993
MK15	420	5/10/67	well	33.5	951			WATSTORE 1993
MK16	262	7/15/81	well	33.0	450			WATSTORE 1993
MK17	243	6/26/75	well	32.5	1500	906	2267.2	WATSTORE 1993
MK18	423	4/21/86	well	32.5	2900			WATSTORE 1993
MK18	422	4/21/86	well	32.7	2900			WATSTORE 1993
MK18	421	5/10/67	well	35.5	2910			WATSTORE 1993
MK19	235	12/22/33	well	32.0				WATSTORE 1993
MK20	241	7/31/70	well	32	1280	860	2649.5	WATSTORE 1993
MK21	237	12/6/55	well	31.5	1220	802	946.25	WATSTORE 1993
MK22	202	5/6/64	well	30.5	1140	730		WATSTORE 1993
MK23	256	10/2/87	well	30.5	800			WATSTORE 1993
MK24	260	7/14/81	well	30.0	675			WATSTORE 1993
OT1	45N9	?/?/45	N-9 Well	71.1		12500		Henry and Gluck (1981)
OT2	57N11	1/?/57	N-11 Well	61.1	14500	8980		Henry and Gluck (1981)
OT3	26	10/18/56	M-11	33.5	1980	1040		WATSTORE 1993
OT3	56M11A	10/?/56	M-11(DST 465-504 ft) Well	50.0	2050	1120		Henry and Gluck (1981)
OT3	56M11B	12/?/56	M-11 Well	hot	2030	1170		Henry and Gluck (1981)
OT4	65	8/2/87	FLOUR-1 Well	30.0	18400		1199.9	WATSTORE 1993
OT4	64	7/15/87	FLOUR-1 Well	33.5	18000			WATSTORE 1993
OT5	S76GART4	12/17/65	Garton Well	33.7	10000	9086		Summers (1976)
OT5	SA1	?/?/75-80	Garton Well	34.0		9140		Swanberg (1980)
OT5	S76GART1	?/?/29	Garton Well			7580	4164	Summers (1976)
OT5	S76GART2	3/29/35	Garton Well			9111	75	Summers (1976)
OT5	S76GART3	8/12/64	Garton Well		16000	10240	30	Summers (1976)
OT6	OLDN8	1900 (?)	N-8 Well	hot (?)				Henry and Gluck (1981)
OT7	27	1/28/57	N-11	61.0	14500	9010	132.48	WATSTORE 1993
RA1	OC-17	4/?/82	Ojo Caliente Hot Spring Soda Spring	27.3	4220	3673		Vuataz and others (1984)
RA1	GS9877	10/1/74	Ojo Caliente Hot Spring Soda Spring	35.0	3890			Summers (1976)
RA1	GS13378	10/6/49	Ojo Caliente Hot Spring Soda Spring		3910			Summers (1976)
RA1	HILLEBRD	?/?/?	Ojo Caliente Hot Spring Soda Spring					Summers (1976)
RA2	OC-18	5/?/82	Ojo Caliente Hot Spring Well	53.6	4560	3724		Vuataz and others (1984)
RA2	OC-4	12/?/79	Ojo Caliente Hot Spring Well	54.0	3900	3344		Vuataz and others (1984)
RA2	OC-25	4/?/82	Ojo Caliente Hot Spring Well	54.2	4440	3618		Vuataz and others (1984)
RA2	NM21	?/?/75-80	Ojo Caliente Hot Spring Well	55.6		2576		Swanberg (1980)
RA3	OC-14	4/?/82	Ojo Caliente Arsenic Hot Spring	38.3	4200	3665		Vuataz and others (1984)
RA3	S76ARSEN	12/3/74	Ojo Caliente Arsenic Hot Spring	38.3				Summers (1976)

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
RA3	NM19	?/?/75-80	Ojo Caliente Arsenic Hot Spring	43.5		2652		Swanberg (1980)
RA3	OC-5	7/?/80	Ojo Caliente Arsenic Hot Spring	43.5	4000	3131	20	Vuataz and others (1984)
RA3	GS13193	10/6/49	Ojo Caliente Arsenic Hot Spring	45.0	3930			Summers (1976)
RA4	NB82-4	?/?/80-82	Ojo Caliente Hot Spring	43.0				Norman and Bernhardt (1982)
RA5	OC-2	12/?/79	Ojo Caliente HS Lithia Spring	38.0	3900	3475		Vuataz and others (1984)
RA5	OC-13	4/?/82	Ojo Caliente HS Lithia Spring	41.9	4190	3630		Vuataz and others (1984)
RA6	OC-3	12/?/79	Ojo Caliente HS Sodium Sulfate Spring	40.0	4100	3533	15	Vuataz and others (1984)
RA6	GS13192	10/6/49	Ojo Caliente HS Sodium Sulfate Spring	40.6	3920			Summers (1976)
RA6	NM20	?/?/75-80	Ojo Caliente HS Sodium Sulfate spring	41.1		2668		Swanberg (1980)
RA6	OC-16	4/?/82	Ojo Caliente HS Sodium Sulfate Spring	41.3	4250	3628	45	Vuataz and others (1984)
RA6	GS8978	10/1/47	Ojo Caliente HS Sodium Sulfate Spring		3890			Summers (1976)
RA7	450	12/3/74	Ojo Caliente Hot Spring Iron Spring	40.0	390			WATSTORE 1993
RA7	OC-15	4/?/82	Ojo Caliente Hot Spring Iron Spring	42.2	4250	3674		Vuataz and others (1984)
RA7	GS15115	12/3/74	Ojo Caliente Hot Spring Iron Spring	42.8	3900			Summers (1976)
RA7	S76IRON2	12/3/74	Ojo Caliente Hot Spring Iron Spring	42.8				Summers (1976)
RA7	OC-1	12/?/79	Ojo Caliente Hot Spring Iron Spring	43.0	4100	3578	40	Vuataz and others (1984)
RA7	S76IRON1	11/30/65	Ojo Caliente Hot Spring Iron Spring		3300	2438		Summers (1976)
RA8	NB82-3	?/?/80-82	Statue Spring	29.0				Norman and Bernhardt (1982)
RA8	OC-26	6/?/82	Statue Spring	29.2	1660	1386	110	Vuataz and others (1984)
RA8	452	9/5/52	Statue Spring	36.0	1740			WATSTORE 1993
RA9	OC-20	4/?/82	Ojo Caliente Hot Spring Well #1	34.3	3000	2586		Vuataz and others (1984)
RA9	PH65-524	4/8/65	Ojo Caliente Hot Spring Well #1		2375	1515		Summers (1976)
RA11	NM18	?/?/75-80	spring	25.5		1072		Swanberg (1980)
RA12	PH65-523	4/8/65	Ojo Caliente Hot Spring Well #2		1050	665		Summers (1976)
SA1	BA-7	7/?/82	Jemez/Baca # 15	267.0	10400	5735		Shevenell and others (1987)
SA1	BA-8	9/?/82	Jemez/Baca # 15	326.0	10600	5783		Shevenell and others (1987)
SA2	BA-5	7/?/82	Jemez/Baca # 4	297.0	9100	4719		Shevenell and others (1987)
SA3	BA-2	6/?/82	Jemez/Baca # 4	294.0	9100	4769		Shevenell and others (1987)
SA4	BA-4	7/?/82	Jemez/Baca # 13	279.0	8900	4644		Shevenell and others (1987)
SA5	BA-1	6/?/82	Jemez/Baca #13	278.0	8500	4529		Shevenell and others (1987)
SA6	BA-3	6/?/82	Jemez/Baca #24	260.0	10600	5328		Shevenell and others (1987)
SA6	BA-6	7/?/82	Jemez/Baca #24	261.0	10400	5339		Shevenell and others (1987)
SA7	VA-116	1/?/83	Jemez/GRI WC 23-4 at 6300 ft depth	232.6	30800	18100		Shevenell and others (1987)
SA8	BA-9	10/?/82	Jemez/Baca # 19	223.0	10900	6147		Shevenell and others (1987)
SA9	VA-113	1/?/83	Jemez/GRI WC 23-4 at 4800 ft depth	214.0	13720	8580		Shevenell and others (1987)
SA9	VA-114	1/?/83	Jemez/GRI WC 23-4 at 4800 ft depth	214.0				Shevenell and others (1987)
SA10	S-6-80	3/?/82	Jemez/Sulphur Springs Women's Bathhouse	88.0	12800	6850		Shevenell and others (1987)
SA10	VA-76	1/?/82	Jemez/Sulphur Springs Women's Bathhouse	89.0				Shevenell and others (1987)
SA11	VA-80	3/?/80	Jemez/Sulphur Springs main fumarole	88.0	70	95.3		Shevenell and others (1987)

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
SA12	VA-15	1/?/79	Jemez HS Jemez Springs #1 Well 152 m	60.5	1700	1140	80	Shevenell and others (1987)
SA12	VA-21	2/?/79	Jemez HS Jemez Springs #1 Well 152 m	61.0	1830	1200	20	Shevenell and others (1987)
SA12	VA-19	1/?/79	Jemez HS Jemez Springs #1 Well 24 m	68.0	3300	2220	120	Shevenell and others (1987)
SA12	VA-144	2/?/84	Jemez HS Jemez Springs #1 Well	72.2	4670	3005		Shevenell and others (1987)
SA12	VA-121	1/?/83	Jemez HS Jemez Springs #1 Well	73.3	4280	2530	64	Shevenell and others (1987)
SA12	VA-25	5/?/79	Jemez HS Jemez Springs #1 Well 24 m	73.3	3500	2560	8	Shevenell and others (1987)
SA13	VA-7	1/?/79	Jemez HS Travertine Mound Spring	70.0	4200	7580	4	Shevenell and others (1987)
SA13	VA-17	1/?/79	Jemez HS Travertine Mound Spring	72.0	4100	2600	4	Shevenell and others (1987)
SA13	VA-66	12/?/80	Jemez HS Travertine Mound Spring	72.0	3400	1700	4	Shevenell and others (1987)
SA13	VA-71	6/?/81	Jemez HS Travertine Mound Spring	72.0	3900	2520	4	Shevenell and others (1987)
SA13	VA-91	3/?/82	Jemez HS Travertine Mound Spring	72.3	4540		4	Shevenell and others (1987)
SA13	VA-123	1/?/83	Jemez HS Travertine Mound Spring	72.6	4360	2550	3	Shevenell and others (1987)
SA13	VA-142	2/?/84	Jemez HS Travertine Mound Spring	72.9	4740	2630		Shevenell and others (1987)
SA14	272	8/31/49	Jemez HS Soda Spring	65.5	3560	2150	37.85	WATSTORE 1993
SA15	VA14	1/?/79	Jemez/Sulphur Springs unnamed HS	63.0	5800	2490	2	Shevenell and others (1987)
SA16	268	2/7/74	Jemez Hot Springs	31.5				WATSTORE 1993
SA16	267	5/18/73	Jemez Hot Springs	49	3550			WATSTORE 1993
SA16	266	8/21/24	Jemez Hot Springs	52.0		2184		WATSTORE 1993
SA16	JEMEZ6	?/?/75-80	Jemez Hot Springs	53.0		1884		Swanberg (1980)
SA16	NB82-8	?/?/80-82	Jemez Hot Springs	53.0				Norman and Bernhardt (1982)
SA16	JEMEZ5	?/?/75-80	Jemez Hot Springs	56.0		1952		Swanberg (1980)
SA16	269	5/30/74	Jemez Hot Springs	58	3460			WATSTORE 1993
SA16	270	7/15/75	Jemez Hot Springs	72.0	3250			WATSTORE 1993
SA16	274	8/1/47	Jemez Hot Springs	73.0	3700			WATSTORE 1993
SA16	JEMEZ7	?/?/75-80	Jemez Hot Springs	74.0		2156		Swanberg (1980)
SA17	393	8/13/47	Jemez/Sulphur Springs Lemonade Spring	53.0	3760			WATSTORE 1993
SA17	S-10-80	9/?/80	Jemez/Sulphur Springs Lemonade Spring	58.0		3220	0.5	Shevenell and others (1987)
SA18	JP91-2	11/11/91	Jemez Pueblo # 1 Well	57.8	5560	3947		Goff (1991)
SA18	91TDI1	1/5/91	Jemez Pueblo #1 Well	57.8		3366	567.81	Witcher (1991)
SA18	91TDI3	6/15/91	Jemez Pueblo #1 Well	58.2		3349	567.81	Witcher and others (1992)
SA19	VA-18	1/?/79	Jemez HS Gazebo Spring	36.0	4250	2700		Shevenell and others (1987)
SA19	VA-93	3/?/82	Jemez HS Gazebo Spring	46.3	4270		20	Shevenell and others (1987)
SA19	VA-10	1/?/79	Jemez HS Gazebo Spring	55.0	4200	2660	20	Shevenell and others (1987)
SA19	VA-143	2/?/84	Jemez HS Gazebo Spring	74.7	4460	2640		Shevenell and others (1987)
SA19	VA-122	1/?/83	Jemez HS Gazebo Spring	74.9	4380	2540	3	Shevenell and others (1987)
SA19	VA-147	4/?/84	Jemez HS Gazebo Spring		3900			Shevenell and others (1987)
SA20	245	9/29/26	Kaseman #2 Well (Zia Hot Well)	32.0		11200		WATSTORE 1993
SA20	249	4/2/45	Kaseman #2 Well (Zia Hot Well)	50.0	15400			WATSTORE 1993
SA20	254	1/25/74	Kaseman #2 Well (Zia Hot Well)	51.0				WATSTORE 1993

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
SA20	252	6/5/73	Kaseman #2 Well (Zia Hot Well)	52	15700		321.73	WATSTORE 1993
SA20	253	6/6/73	Kaseman #2 Well (Zia Hot Well)	52.0				WATSTORE 1993
SA20	E	?/?/75-80	Kaseman #2 Well (Zia Hot Well)	52.0		11300		Swanberg (1980)
SA20	88TDI1	8/?/88	Kaseman #2 Well (Zia Hot Well)	53.0		10720		Witcher (1988a)
SA20	VA-125	2/?/83	Kaseman #2 Well (Zia Hot Well)	53.0	15700	11400	320	Shevenell and others (1987)
SA20	VA-67	3/?/81	Kaseman #2 Well (Zia Hot Well)	53.0	15800	11300	150	Shevenell and others (1987)
SA20	VA-74	10/?/81	Kaseman #2 Well (Zia Hot Well)	53.0	15600	12800	240	Shevenell and others (1987)
SA20	NB82-10	?/?/80-82	Kaseman #2 Well (Zia Hot Well)	54.0				Norman and Bernhardt (1982)
SA20	VA-53	4/?/80	Kaseman #2 Well (Zia Hot Well)	54.0	16000	11700	150	Shevenell and others (1987)
SA20	247	3/14/64	Kaseman #2 Well (Zia Hot Well)	54.4	15300		5677.5	WATSTORE 1993
SA20	VA-34	8/?/79	Kaseman #2 Well (Zia Hot Well)	56.0	16600	12200	150	Shevenell and others (1987)
SA20	250	9/29/48	Kaseman #2 Well (Zia Hot Well)	59.0	15400		1695.7	WATSTORE 1993
SA20	VA-149	4/?/84	Kaseman #2 Well (Zia Hot Well)		15500			Shevenell and others (1987)
SA21	VA-92	3/?/82	Jemez HS Buddhist Spring	43.2	3200		15	Shevenell and others (1987)
SA21	VA-8	1/?/79	Jemez HS Buddhist Spring	49.0	3300	2160	4	Shevenell and others (1987)
SA21	VA-16	1/?/79	Jemez HS Buddhist Spring	50.0	3300	2550	4	Shevenell and others (1987)
SA22	VA-12	1/?/79	Jemez HS Marsh Spring	49.0	4100	2620	4	Shevenell and others (1987)
SA23	NB82-7	?/?/80-82	Jemez/Soda Dam Hot Spring	45.0				Norman and Bernhardt (1982)
SA23	279	3/8/73	Jemez/Soda Dam Hot Spring	46.0				WATSTORE 1993
SA23	280	6/29/73	Jemez/Soda Dam Hot Spring	46.0	6500			WATSTORE 1993
SA23	VA-109	1/?/83	Jemez/Soda Dam Hot Spring	46.8	7090	4570	60	Shevenell and others (1987)
SA23	VA-140	2/?/84	Jemez/Soda Dam Hot Spring	46.8	7300	4570		Shevenell and others (1987)
SA23	JEMEZ2	?/?/75-80	Jemez/Soda Dam Hot Spring	47.0		3496		Swanberg (1980)
SA23	VA-132	5/?/83	Jemez/Soda Dam Hot Spring	47.0	6800	4590		Shevenell and others (1987)
SA23	VA-26	5/?/79	Jemez/Soda Dam Hot Spring	47.0	6600	4630	60	Shevenell and others (1987)
SA23	VA-51	4/?/80	Jemez/Soda Dam Hot Spring	47.0	5900	4150	60	Shevenell and others (1987)
SA23	VA-6	7/?/78	Jemez/Soda Dam Hot Spring	47.0		4014	60	Shevenell and others (1987)
SA23	VA-64	12/?/80	Jemez/Soda Dam Hot Spring	47.0	5600	4200	60	Shevenell and others (1987)
SA23	VA-70	6/?/81	Jemez/Soda Dam Hot Spring	47.0	6700	4380	60	Shevenell and others (1987)
SA23	VA-73	10/?/81	Jemez/Soda Dam Hot Spring	47.0	6700	4539	40	Shevenell and others (1987)
SA23	VA-89	3/?/82	Jemez/Soda Dam Hot Spring	47.0	6700		40	Shevenell and others (1987)
SA23	VA-99	8/?/82	Jemez/Soda Dam Hot Spring	47.5	6900			Shevenell and others (1987)
SA23	VA-9	1/?/79	Jemez/Soda Dam Hot Spring	48.0	7050	4620	60	Shevenell and others (1987)
SA23	358	5/14/74	Jemez/Soda Dam Hot Spring	76.0	13000			WATSTORE 1993
SA23	VA-146	4/?/84	Jemez/Soda Dam Hot Spring		6700			Shevenell and others (1987)
SA24	283	7/15/75	Jemez/Soda Dam Hot Springs (west spring)	46.0	5780			WATSTORE 1993
SA24	284	8/7/75	Jemez/Soda Dam Hot Springs (west spring)	50.0	5760			WATSTORE 1993
SA25	292	11/7/72	Jemez/Spence Hot Spring	39.5	276		147.62	WATSTORE 1993
SA25	294	3/15/73	Jemez/Spence Hot Spring	39.5	295			WATSTORE 1993

