HYDROGEOLOGY AND ENVIRONMENTAL SERVICES

MARCH 13, 2024

REQUEST FOR QUALIFICATIONS

MAMMOTH COMMUNITY WATER DISTRICT

MAMMOTH LAKES, CALIFORNIA

REQUEST FOR QUALIFICATIONS

Hydrogeology and Environmental Science Services

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ATTACHMENTS:

1 INTRODUCTION

The Mammoth Community Water District (District) is seeking a qualified consultant to provide hydrogeological and environmental science technical support to our team. The District provides domestic water, recycled water, and sanitary sewer services to the Town of Mammoth Lakes (TOML). Located on the east side of the Sierra Nevada Mountain Range above 7,000 ft amsl, Mammoth Lakes is the headwaters of Mammoth Creek on the eastern side of the crest, and the San Joaquin river on the west side of the crest. Mammoth Lakes' economy is primarily driven by tourism to the Mammoth Mountain Ski Area, as well as a range of other outdoor activities and its proximity to the eastern entrance of Yosemite National Park. Due to the regular influx of tourists the population of the town varies from 8,500 to over 30,000 during peak holidays, requiring a dynamic approach to water supply and wastewater treatment.

The District is looking for a long-term partner to enter into a master services agreement (MSA) to provide technical support for both on-going monitoring programs as well as specific task involved with regulatory compliance and our capital improvement program. The type of projects that the District is seeking technical support for include:

- Monitoring well design and installation oversite
- Production well asset management including maintenance and rehabilitation
- Production well replacement
- Exploration plan for developing new production well locations
- Groundwater modeling
- Groundwater studies of nutrient fate including surface water/groundwater interactions
- Technical support for permitting and monitoring of geothermal production facilities in the underlying geothermal aquifer

See **Attachment 1** for information about the District system, hydrology, geology, hydrogeology, and the local hydrothermal system.

SITE VISIT: Prospective consultants are encouraged to visit the District and the Town of Mammoth Lakes. Please call or email Jake Trauscht to schedule a visit.

Key Submission Dates:

- Questions to District by: **5:00 PM Wednesday March 27, 2024**
- District Response to questions by: **5:00 PM Friday March 29, 2024**
- Digital submittal of RFQ to the District by: **5:00 PM Wednesday April 3, 2024**
- Interviews will be scheduled for the following week (**Week of April 8, 2024**)

The District reserves the right to reject all statements of qualifications. The District may conduct interviews following the initial SOQ review to determine the most qualified consultant. The District will negotiate a master services agreement with the selected consultant and one or more initial task orders.

Dated: 3/13/2024

Mammoth Community Water District

By: Jacob Trauscht

Jacob Trauscht
Senior Engineer

2 SCOPE OF SERVICES

The District is looking to establish a long-term relationship with a consultant to provide hydrogeology and environmental science support. The specific types of work and tasks required by the District will evolve over time, but our current needs include the tasks described below. More details on the Mammoth area geology, hydrogeology, the District water system, the District well field, and geothermal development can be found in **Attachment 1**.

1. Monitoring well design and installation oversite – The District is currently working with the Lahontan Regional Water Quality Board (LRWQB) to install new monitoring wells at a pond that receives treated wastewater effluent (Laurel Pond). The District is seeking a certified hydrogeologist to design the new monitoring wells (specifications & bid package), and provide installation oversite including well logging, field design changes to meet LRWQB requirements, and composing of well completion reports. This is a top priority item for the District, with a goal of completing well installation in 2024.

2. Production Well Asset Management and Replacement – The District's well field was installed beginning in the late 1980s and several production wells are reaching the end of their useful life. The District desires to extend the useful life of wells when feasible. For wells reaching end of useful life, the District intends to develop plans to replace wells in adjacent locations to take advantage of known hydrogeology, existing transmission infrastructure, and existing easements/property. The District seeks a certified hydrogeologist for all aspects of well replacement including decommissioning of existing wells, design of new wells (specs & bid package), design of development and flow testing, design of new well equipment, and composing well completion reports.

3. Production Well Exploration Plan – The District is seeking to expand its existing well field to new locations to add capacity to the system and to replace capacity from under-performing wells. The District is seeking a certified hydrogeologist to develop a well exploration plan including plans/specs, well testing protocol, drilling depths, well location siting, geologic logging, and general field oversite. Once the exploration is complete the consultant shall produce a report with recommendations for new well siting.

4. New Production Well Installation – Based on the results of the exploration plan described above, the Consultant shall design (plans and specifications) new production wells and provide on-site oversite, including geologic logging, well testing oversite, well installation oversite, well development oversite, and composing well completion reports.

5. Groundwater Nutrient Fate and Transport – The District has submitted a proposal to the LRWQB to study the fate of nitrogen entering Laurel Pond as treated wastewater effluent. Depending on the results of the study, the District will seek a basin plan amendment to bring Laurel Pond into compliance. This study will look at the relationship between surface water and groundwater, biological and chemical processes that may be removing nitrogen from Laurel Pond, and the potential for nitrogen to be transported downstream of Laurel Pond.

6. Groundwater monitoring program technical review and guidance – The District is part of a groundwater monitoring program with a local geothermal power producer, with the goal of identifying and mitigating any negative impacts to the District's aquifer from hydrothermal energy production. The District is looking for technical support in reviewing data, identifying potential impacts, and providing recommendations to improve the monitoring program.

3 RFQ REQUIREMENTS

To be considered, a consultant responding to this RFQ must provide the following items and/or information in its proposal:

1. A cover letter which shall provide the following: name, title, address, email addresses, and telephone numbers of individuals with the authority to negotiate and contractually bind the Consultant.

2. A statement of the Consultant's qualifications, including brief biographical profiles of the company and key personnel who will be assigned to work on the project. Any relevant certifications or education should be identified.

3. A brief list of relevant projects with dates and references that demonstrate the Consultants ability to carry out the tasks listed in Section 2. The successful Consultant shall provide evidence of experience in similar hydrogeologic and regulatory environments, including experience with both cold water and hydrothermal systems, experience with production well design in fractured rock aquifers, experience in well installation oversite, and experience producing reports for regulatory agencies.

4. A standard fee schedule for all positions expected to be involved in projects.

5. If needed, a list of sub-consultants, their potential roles, and qualifications.

6. A general statement on the ability to meet the minimum insurance requirements described in the sample MSA included as **Attachment 2**.

7. Any additional information demonstrating the Consultant's capabilities as related to the selection criteria listed below.

8. A signed non-collusion declaration form, included as **Attachment 3**.

4 SELECTION CRITERIA & PROCESS

All RFQ materials, any amendments, and questions/answers will be posted on the District's website at http:// https://mcwd.dst.ca.us/ . Questions about this RFQ are due by **5:00 p.m. on Wednesday, March 27, 2024**, and may be submitted by email. The District's responses to questions and requests for information will be posted online by **5:00 p.m. on Friday, March 29, 2024**. Proposals must be submitted in accordance with the requirements of Section 5 below.

A committee will then evaluate all qualifying proposals based on the following criteria and values:

Item	***Selection Criteria***	***Value***
1	Qualifications and experience with production well asset management, replacement, exploration, and design in similar hydrogeologic conditions. Qualifications and experience designing and overseeing the installation of monitoring wells to comply with regulatory requirements.	35 pts
2	Qualifications of key staff and personnel.	25 pts
3	Qualifications and experience reviewing and analyzing data as part of a groundwater monitoring and mitigation plan.	10 pts
4	Qualifications and experience with interaction between hydrothermal systems and cold-water aquifers.	10 pts
5	Qualifications and experience with fate and transport of nitrogen in groundwater under the influence of surface water systems.	10 pts
6	Demonstrated ability to effectively communicate and work with staff as a team, and demonstrated capability to meet schedules and complete projects without major cost escalations or overruns.	10 pts

The evaluation committee may select a Consultant based on the above criteria, and/or may conduct phone interviews of the top-ranking contractors. In the event phone interviews are conducted, the final selection will be based on the outcome of such interviews.

The consultant selected to provide the services will be expected to enter into a Master Services Agreement with the District to govern the provisions of these services (see **Attachment 2** for sample MSA). Upon a written request by the District, Consultant shall prepare a specific scope of work, budget, and schedule for each task order. Upon written approval by the District to proceed, the Consultant shall proceed with completion of the work under the applicable task order.

5 SUBMITTAL INSTRUCTIONS

- **Deadline:** To be considered, a digital copy of the Consultant's response to this RFQ must be submitted via email by **5:00 p.m. on Wednesday April 3, 2024.**

    - Email Proposals to Jake Trauscht at: jtrauscht@mcwd.dst.ca.us

- **Modification or Withdrawal of Submittals:** Any RFQ received prior to the date and time specified above for receipt may be withdrawn or modified by written request of the contractor prior to the submittal deadline.

- **Property Rights:** RFQs received become the property of the District and all rights to the contents therein become those of the District.

- **Confidentiality:** Before award of the contract, all submittals will be designated confidential to the extent permitted by the California Public Records Act. After award of the contract (or if not awarded, after rejection of all submittals), all responses will be regarded as public records and will be subject to review by the public. Any language purporting to render all or portions of the submittals confidential will be regarded as non-effective and will be discharged.

- **Amendments to Request for Qualifications:** The District reserves the right to amend this RFQ by addendum before the final submittal date. Any amendments will be posted online at https://mcwd.dst.ca.us/.

Please contact Jake Trauscht, Senior Engineer, at (408)-835-0265 or by email at jtrauscht@mcwd.dst.ca.us, should you have any questions or comments regarding this request.

HYDROGEOLOGY AND ENVIRONMENTAL SERVICES

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ATTACHMENT 1 – GEOLOGY AND SYSTEM OVERVIEW

REQUEST FOR QUALIFICATIONS

ATTACHMENT 1 – GEOLOGY AND SYSTEM OVERVIEW

Hydrogeology and Environmental Services

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1 INTRODUCTION

The Town of Mammoth Lakes (TOML) is located on the east side of the Sierra Crest in Mono County California (**Figure 1**). The economy is primarily driven by outdoor recreation tourism, notably to the Mammoth Mountain ski area (MMSA), Yosemite National Park, Devils Postpile National Monument, and back country trails around the area.