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
SA25	293	12/1/72	Jemez/Spence Hot Spring	41.0	282	224	166.54	WATSTORE 1993
SA25	VA-83	3/?/82	Jemez/Spence Hot Spring	41.5	275	161	160	Shevenell and others (1987)
SA25	A	?/?/75-80	Jemez/Spence Hot Spring	42.0		297		Swanberg (1980)
SA25	NB82-6	?/?/80-82	Jemez/Spence Hot Spring	42.0				Norman and Bernhardt (1982)
SA25	VA-68	6/?/81	Jemez/Spence Hot Spring	42.0	280	297	80	Shevenell and others (1987)
SA25	VA-72	10/?/81	Jemez/Spence Hot Spring	42.0	275	276	20	Shevenell and others (1987)
SA25	VA-120	1/?/83	Jemez/Spence Hot Spring	42.3	293	292	160	Shevenell and others (1987)
SA25	VA-105	9/?/82	Jemez/Spence Hot Spring	42.5	315	161		Shevenell and others (1987)
SA25	291	8/1/47	Jemez/Spence Hot Spring	44.0	283			WATSTORE 1993
SA25	VA-1	7/?/78	Jemez/Spence Hot Spring	45.0		294	60	Shevenell and others (1987)
SA26	387	8/31/24	Jemez/Sulphur Springs Men's Bathhouse	43.5		7887		WATSTORE 1993
SA26	392	12/2/74	Jemez/Sulphur Springs Men's Bathhouse	70.0				WATSTORE 1993
SA26	VA-75	1/?/82	Jemez/Sulphur Springs Men's Bathhouse	72.0				Shevenell and others (1987)
SA26	VA-81	3/?/82	Jemez/Sulphur Springs Men's Bathhouse	73.6	1300	5.51		Shevenell and others (1987)
SA26	VA-13	7/?/79	Jemez/Sulphur Springs Men's Bathhouse	78.0	4050	822		Shevenell and others (1987)
SA26	391	7/21/67	Jemez/Sulphur Springs Men's Bathhouse	81.0	17300			WATSTORE 1993
SA26	S-7-80	9/?/80	Jemez/Sulphur Springs Men's Bathhouse	82.0	10300	2597		Shevenell and others (1987)
SA26	389	11/4/63	Jemez/Sulphur Springs Men's Bathhouse	87.0	13800			WATSTORE 1993
SA27	238	8/30/62	Jemez Pueblo Indian Hot Spring	35.0	5680		7.57	WATSTORE 1993
SA27	88TDI10	8/?/88	Jemez Pueblo Indian Hot Spring	36.0		3176		Witcher (1988b)
SA27	88TDI9	8/?/88	Jemez Pueblo Indian Hot Spring	43.0		3572		Witcher (1988b)
SA28	287	1/16/73	Jemez/McCauley Hot Spring	30	140		1313.4	WATSTORE 1993
SA28	289	12/13/74	Jemez/McCauley Hot Spring	31	165			WATSTORE 1993
SA28	VA-3	7/?/78	Jemez/McCauley Hot Spring	31.0		189	140	Shevenell and others (1987)
SA28	286	1/16/73	Jemez/McCauley Hot Spring	31.5	165		1392.9	WATSTORE 1993
SA28	VA-87	3/?/82	Jemez/McCauley Hot Spring	31.5	190		400	Shevenell and others (1987)
SA28	VA-119	1/?/83	Jemez/McCauley Hot Spring	31.9	173	186	960	Shevenell and others (1987)
SA28	B	?/?/75-80	Jemez/McCauley Hot Spring	32.0		220		Swanberg (1980)
SA28	285	8/1/47	Jemez/McCauley Hot Spring	43.0	198			WATSTORE 1993
SA29	424	5/16/73	Jemez/San Antonio Hot Springs	40	110		1222.6	WATSTORE 1993
SA29	VA-96	3/?/82	Jemez/San Antonio Hot Spring	40.8	140	168	125	Shevenell and others (1987)
SA29	VA-128	3/?/83	Jemez/San Antonio Hot Spring	41.3	127	167		Shevenell and others (1987)
SA29	NB82-5	?/?/80-82	Jemez/San Antonio Hot Spring	42.0				Norman and Bernhardt (1982)
SA29	VA-4	7/?/78	Jemez/San Antonio Hot Spring	42.0	150	170	150	Shevenell and others (1987)
SA29	F	?/?/75-80	Jemez/San Antonio Hot Spring	56.0		148		Swanberg (1980)
SA30	S-4-80	9/?/80	Jemez/Sulphur Springs Footbath Spring	33.0	30200	8310		Shevenell and others (1987)
SA30	399	8/31/49	Jemez/Sulphur Springs Footbath Spring	40.5	4370	1730		WATSTORE 1993
SA31	434	8/1/47	Jemez/San Antonio Warm Springs	38.5	167		94.63	WATSTORE 1993
SA32	VA-5	7/?/78	Jemez/Soda Dam Grotto Spring	38.0		3950	12	Shevenell and others (1987)

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
SA33	VA-94	3/?/82	Jemez/Bathhouse HS	37.4	178	261	18	Shevenell and others (1987)
SA33	VA-20	2/?/79	Jemez/Bathhouse HS	38.0	163	220	12	Shevenell and others (1987)
SA33	VA-126	3/?/83	Jemez/Bathhouse HS	38.1	166	498		Shevenell and others (1987)
SA34	S-5-80	9/?/80	Jemez/Sulphur Springs Electric Spring	36.0	12800	4580	0.5	Shevenell and others (1987)
SA34	396	8/31/49	Jemez/Sulphur Springs Electric Spring	39.0	12700	3160		WATSTORE 1993
SA35	VA-2	7/?/78	Jemez/Little Spence Hot Spring	34.0		321		Shevenell and others (1987)
SA36	436	1/23/78	Star Lake #2 Ojo Encino Well	33	3000	2190	757	WATSTORE 1993
SA37	VA-27	5/?/79	Jemez/Soda Dam Hidden Warm Spring	29.0	5700	3990	2	Shevenell and others (1987)
SA37	VA-90	3/?/82	Jemez/Soda Dam Hidden Warm Spring	32.0	6000		6	Shevenell and others (1987)
SA37	VA-141	2/?/84	Jemez/Soda Dam Hidden Warm Spring	32.2	6260	4020		Shevenell and others (1987)
SA37	VA-110	1/?/83	Jemez/Soda Dam Hidden Warm Spring	32.3	6150	3930	8	Shevenell and others (1987)
SA38	228	8/26/72	well	32	3140	2460		WATSTORE 1993
SA39	88TDI4	8/?/88	Penasco #3 Spring	27.0		9672		Witcher (1988a)
SA40	88TDI6	8/?/88	Penasco #4 Spring	27.0		9924		Witcher (1988a)
SA41	88TDI8	8/?/88	Salado Warm Spring	25.0		9608		Witcher (1988a)
SA41	M77-SA2	?/?/77	Salado Warm Spring	25.0		10465		Mariner and others (1977)
SA42	VA-130	5/?/83	San Ysidro Warm Spring	22.0	9400	6810		Shevenell and others (1987)
SA42	NB82-9	?/?/80-82	San Ysidro Warm Spring	24.0				Norman and Bernhardt (1982)
SA42	VA-33	8/?/79	San Ysidro Warm Spring	27.0	11550	7170	1	Shevenell and others (1987)
SA42	VA-148	4/?/84	San Ysidro Warm Spring		10000			Shevenell and others (1987)
SA43	88TDI3	8/?/88	Swimming Pool Spring	24.0		7420		Witcher (1988b)
SA44	PC2-6	9/?/84	Jemez/PC-2 at 1335 ft (w/drilling fluid)	40.0	4980	5577		Shevenell and others (1987)
SA44	PC1-1	4/?/84	Jemez/PC-1 at 1712 ft (w/drilling fluid)		9500	7510		Shevenell and others (1987)
SF1	401	7/19/51	Guaje #3 Well	30.5	192		2407.3	WATSTORE 1993
SF2	LA-7	9/?/78	Los Alamos #1B Well	30.0		559	2180	Shevenell and others (1987)
SF2	359	3/16/60	Los Alamos #1B Well	30.5	743	522		WATSTORE 1993
SF2	364	1/15/61	Los Alamos #1B Well	30.5	729		1816.8	WATSTORE 1993
SF2	365	1/15/61	Los Alamos #1B Well	30.5	729		1816.8	WATSTORE 1993
SF2	366	1/19/61	Los Alamos #1B Well	30.5	720		1816.8	WATSTORE 1993
SF2	367	2/8/61	Los Alamos #1B Well	30.5	775		2271	WATSTORE 1993
SF2	362	1/10/61	Los Alamos #1B Well	31	766		1816.8	WATSTORE 1993
SF2	363	1/10/61	Los Alamos #1B Well	31	766		1816.8	WATSTORE 1993
SF2	361	8/31/60	Los Alamos #1B Well	31.5	778			WATSTORE 1993
SF2	368	6/9/61	Los Alamos #1B Well	32.0	876		2271	WATSTORE 1993
SF3	LA-12	9/?/78	Los Alamos #G6 Well	30.5		191	1100	Shevenell and others (1987)
SF4	301	9/26/51	Los Alamos #6 Well	30.0	504		2259.7	WATSTORE 1993
SF4	305	6/25/54	Los Alamos #6 Well	30.0	513			WATSTORE 1993
SF4	326	6/19/58	Los Alamos #6 Well	30.0	517		2271	WATSTORE 1993
SF4	349	7/7/59	Los Alamos #6 Well	30.0	529		2214.2	WATSTORE 1993

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
SF4	355	6/9/61	Los Alamos #6 Well	30.5	635		2271	WATSTORE 1993
SF5	LA-16	9/?/78	Los Alamos #G2 Well	30.0		256	1820	Shevenell and others (1987)
SI1	118	2/9/39	TorC well	45.5	4380		3.79	WATSTORE 1993
SI2	SNM-3	5/31/87	TorC Artesian well	41.2	5140	2697.5		Shevenell (1987)
SI2	NB82-19	?/?/80-82	TorC artesian well	45.0				Norman and Bernhardt (1982)
SI3	B9	?/?/75-80	TorC Blackstone Mineral Bath	45.0		2608		Swanberg (1980)
SI4	112	2/9/39	TorC well	44.5	4400		189.25	WATSTORE 1993
SI5	NB82-18	?/?/80-82	TorC Sierra Grande Bath	44.0				Norman and Bernhardt (1982)
SI6	GS38930	4/15/58	TorC Yucca Lodge well 14 ft	40.0	4460			Summers (1976)
SI6	GS44734	4/4/60	TorC Yucca Lodge well 14 ft	40.0	4450			Summers (1976)
SI6	S76TRC14B	12/4/74	TorC Yucca Lodge well 14 ft	40.0	4500			Summers (1976)
SI6	S76W14-65	12/14/65	TorC Yucca Lodge well 14 ft	40.8	4300	2621		Summers (1976)
SI6	GS43047	8/3/59	TorC Yucca Lodge well 14 ft	41.7	4450			Summers (1976)
SI6	GS54863	8/8/64	TorC Yucca Lodge well 14 ft	41.7	4520		29.15	Summers (1976)
SI6	GS50301	3/13/62	TorC Yucca Lodge well 14 ft	41.9	4480			Summers (1976)
SI6	GS38827	8/5/57	TorC Yucca Lodge well 14 ft	42.2	4400		32.18	Summers (1976)
SI6	GS52617	8/5/63	TorC Yucca Lodge well 14 ft	42.2	4490			Summers (1976)
SI6	S76TRC14A	5/28/54	TorC Yucca Lodge well 14 ft	42.8	4510	2670	4.16	Summers (1976)
SI6	GS653	4/28/43	TorC Yucca Lodge well 14 ft	43.0				Summers (1976)
SI6	GS18840	3/31/52	TorC Yucca Lodge well 14 ft	43.3	4430		7.57	Summers (1976)
SI6	GS31092	8/2/55	TorC Yucca Lodge well 14 ft	43.3	4450		2.91	Summers (1976)
SI6	T41-YLW14	2/?/39	TorC Yucca Lodge well 14 ft	43.3				Summers (1976)
SI6	GS33929	9/17/56	TorC Yucca Lodge well 14 ft	43.6	4450		2.91	Summers (1976)
SI6	GS15117	12/4/74	TorC Yucca Lodge well 14 ft		4500			Summers (1976)
SI6	GS27039	7/12/54	TorC Yucca Lodge well 14 ft		4420		1.89	Summers (1976)
SI7	NB82-17	?/?/80-82	TorC Yucca Lodge	43.0				Norman and Bernhardt (1982)
SI8	S76YUCCA	12/14/65	TorC Yucca Lodge outdoor pool	41.7				Summers (1976)
SI9	B10	?/?/75-80	TorC Sierra Mineral Bath	41.0		2688		Swanberg (1980)
SI10	B11	?/?/75-80	TorC warm spring	41.0		2640		Swanberg (1980)
SI11	B19	?/?/75-80	TorC Yucca Lodge	41.0		2708		Swanberg (1980)
SI12	111	9/15/44	TorC Old Government Spring	40.0	4480		4.92	WATSTORE 1993
SI12	GS20949	2/9/39	TorC Old Government Spring		4520	2560		Summers (1976)
SI12	GS684	6/23/38	TorC Old Government Spring		4590			Summers (1976)
SI13	107	7/19/45	TorC well	40.0	4410		3.03	WATSTORE 1993
SI14	108	2/9/39	TorC well	40				WATSTORE 1993
SI14	113	2/9/39	TorC well	44.5	4410	2490	257.38	WATSTORE 1993
SI15	98	2/9/39	TorC Ponce De Leon Spring	39	4400	2440	473.13	WATSTORE 1993
SI15	96	4/18/50	TorC Ponce De Leon Spring	40.0	4480		605.6	WATSTORE 1993
SI15	97	4/18/50	TorC Ponce De Leon Spring	40.0	4470			WATSTORE 1993

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
SI15	100	2/10/39	TorC Ponce De Leon Spring	40.0	4350			WATSTORE 1993
SI15	102	4/15/58	TorC Ponce De Leon Spring	40.0	4460			WATSTORE 1993
SI15	104	12/4/74	TorC Ponce De Leon Spring	40.0	4500			WATSTORE 1993
SI15	103	8/13/62	TorC Ponce De Leon Spring	41.5	4480			WATSTORE 1993
SI15	99	10/6/50	TorC Ponce De Leon Spring	42.0	4470		113.55	WATSTORE 1993
SI15	105	8/5/57	TorC Ponce De Leon Spring	42.0	4400		32.17	WATSTORE 1993
SI16	106	2/9/39	TorC Geronimo (State) Springs	38.5				WATSTORE 1993
SI16	SNM-4	5/31/87	TorC Geronimo (State) Springs	42.0	5120	2696.6		Shevenell (1987)
SI16	GS20948	2/9/39	TorC Geronimo (State) Springs		4290	2418		Summers (1976)
SI16	GS3932	3/20/26	TorC Geronimo (State) Springs					Summers (1976)
SI17	NB82-24	?/?/80-82	Hillsboro Warm Spring	34.0				Norman and Bernhardt (1982)
SI17	JUST1	?/?/75-80	Hillsboro Warm Spring	34.5		568		Swanberg (1980)
SI19	S76DWS-65	12/16/65	Derry Warm Springs	33.8	1420	823		Summers (1976)
SI19	S76DWS-74	12/4/74	Derry Warm Springs	33.8				Summers (1976)
SI19	124	7/8/55	Sun Oil Test Well	34.0	2600		3406.5	WATSTORE 1993
SI19	B5	?/?/75-80	Derry Warm Springs			1240		Swanberg (1980)
SI19	B6	?/?/75-80	Derry Warm Springs			1228		Swanberg (1980)
SI19	GS1510	12/4/74	Derry Warm Springs		1660			Summers (1976)
SI20	CON54DWS	4/17/47	Derry Warm Springs	33.9	1650	1030		Summers (1976)
SI20	GS35977	4/30/57	Derry Warm Springs	33.9	1660	823		Summers (1976)
SI20	88	3/7/52	Derry Warm Springs	34.0	1660		37.85	WATSTORE 1993
SI20	89	4/30/57	Derry Warm Springs	34.0	1660			WATSTORE 1993
SI20	GS18725	3/7/52	Derry Warm Springs	34.0	1660		189	Summers (1976)
SI21	90	4/17/47	well	34.0	1650			WATSTORE 1993
SI21	91	3/7/52	well	34.0	1660		30.28	WATSTORE 1993
SI21	92	12/4/74	well	34	1660			WATSTORE 1993
SI21	125	3/7/52	well	34.0	1660			WATSTORE 1993
SI22	83	9/9/71	well	31	1350	953		WATSTORE 1993
SI23	S76AFTER	12/15/65	Barney Iorio #1 Fee	33.0	5600	4931	88	Summers (1976)
SI23	B12	?/?/75-80	warm spring			1392		Swanberg (1980)
SI24	HAREMIT	12/?/1901	TorC "warm spring"			2635		Summers (1976)
SI25	GS44137	12/2/59	Barney Iorio #1 Fee		5600			Summers (1976)
SJ1	440	7/22/78	well	62	11400		1514	WATSTORE 1993
SJ2	442	1/6/76	well	48	4000	3620		WATSTORE 1993
SJ2	441	5/5/75	well	57	4350		1135.5	WATSTORE 1993
SJ3	448	6/11/87	Navajo well	51.8	1200			WATSTORE 1993
SJ3	446	9/24/73	Navajo well	61	1390	880		WATSTORE 1993
SJ4	443	3/28/78	Dome Well Chaco	42	10000			WATSTORE 1993
SJ5	474	7/21/87	ARCO WS-2 well	39.9	8000			WATSTORE 1993

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
SJ6	444	9/12/49	Navajo well	35.5	2320		75.7	WATSTORE 1993
SJ7	466	6/10/87	Navajo 12T-630 Well	31.0	4930			WATSTORE 1993
SJ7	464	6/19/86	Navajo 12T-630 Well	33.0	6000			WATSTORE 1993
SJ8	437	4/22/86	well	32.8	2720			WATSTORE 1993
SJ8	438	4/22/86	well	32.8	2720			WATSTORE 1993
SJ8	439	10/21/87	well	32.9	2800			WATSTORE 1993
SJ9	471	8/29/49	Navajo well	30.5	5050		567.75	WATSTORE 1993
SJ9	473	10/9/52	Navajo well	32.0	4110		567.75	WATSTORE 1993
SJ10	467	3/9/61	Navajo 12T-520 Well	30.0	4050		586.68	WATSTORE 1993
SJ10	468	6/16/86	Navajo 12T-520 Well	31.0	4000			WATSTORE 1993
SJ10	470	6/9/87	Navajo12T-520 Well	31.1	4300			WATSTORE 1993
SJ11	453	4/15/54	well	30.5	8610			WATSTORE 1993
SJ12	463	6/10/87	Navajo 12T-629 Well	30.5	4200			WATSTORE 1993
SM1	S76MNTZ1	1/3/66	Montezuma Hot Spring #1	55.2	810			Summers (1976)
SM1	GS2083	5/16/39	Montezuma Hot Spring #1		878	554		Summers (1976)
SM1	GS4801	7/2/40	Montezuma Hot Spring #1		870	537		Summers (1976)
SM1	GS5233	8/20/40	Montezuma Hot Spring #1		878	531		Summers (1976)
SM2	GS18609	3/11/52	Montezuma Hot Spring #6	50.6	876	530		Summers (1976)
SM3	NM3	?/?/75-80	Montezuma Hot Spring	34.3		464		Swanberg (1980)
SM3	NM6	?/?/75-80	Montezuma Hot Spring	35.6		400		Swanberg (1980)
SM3	NM2	?/?/75-80	Montezuma Hot Spring	48.0		452		Swanberg (1980)
SM3	NB82-11	?/?/80-82	Montezuma Hot Spring	49.0				Norman and Bernhardt (1982)
SM3	NM4	?/?/75-80	Montezuma Hot Spring	53.0		460		Swanberg (1980)
SM3	NM1	?/?/75-80	Montezuma Hot Spring	53.8		432		Swanberg (1980)
SM3	NM5	?/?/75-80	Montezuma Hot Spring	58.5		448		Swanberg (1980)
SM4	GS18610	3/11/52	Montezuma Hot Spring #13	41.1	876	528		Summers (1976)
SM6	S76MNTZ16	2/11/66	Montezuma Hot Spring #16					Summers (1976)
SM9	S76MNTZ2	2/11/66	Montezuma Hot Spring #2					Summers (1976)
SM10	S76MNTZ20	2/11/66	Montezuma Hot Spring #20					Summers (1976)
SM15	S76MNTZ15	2/11/66	Montezuma Hot Spring #15					Summers (1976)
SM18	S76MNTZ18	2/11/66	Montezuma Hot Spring #18					Summers (1976)
SM19	S76MNTZ19	2/11/66	Montezuma Hot Spring #19					Summers (1976)
SO1	CH823-66	8/23/66	core hole	42.2	3460			Summers (1976)
SO2	166	5/7/79	warm well	36	430		11.36	WATSTORE 1993
SO3	126	8/24/79	Welty Salty Well	35	2100	1440	18.93	WATSTORE 1993
SO4	NB82-16	?/?/80-82	Bosque del Apache Well #13	33.0				Norman and Bernhardt (1982)
SO5	127	7/2/80	warm well	33	4600			WATSTORE 1993
SO5	128	2/24/88	warm well	33.0	4450	2870		WATSTORE 1993
SO6	161	7/24/56	Blue Canyon Well	30.0	380			WATSTORE 1993

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
SO6	160	12/4/74	Blue Canyon Well	31.5	360			WATSTORE 1993
SO6	163	1/22/64	Blue Canyon Well	31.8	380		15.14	WATSTORE 1993
SO6	GS-BLUE	4/10/65	Blue Canyon Well	32.2	375		18.93	Summers (1976)
SO6	GS54325	1/22/64	Blue Canyon Well	32.2	380		18.93	Summers (1976)
SO6	159	7/24/56	Blue Canyon Well	32.4	380		75.7	WATSTORE 1993
SO6	NB82-12	?/?/80-82	Blue Canyon Well	33.0				Norman and Bernhardt (1982)
SO6	GS3372	7/24/56	Blue Canyon Well	33.3	380		71.92	Summers (1976)
SO6	BLUE12-74	12/4/74	Blue Canyon Well				18.93	Summers (1976)
SO6	GS15116	12/4/74	Blue Canyon Well		360			Summers (1976)
SO6	HALL4	12/20/61	Blue Canyon Well					Summers (1976)
SO6	BLUE10-65	10/22/65	Blue Canyon Well		365	145		Summers (1976)
SO7	148	1/24/57	Socorro Gallery Spring	30	348	224		WATSTORE 1993
SO7	149	3/20/58	Socorro Gallery Spring	30.0	362	231		WATSTORE 1993
SO7	151	2/5/63	Socorro Gallery Spring	30.0	356			WATSTORE 1993
SO7	155	2/4/77	Socorro Gallery Spring	30.0	370			WATSTORE 1993
SO7	153	4/10/65	Socorro Gallery Spring	30.5	346			WATSTORE 1993
SO7	154	10/23/65	Socorro Gallery Spring	30.5				WATSTORE 1993
SO7	150	12/12/61	Socorro Gallery Spring	31.0	370			WATSTORE 1993
SO7	141	3/20/58	Socorro Gallery Spring	31.5	362		832.7	WATSTORE 1993
SO7	140	1/24/57	Socorro Gallery Spring	32	348	224	1336.1	WATSTORE 1993
SO7	NB82-13	?/?/80-82	Socorro Gallery Spring	32.0				Norman and Bernhardt (1982)
SO7	S76FIG27-3	10/23/65	Socorro Gallery Spring	32.4	334	245		Summers (1976)
SO7	157	10/30/80	Socorro Gallery Spring	32.5	352	224		WATSTORE 1993
SO7	S76FIG27-1	10/23/65	Socorro Gallery Spring	32.6	335	249		Summers (1976)
SO7	WALD1956	?/?/52	Socorro Gallery Spring	32.8				Summers (1976)
SO7	158	1/1/51	Socorro Gallery Spring	33.0		234		WATSTORE 1993
SO7	HALL1	12/12/61	Socorro Gallery Spring	33.0	370			Summers (1976)
SO7	GS410-65	4/10/65	Socorro Gallery Spring	33.1	346			Summers (1976)
SO7	S76FIG27-4	10/23/65	Socorro Gallery Spring	33.1	339	232		Summers (1976)
SO7	142	4/10/65	Socorro Gallery Spring	33.5	346			WATSTORE 1993
SO7	S76FIG27-2	10/23/65	Socorro Gallery Spring	33.6	340	234		Summers (1976)
SO7	GS110-64	1/10/64	Socorro Gallery Spring		356	236		Summers (1976)
SO7	HALL2	2/5/63	Socorro Gallery Spring		356			Summers (1976)
SO7	NMHSS-SC	6/19/73	Socorro Gallery Spring		330	220		Summers (1976)
SO7	S76GS2-48	2/10/48	Socorro Gallery Spring		352			Summers (1976)
SO7	SCOFLD2	12/4/36	Socorro Gallery Spring		347			Summers (1976)
SO7	CLKPRST	5/24/31	Socorro Gallery Spring			318		Summers (1976)
SO7	GS38854	3/20/58	Socorro Gallery Spring		362		832.79	Summers (1976)
SO7	JONES04	?/?/03	Socorro Gallery Spring				1870	Summers (1976)

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
SO7	SCOFLD1	2/17/36	Socorro Gallery Spring		340			Summers (1976)
SO7	SCOFLD3	12/4/36	Socorro Gallery Spring		348			Summers (1976)
SO7	SCTTBRK	1/24/57	Socorro Gallery Spring		348	224	1184.8	Summers (1976)
SO7	SETTLING	10/23/65	Socorro Gallery Spring			232	1105.3	Summers (1976)
SO8	133	1/22/64	Socorro/Sedilla Gallery Spring	30	352	237		WATSTORE 1993
SO8	139	9/4/80	Socorro/Sedilla Gallery Spring	30.0	331	255		WATSTORE 1993
SO8	137	7/1/77	Socorro/Sedilla Gallery Spring	30.5	340			WATSTORE 1993
SO8	HALL3	12/12/61	Socorro/Sedilla Gallery Spring	31.1	370			Summers (1976)
SO8	138	1/22/64	Socorro/Sedilla Gallery Spring	32	352		643.45	WATSTORE 1993
SO8	SNM-21	6/5/87	Socorro/Sedilla Gallery Spring	32.0	338	319.6		Shevenell (1987)
SO8	GS54324	1/22/64	Socorro/Sedilla Gallery Spring	32.2	352			Summers (1976)
SO8	B13	?/?/75-80	Socorro/Sedilla Gallery Spring	34.0		284		Swanberg (1980)
SO8	GS38853	3/20/58	Socorro/Sedilla Gallery Spring				908.49	Summers (1976)
SO8	NMHSS-SD	6/19/73	Socorro/Sedilla Gallery Spring		343	298		Summers (1976)
SO8	S76SEDI	10/23/65	Socorro/Sedilla Gallery Spring		336	249		Summers (1976)
SO9	B28	?/?/75-80	well	30.0		192		Swanberg (1980)
SO10	167	7/10/79	well	30.0	4000	4220		WATSTORE 1993
SO11	B25	?/?/75-80	Monticello Box Warm Spring	29.0		516		Swanberg (1980)
SO12	B17	?/?/75-80	Monticello Box Warm Spring	28.0		468		Swanberg (1980)
SO13	LUC-17	5/?/80	artesian well	26	4000		10	Goff and others (1983)
SO14	LUC-19	5/?/80	Field Artesian Well	25	3700		40	Goff and others (1983)
SO15	LUC-25	5/?/80	Ojo Saladito Spring	24	12000		20	Goff and others (1983)
SP16	B14	?/?/75-80	Cook Spring			348		Swanberg (1980)
TS1	S76JDUN	12/4/65	Hondo Hot Spring	36.9	740	505	1.89	Summers (1976)
TS1	NM31	?/?/75-80	Hondo Hot Spring	40.6		584		Swanberg (1980)
TS2	NM30	?/?/75-80	Mamby Hot Spring	32.8		396		Swanberg (1980)
TS2	458	12/3/74	Mamby Hot Spring	34	794			WATSTORE 1993
TS2	S76MAM3	12/3/74	Mamby Hot Spring	34.4				Summers (1976)
TS2	S76MAM1	12/3/65	Mamby Hot Spring	37.8	660	520	113	Summers (1976)
TS2	S76MAM2	12/3/65	Mamby Hot Spring	37.8	729	491	113	Summers (1976)
TS2	457	7/21/67	Mamby Hot Spring	38	736	504		WATSTORE 1993
TS2	459	7/21/67	Mamby Hot Spring	38	736	491		WATSTORE 1993
TS2	NB82-1	?/?/80-82	Mamby Hot Spring	38.0				Norman and Bernhardt (1982)
TS2	NM29	?/?/75-80	Mamby Hot Spring	38.3		552		Swanberg (1980)
TS2	GS15113	12/3/74	Mamby Hot Spring		794			Summers (1976)
TS3	460	7/22/76	warm spring	37	760			WATSTORE 1993
TS4	451	12/3/74	Rancho Del Rio Grande Well	32	786			WATSTORE 1993
TS5	NB82-2	?/?/80-82	Ponce de Leon Hot Spring	34.0				Norman and Bernhardt (1982)
TS5	S76SITE6	12/3/74	Ponce de Leon Hot Spring	34.0				Summers (1976)

SITE ID	SAMPLE	DATE	NAME	TMP C	COND uS/cm	TDS mg/L	FLOW L/min	REFERENCE
TS5	NM22	?/?/75-80	Ponce de Leon Hot Spring	34.4		512		Swanberg (1980)
TS5	S76SITE2	12/5/65	Ponce de Leon Hot Spring	34.6	740	486	529.95	Summers (1976)
TS5	GS15114	12/3/74	Ponce de Leon Hot Spring		786			Summers (1976)
VA1	S76-52270	5/22/70	well	80.0	3450	3440		Summers (1976)
VA2	172	7/13/75	well	32.5	625	468		WATSTORE 1993

APPENDIX 5

REFERENCES FOR DATA SOURCES

COMPILED DATA BASE REFERENCES

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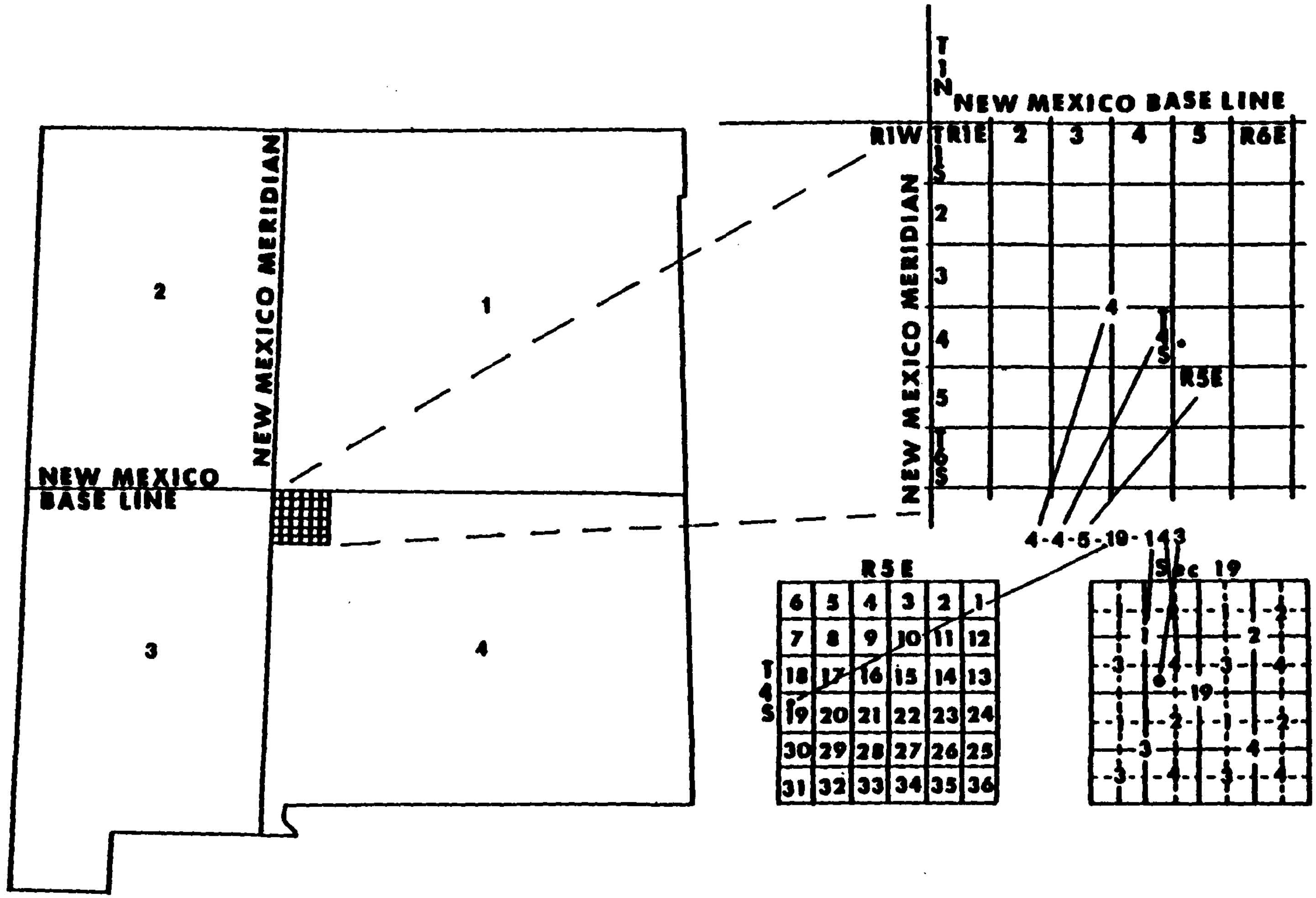
APPENDIX 6

NEW MEXICO WELL AND SPRING LOCATION SYSTEM



NEW MEXICO MERIDIAN
NEW MEXICO BASE LINE
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30 29 28 27 26 25
31 32 33 34 35 36

GEO-HEAT CENTER

Oregon Institute of Technology • Klamath Falls, Oregon 97601 • 503/885-1750 • FAX 503/885-1754

Paul J. Lienau, Director

May 31, 1994

James C. Witcher
SWTDI
New Mexico State University
Box 30001, Dept. 3SOL
Las Cruces, NM 88003-0001

Dear Jim:

This letter is to inform you that the Standard Contract titled "Geothermal Energy Research Development and Data Base Compilation" with Oregon Institute of Technology is extended from June 30, 1994 to August 31, 1994.