2 WATER SYSTEM OVERVIEW

The Mammoth Community Water District (MCWD) utilizes surface water and groundwater sources depending on environmental conditions and town demand. Surface water originates from Lake Mary and is treated at the Lake Mary Treatment Plant before being distributed through the system by gravity (**Figure 2**). Surface water is available when flow in Mammoth Creek at the Old Mammoth Road Gauge are above monthly requirements as dictated by the State Water Resources Control Board. Groundwater is utilized when the streamflow requirements are not met, and during periods of high demand when surface water cannot meet demand. MCWD's groundwater field is comprised of ten production wells located in the western portion of the Mammoth Hydrologic Basin (**Figure 1 & 2**). Groundwater is conveyed from nine production wells to two groundwater treatment plants before entering the system. The groundwater treatment plants treat naturally occurring iron, manganese, and arsenic, and provide corrosion control and chlorination. Due to variations in arsenic and manganese concentrations throughout the MCWD groundwater basin, water from various wells is blended prior to treatment to reduce concentrations to treatable levels. One production well, Well 1, does not go to a groundwater treatment plant but rather undergoes corrosion control and chlorination at the well head before entering the system directly.

3 HYDROLOGY

The Sierra Crest forms an orographic barrier to Pacific storms that deposit snow east of the crest and form the seasonal snowpack that is the primary water source for the Mammoth Lakes Basin, as well as the source of recharge for the Mammoth Groundwater Basin. Secondary precipitation is derived from spring snowstorms generated over the Great Basin (Tonopah lows) and summer thunderstorms triggered by monsoonal southerly flows, although these sources are significantly smaller and more variable than snowpack. Snow fall on the Sierra Crest varies significantly year to year, with annual maximum snow water equivalent (SWE) measurements at Mammoth Pass averaging 41-in but ranging from 7-in to 91-in over the past 30 years (**Figure 3**). Typically, precipitation is greatest near the crest and decreases significantly as one moves away from the crest.

The Mammoth Hydrologic Basin is an approximate 45,000 acre area that extends from the Sierra Crest in the west to the confluence of Mammoth Creek and Hot Creek to the east (**Figure 4**). The Basin is divided into six sub-basins, three of which contribute to the Mammoth Groundwater Basin upstream of the MCWD production well field (**Figure 4**). One of the sub-basins, The Lakes Basin located southwest of the TOML at ~9,000 ft amsl, is the headwaters of Mammoth Creek which flows eastward from Twin Lakes until it becomes Hot Creek, eventually flowing into Crowley Lake. Coldwater Creek and George Creek are the major inputs to Lake Mary.

Lake Mary levels are controlled by a small dam operated by MCWD located at the outlet of Lake Mary, and serves as the surface water diversion point for the Mammoth Community Water District (**Figure 4**).

Laurel Pond receives treated effluent from MCWD's wastewater treatment plant and is located in the eastern portion of the Mammoth Basin (**Figure 4**). Prior to MCWD beginning to send treated effluent to Laurel Pond in the late 1980s, Laurel Pond was an ephemeral pond that would dry up during drought years. The only inputs to Laurel Pond are a spring emanating from the north side of Laurel Mountain, direct precipitation, runoff, and treated wastewater effluent, and the only outlets to Laurel Pond are evapo-transpiration and infiltration.

4 REGIONAL GEOLOGY AND THE HYDROTHERMAL SYSTEM

The Mammoth Basin watershed straddles the southwest boundary of the Long Valley Caldera and extends to a portion of the Sierra Crest (**Figure 5**). The Long Valley Caldera was created by the eruption of an estimated 600 km^3 of Bishop Tuff approximately 760,000 years ago (Bailey et al, 1976). Over the last 600,000 years smaller but significant post-caldera eruptions have occurred throughout the basin, with the most recent eruptions occurring north of Mammoth Mountain along the Mono-Inyo volcanic chain around 600 years ago. These late Tertiary to Quaternary volcanic flows and pycroclastic eruptions range in composition from rhyolite to basalt. Pleistocene and Holocene units also include numerous glacial tills, alluvial deposits, lake deposits, and various types of mass wasting deposits. Bedrock is the Mesozoic granitic Sierra Nevada Batholith, with roof pendants comprised of Paleozoic metasediments and Mesozoic metavolcanics (**Figure 5**). The Paleozoic metasediments are exposed at Mammoth Rock and the Mesozoic metavolcanics are exposed throughout the southeast portion of the Lakes Basin in the Coldwater Creek drainage (**Figure 5**).

The post-caldera resurgent dome, located east of Mammoth Lakes, formed from smaller eruptions of rhyolitic magma as well as continued uplift, resulting in 33 inches of uplift from 1988 to 2017 (Hildreth, 2017). The topographic low between the resurgent dome and the caldera rim is referred to as the moat and is more particularly divided into the North, East, South, and West Moat (**Figure 5**). Other post-caldera eruptions deposited rhyolitic magma on top of the bishop tuff in the west moat (Sorey, 1991).

Hydrothermal activity in the Long Valley Caldera is apparent in surface manifestations characterized by hot springs and fumaroles located primarily in the south and east moats, close to the resurgent dome (**Figure 5**). On-going research by USGS and the geothermal industry have identified the source of the hydrothermal system to be one or more hot-water reservoirs in metamorphic basement rocks underlying the volcanic fill in the west moat. Current conceptual models state that precipitation on the west rim of the caldera recharge a hydrothermal reservoir beneath the West Moat near the Inyo Volcanic Chain, specifically near Deer Mountain located north of Mammoth Mountain (**Figure 5**). A plume of 215-240°C water rises from this reservoir and flows laterally southeast along the contact between the Bishop Tuff and the capping Post-Caldera rhyolites, escaping to the surface through springs near the southern and eastern edges of the resurgent dome (**Figure 5**) (Peacock, 2016). Well temperatures support this model with

decreasing temperatures from east to west, from 220°C at Well 44-16 near the source to 170°C at Casa Diablo to 20°C near Lake Crowley (Sorey et al., 1991).

5 MAMMOTH BASIN HYDROGEOLOGY AND WATER PRODUCTION

The Mammoth Groundwater Basin extends from the Lakes Basin at 9,000 ft amsl to the Hot Creek Gorge at 7,000 ft amsl, with a generally eastward flow from the Lakes Basin/Mammoth Mountain area to south of the resurgent dome towards Hot Creek (**Figure 6**). The geology of the Mammoth Groundwater Basin is generally described as glacial till overlying a series of basalt/andesite volcanic flows, with interbedded glacial tills. The overlying glacial till only exists in the western portion of the groundwater basin where the MCWD well field is located, downgradient of the this the volcanic flows are at the surface with minor alluvium deposits throughout (**Figure 6**). The overlying glacial till in the western portion of the groundwater basin supports a shallow aquifer system that responds quickly to recharge but is considered disconnected from the underlying aquifer system in the fractured volcanic rock.

MCWD production wells primarily extract water from a semi-confined aquifer located in fractured volcanic rock, with smaller amounts of water coming from glacial till/alluvium interbedded between the volcanic layers (**Figure 7**). Average depths to groundwater in the MCWD production wells range from 46-470 ft bgs, with artesian conditions present in the Mammoth Meadows area (Wells 6 & 10) following winters with above average precipitation (**Figure 7**).

Groundwater is a critical part of MCWD's water supply portfolio and contributes up to 100% of required supply when streamflows in Mammoth Creek do not meet requirements for surface water diversion. Groundwater production varies significantly from year to year, with annual production over the past 34 years averaging 442 MG/year, but ranging from 54 MG/year to 885 MG/year (**Figure 8**). Wells 6, 10, and 15 produce the majority of water from treatment plant 1 (~50% of total production), while Wells 17, 20, and 25 produce the majority of water from treatment plant 2 (~40% of total production).

Groundwater quality in the production field varies spatially with generally higher metal, TDS, specific conductivity, and major ion concentrations in upstream wells compared with downstream wells closer to Mammoth Creek (**Figures 9 & 10**). Contaminants of concern (CoCs) for the MCWD production field are arsenic, manganese, and iron which vary spatially, but with notably higher concentration of arsenic in Well 17 and manganese and iron in Wells 16 & 18 (**Figure 9**). Concentrations of these CoCs typically vary with water levels, with increased concentrations during periods of lower groundwater levels. While Wells 16 & 18 are not major contributors, Well 17 is one of the biggest contributors to groundwater production with an average pumping volume of 51 MG/year, representing approximately 17% of annual groundwater production (**Figures 8 & 9**). Arsenic concentrations are correlated with groundwater levels at Well 17, and further studies by the USGS as part of the groundwater monitoring and response plan indicate that the aquifer at this location is composed of a fraction of geothermal water (**Figure 9**) (Howle, 2019).

6 HYDROTHERMAL ENERGY PRODUCTION

The Casa Diablo plant, also referred to as the Mammoth Geothermal Complex, is located east of the Town of Mammoth lakes along the southeast flank of the resurgent dome (**Figure 5**). Extraction of hydrothermal fluids for electric power generation began in 1985 with a capacity of 10 MW, and expanded in 1990, 2006, and 2022, resulting in a final nameplate capacity of up to 80 MW, produced utilizing five production wells and four binary power plants. The system is an open loop system where thermal waters are extracted west of the plant, run through a series of heat exchangers, and then the cooled production water is re-injected into the Bishop Tuff near the Casa Diablo power plant, at a greater depth than the production wells to minimize thermal breakthrough while attempting to maintain reservoir pressure.