If you have questions, please do not hesitate to contact me.

Sincerely,

Paul J. Lienau

Paul J. Lienau
Director

PJL/dg

cc: D. Yates, OIT
J. Renner
H. Ross

UNIVERSITY OF UTAH RESEARCH INSTITUTE
UURI
391 CHIPETA WAY, SUITE C
SALT LAKE CITY, UTAH 84108-1295
TELEPHONE 801-584-4422

March 15, 1994

James C. Witcher
Southwest Technology Development Institute
New Mexico State University
P.O. Box 30001, Dept. 3SOL
Las Cruces, NM 88003

Dear Jim:

Enclosed are 30 copies of our Low Temperature Geothermal and Geothermal Heat Pump Program fact sheet. We are using this fact sheet as one way of reporting to Congress and to state officials the results of the first phase of this program. Perhaps you and Rudi can distribute this information to your contacts in Arizona and New Mexico. We printed 1,000 copies so I have more copies for you if and when you need them.

It seeems like spring is here in Salt Lake City, so I'm trying to get some time to get out in the field and measure the earth. I hope things are going well for you as you develop your databases and reports.

Regards,

Howard

Howard Ross
Project Manager

encl.

SOUTHWEST TECHNOLOGY DEVELOPMENT INSTITUTE

Box 30001/Dept. 3SOL/Las Cruces, New Mexico 88003-0001
Telephone: (505) 646-1846
Telefax: (505) 646-2960

29 November 1993

Dr. Howard P. Ross
University of Utah Research Institute
Earth Science Laboratory
391 Chipeta Way, Suite C.
Salt Lake City, Utah
84108-1295

Dear Howard:

Please find the enclosed Geothermal Database Summary for Arizona and New Mexico. A few things should be noted with regard to the summary and database. First, the summary should be considered as preliminary. Second, only wells and springs with temperatures 10 °C above the mean annual temperature are used for the Arizona and New Mexico compilation. This is necessary because virtually every well or spring below 4,000 feet elevation has a temperature exceeding 20 °C. This is due to climate factors rather than geothermal. If everything over 20 °C were included, the number of wells and springs for both states would easily exceed 5,000 to 10,000. Third, in the 1980 NM and the 1982 AZ databases (maps), some oil well drillstem test data and bottom-hole temperature measurements were included in the databases. The 1993 data eliminates these data to conform with the type of data that other states are gathering.

While the number of agricultural and industrial users in Arizona and New Mexico is small, the increase in direct-use, as measured in Btu or greenhouse acreage, is of an order of magnitude since the early 80's. Arizona has the largest use in the nation for aquaculture, while New Mexico has the largest acreage of geothermally-heated greenhouses currently on line in the nation.

Sincerely,

James C Witcher
Geologist

		AZ 82	AZ93	NM 80	NM 93
DATABASE					
	TOTAL DATABASE ENTRIES	501	543	312	237
	MODERATE TEMP WELLS	0	0	3	10
	LOW TEMP WELLS/SPRGS	501	543	309	247
RESOURCE					
AREAS	LOW TEMP				
	MULTIPLE WELL/SPR AREAS	29	29	24	29
	LOW TEMP SINGLE WELL /SPR	185	190	260	151
	AREAS				
DIRECT-USE					
	SPACE HEATING (DISTRICTS)	0	0	0	2
	AGRICULTURE/INDUSTRIAL	1	5	1	6
	(BUSINESSES)				
	SPACE HEATING	N/A	2	N/A	5
	MUTLIPLE RESIDENCE				
	(NO DISTRICT) (AREAS)				
	POTENTIAL NEAR-TERM	N/A	4	N/A	4
	COMMERCIAL SPACE HEAT				
	(AREAS)				
ELECTRICITY					
	POTENTIAL BINARY POWER	N/A	1	N/A	3
PRIORITY					
RESOURCE	AREAS	N/A	3	N/A	4
AREAS					

Southwest Technology Development Institute
New Mexico State University
P.O. Box 30001/Dept. 3SOL
Las Cruces, New Mexico 88003-0001
Telephone: (505) 646-1846
Fax: (505) 646-2960

Facsimile Transmission Control Sheet

TO (ADDRESSEE)	FAX NO.	COMPANY
HOWARD ROSS	801/584-4453	UURI/UNIVERSITY UTAH
TELEPHONE NO. 801/584-4444	LOCATION	
FROM (SENDER) JIM WITCHER	DATE 11/29/93	NO. OF PAGES (Including Control Sheet) 2

REMARKS:

GEOTHERMAL DATABASE SUMMARY

SOUTHWEST TECHNOLOGY DEVELOPMENT INSTITUTE

Box 30001/Dept. 3SOL/Las Cruces, New Mexico 88003-0001
Telephone: (505) 646-1846
Telefax: (505) 646-2960

NEW MEXICO STATE UNIVERSITY

29 November 1993

Dr. Howard P. Ross
University of Utah Research Institute
Earth Science Laboratory
391 Chipeta Way, Suite C.
Salt Lake City, Utah
84108-1295

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Sincerely,

James C Witcher
Geologist

AZ
NM

		AZ 82	AZ93	NM 80	NM 93
DATABASE					
	TOTAL DATABASE ENTRIES	501	543	312	~~237~~ 247
	MODERATE TEMP WELLS	0	0	3	10
	LOW TEMP WELLS/SPRGS	501	543	309	~~247~~ 237
RESOURCE AREAS	LOW TEMP MULTIPLE WELL/SPR AREAS	29	29	24	29
	LOW TEMP SINGLE WELL /SPR AREAS	185	190	260	151
DIRECT-USE					
	SPACE HEATING (DISTRICTS)	0	0	0	2
	AGRICULTURE/INDUSTRIAL (BUSINESSES)	1	5	1	8
	SPACE HEATING MUTLIPLE RESIDENCE (NO DISTRICT) (AREAS)	N/A	2	N/A	5
	POTENTIAL NEAR-TERM COMMERCIAL SPACE HEAT (AREAS)	N/A	4	N/A	4
ELECTRICITY					
	POTENTIAL BINARY POWER	N/A	1	N/A	3
PRIORITY RESOURCE AREAS	AREAS	N/A	3	N/A	4

Geothermal Energy:
The Heat Is On

The discovery of a new geothermal resource in New Mexico could be your answer to rising energy costs and taxes.

by R. BERGHAGE, R. SCHOEN-MACKERS, and J.C. WITCHER

ENERGY costs are heating up again as an issue for greenhouse operators in the U.S. With President Clinton's proposed energy tax (and the bite it may take out of your profits), it's a good time to look at alternative energy sources.

Geothermal is a proven, environmentally benign, alternative energy source for greenhouse production — and it is exempt from the proposed energy tax. Low operating costs from shallow geothermal reservoirs can result in substantial energy cost savings compared to traditional fossil fuels. A number of commercial greenhouses, both large and small, are already taking advantage of geothermal heat in the Southwest to reduce their energy costs and increase their profitability.

Will it work for you?

The Process

Geothermal heat is the result of geological and hydrological conditions that allow water to circulate deep into the ground. At great depth, the water heats. A useful geothermal resource exists when this heated water is carried back close to the surface through a zone of faults and fractured rock (Figure 1).

This zone effectively provides an outlet for the hot water. Shallow extraction is needed to keep well drilling costs low enough to extract the energy at a competitive overall cost.

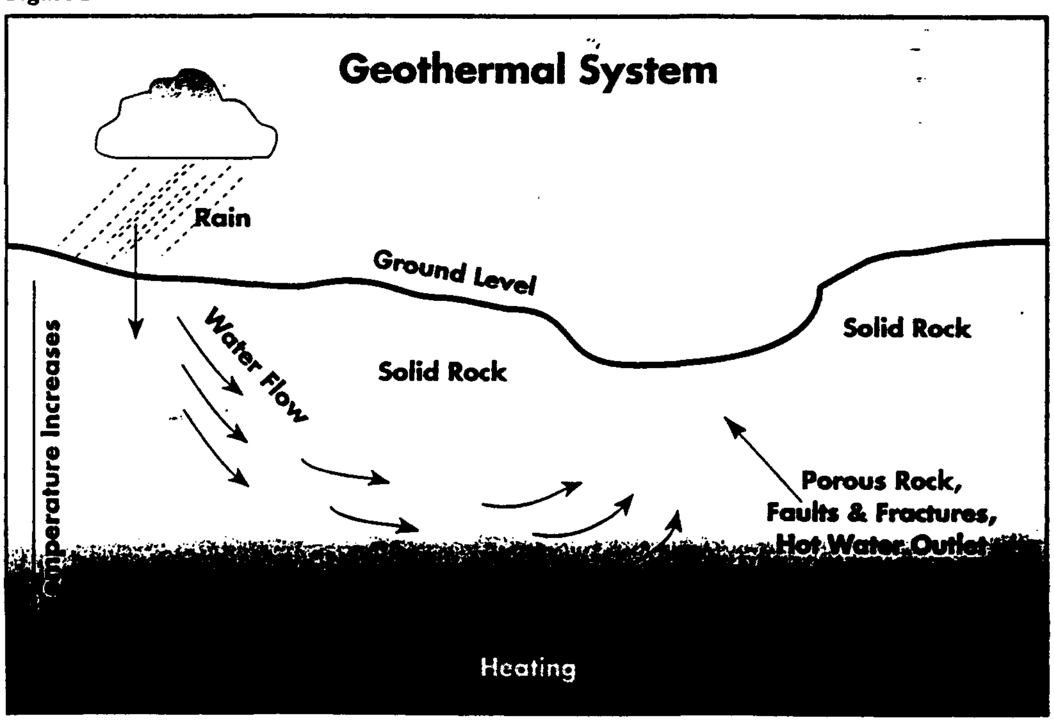
This unique set of geological and hydrological conditions exists in many locations in the Southwest. Geothermal resources in the western U.S. are so abundant, in fact, that the known resources could satisfy the heating requirements of the entire U.S. greenhouse industry for more than 600 years.

Why Don't More Operations Use It?

So why aren't there more geothermal greenhouses? The answer lies in other requirements of a commercial greenhouse. A greenhouse must have a good quality water source for irrigation, access to a market and a transportation network, and somewhat level land. It also requires access to labor.

Unfortunately, these features are

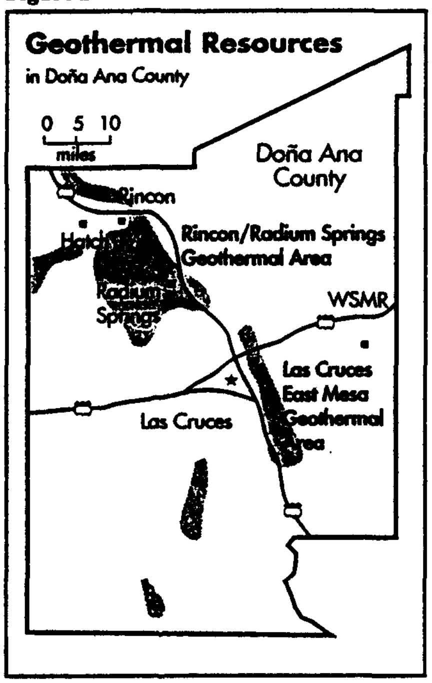
Figure 1



missing from many geothermal sites. In addition, geothermal water may be quite high in salts and is thus unusable for greenhouse production.

There are several locations in southern New Mexico where all, or at least most, of the proper conditions come together. Two of the largest geothermal greenhouses in the U.S. (Burgett Floral and Masson's Radium Springs Farms) are located there.

Figure 2



Burgett Floral has approximately 20 acres of geothermally heated greenhouses in the Animas Valley. Masson's at Radium Springs is located in the Rio Grande rift zone, a promising location for additional geothermal development.

In the Rio Grande Valley in southern New Mexico, fresh water, major north/south (I-25) and east/west (I-10) interstate highways, and abundant, reliable labor are available. In a few choice locations, geothermal water is also near the surface (Figure 2).

Until recently the known shallow geothermal water resources in the Rio Grande rift were all considered low temperature geothermal water.

This could change, however, with discovery of the hottest shallow geothermal resource in the southern Rio Grande rift, found in Rincon, NM. A test well in Rincon demonstrated the existence of an excellent reservoir at a depth of 350-600 feet with water that will exceed 180°F.

Data indicate that a second reservoir at about 1400-2000 feet will have temperatures exceeding 240°F. The shallow resource could be a very economical source of heat for greenhouse production with a properly designed well producing 500-1000 gallons per minute, and over 20-40 million Btus per hour.

A Warm Invitation

The state of New Mexico and New Mexico State University would like to encourage the development of this resource by the greenhouse industry. New Mexico offers growers a favorable political and environmental climate. In addition, New Mexico State University can provide technical engineering and horticultural assistance.

Growers in southern New Mexico enjoy more than 320 days of sun per year and a dry climate which reduces disease control problems and allows for very effective cooling with evaporative cooling systems.

For more information about this resource or about geothermal energy used in greenhouses, contact The Southwest Technology Development Institute, New Mexico State University, Las Cruces, NM 88003, 505-646-0846. **GG**

About the authors: Dr. R. Berghage is assistant professor, Department of Agronomy and Horticulture, and R. Schoenmackers is director and J. Witcher is an engineer with the Southwest Technology Development Institute, New Mexico State University, Las Cruces, NM 88003-0003.

M E M O R A N D U M

TO: Paul Lienau, OIT-GHC

FROM: Howard Ross

DATE: May 26, 1992

SUBJECT: Low-Temperature Program: New Mexico State Team

Enclosed are a revised Statement of Work, letter of response, and budget and contractual information for a proposed subcontract for the New Mexico State University State Team, submitted by Jim Witcher and Rudi Schoenmackers. I believe this is all of the information that will be needed for the OIT contract modification with EG&G.

This is the only state team package ready to go to OIT and EG&G at present, but most of the others should be ready during the month of June. Please let me know of any problems with this. Jim Witcher, Southwest Technology Development Institute, can be called directly for additional details.

ADDENDUM TO STANDARD CONTRACT AGREEMENT
for
STATE GEOTHERMAL ENERGY RESEARCH,DEVELOPMENT,
AND DATABASE COMPILATION

between

THE OREGON STATE SYSTEM OF HIGHER EDUCATION
OREGON INSTITUTE OF TECHNOLOGY

and

NEW MEXICO STATE UNIVERSITY
SOUTHWEST TECHNOLOGY DEVELOPMENT INSTITUTE

STATEMENT OF WORK

1.0 INTRODUCTION

The United States Department of Energy - Geothermal Division (DOE/GD) supports the development of indigenous and environmentally advantageous energy alternatives to the traditional fuels. There is a very large, nearly unused supply of low- and moderate-temperature geothermal resources in the United States that could be brought on line over the next decade. The increased use of Geothermal Heat Pumps (GHPs) could also reduce the need for traditional fossil fuel consumption for space heating and cooling.

The U.S. Congress has appropriated funds for a program of Low-Temperature Geothermal Resources and Technology Transfer and DOE/GD has funded EG&G, Idaho to establish contracts with the Oregon Institute of Technology - Geo-Heat Center (OIT-GHC), the Idaho Water Resources Research Institute (IWRRI) and the University of Utah Research Institute (UURI) to implement this program.

Important parts of this program are to bring the inventory of the nation's low- and moderate-temperature resources up to date, to complete a collocation study of these resources and communities and other potential users, and to collect and disseminate information necessary to expand the use of GHPs. OIT-GHC will have the lead role in the collocation study and will establish subcontracts with the state resource teams. UURI will work with the State Teams on gathering, documenting, and assembly of low- and moderate-temperature hydrothermal resource data and will assist in technical monitoring of the State Team efforts and publications. IWRRI will be responsible for establishing the hydrothermal resource data for Idaho and for performing geothermal reservoir evaluations throughout the western United States.

The technical tasks described herein may be considered Phase I of the Low-Temperature Geothermal Resources and Technology Transfer program. If Phase I proves successful, and additional funds are appropriated by Congress, the program may be expanded and continued. Phase II would likely include detailed resource evaluations of priority areas identified in Phase I.

Funding for the Low-Temperature Geothermal Resources and Technology Transfer Program is limited, and the success and continuation of the program is dependent upon a productive Phase I effort. Participating State Teams are encouraged to seek state or organization cost shares (in cost or in-kind) to enhance this contract effort.

2.0 TECHNICAL TASKS

The following technical tasks will be accomplished under this subcontract.

2.1 Complete an updated inventory of low- and moderate-temperature resources for the States of New Mexico and Arizona, current to June 1, 1992. Review drilling records and other information to identify new resources and verify temperatures and flow rates of springs and wells which may have changed substantially since the previous statewide geothermal resource inventory. Identify geological, geophysical, geochemical, and hydrologic studies which relate to these resources. The minimum temperature for a low-temperature resource is defined to be 10°C above the mean annual air temperature at the surface and should increase by 25°C/km. Occurrences to 150°C will be included.

2.2 Conduct a fluid geochemistry study of the more important resource areas for which existing data are questionable or unavailable. UURI will provide up to ten (10) quantitative fluid chemical analyses for each state in support of this study.

2.3 Complete a computer database listing compatible with Lotus 123 format tabulating for each occurrence: name, location (T,R,S), county, longitude, latitude, depth, flow, temperature, chemistry, and other data as appropriate and available.

2.4 Review OIT-GHC geothermal resource and demographic data for the States of New Mexico and Arizona for accuracy and completeness, as part of the collocation study.

2.5 Assist OIT-GHC, UURI, and IWRRI in studies to prioritize low- and moderate-temperature resource areas for new development. Develop conceptual geologic models and groundwater data for selected resources.

3.0 REPORTS, DATA, AND OTHER DELIVERABLES

3.1 A geothermal database listing in hardcopy and diskette form will be submitted to UURI. The listing will include all known low- and moderate- temperature spring and well occurrences in the States of New Mexico and Arizona. Principal facts will include location, depth (well), flow rate (if known), etc.

3.2 Letter reports and memoranda reviewing collocation data and priority rankings will be submitted to OIT-GHC and UURI.

3.3 A final summary report, not to exceed 70 pages, describing all tasks and their results, and documenting any new temperature, geologic, geochemical or geophysical data will be submitted to UURI, OIT-GHC, and IWRRI. This report may incorporate interim letter reports and memoranda as appendices. The report will include a geothermal resource occurrence map of the two states, black and white, scale 1:1,000,000 or acceptable alternative.

3.4 Interim progress reports will be submitted to UURI quarterly.

4.0 SCHEDULE OF PERFORMANCE AND REPORTING

4.1 The period of performance for this agreement will be 24 months, unless modified by letter agreement and signed by the Southwest Technology Development Institute, OIT-GHC, and UURI.

4.2 A review of the OIT-GHC collocation study will be completed and a letter report or memorandum of comment submitted to OIT-GHC and UURI within one month after receipt of the draft document from OIT-GHC.

4.3 A preliminary database listing of geothermal resource occurrences will be submitted to UURI within four months after the execution of this agreement.

4.4 A final database listing of geothermal resource occurrences will be submitted to UURI within twelve months after the execution of this agreement.

4.5 A final report documenting all new data and activities completed under this agreement will be submitted to UURI within 24 months after the execution of this agreement.

5.0 RESPONSIBLE PARTIES

5.1 The Principal Investigators for this agreement will be James C. Witcher and Rudi Schoenmackers, Southwest Technology Development Institute.

5.2 The Technical Project Managers for this agreement will be Howard P. Ross, UURI and Paul J. Lienau, OIT-GHC.

5.3 The Contracting Officer for this agreement will be Douglas Yates, OIT.

6.0 FUNDING

This contract agreement provides for funding not to exceed $60,000.00 for the completion of all technical tasks and submittal of all required deliverables.

RESUME

JAMES C. WITCHER
GEOLOGIST

ADDRESS: Southwest Technology Development Institute, New Mexico State University, Box 30001, Dept 3SOL,Las Cruces, NM 88003

EDUCATION:
1992-New Mexico State University, MS
1977-New Mexico State University, BS
1967-1969-New Mexico Military Institute

INTERESTS :
Exploration geology and geophysics; geologic mapping; aqueous geochemistry; geothermics and terrestrial heat flow; hydrogeology; Quaternary geology; environmental geology; radon occurrence and transport; regional geology of the southwestern United States and Rio Grande rift; direct-use geothermal utilization; economic geology; soil geochemical surveying; geothermal well drilling and design; development of exploration models for geothermal resources.

EXPERIENCE:
1986-1992 Geologist: Southwest Technology Development Institute, New Mexico State University, Las Cruces, New Mexico.

1984-1986 Graduate assistantship: Department of Earth Sciences, New Mexico State University,Las Cruces, New Mexico

1982-1983 Consulting geologist: Stone and Witcher, Tucson, Arizona

1978-1982 Geologist: Arizona Bureau of Geology and Mineral Technology, University of Arizona, Tucson, Arizona

BACKGROUND AND EXPERTISE:
Measurement of heat flow; temperature log interpretation for vertical ground-water flow; planned and supervised drilling of temperature gradient holes; developed a CO_2 correction to the silica geothermometer for low-temperature geothermal waters; collection and interpretation of ground-water chemistry data; recommended, directed, and intepreted contract geophysical surveys; familiar with government geothermal permitting procedures and regulations; coordinated and authored NOAA/DOE Geothermal Resources of Arizona map; designed and developed a computerized data base for New Mexico geothermal resources and utilization; sited, designed, supervised successful low-temperature geothermal wells; identified a "caliche effect" in self potential (SP) geophysical surveying; developed a diffusion model technique for exploration radon soil-gas surveying; discovered a shallow intermediate-temperature geothermal system in the southern Rio Grande rift at Rincon; geologic mapping.

AWARDS AND HONORS:
Sigma Gamma Epsilon

Certificate of Appreciation, Arizona Utility Supervisors Association

Graduate teaching assistantship, Department of Earth Sciences, New Mexico State University.

New Mexico Geological Society Summer Research Award.

INVITED PAPERS:
1986 Fall meeting of American Geophysical Union, San Francisco, California.

1987 Annual meeting Interstate Oil and Gas Compact Commission, Santa Fe, New Mexico.

CHAIRED SESSIONS:
Session co-chairman, Geothermal and Hydrothermal Systems, The Geological Society of America, Cordilleran section meeting, Hermosillo, Mexico.

FORMAL TECHNICAL REVIEW:
New Mexico Water Resources Research Institute (Proposal)

Utah Geological Survey (Publication)

SHORT COURSE ATTENDENCE:

Geophysical Methods in Geothermal Exploration (GRC)

Geochemical Methods in Geothermal Exploration (GRC)

Geothermal Reservoir Engineering (GRC)

Geothermal Well Drilling Practices (GRC)

OTHER ACTIVITIES:

Taught Elderhostel course on Geothermal Energy

PROFESSIONAL AFFILIATIONS:
New Mexico Geological Society
Geological Society of America
Geothermal Resources Council
International Geothermal Association
American Geophysical Union
Association of Ground Water Scientists and Engineers

PUBLICATIONS

ABSTRACTS

Witcher, J. C. and Stone, C., 1981, Thermal regime of the Clifton-Morenci area, Arizona: Cordilleran section, Geological Society of America Abstracts, v. 13, no. 2, p. 114.

Witcher, J. C., 1986, Heat flow variation in the Basin and Range, New Mexico: EOS Transactions, American Geophysical Union, v. 67, no. 46, p. 1134 (invited paper)

Witcher, J. C. 1987, Geologic settings of hydrothermal resources in the Basin and Range, Arizona and New Mexico: Annual meeting, Geological Society of America Abstracts, v. 19, no. 7, p. 893.

Witcher, J. C., 1991, A diffusion model for radon soil-gas survey interpretation: Rocky Mountain section, Geological Society of America Abstracts, v. 23, no. 4, p. 107.

Witcher, J. C., 1992, A geologic framework for geothermal systems in the southern Basin and Range Province and southern Rio Grande rift, New Mexico: Proceedings Volume, Spring Meeting, New Mexico Geological Society, Socorro, p. 17.

PAPERS:

Witcher, J. C., 1987, Geothermal resources in New Mexico, geologic settings and development update: The Interstate Oil and Gas Compact and Committe Bulletin, v. 1, no. 2, p. 49-60 (invited paper)

Witcher, J. C., 1988, Geothermal resources of southwestern New Mexico and southeastern Arizona, in Mack, G. H., Lawton, T. F., and Lucas, S. G., eds., Cretaceous and Laramide Tectonic Evolution of Southwestern New Mexico: New Mexico Geological Society 39th Annual Field Conference Guidebook, p. 191-197.

Fischer, C. L., Whittier, J., Witcher, J. C., and Schoenmackers, 1990, An economic evaluation of southern New Mexico's low-temperature geothermal resources: Transactions, Geothermal Resources Council, v. 14, part 1, p. 495-498.

Witcher, J. C., Whittier, J, Morgan R., 1990, New Mexico geothermal data base: Transactions, Geothermal Resources Council, v. 14, part 1, p. 513-518.

Witcher, J. C., 1991, The Rincon geothermal system, southern Rio Grande rift, New Mexico: A preliminary report on a recent discovery: Transactions, Geothermal Resources Council, v. 15, p. 205-212.

Witcher, J. C., 1991, Radon soil-gas surveys with diffusion-model corrections in geothermal exploration: Transactions, Geothermal Resources Council, v. 15, p. 301-308.

Whittier, J., Schoenmackers, R., and Witcher, J. C., 1991, Geothermal direct-use - a successful example of greenhouse heating in New Mexico: Transactions, Geothermal Resources Council, v. 15, p. 73-76.

MAPS

Hahman, W. R., Stone, C., and Witcher, J. C., 1978, Preliminary map - geothermal energy resources of Arizona, geothermal map 1: State of Arizona Bureau of Geology and Mineral Technology, scale 1:1,000,000.

Witcher, J. C., Stone, C., and Hahman, W. R., 1982, The geothermal resources of Arizona: National Geophysical and Solar-Terrestrial Data Center, National Oceanic and Atmospheric Administration, in cooperation with the U.S. Department of Energy and the State of Arizona Bureau of Geology and Mineral Technology, University of Arizona, scale 1:500,000.

ARTICLES

Witcher, J. C., 1979, Geothermal space heating and cooling - a direct use of naturally occurring hot water in southern Arizona: Fieldnotes, State of Arizona Bureau of Geology and Mineral technology, v. 9, no. 4, p. 1-2.

Witcher, J. C., 1980, Geothermal space heating/cooling: Geo-heat Utilization Center Quarterly Bulletin, Oregon Institute of Technology, v. 5, no. 2, p. 18-20.

Witcher, J. C., 1981, Thermal springs of Arizona: Fieldnotes, State of Arizona Bureau of Geology and Mineral Technology, v. 11, no. 2, p. 1-3.

Witcher, J. C, Reiter, M., Bland, D., and Barroll, M. W., 1992, Geothermal Resources in New Mexico: New Mexico Geology, New Mexico Bureau of Mines and Mineral Resources, v. 14, no. 1, p. 14-16.

<u>TECHNICAL REPORTS</u>

Swanberg, C. A., Morgan, P., Stoyer, C., and Witcher, J. C., 1977, An appraisal study of the geothermal resources of Arizona and adjacent areas in New Mexico and Utah and their value for desalination and other uses: New Mexico Energy Institute Technical Report 6, New Mexico State University, 76 p.

Witcher, J. C., 1979, A progress report of geothermal investigations in the Clifton area: State of Arizona Bureau of Geology and Mineral Technology Open-File Report 79-1b, 16p.

Witcher, J. C., 1979, A geothermal reconnaissance study of the San Francisco River between Clifton, Arizona and Pleasanton, New Mexico: State of Arizona Bureau of Geology and Mineral Technology Open-File Report, 18 p.

Witcher, J. C., 1979, Geothermal potential of the IBM plant site area, Tucson, Arizona: State of Arizona Bureau of Geology and Mineral Technology Open-File Report 9-18, 26 p.

Witcher, J. C., 1979, A preliminary report on the geothermal energy potential of the Safford basin, southeastern Arizona: State of Arizona Bureau of Geology and Mineral Technology Open-File Report 79-2C, 31 p.

Witcher, J. C., 1979, A preliminary study of the geothermal potential of the Tucson metropolitan area: State of Arizona Bureau of Geology and Mineral Technology Open-File Report 79-2d, 19 p.

Witcher, J. C., 1979, Proven, potential and inferred geothermal resources of Arizona and their heat contents: State of Arizona Bureau of Geology and Mineral Technology Open-File Report 79-5, 65 p.

Witcher, J. C., 1980, Proven, potential and inferred geothermal resources of Arizona and their heat contents, <u>in</u> Powell, W. and Tang, K. eds., Geothermal direct heat use: Market potential penetration analysis for federal region IX: Jet Propulsion Laboratory, JPL Publication 80-41, Pasadena, California, p. A3 - A73.

Witcher, J. C. and Stone, C., 1980, Heat flow and the thermal regime in the Clifton, Arizona area: State of Arizona Bureau of Geology and Mineral Technology Open-File Report 80-1a, 29p.

Witcher, J. C., 1981, Thermal springs of Arizona, <u>in</u> Ruscetta, C. A. and Foley, D., eds., Geothermal Direct Heat Program Glenwood Springs Technical Conference Proceedings, Volume 1: Earth Science Laboratory University of Utah Research Institute, Salt Lake City, Utah, ESL Report 59, p. 78-89.

Witcher, J. C.l, 1981, Geothermal resource potential of the Safford-San Simon basin, Arizona: State of Arizona Bureau of Geology and Mineral Technology Open-File Report 81-26, 125p.

Witcher, J. C., 1981, Geothermal energy potential of the lower San Francisco River region, Arizona: State of Arizona Bureau of Geology and Mineral Technology Open-File Report 81-7, 141p.

Witcher, J. C., 1982, Geothermal resource potential of the Tucson basin, Arizona: State of Arizona Bureau of Geology and Mineral Technology Open-File Report 82-3, 49p.

Witcher, J. C., 1982, Geothermal resource potential of the Willcox, Arizona area: State of Arizona Bureau of Geology and Mineral Technology Open-File Report 82-4, 40 p.

Witcher, J. C., 1982, Exploration for geothermal energy in Arizona Basin and Range: State of Arizona Bureau of Geology and Mineral Technology Open-File Report 82-5, 51 p.

Witcher, J. C., 1982, Exploration for geothermal energy in Arizona Basin and Range, in Ruscetta, C., ed., Geothermal Direct Heat Program Roundup Technical Conference Proceedings, Volume 1: Earth Science Laboratory, University of Utah Research Institute, Salt Lake City, Utah, p. 33-61.

Stone, C., and Witcher, J. C., 1982, Geothermal energy in Arizona - Final Report: State of Arizona Bureau of Geology and Mineral Technology Open-File Report 83-12, 398 p.

Witcher, J. C., and Stone, C., 1983, A C02 - Silica geothermometer for low temperature geothermal resource assessment, with application to resources in the Safford Basin, Arizona: Stone and Witcher consulting geologists, prepared for Arizona Solar Energy Commission and U. S. Department of Energy, 91 p.

Witcher, J. C., Schoenmackers, R., Whittier, J., 1988, Geologic, geohydrologic, and thermal settings of southern New Mexico geothermal resources, in Icerman, L., and Parker, S. K., eds, NewMexico Statewide Geothermal Energy Program: New Mexico Research and Development Institute Report prepared for the U. S.DOE under contract DE-F607-84ID12546, p. 1-1 to 1-117.

Witcher, J. C., 1988, Geothermal Resources of the Jemez Pueblo, a prefeasibility assessment: Southwest Technology Development Institute Report prepared for the Council of Energy Resource Tribes, 50 p., 3 appendices.

Witcher, J. C., 1988, Geothermal Resources of the Zia Pueblo, a prefeasibility assessment: Southwest Technology Development Institute report prepared for the Council of Energy Resource Tribes, 51 p., 3 appendices.

Fischer, C. L., Foster, R., Heller Turietta, M., Whittier, J., Witcher, J. C., and Zachritz, W. H., 1990, New Mexico economic development and geothermal resources: potential industry applications: New Mexico Energy, Minerals and Natural Resources Department Report EMNRD 77-521.31-121, 55 p.

Fischer, C. L., Whittier, J., Witcher, J. C., Schoenmackers, R., 1990, Southern New Mexico low-temperature geothermal resource economic analysis: New Mexico Research and Development Institute Report NMRDI 2-78-5202/II, 99 p.

Witcher, J. C., 1990, A geologic and hydrogeologic inventory of the NMSU landfill area: Southwest Technology Development Institute report prepared for NMSU Physical Plant Department, 23 p.

Witcher, J. C. and Schoenmackers, R., 1990, Time-integrated radon soil-gas surveys in geothermal exploration in the southern Rio Grande rift, New Mexico: Final Report, Southwest Technology Development Institute prepared for the U. S. Department of Energy under contract DEFG07-88ID12794 and New Mexico Research and Development Institute under contract 2-77-5206, 2 volumes, 175 p., and 30 appendices.

Foster, R. E., Fischer, C. L., and Witcher, J. C., 1991, An economic and engineering feasibility assessment of the proposed ironhorse railroad for Lincoln County, New Mexico, Part 1, Engineering analysis: Southwest Technology Development Institute Technical Report, 29 p., 34 appendices.

Witcher, J. C. 1991, Jemez Pueblo geothermal assessment: Technology Enterprise Division, New Mexico Economic Development Department Report 2-78-5206, 11 p.

Witcher, J. C., Heller Turietta, M., and Fischer, C. L., 1992, Geothermal Resources at the Jemez Pueblo, Phase 2, reservoir assessment and feasibility of geothermal applications: Final Report, Southwest Technology Development Institute prepared for the Council of Energy Resource Tribes, Denver, 38 p., and 6 appendices.

Witcher, J. C., 1992, Geologic Logs of NMSU landfill monitor wells: Southwest Technology Development Institute prepared for NMSU Physical Plant Department, 3 p. , and 3 appendices.

RESUME

NAME: Rudi Schoenmackers

TITLE: Director

ADDRESS: Southwest Technology Development Institute
Box 30001, Dept. 3 SOL
Las Cruces, NM 88003-0001

EDUCATION:
Dipl. phys., Physics, University of Bonn, 1972
Dr. rer. nat., Physics, University of Bonn, 1975

PROFESSIONAL EXPERIENCE:
Employer: Southwest Technology Development Institute
Period: March 1988 to present
Position: Director

Administration and management of the Southwest Technology Development Institute's programs and contracts. Research in geothermal and photovoltaic energy systems, and heating and cooling systems for residential and commercial buildings. Development of proposals and new program initiatives. Representation of university research programs to outside groups.