In 2006, two new production wells (57-25 & 66-25) were brought on-line to replace cooler production wells closer to Casa Diablo. Following the start-up of these two wells the USGS observed land-surface subsidence at Casa Diablo, and an expansion of the areal extent of thermal ground, vegetation die off, and carbon dioxide soil-gas emissions near the wells. During this period hydrogen sulfide gas and the binary working fluid (isobutane) were also detected at the Shady Rest thermal area (Howle, 2019). The USGS concluded that the temporal and spatial association of these gas emissions indicate boiling in the geothermal aquifer in the west moat coincident with the location of the two new production wells (57-25 & 66-25), and demonstrate fluid pathways exist from the geothermal aquifer to the land surface (Howle, 2019). Notably the presence of isobutane in gas samples at the Shady Rest thermal area indicate spent geothermal fluid injected near Casa Diablo travels westward, opposite the primary thermal gradient (Evans, 2004).

While the USGS and the Long Valley Hydrologic Advisory Committee (LVHAC) have been monitoring the area since 1987 for potential impacts to the hot springs and vegetation of Long Valley due to geothermal energy development, this work did not include monitoring of potential impacts to the cold-water aquifer utilized by MCWD. When the geothermal developer submitted an EIR to double the production capacity of the plant by expanding further into Basalt Canyon (CD-IV project), MCWD sued with the goal of creating a mitigation and monitoring plan that would be focused on potential impacts to the shallow cold-water aquifer. The result of this effort was the establishment of the Groundwater Monitoring and Response Plan (GMRP) which began monitoring in 2015. The GMRP consists of quarterly groundwater quality monitoring and continuous groundwater level/pressure monitoring of 31 sites, including MCWD production wells, Ormat production wells, and monitoring wells drilled in both the shallow cold-water aquifer and the deeper geothermal aquifer. The GMRP is included as **Appendix A**. The CD-IV project included construction of 3 new production wells on USFS lands regulated by the Bureau of Land Management (BLM) and 2 new injection wells on private property. The parties to the GMRP include Ormat (current owner of the Casa Diablo power plant), the USFS, the BLM, the USGS, the Great Basin Unified Air Pollution Control District (GBUAPCD), and MCWD. While the USGS provided excellent monitoring services, their costs had been paid for by the BLM and MCWD until 2023, with little input from the geothermal developer (Ormat). The BLM and MCWD desired to shift costs to Ormat, however due to contracting requirements it was determined that a private firm would perform the work. In the summer of 2023, following a

request for proposal process, a private firm took over the monitoring activities the USGS had previously been completing.

The monitoring program has collected valuable data that has better characterized the relationship between the shallow cold-water aquifer and the underlying geothermal aquifer. After collection of quarterly data from 2015 through 2017, the USGS published their initial observations that indicate some hydraulic connectivity between the deep geothermal aquifer and the shallow groundwater aquifer. Groundwater chemistry data also indicated that shallow groundwater naturally mixes with a component of geothermal water along the northern periphery of the shallow aquifer system. In particular, MCWD production well 17 has a geothermal input that varies based on seasonal precipitation, with chloride/boron ratios decreasing following above average snow pack due increased freshwater input (Howle, 2019).

In addition to the commercial scale geothermal development at Casa Diablo, geothermal development on a smaller scale has been explored by several private businesses. These proposals have included utilizing geothermal fluid to reduce heating costs utilizing heat exchangers and utilizing geothermal fluids in a hydronics system to eliminate the need for snow removal on sidewalks. While none of these proposals have made it to the production phase, MCWD expects more proposals for similar systems in the future, and needs assistance in developing reasonable mitigation and monitoring programs to protect the cold-water aquifer.

References

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Sorey, M.L., G.A. Suemnicht, N.C. Sturchio, and G.A. Nordquist, 1991. New evidence on the hydrothermal system in Long Valley caldera, California, from wells, fluid sampling, electrical geophysics, and age determinations of hot-spring deposits. J. Volcanol. Geotherm. Res., 48, 229–263.

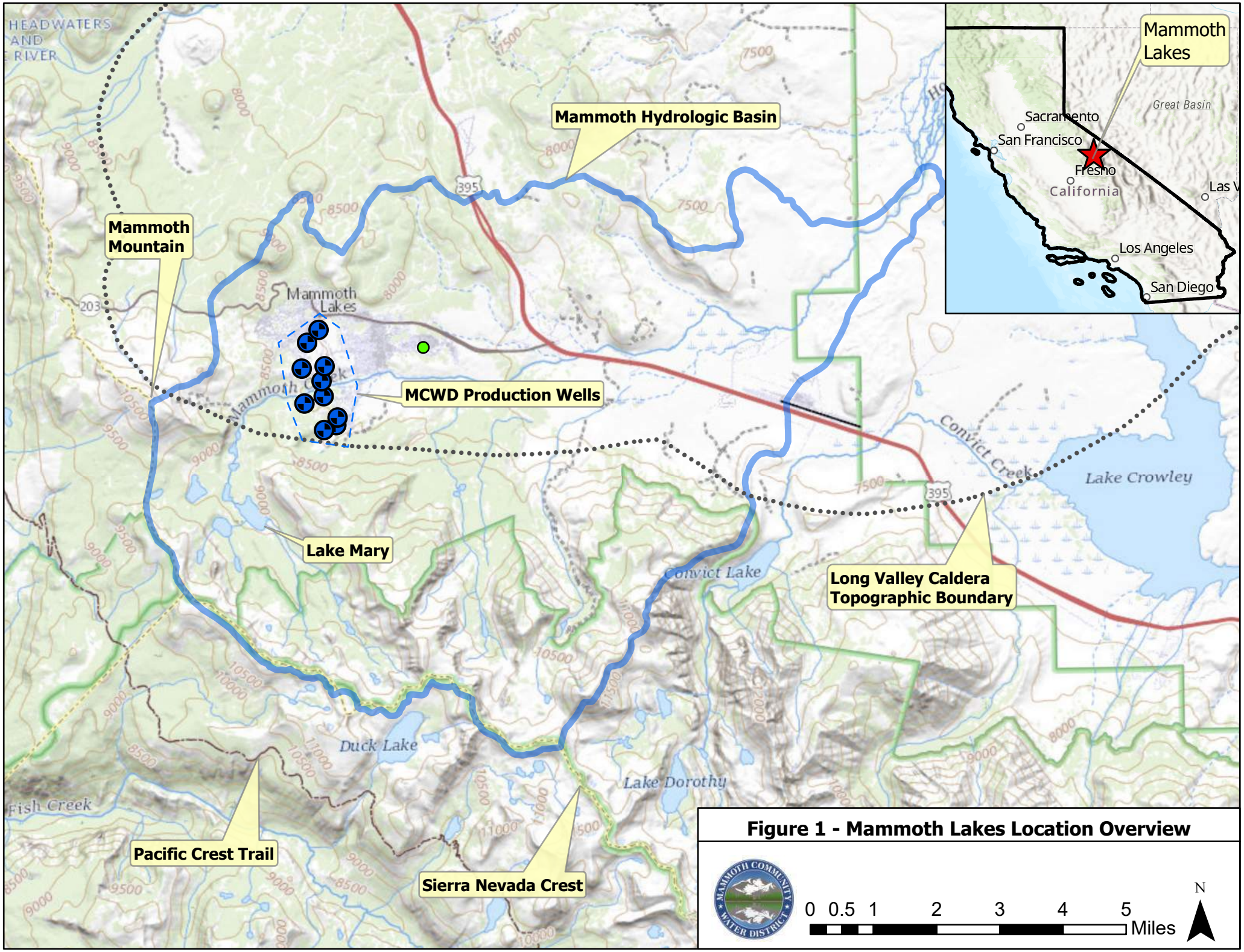
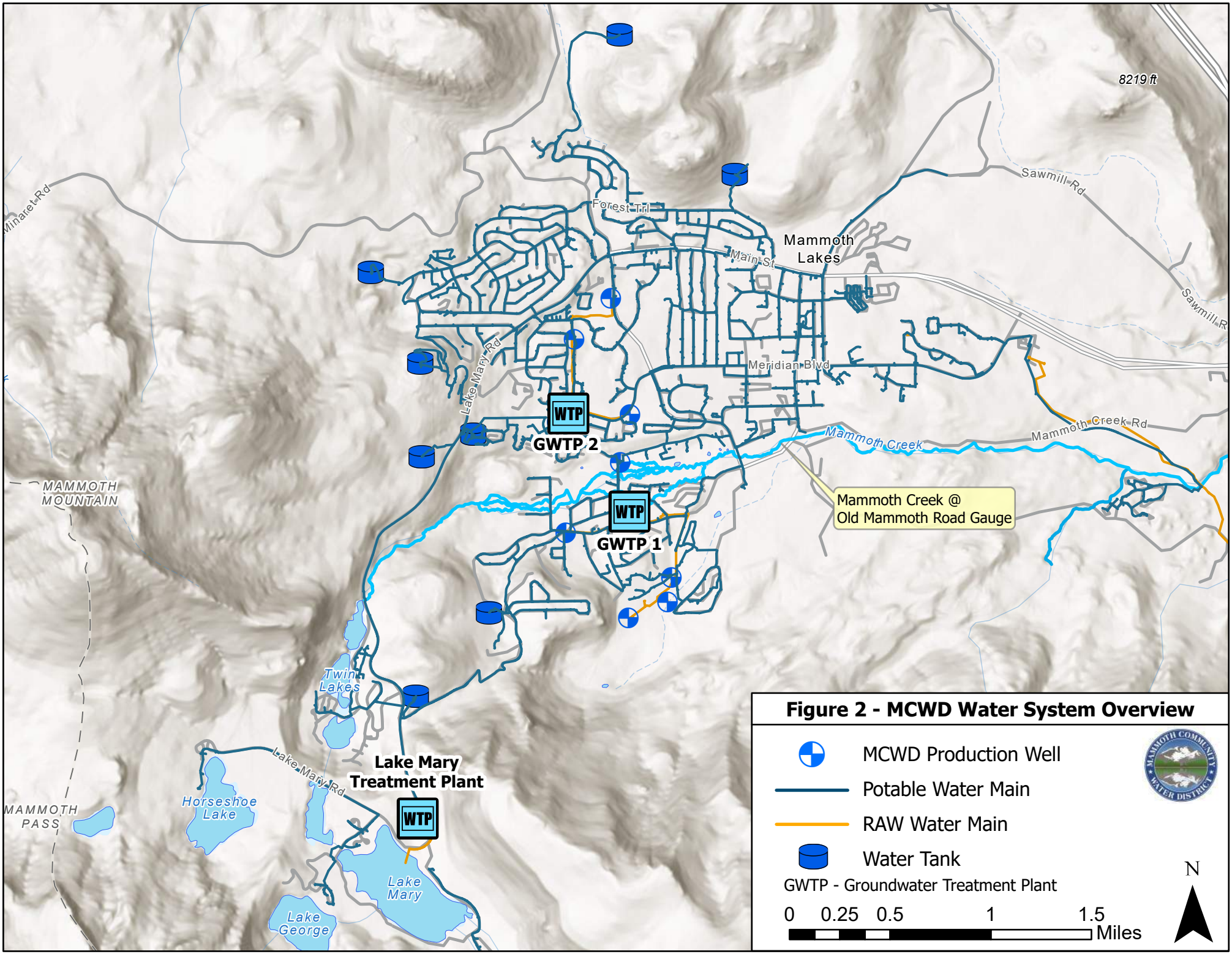