Employer: New Mexico State University Energy Institute
Period: January 1984 to February 1988
Position: Director

Research on geothermal energy systems: resource assessments, exploration drilling programs, low temperature applications, industry assistance, feasibility studies. Design of geothermal heating systems for commercial greenhouses. Commercialization activities and information dissemination. Principal investigator on several ongoing projects. Administration and management of the Energy Institute Program.

Employer: New Mexico Solar Energy Institute, New Mexico State University
Period: September 1979 to December 1983
Position: Head, Wind Energy (April 1981 to December 1983)
Acting Head, Wind Energy (July 1980 to April 1981)

Research engineer (September 1979 to July 1980)

Research work in wind energy: wind resource assessment, wind energy conversion systems design and applications, computer modeling of wind systems, siting of wind turbines, investigation of utility interconnection with wind electrical systems, information dissemination on wind energy, presentations, workshops, and publications. Research work in small-scale hydro power: resource and site assessments, management of a small-scale hydroelectric demonstration plant in Alamogordo.

Employer: Energy and Minerals Department, State of New Mexico
Period: May 1978 to September 1979
Position: Energy consultant

Technical review of proposals submitted for funding under the state's Energy Research and Development Program, especially in the areas of solar, wind and geothermal; program manager for the state's geothermal demonstration program; technical assistance and advice for energy-related projects; review of environmental impact statements; investigation of the feasibility for siting electrical power generating stations in south central New Mexico; information dissemination on energy-related projects.

Employer: Los Alamos Scientific Laboratory
Period: 1975 to 1977
Position: Postdoctoral scientist

Research in experimental nuclear physics: particle-induced fission experiments with Van de Graaf accelerator beam, on-line data acquisition, data evaluation and interpretation, computer programming, work with fast electronics, fission detector development, thin film preparation, publication of research papers, presentation of papers at local and national meetings.

Employer: Institute for Nuclear Physics, University of Bonn, West Germany
Period: 1972 to 1975
Position: Staff Member

Research in experimental nuclear physics: experiments on the Bonn isochronous cyclotron accelerator, the 450 MeV proton synchroton, and the 2 GeV electron synchroton accelerator; work on the cyclotron beam and beam handling system;

construction of a remote controlled scattering chamber; work with a 3Hea-gas recycling system; design and implementation of laboratory learning experience for students of medicine and pharmacy; supervision of laboratory courses for 16 students.

AWARDS:

1967 Award for outstanding achievement in science

1972 Fellowship for doctoral studies based on academic excellence

1975 NATO fellowship for postdoctoral studies based on academic excellence

1984 Special Award for Energy Innovation, U.S. Department of Energy

1986 National Award for Energy Innovation, U.S. Department of Energy

LANGUAGES:

Fluent in English, German; studied Latin, French, and Dutch

PUBLICATIONS:

Schoenmackers, R. 1988. "Agricultural Uses of Geothermal Energy in the Western United States." In The Use of Geothermal Energy in Agriculture. Vila Real, Portugal.

Witcher, J. C.; Schoenmackers, R.; and Whittier, J. 1988. "Geologic Geohydrologic, and Thermal Settings of Southern New Mexico Geothermal Resources." Icerman, L. and Parker, S. K. (eds.). New Mexico Research and Development Institute Report. New Mexico Research and Development Institute, DE-F607-84ID12546, 1:1-117.

Whittier, J.; Schoenmackers, R.; and Witcher, J. C. 1988. "New Mexico Geothermal Exploration and Development: A Decade of Experience." Exploration and Development of Geothermal Resources. International Symposium on Geothermal Energy, Kumamoto and Beppu, Japan, p. 287.

Schoenmackers, R. 1985. "Geothermal Applications in Remote Areas. Solar Applications in Remote Locations Workshop." In Proceedings of the Sixth SOLERAS Workshop, May 1985, Las Cruces, New Mexico.

_____. 1985. "The New Mexico Direct Use Geothermal Commercialization Program." Sixty-first annual meeting of the

Southwestern and Rocky Mountain Division of the American Association for the Advancement of Science, Tucson, Arizona.

Schoenmackers, R., and Barnett, K. 1983. Tying in to the wind: a wind energy handbook for New Mexico. New Mexico Solar Energy Institute: Las Cruces, New Mexico.

Schoenmackers, R.; Wrasman, B.; Zwibel, H.; and Hinman, G. 1983. Economics of business investments in renewable energy systems. In Proceedings of the Eighth IASTED International Symposium, Orlando, Florida, November 9-11.

Schoenmackers, R. 1983. "Micorcomputer applications for wind energy measurements." In Proceedings of the American wind Energy Association National Conference and Exposition, San Francisco, California, October 16-19.

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Schoenmackers, R., and Risser, V. V. 1983. "Photovoltaic wind systems familiarization computer program." In the Proceedings of the Wind/Solar Energy Conference, Kansas City, Missouri, April 25-26.

Schoenmackers, R. 1983. "SWECS performance data from New Mexico's wind energy research and demonstration program." In Proceedings of the Energy Sources Technology Conference and Exhibition, Houston, Texas, January 30 - February 3.

______. 1982. A hydroelectric generator for a municipal pipeline in Alamogordo. In Proceedings of the Fifty-eighth Annual Meeting of the Southwestern and Rocky Mountain Division of the American Association for the Advancement of Science, El Paso, Texas, April 28 - May 1.

Barnett, K., and Schoenmackers, R. 1981. Wind energy in New Mexico. In Proceedings of the Wind Power Energy Alternative for the Midwest Conference, p. 87, April 3-4, Rochester, Minn.

Schoenmackers, R., and Barnett, K. 1981. "Wind in New Mexico." Wind Power Digest 22:40.

_____. 1980. "The New Mexico wind energy program." Proceedings of the Western Sun 1980 Solar Update, Salt Lake City, Utah, September 25-26, 1980.

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David, P.; Debrus, J.; Lubke, F.; Schoenmackers, R.; and Schulze, J. 1978. The fission processes U-238 (a, a'f) at Ea = 50 MeV and U-235 (d, pf) at Ed = 23 MeV and the total kinetic energy release in fission of excited nuclei. Phys. Lett. B (Netherlands) 77B:178.

David, P.; Bachschi, N. M.; Debrus, J.; Kim, U.; Kumbartzki, G.; Lubke, F.; Mayer, T.; UcKuk, K.; Mommsen, H.; Schoenmackers, R.; Speidel, K. H.; and Stein, G. 1977. Investigation of bremsstrahlung-induced reactions in nuclei of masses A-27-238 in the end-point energy range 450 MeV-2.2 GeV. Forschungsber. Landes Nordrhein-Westfalen, no. 2664, p. 1-100.

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Gavron, A.; Britt, H. C.; Goldstone, P. D.; Schoenmackers, R.; Weber, J.; and Wilhelmy, J. B. 1977. m_n/m_f in heavy actinides. Phys. Rev. C (USA) 15:2238.

Bentheim, F.zu; David, P.; Debrus, J.; Hinterberger, F.; Jahn, R.; Lubke, F.; Mommsen, H.; Schoenmcakers, R.; and Schuller, B. 1976. Elastic scattering of a-particles on B-10 for Ea = 5-50 MeV. Z. Phys. A (Germany) 279:163.

David, P.: Debrus, H.: Essen, H.; Lubke, F.; Mommsen, H.; Schoenmackers, R.; and Soyez, W. 1976. Elastic and inelastic He-4 scattering on Pb-208, Th-232, and U-234, 236, 238. Z. Phys. A (Germany) 278:281.

Bachschi, N. M.; David, P.; Debrus, J.; Lubke, F.; Mommsen, H.; and Schoenmackers, R. 1976. Photonuclear reactions in Sc-45 and Cu-nat induced by 2 GeV bremsstrahlung. Nucl. Phys. A (Netherlands) A 264:493.

David, P.; Debrus, J.; Lubke, F.; Mommsen, H.; Schmitt, E.; Schoenmackers, R.; and Simons, H. 1976. Fission of U-238 following inelastic a-particle scattering at bombarding energy E_a = 50 MeV. Phys. Lett. B (Netherlands) 61B:158.

David, P.; Debrus, J.; Lubke, F.; Mommsen, H.; Schoenmackers, R. 1976. Total kinetic energies and mass yield distributions of Cf-252 fission fragments. Phys. Lett. B (Netherlands) 60B:445.

David, P.; Debrus, J.; Lubke, F.; Mommsen, H.; Schoenmackers, R.; and Stein, G. 1974. Bremsstrahlung induced nuclear reactions with E_3max = 450 MeV. Nucl. Phys. A (Netherlands) A 221:145-62.

_____. 1973. High energy photonuclear reactions. Int. Conf. on Photonuclear Reactions and Applications. Conf-730301-P2, Pacific Grove, California, March 26, p. 985.

David, P.; Debrus, J.; Kim, U.; Lubke, F.; Mommsen, H.; Schoenmackers, R.; Soyez, W.; Speidel, K. H.; and Stein, G. 1972. High energy photonuclear reactions. J. Phys. (France) 33:18.

REPORTS:

Design and Construction of the NMSU Geothermally Heated Greenhouse Research Facility. New Mexico Research and Development Institute, NMRDI 2-72-4214, 1988.

A Small-Scale Hydroelectric Power Plant for the City of Alamogordo, New Mexico. New Mexico Research and Development Institute, NMRDI 2-69-1201, 1986.

Geothermal low-temperature reservoir assessment in northern Dona Ana County, New Mexico: Final Report. New Mexico Energy Research and Development Institute, NMERDI 2-71-4220. December 1984.

Wind generator for solar office complex, Luna Vocational Technical Institute, Las Vegas, New Mexico: Final Report. New Mexico Energy Research and Development Institute, NMERDI 2-69-2210. September 1984.

Wind system interconnected with Lea County Electric Cooperative at Lovington, New Mexico: Final Report. New Mexico Energy Research and Development Institute, NMERDI 2-68-2214. August 1984.

Wind system interconnected with Public Service Company of New Mexico at Deming, New Mexico: Final Report. New Mexico Energy Research and Development Institute, NMERDI 2-68-2215. August 1984.

Fuel cells for photovoltaic systems applications. Prepared for the Naval Civil Engineering Laboratory. June 1984.

Study for hydraulic power recovery from New Mexico water distribution systems: Final Report. New Mexico Energy Research and Development Institute, NMERDI 2-71-4223. February 1984.

Llano Estacado wind generator demonstration project: final report. Prepared for the New Mexico State Highway Department by the New Mexico Solar Energy Institute, Las Cruces, July 1983.

Final report: Bonito pipeline study. Prepared for the U.S. Department of Interior, Bureau of Reclamation. May 1983.

Alamogordo hydroelectric project engineering report. August 1981.

Report on the technical and economical feasibility for siting electrical generating plants in the Tularosa Basin. January 1979. Prepared for and submitted to the 1st session of the 34th New Mexico Legislature, Santa Fe, New Mexico.

OTHER:

Photography, published in Science, October 13, 1978.

EXPLANATION

ARIZONA
GEOTHERMAL RESOURCES AND CITIES COLOCATION LIST
RESOURCES >50 °C

CITY — Name of city, town, or community.

POP — Population of CITY.

NOTES (A) — Explanation of POP values.

- E — Estimated population.
- C90 — 1990 Census.
- 2652.8/T — Population density (per mile).
  - T — Town.
  - For CITY without estimate or census the POP value represents the density times 5.

M — Distance in miles of wells and springs from CITY.

Tmax — Maximum measured discharge temperatue in °C.

TDS — Total dissolved solids in mg/L.
minimum/maximum reported values.

DEPTH — Well depth in meters (m).
minimum/maximum reported depths for several thermal wells.

FLOW — Discharge rates for thermal wells and springs in L/min.

NOTES (B) — Explanation of FLOW vaues.

- R — Reported FLOW.
- E — Estimated FLOW. In general irrigation wells are assumed to have a flow of 4000 L/min and flowing artesian wells are assumed to flow 500 L/min.
- H — Historical reported flow. Well is currently plugged or destroyed.

P8000 — Flowing well with an estimated of flow rate 8000 L/min when pumped

ARIZONA									
GEOTHERMAL RESOURCES AND CITIES COLOCATION LIST									
Resources >50 C									
CITY	POP	NOTES (A)	M	Tmax	TDS	DEPTH	WELLS	FLOW	NOTES (B)
					min/max	min/max			
CASTLE HOT SPRINGS	<100	E	1	55	760	ND	ND	1287	R
CLIFTON	2840	C 90	1	70	10732\14272	ND	ND	4500	R
COOLIDGE	6927	C90	1\5	72	684\9500.	469\931	9	36000	E
DAVIS MONTHAN AFB	6279	C90	3	52	485	760	1	7041	R
ELEVEN MILE CORNER	<100	E	3	62		914\955	2	8000	E
GLENBAR	<100	E	1	59	3530	1148	1	8000	R\F\H
GOODYEAR	6258	C90	1\5	50	443\5274	457\579	8	32000	E
HOOKERS HOT SPRING	<100	E	1	52	300	ND	ND	151	R
LITCHFIELD PARK	3303	C90	1\4	56	1404\5676	533\606	3	12000	E
LUKE AFB	4371	C90	3\5	56	274\5676	533\783	10	40000	E
MCNEAL	<100	E	4	54	910	1283	1	379	R
MESA	13264	2652.8\T C 90	1	54	942	75/272	6	24000	E
MORENCI	1799	C 90	7	84	1244	ND	ND	1800	R
PAPAGO FARMS	<100	E	1	51	327\417	127\194	3	12000	E
PIMA	1725	C90	2	59	3530	1148	1	8000	R\F\H
RANDOLPH	<100	E	3	62	1101	914\995	2	8000	E
ROLL	<100	E	5	60	2240	<100	1	500	E
TUCSON	12969	2593.7\T C90	1\5	52	485	523\760	1	7041	R
WELLTON	1066	C 90	6	60	2240	<100	1	500	E
WILLCOX	3122	C 90	9	54		204\445	2	1000	E\F\P8000

GEO-HEAT CENTER

Oregon Institute of Technology • Klamath Falls, Oregon 97601 • 503/885-1750 • FAX 503/885-1754

Paul J. Lienau, Director

June 10, 1992

Mr. Bob Crowton
EG&G Idaho, Inc.
1955 Fremont Avenue
P.O. Box 1625
Idaho Falls, ID 83415-2082

Dear Mr. Crowton:

Enclosed is the addendum to subcontract no. C92-120253 with Oregon Institute of Technology for State Geothermal Energy Research, Development and Database Compilation in New Mexico and Arizona.

Included are the statement of work, budget, resumes, audit information, federal indirect rate agreement and official travel policy for New Mexico State University.

Also, enclosed is the Standard Contract Oregon Institute of Technology will use and is included for your review.

If you have questions on budget, etc., please contact James Witcher at NMSU.

If you have any question, please feel free to contact me on (503) 885-1750.

Sincerely,

Paul J. Lienau

Paul J. Lienau
Director

PJL/dg

Enclosures

cc: Joel Renner
Howard Ross

SOUTHWEST TECHNOLOGY DEVELOPMENT INSTITUTE

Box 30001/Dept. 3SOL/Las Cruces, New Mexico 88003-0001
Telephone: (505) 646-1846
Telefax: (505) 646-2960

8 May 1992

Dr. Howard P. Ross
Earth Science Laboratory
University of Utah Research Institute
391 Chipeta Way, Suite C.
Salt Lake City, Utah 84108-1295

Dear Howard:

Enclosed is the budget for the proposed Statement of Work for the Southwest Technology Development Institute's participation in the Department of Energy-Geothermal Division's Low Temperature Geothermal Resources and Technology Transfer Program. Also, included with the budget are resumes for myself and Rudi Schoenmackers, the audit agency information for New Mexico State University and a copy of the negoiated federal indirect rate agreement, and a copy of the official travel policy. I hope that the budget that I have prepared has sufficient detail for adequate review and approval. If more information is needed, I will be happy to provide you with the additional detail.

Drilling funds are forthcoming from the State of New Mexico to continue our studies at Rincon. This state funding will augment the budget for Task 5 of the proposed Statement of Work.

I look forward to commencing proposed geothermal studies and coordinating work with you.

Sincerely,

James C. Witcher
Geologist

Encl.

BUDGET SUMMARY	TASK 1	TASK 2	TASK 3	TASK 4	TASK 5	SUMMARY TOTALS
PERSONNEL (details below)	$5,850	$4,500	$4,500	$1,620	$5,850	$22,320
FRINGE BENEFITS (23%)	$1,346	$1,035	$1,035	$373	$1,346	$5,134
TRAVEL (details below)	$3,375 (see note)	$3,625	$0	$0	$250	$7,250
SUPPLIES (details at right)	$750	$125	$750	$25	$100	$1,750
STUDENT ASSISTANTS	$2,720	$0	$2,720	$0	$0	$5,440
DIRECT COSTS	$14,041	$9,285	$9,005	$2,018	$7,546	$41,894
INDIRECT COSTS (43.2%)	$6,065	$4,011	$3,890	$872	$3,260	$18,098
TOTAL COSTS	$20,106	$13,296	$12,895	$2,889	$10,805	$59,992
Task 1 travel includes meetings/conferences.				TOTAL ESTIMATED COST		$59,992

SUPPLIES	BOTTLES/ FILTERS/ REAGENTS/ETC	SOFTWARE/ MAPS/ETC	TOTAL SUPPLIES
TASK 1	$0	$750	$750
TASK 2	$100	$25	$125
TASK 3	$0	$750	$750
TASK 4	$0	$25	$25
TASK 5	$0	$100	$100

SALARIES	TOTAL TIME hours	TOTAL LABOR $18/hr	WITCHER PERCENT	LABOR COST	SCHOENMACKERS PERCENT	LABOR COST
TASK 1	325	$5,850	90	$5,265	10	$585
TASK 2	250	$4,500	90	$4,050	10	$450
TASK 3	250	$4,500	90	$4,050	10	$450
TASK 4	90	$1,620	90	$1,458	10	$162
TASK 5	325	$5,850	90	$5,265	10	$585

STUDENT ASSISTANTS	STUDENT hours	LABOR COST $8/hr
TASK 1	340	$2,720
TASK 2	0	$0
TASK 3	340	$2,720
TASK 4	0	$0
TASK 5	0	$0

TRAVEL COSTS	PER DIEM $75/d	COST	MILEAGE 0.25/mi	COST	AIRFARE	SUBTOTAL TRAVEL
TASK 1	10	$750	3,000	$750	$0	$1,500
TASK 2	15	$1,125	10,000	$2,500	$0	$3,625
TASK 3	0	$0	0	$0	$0	$0
TASK 4	0	$0	0	$0	$0	$0
TASK 5	0	$0	1,000	$250	$0	$250
CONTRACT MEETING	2	$150	0	$0	$750	$900
GRC PRESENTATION	3	$225	0	$0	$750	$975

NOTE: Contract meeting is for one round trip to Salt Lake City, Utah.
GRC presentation is for one round trip to present paper on results of contract work to the Geothermal Resources Council annual meeting (a probable West Coast destination).
Travel in Task 1 is for trips to Socorro and Santa Fe in New Mexico and for trips to Tucson and Phoenix in Arizona with an origin in Las Cruces, New Mexico.
Travel in Task 2 is for statewide field data collection in New Mexico and Arizona with an origin in Las Cruces, New Mexico.
Travel in Task 5 is for travel to field areas within a 100 mile radius of Las Cruces, New Mexico.
All airfares have points of origin in El Paso, Texas.

DEPARTMENT OF THE NAVY
OFFICE OF NAVAL RESEARCH
RESIDENT REPRESENTATIVE
FEDERAL BUILDING, ROOM 582
300 EAST 8TH STREET
AUSTIN, TEXAS 78701-3273

IN REPLY REFER TO:
ONR Au/1422:MWD:jad
NMSU/Indirect Cost
13 August 1991

NEGOTIATION AGREEMENT

INSTITUTION: New Mexico State University
Las Cruces, NM 88003

The Indirect Cost Rate(s) contained herein are for use on grants and contracts with all Federal Agencies in accordance with the cost principles mandated by Office of Management and Budget (OMB) Circular A-21. These provisional rates shall be used for forward pricing and billing purposes for FY-1992 until amended. This rate agreement supersedes all previous rate agreements for FY-92.

SECTION I: Rates-Type: Final; Fixed; Predetermined (Pred); Provisional (Prov)

Type	Effective Period From	To	Rate	Base	Applicable To	Location
Overhead						
Prov	7/1/91	6/30/92		(a)	Sponsored Research Physical Science Lab.	On-Campus
Prov	7/1/91	6/30-92		(a)	Sponsored Research Physical Science Lab.	Off-Campus
Prov	7/1/91	6/30/92	25.1%	(a)	Sponsored Research Agriculture	All
Prov	7/1/91	6/30/92	43.2%	(a)	Sponsored Research	On-Campus
Prov	7/1/91	6/30/92	24.7%	(a)	Sponsored Research	Off-Campus
Prov	7/1/91	6/30/92	43.2%	(a)	Sponsored Instruction	All
Prov	7/1/91	6/30/92	73.6%	(a)	Sponsored Research	Primate Center
Employee Benefits	(PSL only)					
Fringe B.	7/1/90	6/30/92		(c)	Physical Science Lab.	All
Leave B.	7/1/90	6/30/92		(b)	Physical Science Lab.	All
Allocated Direct Labor						
Prov	7/1/91	6/30/92		(d)	Physical Science Lab.	All

OVERHEAD NEGOTIATION

Allocation Bases

(a) Total Direct Cost excluding subgrant and subcontract expenditures in excess of $25,000 per agreement, capital expenditures, lease or rental of facilities and student aid.

(b) Direct staff salaries and wages (excluding overtime expenses, straight or premium and allocated direct labor.

(c) Direct staff salaries and wages (including overtime expense, straight and premium) allocated direct labor, and employee leave benefits.

(d) Direct staff and student salaries and wages (excluding overtime, straight and premium, and sabbatical leave).

LIMITATIONS: Use of the rates contained in this Agreement are subject to any statutory limitations, and are applicable to a given contract or grant consistent with the limitation of costs provisions contained therein.

FOR THE UNIVERSITY

James L. McDonough — Name

Vice President for Business Affairs — Title

27 August 1991 — Date

FOR THE GOVERNMENT

MARTIAL W. DAVOUST — Name

Administrative Contracting Officer — Title

21 October 1991 — Date

SOUTHWEST TECHNOLOGY DEVELOPMENT INSTITUTE

Box 30001/Dept. 3SOL/Las Cruces, New Mexico 88003-0001
Telephone: (505) 646-1846
Telefax: (505) 646-2960

NEW MEXICO STATE UNIVERSITY

New Mexico State University has been designated a Minority Institution under Title III of the U.S. Department of Education regulations Section 607.2- 607.5 for the purpose of participating in the Department of Defense Minority Institutions set-aside program.

Cognizant Audit Agency

New Mexico State University's audit agency is:

DCAA Dallas Branch
El Paso Area Office
P.O. Box 7849
Fort Bliss, TX 79926
(915) 568-4602

Attached is a copy of the current negotiated agreement with the government audit agency.

BUSINESS AFFAIRS, DEPT. 3AA

Box 30001/Las Cruces, New Mexico 88003-0001
Telephone (505) 646-2432

MEMORANDUM

November 26, 1990

TO: Barbara J. Morrison
Solar Energy Institute, Dept. 3SOL

FROM: David Pacheco
Acting Vice President for Business Affairs

SUBJECT: Travel Policy Changes

The following NMSU travel policy was approved by the Board of Regents at their November meeting. This policy becomes effective December 1, 1990. Please notify employees in your area of these changes.

1. **PER DIEM**

a. For each day spent on official business and requiring overnight lodging:

In-State Regular	$60.00 per day
In-State Special	$75.00 per day

In-State Special rates apply to Los Alamos, Ruidoso, Santa Fe, and Taos.

Out-of-State Regular	$75.00 per day
Out-of-State Special	$95.00 per day

Out-of-State Special areas include Alaska, Atlanta, Atlantic City, Boston, Chicago, Dallas/Ft. Worth, Hawaii, Las Vegas, Los Angeles, New York City, Palm Springs, Philadelphia, San Diego, San Francisco, Washington D.C., and travel outside the United States.

b. Partial day rates for time periods following a 24-hour period, whether or not overnight lodging is required:

0.1 - 5.9 hours	$ 6.00
6.0 - 11.9 hours	$16.00
12.0 - 24.0 hours	$22.50

2. **REIMBURSEMENT OF ACTUAL EXPENSES**

With prior written approval of the Vice President for Business Affairs, employees traveling on official business either in-state or out-of-state may receive upon submission of receipts:

a. Reimbursement for actual expense for lodging; and

b. Reimbursement for actual expenses for meals not to exceed $22.50 per day.

3. **MILEAGE**

Employees traveling on official business shall receive $.25 per mile for each mile traveled in a privately-owned vehicle, or $.40 per mile for each mile traveled in a privately-owned airplane.

Revised Business Procedures Manuals incorporating these revisions and other policy updates will be distributed by the Business Office on or about January 2, 1990.

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ADDENDUM TO STANDARD CONTRACT AGREEMENT
for
STATE GEOTHERMAL ENERGY RESEARCH,DEVELOPMENT,
AND DATABASE COMPILATION

between

THE OREGON STATE SYSTEM OF HIGHER EDUCATION
OREGON INSTITUTE OF TECHNOLOGY

and

NEW MEXICO STATE UNIVERSITY
SOUTHWEST TECHNOLOGY DEVELOPMENT INSTITUTE

STATEMENT OF WORK

1.0 INTRODUCTION

The United States Department of Energy - Geothermal Division (DOE/GD) supports the development of indigenous and environmentally advantageous energy alternatives to the traditional fuels. There is a very large, nearly unused supply of low- and moderate-temperature geothermal resources in the United States that could be brought on line over the next decade. The increased use of Geothermal Heat Pumps (GHPs) could also reduce the need for traditional fossil fuel consumption for space heating and cooling.

The U.S. Congress has appropriated funds for a program of Low-Temperature Geothermal Resources and Technology Transfer and DOE/GD has funded EG&G, Idaho to establish contracts with the Oregon Institute of Technology - Geo-Heat Center (OIT-GHC), the Idaho Water Resources Research Institute (IWRRI) and the University of Utah Research Institute (UURI) to implement this program.

Important parts of this program are to bring the inventory of the nation's low- and moderate-temperature resources up to date, to complete a collocation study of these resources and communities and other potential users, and to collect and disseminate information necessary to expand the use of GHPs. OIT-GHC will have the lead role in the collocation study and will establish subcontracts with the state resource teams. UURI will work with the State Teams on gathering, documenting, and assembly of low- and moderate-temperature hydrothermal resource data and will assist in technical monitoring of the State Team efforts and publications. IWRRI will be responsible for establishing the hydrothermal resource data for Idaho and for performing geothermal reservoir evaluations throughout the western United States.

The technical tasks described herein may be considered Phase I of the Low-Temperature Geothermal Resources and Technology Transfer program. If Phase I proves successful, and additional funds are appropriated by Congress, the program may be expanded and continued. Phase II would likely include detailed resource evaluations of priority areas identified in Phase I.

Funding for the Low-Temperature Geothermal Resources and Technology Transfer Program is limited, and the success and continuation of the program is dependent upon a productive Phase I effort. Participating State Teams are encouraged to seek state or organization cost shares (in cost or in-kind) to enhance this contract effort.

2.0 TECHNICAL TASKS

The following technical tasks will be accomplished under this subcontract.

2.1 Complete an updated inventory of low- and moderate-temperature resources for the States of New Mexico and Arizona, current to June 1, 1992. Review drilling records and other information to identify new resources and verify temperatures and flow rates of springs and wells which may have changed substantially since the previous statewide geothermal resource inventory. Identify geological, geophysical, geochemical, and hydrologic studies which relate to these resources. The minimum temperature for a low-temperature resource is defined to be 10°C above the mean annual air temperature at the surface and should increase by 25°C/km. Occurrences to 150°C will be included.

2.2 Conduct a fluid geochemistry study of the more important resource areas for which existing data are questionable or unavailable. UURI will provide up to ten (10) quantitative fluid chemical analyses for each state in support of this study.

2.3 Complete a computer database listing compatible with Lotus 123 format tabulating for each occurrence: name, location (T,R,S), county, longitude, latitude, depth, flow, temperature, chemistry, and other data as appropriate and available.

2.4 Review OIT-GHC geothermal resource and demographic data for the States of New Mexico and Arizona for accuracy and completeness, as part of the collocation study.

2.5 Assist OIT-GHC, UURI, and IWRRI in studies to prioritize low- and moderate-temperature resource areas for new development. Develop conceptual geologic models and groundwater data for selected resources.

3.0 REPORTS, DATA, AND OTHER DELIVERABLES

3.1 A geothermal database listing in hardcopy and diskette form will be submitted to UURI. The listing will include all known low- and moderate- temperature spring and well occurrences in the States of New Mexico and Arizona. Principal facts will include location, depth (well), flow rate (if known), etc.

3.2 Letter reports and memoranda reviewing collocation data and priority rankings will be submitted to OIT-GHC and UURI.

3.3 A final summary report, not to exceed 70 pages, describing all tasks and their results, and documenting any new temperature, geologic, geochemical or geophysical data will be submitted to UURI, OIT-GHC, and IWRRI. This report may incorporate interim letter reports and memoranda as appendices. The report will include a geothermal resource occurrence map of the two states, black and white, scale 1:1,000,000 or acceptable alternative.

3.4 Interim progress reports will be submitted to UURI quarterly.

4.0 SCHEDULE OF PERFORMANCE AND REPORTING

4.1 The period of performance for this agreement will be 24 months, unless modified by letter agreement and signed by the Southwest Technology Development Institute, OIT-GHC, and UURI.

4.2 A review of the OIT-GHC collocation study will be completed and a letter report or memorandum of comment submitted to OIT-GHC and UURI within one month after receipt of the draft document from OIT-GHC.

4.3 A preliminary database listing of geothermal resource occurrences will be submitted to UURI within four months after the execution of this agreement.

4.4 A final database listing of geothermal resource occurrences will be submitted to UURI within twelve months after the execution of this agreement.

4.5 A final report documenting all new data and activities completed under this agreement will be submitted to UURI within 24 months after the execution of this agreement.

5.0 RESPONSIBLE PARTIES

5.1 The Principal Investigators for this agreement will be James C. Witcher and Rudi Schoenmackers, Southwest Technology Development Institute.

5.2 The Technical Project Managers for this agreement will be Howard P. Ross, UURI and Paul J. Lienau, OIT-GHC.

5.3 The Contracting Officer for this agreement will be Douglas Yates, OIT.

6.0 FUNDING

This contract agreement provides for funding not to exceed $60,000.00 for the completion of all technical tasks and submittal of all required deliverables.

RESUME

NAME: Rudi Schoenmackers

TITLE: Director

ADDRESS: Southwest Technology Development Institute
Box 30001, Dept. 3 SOL
Las Cruces, NM 88003-0001

EDUCATION:
Dipl. phys., Physics, University of Bonn, 1972
Dr. rer. nat., Physics, University of Bonn, 1975

PROFESSIONAL EXPERIENCE:
Employer: Southwest Technology Development Institute
Period: March 1988 to present
Position: Director

Administration and management of the Southwest Technology Development Institute's programs and contracts. Research in geothermal and photovoltaic energy systems, and heating and cooling systems for residential and commercial buildings. Development of proposals and new program initiatives. Representation of university research programs to outside groups.

Employer: New Mexico State University Energy Institute
Period: January 1984 to February 1988
Position: Director

Research on geothermal energy systems: resource assessments, exploration drilling programs, low temperature applications, industry assistance, feasibility studies. Design of geothermal heating systems for commercial greenhouses. Commercialization activities and information dissemination. Principal investigator on several ongoing projects. Administration and management of the Energy Institute Program.

Employer: New Mexico Solar Energy Institute, New Mexico State University
Period: September 1979 to December 1983
Position: Head, Wind Energy (April 1981 to December 1983)
Acting Head, Wind Energy (July 1980 to April 1981)

Research engineer (September 1979 to July 1980)
Research work in wind energy: wind resource assessment, wind energy conversion systems design and applications, computer modeling of wind systems, siting of wind turbines, investigation of utility interconnection with wind electrical systems, information dissemination on wind energy, presentations, workshops, and publications. Research work in small-scale hydro power: resource and site assessments, management of a small-scale hydroelectric demonstration plant in Alamogordo.

Employer: Energy and Minerals Department, State of New Mexico
Period: May 1978 to September 1979
Position: Energy consultant

Technical review of proposals submitted for funding under the state's Energy Research and Development Program, especially in the areas of solar, wind and geothermal; program manager for the state's geothermal demonstration program; technical assistance and advice for energy-related projects; review of environmental impact statements; investigation of the feasibility for siting electrical power generating stations in south central New Mexico; information dissemination on energy-related projects.

Employer: Los Alamos Scientific Laboratory
Period: 1975 to 1977
Position: Postdoctoral scientist

Research in experimental nuclear physics: particle-induced fission experiments with Van de Graaf accelerator beam, on-line data acquisition, data evaluation and interpretation, computer programming, work with fast electronics, fission detector development, thin film preparation, publication of research papers, presentation of papers at local and national meetings.

Employer: Institute for Nuclear Physics, University of Bonn, West Germany
Period: 1972 to 1975
Position: Staff Member

Research in experimental nuclear physics: experiments on the Bonn isochronous cyclotron accelerator, the 450 MeV proton synchroton, and the 2 GeV electron synchroton accelerator; work on the cyclotron beam and beam handling system;

construction of a remote controlled scattering chamber; work with a 3Hea-gas recycling system; design and implementation of laboratory learning experience for students of medicine and pharmacy; supervision of laboratory courses for 16 students.

AWARDS:

1967 Award for outstanding achievement in science
1972 Fellowship for doctoral studies based on academic excellence
1975 NATO fellowship for postdoctoral studies based on academic excellence
1984 Special Award for Energy Innovation, U.S. Department of Energy
1986 National Award for Energy Innovation, U.S. Department of Energy

LANGUAGES:

Fluent in English, German; studied Latin, French, and Dutch

PUBLICATIONS:

Schoenmackers, R. 1988. "Agricultural Uses of Geothermal Energy in the Western United States." In The Use of Geothermal Energy in Agriculture. Vila Real, Portugal.

Witcher, J. C.; Schoenmackers, R.; and Whittier, J. 1988. "Geologic Geohydrologic, and Thermal Settings of Southern New Mexico Geothermal Resources." Icerman, L. and Parker, S. K. (eds.). New Mexico Research and Development Institute Report. New Mexico Research and Development Institute, DE-F607-84ID12546, 1:1-117.