Figure 1 - Mammoth Lakes Location Overview


8219 ft
Minaret Rd
Forest Trl
Mammoth Lakes
Main St
Sawmill Rd
Sawmill R
Lake Mary Rd
Meridian Blvd
WTP
GWTP 2
Mammoth Creek
Mammoth Creek Rd
MAMMOTH MOUNTAIN
WTP
GWTP 1
Mammoth Creek @ Old Mammoth Road Gauge
Twin Lakes
Lake Mary Rd
Lake Mary Treatment Plant
WTP
MAMMOTH PASS
Horseshoe Lake
Lake Mary
Lake George
Figure 2 - MCWD Water System Overview
MCWD Production Well
Potable Water Main
RAW Water Main
Water Tank
GWTP - Groundwater Treatment Plant
0 0.25 0.5 1 1.5
Miles
N

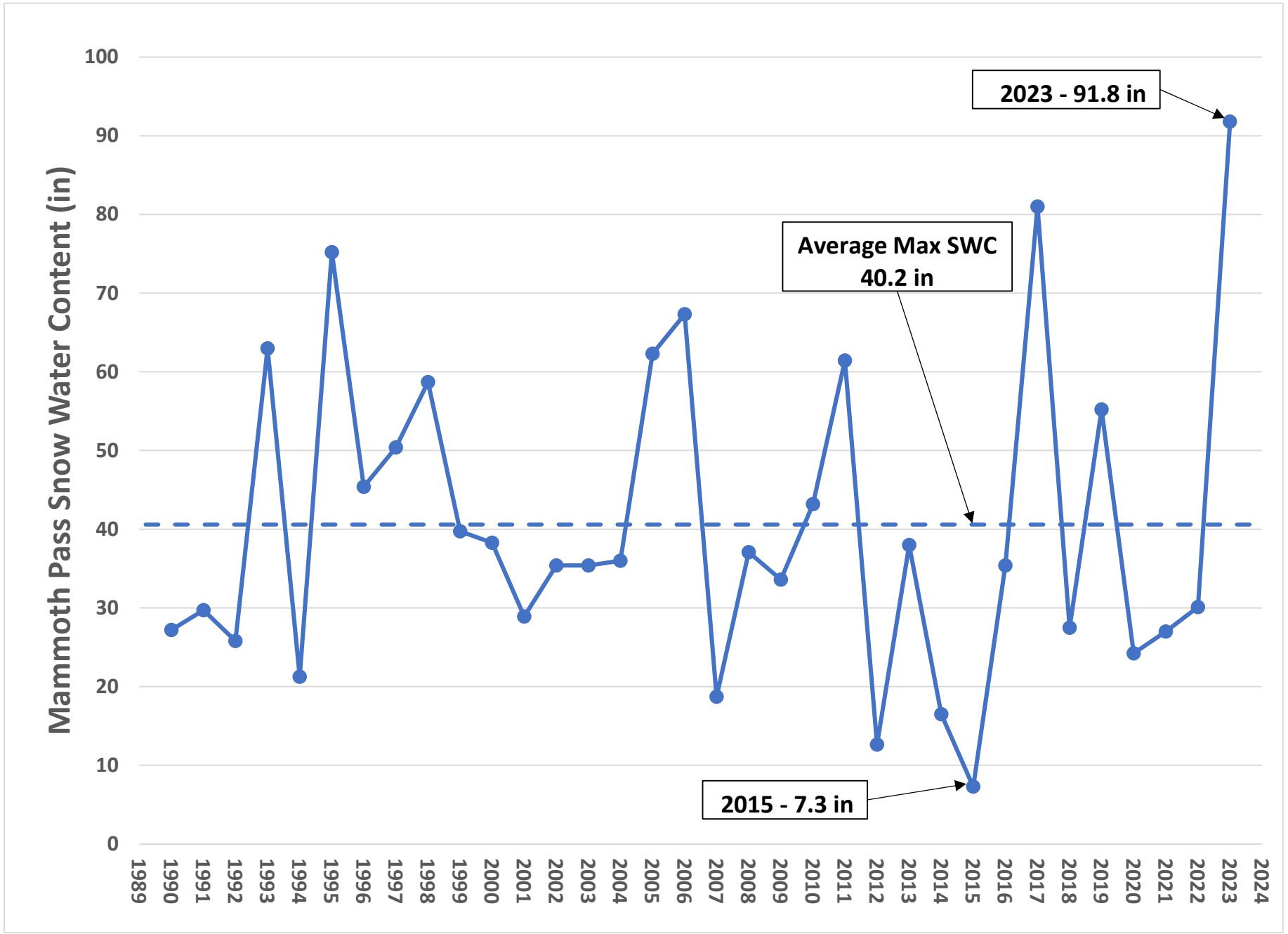


Figure 3 - Annual Maximum Snow Water Content (SWC) at the Mammoth Pass Snow Survey Site (CDEC ID: MHP)