Whittier, J.; Schoenmackers, R.; and Witcher, J. C. 1988. "New Mexico Geothermal Exploration and Development: A Decade of Experience." Exploration and Development of Geothermal Resources. International Symposium on Geothermal Energy, Kumamoto and Beppu, Japan, p. 287.

Schoenmackers, R. 1985. "Geothermal Applications in Remote Areas. Solar Applications in Remote Locations Workshop." In Proceedings of the Sixth SOLERAS Workshop, May 1985, Las Cruces, New Mexico.

_____. 1985. "The New Mexico Direct Use Geothermal Commercialization Program." Sixty-first annual meeting of the

Southwestern and Rocky Mountain Division of the American Association for the Advancement of Science, Tucson, Arizona.

Schoenmackers, R., and Barnett, K. 1983. Tying in to the wind: a wind energy handbook for New Mexico. New Mexico Solar Energy Institute: Las Cruces, New Mexico.

Schoenmackers, R.; Wrasman, B.; Zwibel, H.; and Hinman, G. 1983. Economics of business investments in renewable energy systems. In Proceedings of the Eighth IASTED International Symposium, Orlando, Florida, November 9-11.

Schoenmackers, R. 1983. "Micorcomputer applications for wind energy measurements." In Proceedings of the American wind Energy Association National Conference and Exposition, San Francisco, California, October 16-19.

_____. 1983. Microhydro-small but promising. New Mexico Professional Engineer, 35, 6 (June), 4.

Schoenmackers, R., and Risser, V. V. 1983. "Photovoltaic wind systems familiarization computer program." In the Proceedings of the Wind/Solar Energy Conference, Kansas City, Missouri, April 25-26.

Schoenmackers, R. 1983. "SWECS performance data from New Mexico's wind energy research and demonstration program." In Proceedings of the Energy Sources Technology Conference and Exhibition, Houston, Texas, January 30 - February 3.

_____. 1982. A hydroelectric generator for a municipal pipeline in Alamogordo. In Proceedings of the Fifty-eighth Annual Meeting of the Southwestern and Rocky Mountain Division of the American Association for the Advancement of Science, El Paso, Texas, April 28 - May 1.

Barnett, K., and Schoenmackers, R. 1981. Wind energy in New Mexico. In Proceedings of the Wind Power Energy Alternative for the Midwest Conference, p. 87, April 3-4, Rochester, Minn.

Schoenmackers, R., and Barnett, K. 1981. "Wind in New Mexico." Wind Power Digest 22:40.

______. 1980. "The New Mexico wind energy program." Proceedings of the Western Sun 1980 Solar Update, Salt Lake City, Utah, September 25-26, 1980.

Britt, H. C.; Gavron, A.; Goldstone, P. D.; Schoenmackers, R.; Weber, J.; and Wilhelmy, J. B. 1978. Yet more complexity in fission: barriers for nuclei with N = 150-154. Phys. Rev. Lett. (USA) 40:1010.

David, P.; Debrus, J.; Lubke, F.; Schoenmackers, R.; and Schulze, J. 1978. The fission processes U-238 (a, a'f) at Ea = 50 MeV and U-235 (d, pf) at Ed = 23 MeV and the total kinetic energy release in fission of excited nuclei. Phys. Lett. B (Netherlands) 77B:178.

David, P.; Bachschi, N. M.; Debrus, J.; Kim, U.; Kumbartzki, G.; Lubke, F.; Mayer, T.; UcKuk, K.; Mommsen, H.; Schoenmackers, R.; Speidel, K. H.; and Stein, G. 1977. Investigation of bremsstrahlung-induced reactions in nuclei of masses A-27-238 in the end-point energy range 450 MeV-2.2 GeV. Forschungsber. Landes Nordrhein-Westfalen, no. 2664, p. 1-100.

Goldstone, P. D; Britt, H. C.; Schoenmackers, R.; and Wilhelmy, J. B. 1977. Determination of m_n/m_f at 12 to 20 MeV excitation from evaporation-residue cross sections. Phys. Rev. Lett. 38:1262.

Schoenmackers, R.; Britt, H. C.; Goldstone, P. D.; and Whilhelmy, J. B. 1977. High resolution measurement of the 5.0 MeV sub-barrier resonance in Pu-240 using the Pu-238 (t, mpf) reaction. Bull. Am. Phys. Soc. 22:67.

Gavron, A.; Britt, H. C.; Goldstone, P. D.; Schoenmackers, R.; Weber, J.; and Wilhelmy, J. B. 1977. m_n/m_f in heavy actinides. Phys. Rev. C (USA) 15:2238.

Bentheim, F.zu; David, P.; Debrus, J.; Hinterberger, F.; Jahn, R.; Lubke, F.; Mommsen, H.; Schoenmcakers, R.; and Schuller, B. 1976. Elastic scattering of a-particles on B-10 for Ea = 5-50 MeV. Z. Phys. A (Germany) 279:163.

David, P.: Debrus, H.: Essen, H.; Lubke, F.; Mommsen, H.; Schoenmackers, R.; and Soyez, W. 1976. Elastic and inelastic He-4 scattering on Pb-208, Th-232, and U-234, 236, 238. Z. Phys. A (Germany) 278:281.

Bachschi, N. M.; David, P.; Debrus, J.; Lubke, F.; Mommsen, H.; and Schoenmackers, R. 1976. Photonuclear reactions in Sc-45 and Cu-nat induced by 2 GeV bremsstrahlung. Nucl. Phys. A (Netherlands) A 264:493.

David, P.; Debrus, J.; Lubke, F.; Mommsen, H.; Schmitt, E.; Schoenmackers, R.; and Simons, H. 1976. Fission of U-238 following inelastic a-particle scattering at bombarding energy E_a = 50 MeV. Phys. Lett. B (Netherlands) 61B:158.

David, P.; Debrus, J.; Lubke, F.; Mommsen, H.; Schoenmackers, R. 1976. Total kinetic energies and mass yield distributions of Cf-252 fission fragments. Phys. Lett. B (Netherlands) 60B:445.

David, P.; Debrus, J.; Lubke, F.; Mommsen, H.; Schoenmackers, R.; and Stein, G. 1974. Bremsstrahlung induced nuclear reactions with E_3max = 450 MeV. Nucl. Phys. A (Netherlands) A 221:145-62.

_____. 1973. High energy photonuclear reactions. Int. Conf. on Photonuclear Reactions and Applications. Conf-730301-P2, Pacific Grove, California, March 26, p. 985.

David, P.; Debrus, J.; Kim, U.; Lubke, F.; Mommsen, H.; Schoenmackers, R.; Soyez, W.; Speidel, K. H.; and Stein, G. 1972. High energy photonuclear reactions. J. Phys. (France) 33:18.

REPORTS:

Design and Construction of the NMSU Geothermally Heated Greenhouse Research Facility. New Mexico Research and Development Institute, NMRDI 2-72-4214, 1988.

A Small-Scale Hydroelectric Power Plant for the City of Alamogordo, New Mexico. New Mexico Research and Development Institute, NMRDI 2-69-1201, 1986.

Geothermal low-temperature reservoir assessment in northern Dona Ana County, New Mexico: Final Report. New Mexico Energy Research and Development Institute, NMERDI 2-71-4220. December 1984.

Wind generator for solar office complex, Luna Vocational Technical Institute, Las Vegas, New Mexico: Final Report. New Mexico Energy Research and Development Institute, NMERDI 2-69-2210. September 1984.

Wind system interconnected with Lea County Electric Cooperative at Lovington, New Mexico: Final Report. New Mexico Energy Research and Development Institute, NMERDI 2-68-2214. August 1984.

Wind system interconnected with Public Service Company of New Mexico at Deming, New Mexico: Final Report. New Mexico Energy Research and Development Institute, NMERDI 2-68-2215. August 1984.

Fuel cells for photovoltaic systems applications. Prepared for the Naval Civil Engineering Laboratory. June 1984.

Study for hydraulic power recovery from New Mexico water distribution systems: Final Report. New Mexico Energy Research and Development Institute, NMERDI 2-71-4223. February 1984.

Llano Estacado wind generator demonstration project: final report. Prepared for the New Mexico State Highway Department by the New Mexico Solar Energy Institute, Las Cruces, July 1983.

Final report: Bonito pipeline study. Prepared for the U.S. Department of Interior, Bureau of Reclamation. May 1983.

Alamogordo hydroelectric project engineering report. August 1981.

Report on the technical and economical feasibility for siting electrical generating plants in the Tularosa Basin. January 1979. Prepared for and submitted to the 1st session of the 34th New Mexico Legislature, Santa Fe, New Mexico.

OTHER:

Photography, published in Science, October 13, 1978.

RESUME

JAMES C. WITCHER
GEOLOGIST

ADDRESS: Southwest Technology Development Institute, New Mexico State University, Box 30001, Dept 3SOL,Las Cruces, NM 88003

EDUCATION:
1992-New Mexico State University, MS
1977-New Mexico State University, BS
1967-1969-New Mexico Military Institute

INTERESTS :
Exploration geology and geophysics; geologic mapping; aqueous geochemistry; geothermics and terrestrial heat flow; hydrogeology; Quaternary geology; environmental geology; radon occurrence and transport; regional geology of the southwestern United States and Rio Grande rift; direct-use geothermal utilization; economic geology; soil geochemical surveying; geothermal well drilling and design; development of exploration models for geothermal resources.

EXPERIENCE:
1986-1992 Geologist: Southwest Technology Development Institute, New Mexico State University, Las Cruces, New Mexico.

1984-1986 Graduate assistantship: Department of Earth Sciences, New Mexico State University,Las Cruces, New Mexico

1982-1983 Consulting geologist: Stone and Witcher, Tucson, Arizona

1978-1982 Geologist: Arizona Bureau of Geology and Mineral Technology, University of Arizona, Tucson, Arizona

BACKGROUND AND EXPERTISE:
Measurement of heat flow; temperature log interpretation for vertical ground-water flow; planned and supervised drilling of temperature gradient holes; developed a CO_2 correction to the silica geothermometer for low-temperature geothermal waters; collection and interpretation of ground-water chemistry data; recommended, directed, and intepreted contract geophysical surveys; familiar with government geothermal permitting procedures and regulations; coordinated and authored NOAA/DOE Geothermal Resources of Arizona map; designed and developed a computerized data base for New Mexico geothermal resources and utilization; sited, designed, supervised successful low-temperature geothermal wells; identified a "caliche effect" in self potential (SP) geophysical surveying; developed a diffusion model technique for exploration radon soil-gas surveying; discovered a shallow intermediate-temperature geothermal system in the southern Rio Grande rift at Rincon; geologic mapping.

AWARDS AND HONORS:
Sigma Gamma Epsilon

Certificate of Appreciation, Arizona Utility Supervisors Association

Graduate teaching assistantship, Department of Earth Sciences, New Mexico State University.

New Mexico Geological Society Summer Research Award.

INVITED PAPERS:
1986 Fall meeting of American Geophysical Union, San Francisco, California.

1987 Annual meeting Interstate Oil and Gas Compact Commission, Santa Fe, New Mexico.

CHAIRED SESSIONS:
Session co-chairman, Geothermal and Hydrothermal Systems, The Geological Society of America, Cordilleran section meeting, Hermosillo, Mexico.

FORMAL TECHNICAL REVIEW:
New Mexico Water Resources Research Institute (Proposal)

Utah Geological Survey (Publication)

SHORT COURSE ATTENDENCE:

Geophysical Methods in Geothermal Exploration (GRC)

Geochemical Methods in Geothermal Exploration (GRC)

Geothermal Reservoir Engineering (GRC)

Geothermal Well Drilling Practices (GRC)

OTHER ACTIVITIES:

Taught Elderhostel course on Geothermal Energy

PROFESSIONAL AFFILIATIONS:
New Mexico Geological Society
Geological Society of America
Geothermal Resources Council
International Geothermal Association
American Geophysical Union
Association of Ground Water Scientists and Engineers

PUBLICATIONS

ABSTRACTS

Witcher, J. C. and Stone, C., 1981, Thermal regime of the Clifton-Morenci area, Arizona: Cordilleran section, Geological Society of America Abstracts, v. 13, no. 2, p. 114.

Witcher, J. C., 1986, Heat flow variation in the Basin and Range, New Mexico: EOS Transactions, American Geophysical Union, v. 67, no. 46, p. 1134 (invited paper)

Witcher, J. C. 1987, Geologic settings of hydrothermal resources in the Basin and Range, Arizona and New Mexico: Annual meeting, Geological Society of America Abstracts, v. 19, no. 7, p. 893.

Witcher, J. C., 1991, A diffusion model for radon soil-gas survey interpretation: Rocky Mountain section, Geological Society of America Abstracts, v. 23, no. 4, p. 107.

Witcher, J. C., 1992, A geologic framework for geothermal systems in the southern Basin and Range Province and southern Rio Grande rift, New Mexico: Proceedings Volume, Spring Meeting, New Mexico Geological Society, Socorro, p. 17.

PAPERS:

Witcher, J. C., 1987, Geothermal resources in New Mexico, geologic settings and development update: The Interstate Oil and Gas Compact and Committe Bulletin, v. 1, no. 2, p. 49-60 (invited paper)

Witcher, J. C., 1988, Geothermal resources of southwestern New Mexico and southeastern Arizona, in Mack, G. H., Lawton, T. F., and Lucas, S. G., eds., Cretaceous and Laramide Tectonic Evolution of Southwestern New Mexico: New Mexico Geological Society 39th Annual Field Conference Guidebook, p. 191-197.

Fischer, C. L., Whittier, J., Witcher, J. C., and Schoenmackers, 1990, An economic evaluation of southern New Mexico's low-temperature geothermal resources: Transactions, Geothermal Resources Council, v. 14, part 1, p. 495-498.

Witcher, J. C., Whittier, J, Morgan R., 1990, New Mexico geothermal data base: Transactions, Geothermal Resources Council, v. 14, part 1, p. 513-518.

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Whittier, J., Schoenmackers, R., and Witcher, J. C., 1991, Geothermal direct-use - a successful example of greenhouse heating in New Mexico: Transactions, Geothermal Resources Council, v. 15, p. 73-76.

MAPS

Hahman, W. R., Stone, C., and Witcher, J. C., 1978, Preliminary map - geothermal energy resources of Arizona, geothermal map 1: State of Arizona Bureau of Geology and Mineral Technology, scale 1:1,000,000.

Witcher, J. C., Stone, C., and Hahman, W. R., 1982, The geothermal resources of Arizona: National Geophysical and Solar-Terrestrial Data Center, National Oceanic and Atmospheric Administration, in cooperation with the U.S. Department of Energy and the State of Arizona Bureau of Geology and Mineral Technology, University of Arizona, scale 1:500,000.

ARTICLES

Witcher, J. C., 1979, Geothermal space heating and cooling - a direct use of naturally occurring hot water in southern Arizona: Fieldnotes, State of Arizona Bureau of Geology and Mineral technology, v. 9, no. 4, p. 1-2.

Witcher, J. C., 1980, Geothermal space heating/cooling: Geo-heat Utilization Center Quarterly Bulletin, Oregon Institute of Technology, v. 5, no. 2, p. 18-20.

Witcher, J. C., 1981, Thermal springs of Arizona: Fieldnotes, State of Arizona Bureau of Geology and Mineral Technology, v. 11, no. 2, p. 1-3.

Witcher, J. C, Reiter, M., Bland, D., and Barroll, M. W., 1992, Geothermal Resources in New Mexico: New Mexico Geology, New Mexico Bureau of Mines and Mineral Resources, v. 14, no. 1, p. 14-16.

TECHNICAL REPORTS

Swanberg, C. A., Morgan, P., Stoyer, C., and Witcher, J. C., 1977, An appraisal study of the geothermal resources of Arizona and adjacent areas in New Mexico and Utah and their value for desalination and other uses: New Mexico Energy Institute Technical Report 6, New Mexico State University, 76 p.

Witcher, J. C., 1979, A progress report of geothermal investigations in the Clifton area: State of Arizona Bureau of Geology and Mineral Technology Open-File Report 79-1b, 16p.

Witcher, J. C., 1979, A geothermal reconnaissance study of the San Francisco River between Clifton, Arizona and Pleasanton, New Mexico: State of Arizona Bureau of Geology and Mineral Technology Open-File Report, 18 p.

Witcher, J. C., 1979, Geothermal potential of the IBM plant site area, Tucson, Arizona: State of Arizona Bureau of Geology and Mineral Technology Open-File Report 9-18, 26 p.

Witcher, J. C., 1979, A preliminary report on the geothermal energy potential of the Safford basin, southeastern Arizona: State of Arizona Bureau of Geology and Mineral Technology Open-File Report 79-2C, 31 p.

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Witcher, J. C., 1979, Proven, potential and inferred geothermal resources of Arizona and their heat contents: State of Arizona Bureau of Geology and Mineral Technology Open-File Report 79-5, 65 p.

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Witcher, J. C. and Stone, C., 1980, Heat flow and the thermal regime in the Clifton, Arizona area: State of Arizona Bureau of Geology and Mineral Technology Open-File Report 80-1a, 29p.

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Witcher, J. C., Schoenmackers, R., Whittier, J., 1988, Geologic, geohydrologic, and thermal settings of southern New Mexico geothermal resources, in Icerman, L., and Parker, S. K., eds, NewMexico Statewide Geothermal Energy Program: New Mexico Research and Development Institute Report prepared for the U. S.DOE under contract DE-F607-84ID12546, p. 1-1 to 1-117.

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Fischer, C. L., Foster, R., Heller Turietta, M., Whittier, J., Witcher, J. C., and Zachritz, W. H., 1990, New Mexico economic development and geothermal resources: potential industry applications: New Mexico Energy, Minerals and Natural Resources Department Report EMNRD 77-521.31-121, 55 p.

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