Mammoth Creek

Laurel Pond

Lakes Basin

Mammoth Hydrologic Basin and Sub-Basins

Figure 4 - Mammoth Basin Watershed

Production Well

Monitoring Well

0 0.5 1 2 Miles

N

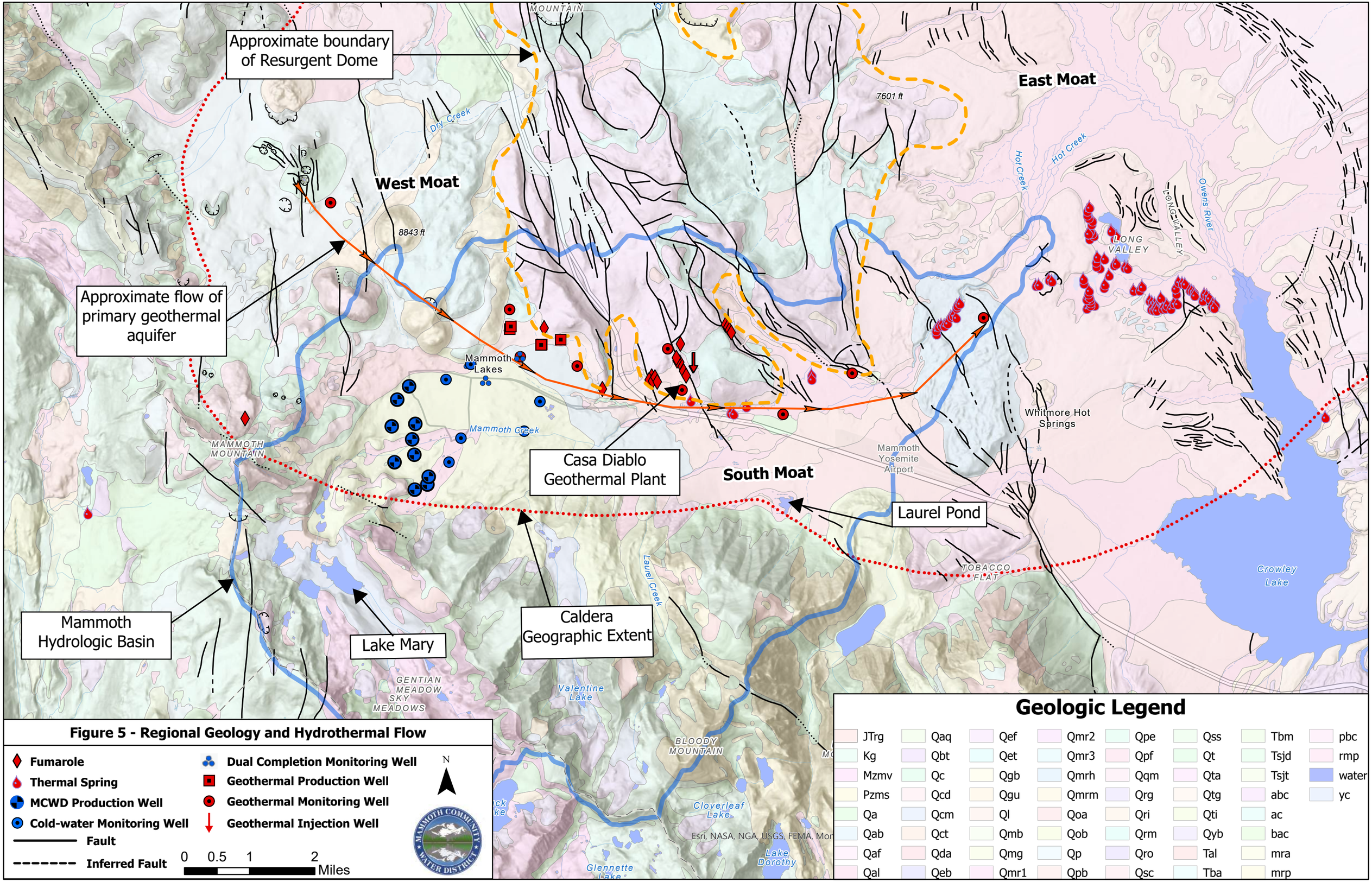
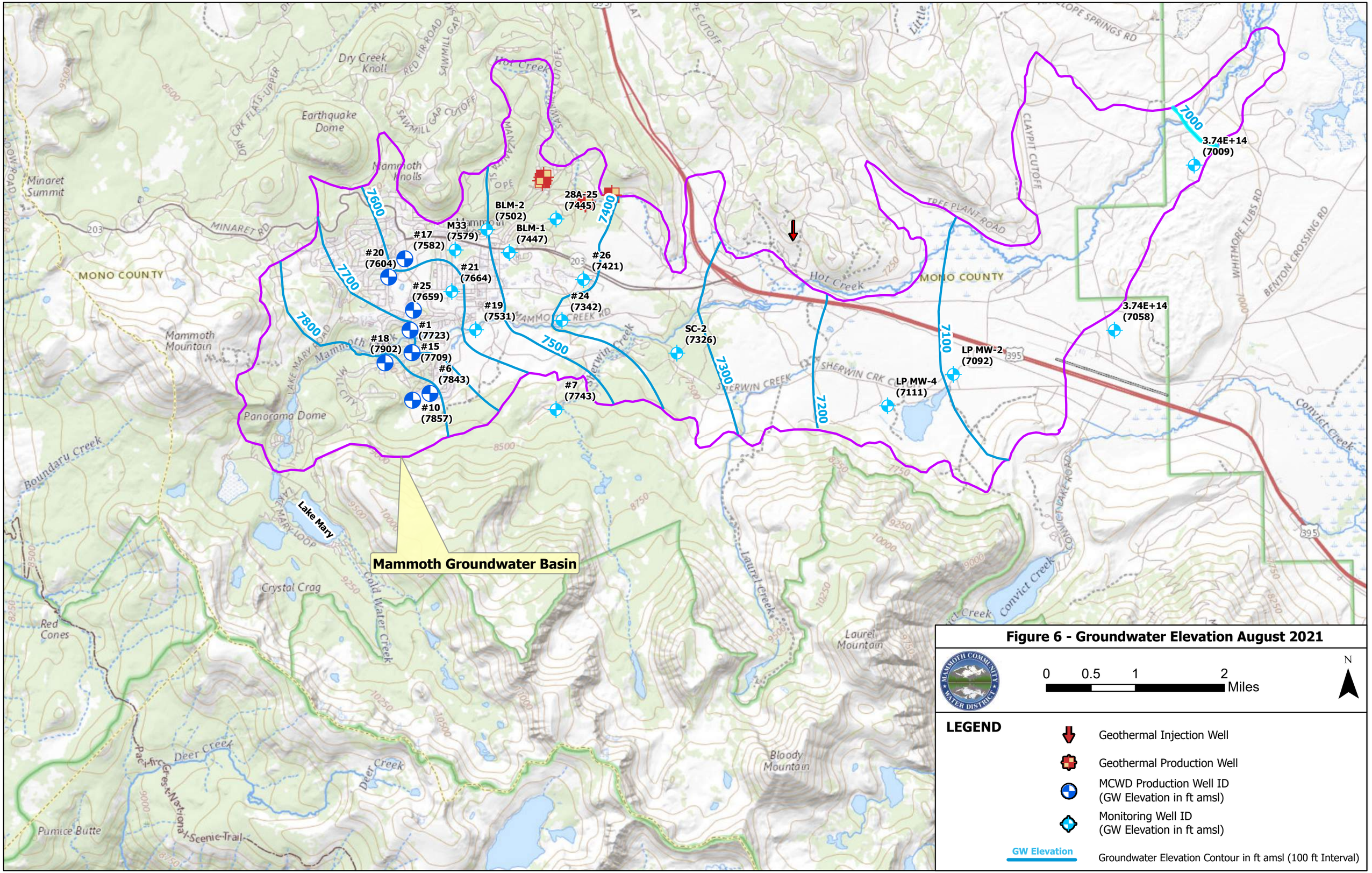


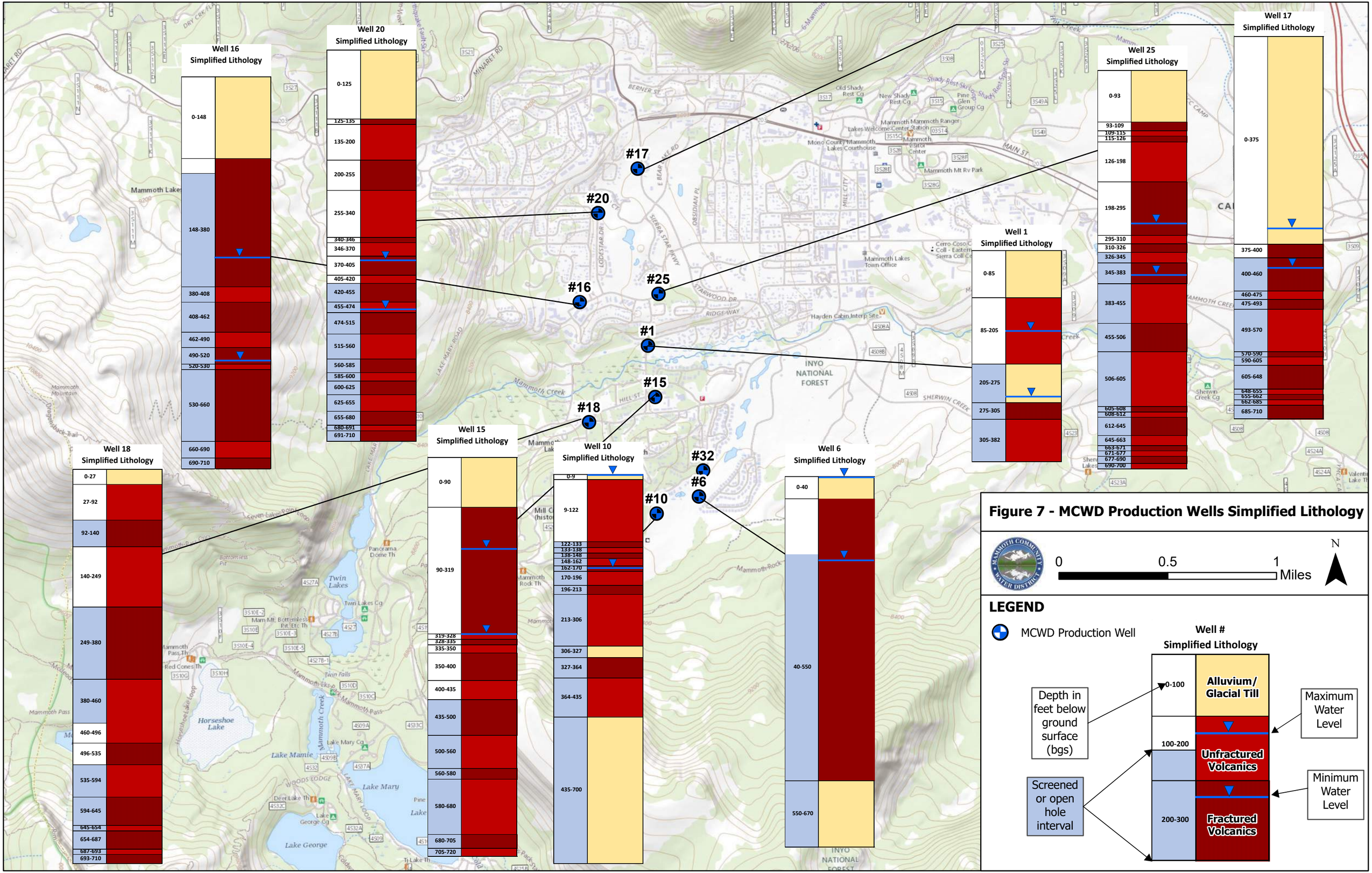
Figure 5 - Regional Geology and Hydrothermal Flow

- Fumarole
- Thermal Spring
- MCWD Production Well
- Cold-water Monitoring Well
- Fault
- Inferred Fault
- Dual Completion Monitoring Well
- Geothermal Production Well
- Geothermal Monitoring Well
- Geothermal Injection Well

Geologic Legend

JTrg	Qaq	Qef	Qmr2	Qpe	Qss	Tbm	pbc
Kg	Qbt	Qet	Qmr3	Qpf	Qt	Tsjd	rmp
Mzmv	Qc	Qgb	Qmrh	Qqm	Qta	Tsjt	water
Pzms	Qcd	Qgu	Qmrm	Qrg	Qtg	abc	yc
Qa	Qcm	Ql	Qoa	Qri	Qti	ac	
Qab	Qct	Qmb	Qob	Qrm	Qyb	bac	
Qaf	Qda	Qmg	Qp	Qro	Tal	mra	
Qal	Qeb	Qmr1	Qpb	Qsc	Tba	mrp	


Mammoth Groundwater Basin
7600
7700
7800
7500
7400
7300
7200
7100
7000
BLM-2 (7502)
BLM-1 (7447)
28A-25 (7445)
M33 (7579)
#17 (7582)
#20 (7604)
#21 (7664)
#25 (7659)
#19 (7531)
#26 (7421)
#24 (7342)
#1 (7723)
#18 (7902)
#15 (7709)
#6 (7843)
#7 (7743)
#10 (7857)
SC-2 (7326)
LP MW-2 (7092)
LP MW-4 (7111)
3.74E+14 (7009)
3.74E+14 (7058)
Lake Mary
Mammoth Creek
Hot Creek
Sherwin Creek
Laurel Creek
Convict Creek
Boundary Creek
Deer Creek
Cold Water Creek
Dry Creek Knoll
Earthquake Dome
Mammoth Knolls
Minaret Summit
Mammoth Mountain
Panorama Dome
Crystal Crag
Red Cones
Pumice Butte
Laurel Mountain
Bloody Mountain
MINARET RD
LAKE MARY ROAD
MAMMOTH CREEK RD
SHERWIN CRK RD
TREE PLANT ROAD
CLAYPIT CUTOFF
WHITMORE TUBS RD
BENTON CROSSING RD
CONVICT LAKE RD
MONO COUNTY
Pacific Crest National Scenic Trail
Figure 6 - Groundwater Elevation August 2021
0 0.5 1 2 Miles
N
LEGEND
Geothermal Injection Well
Geothermal Production Well
MCWD Production Well ID (GW Elevation in ft amsl)
Monitoring Well ID (GW Elevation in ft amsl)
GW Elevation
Groundwater Elevation Contour in ft amsl (100 ft Interval)


Well 16
Simplified Lithology
0-148
148-380
380-408
408-462
462-490
490-520
520-530
530-660
660-690
690-710
Well 20
Simplified Lithology
0-125
125-135
135-200
200-255
255-340
340-346
346-370
370-405
405-420
420-455
455-474
474-515
515-560
560-585
585-600
600-625
625-655
655-680
680-691
691-710
Well 17
Simplified Lithology
0-375
375-400
400-460
460-475
475-493
493-570
570-590
590-605
605-648
648-655
655-662
662-685
685-710
Well 25
Simplified Lithology
0-93
93-109
109-115
115-126
126-198
198-295
295-310
310-326
326-345
345-383
383-455
455-506
506-605
605-608
608-612
612-645
645-663
663-671
671-677
677-690
690-700
Well 1
Simplified Lithology
0-85
85-205
205-275
275-305
305-382
Well 18
Simplified Lithology
0-27
27-92
92-140
140-249
249-380
380-460
460-496
496-535
535-594
594-645
645-654
654-687
687-693
693-710
Well 15
Simplified Lithology
0-90
90-319
319-328
328-335
335-350
350-400
400-435
435-500
500-560
560-580
580-680
680-705
705-720
Well 10
Simplified Lithology
0-9
9-122
122-133
133-138
138-148
148-162
162-170
170-196
196-213
213-306
306-327
327-364
364-435
435-700
Well 6
Simplified Lithology
0-40
40-550
550-670
#17
#20
#16
#25
#1
#15
#18
#32
#6
#10
Mammoth Lakes
Mammoth Creek
Lake Mary
Lake Mamie
Lake George
Horseshoe Lake
Twin Lakes
Mammoth Mountain
Mammoth Pass
Inyo National Forest
Mammoth Lakes Town Office
Mono County Mammoth Lakes Courthouse
Mammoth Visitor Center
Mammoth Mt Rv Park
Lakes Welcome Center Station
Hayden Cabin Interp Site
Old Shady Rest Cg
New Shady Rest Cg
Pine Glen Group Cg
Twin Lakes Cg
Lake Mary Cg
Lake George Cg
Sherwin Creek Cg
Panorama Dome Th
Mammoth Rock Th
Deer Lake Th
Tj Lake Th
Red Cones Th
Mammoth Pass Th
Mam Mt Bottenless Pit Etc Th
Bottomless Pit
Minaret Rd
Lake Mary Road
Sherwin Creek
Hill St
Ridge Way
Starwood Dr
Sierra Star Pkwy
Obsidian Pl
Mill City
Lodestar Dr
E Bear Lake Rd
Main St
Berner St
Woods Lodge
Lake Mary Loop
Horseshoe Lake Loop
Dragonback Trail
Shady Rest Ski Co
Shady Rest Snow Sp
Figure 7 - MCWD Production Wells Simplified Lithology
0
0.5
1
Miles
N
LEGEND
MCWD Production Well
Well #
Simplified Lithology
0-100
Alluvium/ Glacial Till
100-200
Unfractured Volcanics
200-300
Fractured Volcanics
Depth in feet below ground surface (bgs)
Maximum Water Level
Minimum Water Level
Screened or open hole interval

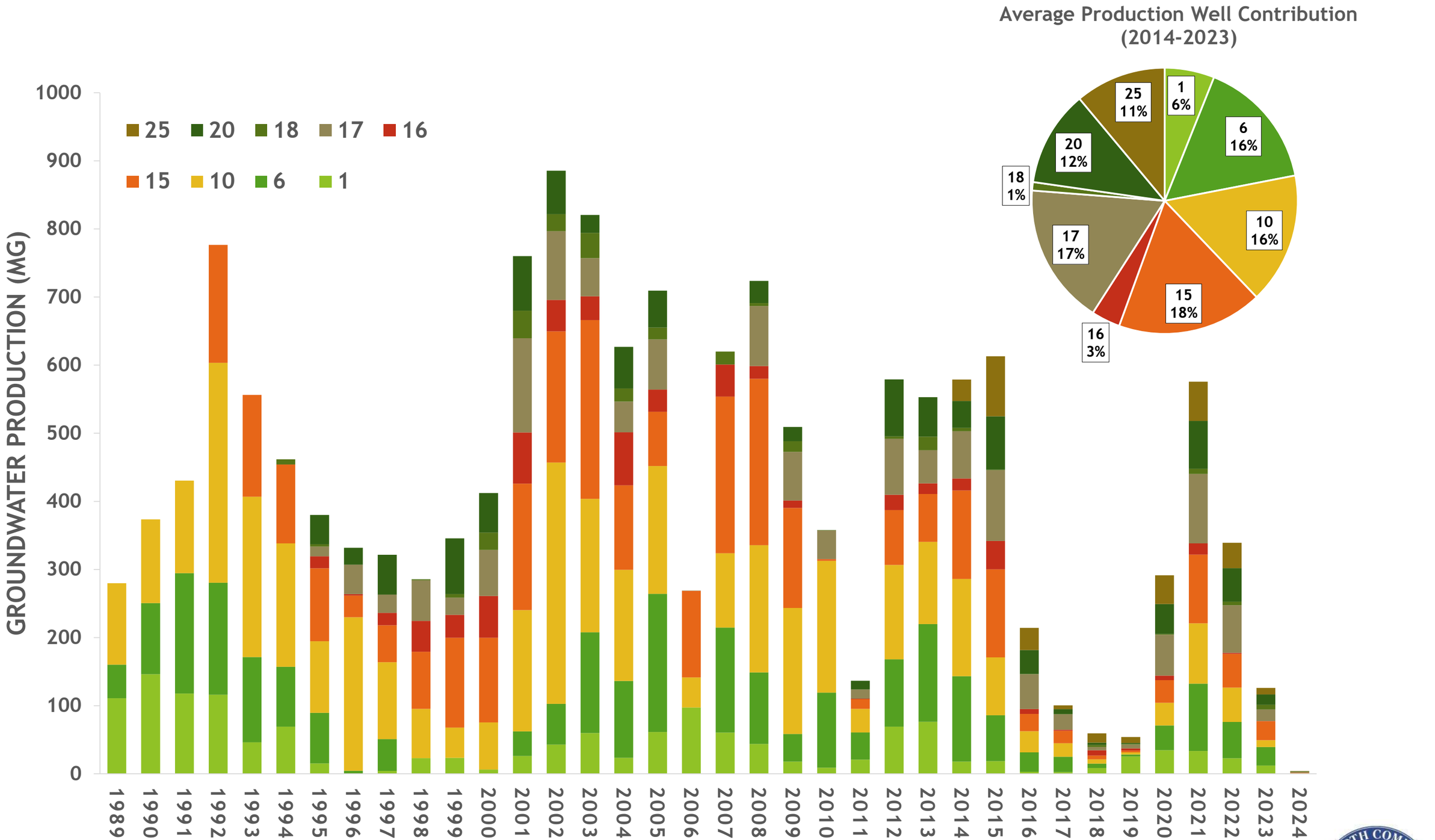
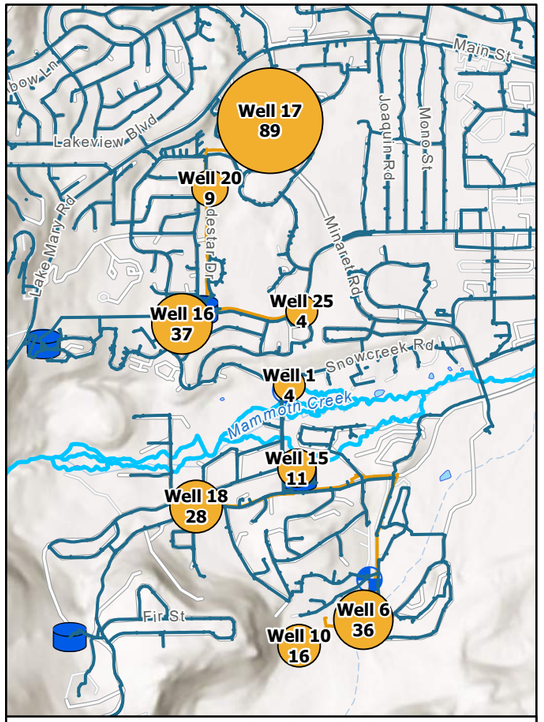
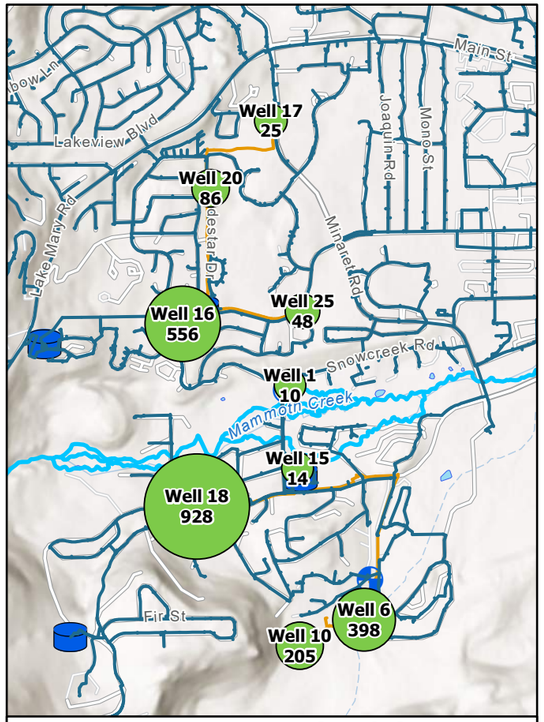


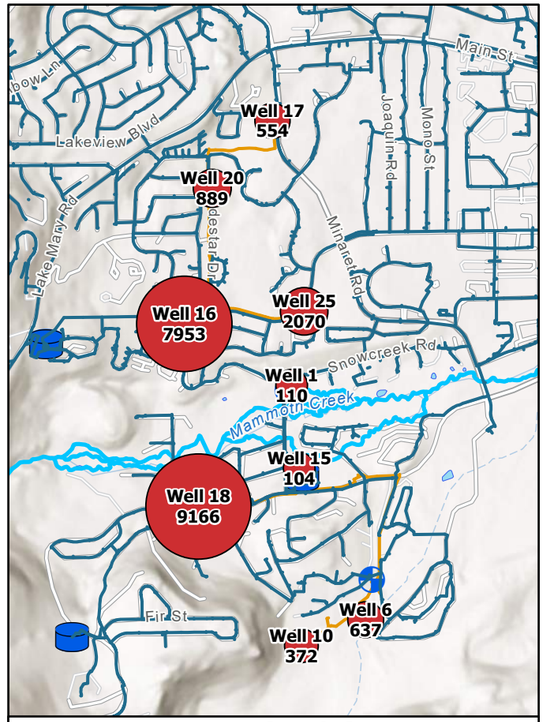
Figure 8 - Groundwater Production 1989-2024



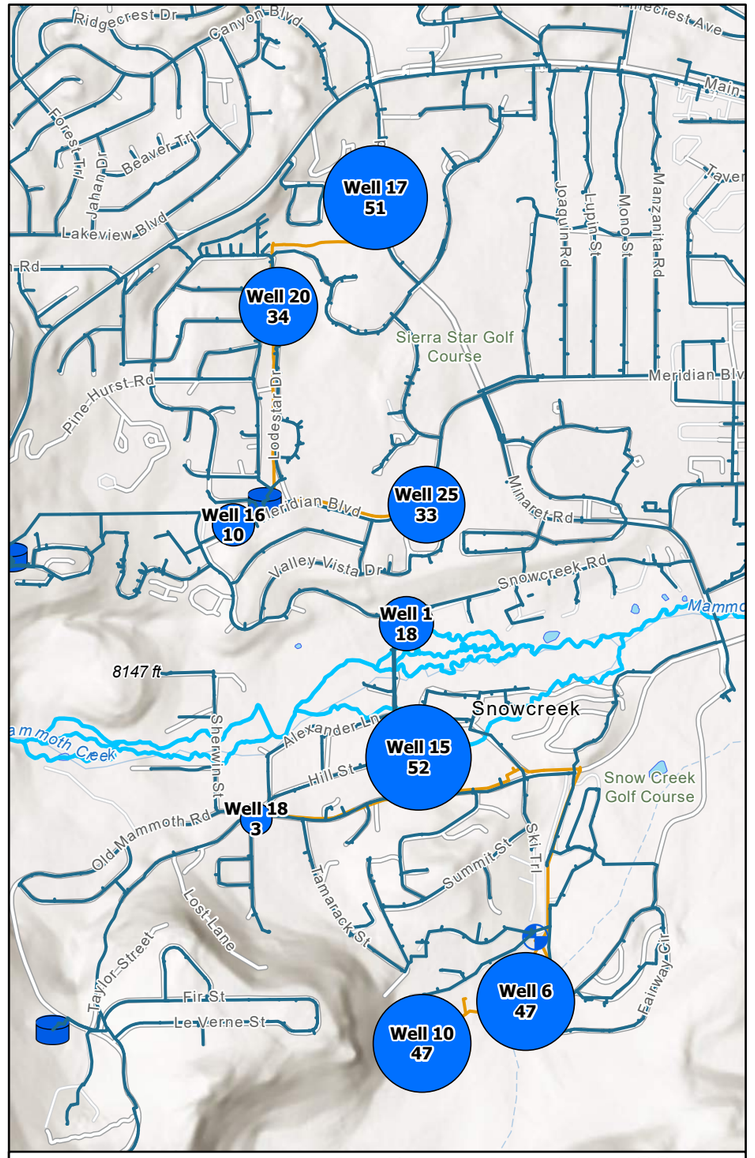
Arsenic (ug/L)
MCL = 10 ug/L



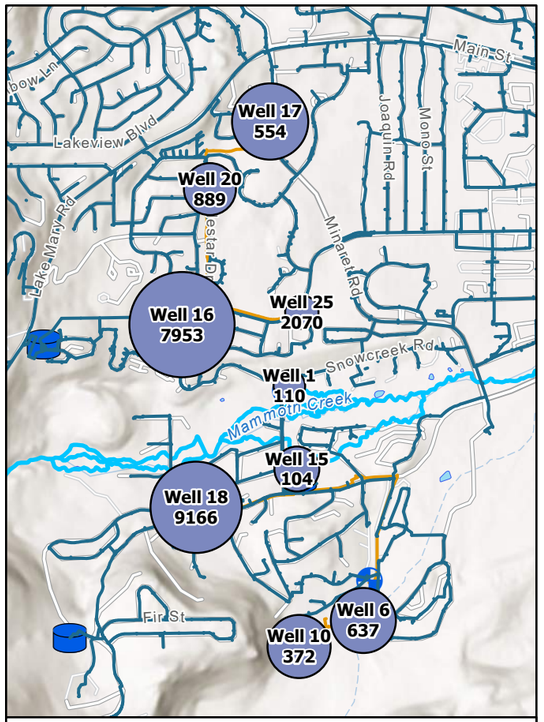
Manganese (ug/L)
MCL = 50 ug/L



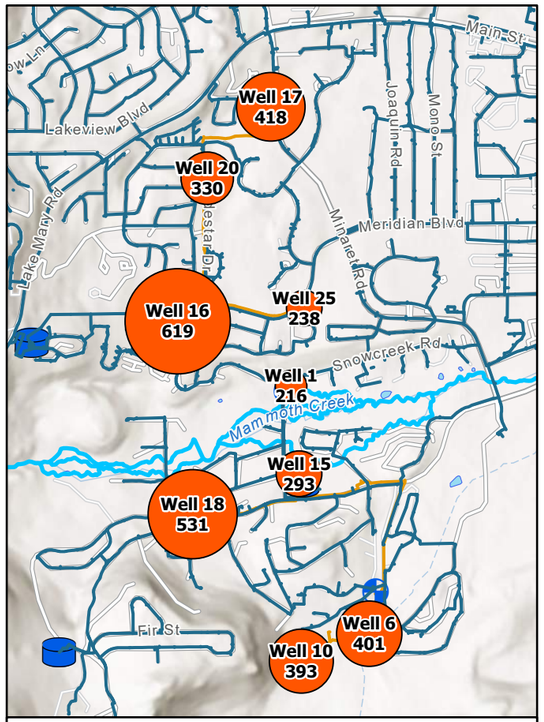
Iron (ug/L)
Secondary MCL = 300 ug/L



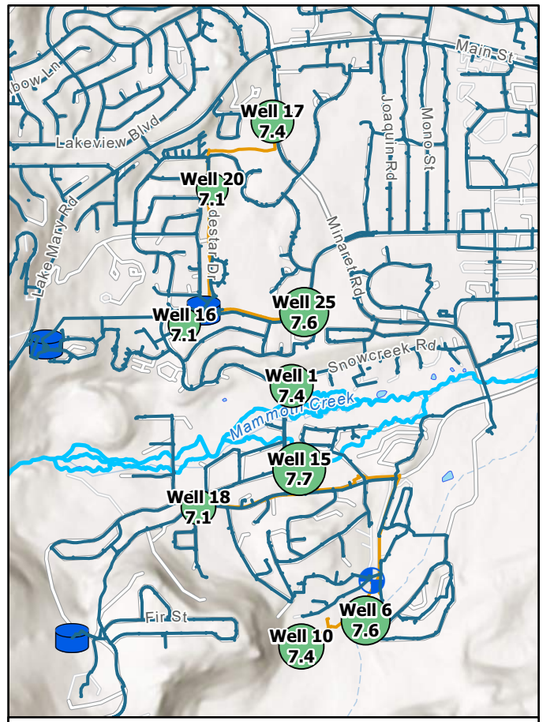
Annual Average Water Production from 2014 through 2023 (MG/year)



Total Dissolved Solids (mg/L)



Specific Conductance (uS)



pH (Lab)

Figure 9 - Select Water Quality and Production

LEGEND

- Potable Water Main
- RAW Water Main
- Water Tank

N

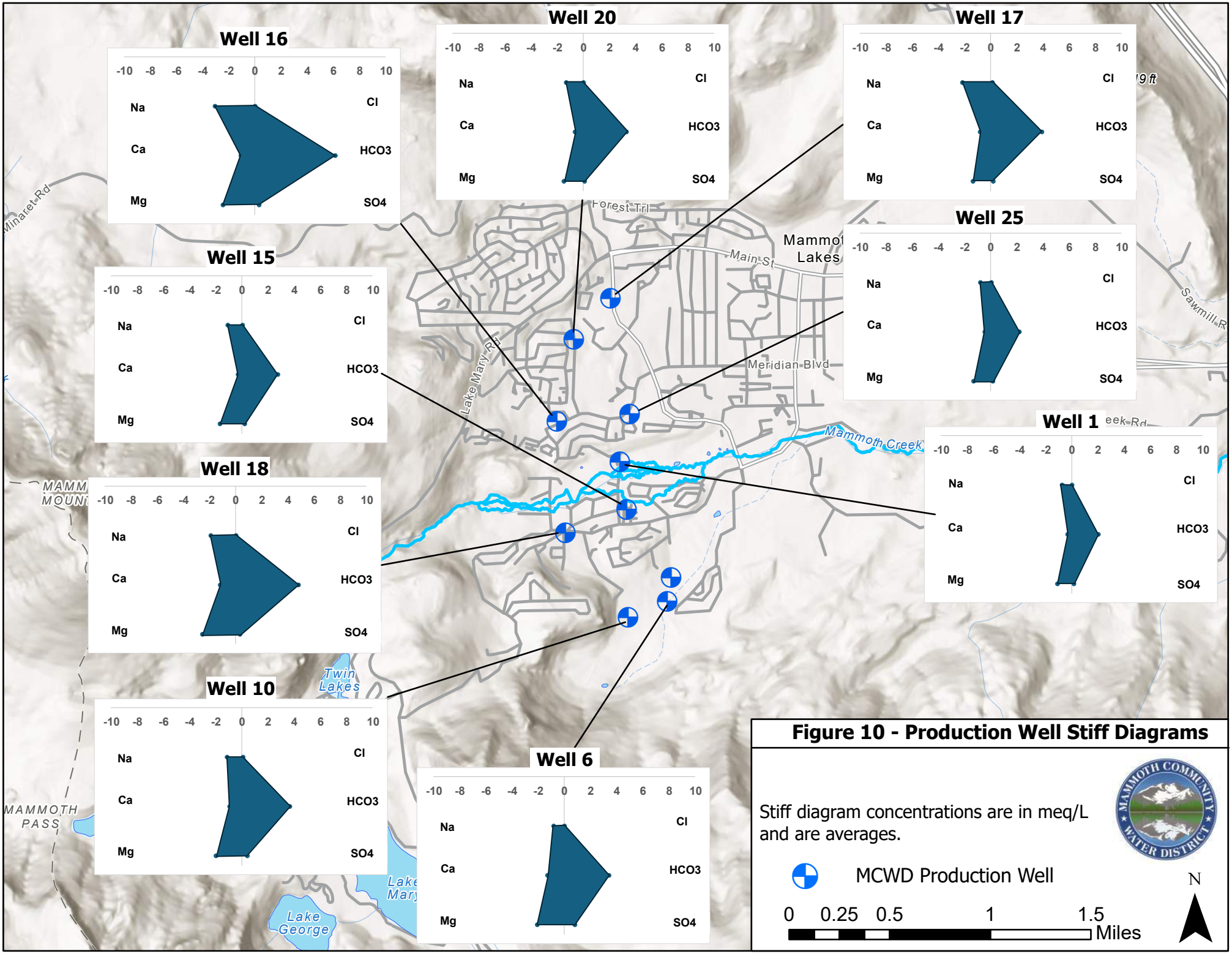


Figure 10 - Production Well Stiff Diagrams

Stiff diagram concentrations are in meq/L and are averages.

MCWD Production Well

0 0.25 0.5 1 1.5 Miles

N

HYDROGEOLOGY AND ENVIRONMENTAL SERVICES

MARCH 13, 2024

REQUEST FOR QUALIFICATIONS

APPENDIX A OF ATTACHMENT 1 – GROUNDWATER MONITORING AND RESPONSE PLAN

Table of Contents

1.0 INTRODUCTION

The Casa Diablo IV Geothermal Development Project (CD-IV Project) was formally proposed to the Bureau of Land Management (BLM) by Mammoth Pacific, L.P. (MPLP) in 2010. MPLP was subsequently acquired by Ormat Nevada Inc. (Ormat) and they requested authorization to construct, operate and maintain, and decommission the proposed project on BLM-administered Federal geothermal leases located on National Forest System lands managed by the Inyo National Forest near Mammoth Lakes in Mono County, California.

The CD-IV Project was approved by the BLM on August 12, 2013. In the Record of Decision (ROD) for the project, the BLM acknowledged concern expressed by the Mammoth Community Water District (MCWD) that "*uncertainty remained regarding the potential impact of the CD-IV Project on their domestic water supply*." The BLM also recognized the "*importance of ongoing data collection and monitoring related to the municipal water supply for the Mammoth Lakes community*" (USDI BLM 2013).

As a condition of approval for the CD-IV Project (43 CFR 3200.4(f) and 43 CFR 3270.12(d)), the BLM required the *"development and implementation of a cooperative shallow ground water monitoring plan focused on detecting any direct or indirect effects on the municipal water supply that may occur from geothermal production and injection in coordination with the Long Valley Hydrologic Advisory Committee."* The BLM also required that the MCWD be "*invited to participate in the development and implementation*" of the shallow groundwater monitoring plan (USDI BLM 2013). This Groundwater Monitoring and Response Plan (GMRP) has been developed and will be implemented to meet this condition of approval for the CD-IV Project.

The primary intent of this BLM-required shallow groundwater monitoring plan is to address concerns expressed by the MCWD regarding potential impacts on the domestic water supply for the Town of Mammoth Lakes from CD-IV Project operations. These concerns include, but are not limited to, the potential reduction in the amount of shallow cold groundwater available to the MCWD from the Mammoth Groundwater Basin, the potential reduction in the amount of surface water available to the MCWD from Mammoth Creek, and the potential degradation of water quality within the shallow cold groundwater aquifer in the Mammoth Groundwater Basin and/or the surface water resource from Mammoth Creek.

2.0 PURPOSE AND OBJECTIVES

The purpose of this Groundwater Monitoring and Response Plan (GMRP) is to establish a monitoring program to detect any direct or indirect effects on the municipal water supply for

the Town of Mammoth Lakes that may occur from geothermal production and injection associated with the CD-IV Project.

The objectives of this GMRP are to: 1) Identify and implement shallow groundwater aquifer, surface water resource, and deep geothermal reservoir monitoring strategies and protocols necessary to achieve this purpose, and 2) Establish a framework for determining and implementing appropriate response actions if, and when, needed to avoid, minimize, and/or mitigate potential adverse effects to the Town of Mammoth Lakes municipal water supply based on review and analysis of the monitoring data collected. To meet these objectives, this GMRP outlines: 1) Monitoring strategies (Section 4), 2) Data management, data reporting and plan evaluation strategies (Section 5), and 3) Response action strategies (Section 6) that will be implemented as the CD-IV Project progresses.

As envisioned by the BLM, this GMRP will be a cooperative effort of the Operator (currently ORNI 50, LLC a wholly owned subsidiary of Ormat), MCWD, the three (3) agencies that have the principal authority and responsibility to permit, monitor, and oversee operation of the CD-IV Project (BLM, United States Forest Service (USFS) and Great Basin Unified Air Pollution Control District (GBUAPCD)), and from past data analysis and consultation with the United States Geological Survey (USGS). The BLM also intends for the monitoring effort implemented pursuant to this plan to be coordinated with the Long Valley Hydrologic Advisory Committee (LVHAC), which has collaborated on monitoring hydrologic systems in the Long Valley Caldera under the purview of Mono County since 1987 (Lyster 1991).

Finally, the BLM expects this GMRP to be adaptive. The dynamic nature of hydrologic systems, combined with the varying effects of geothermal production, regional seismic activity, climatic changes, and the export and consumptive use of surface and groundwater resources within the Long Valley Caldera including the Mammoth Groundwater Basin necessitates an adaptive approach to monitoring. As data from this monitoring effort is collected and analyzed, there may be a need to reassess the monitoring strategy outlined herein. New or refined approaches and methods may be needed to ensure that the plan is effective in achieving its stated purpose and objectives.

3.0 BACKGROUND

3.1 Geologic Setting

Long Valley Caldera is the largest feature in the Mono-Long Valley volcanic field that includes Pleistocene-Recent eruptive centers of Mammoth Mountain and the Mono-Inyo volcanic chain.

The caldera is a 10 X 20 mile (16 X 32 km) depression created by the eruption of an estimated 144 mi^3 (600 km^3) of Bishop Tuff over 760,000 years ago (Bailey et al. 1976, Bailey et al. 1989). Approximately 84 - 96 mi^3 (350 - 400 km^3) of Bishop Tuff filled the caldera depression as a single continuous stratigraphic unit. Pressure recovery in the Bishop Tuff magma chamber pushed up part of the magma chamber roof initiating a series of post-collapse Early Rhyolite eruptions about 600,000 years ago, that drilling data has shown to be relatively continuous across the caldera. Discontinuous eruptions have continued to fill the caldera depression over the last 500,000 years (Bailey et al. 1976, Bailey et al. 1989, Bailey 2004, Hildreth 2004). A series of mixed basalt-rhyolite eruptive units intercalated with alluvium and glacial till have continued to fill the western caldera moat over the last 200,000 years.

3.2 Existing Geothermal Development and CD-IV Project Expansion

The Long Valley Caldera has been explored for geothermal resources since the 1960s. Early exploration wells (<300 m; 985 ft deep) were drilled around Casa Diablo near the most prominent hot springs and fumaroles just northeast of the intersection of U.S. Highway 395 and California State Highway 203. More recent and deeper exploration wells have established that the principal geothermal reservoir in the caldera is not located directly beneath the hot springs at Casa Diablo and that the current 40 Megawatts electrical (MWe (gross)) production at Casa Diablo is supplied primarily by shallow outflow from a geothermal source located beneath the western caldera moat.

The current production mix includes approximately 12,000 gallons per minute (gpm)(6,019 kph; 2,687 tph; 19,355 ac-ft/yr) of geothermal fluid from shallow (<200 m; 650 ft) moderate temperature (170 °C; 338 °F) outflow that is produced from permeable structures and zones within the Early Rhyolite at Casa Diablo, supplemented by approximately 5,000 gpm (2,508 kph; 1,120 tph; 8,064 ac-ft/yr) of geothermal fluid from deeper (488 - 693 m; 1,600 - 2,276 ft), higher temperature (180 °C ; 356 °F) outflow in Basalt Canyon which is closer to the ultimate deep source reservoir in the western caldera. All of the spent fluid is currently returned to a zone of interconnected, permeable structures that are present within the underlying Bishop Tuff via deep (600 m; 1,970 ft) injection wells at Casa Diablo.

The CD-IV Project will expand electrical generation in the Long Valley Caldera by approximately 40 MWe (gross), to approximately 80 MWe (gross), by drilling additional deep (±610 m; 2,000 ft) wells in Basalt Canyon and piping the produced fluids to a new binary generation facility located northeast of the existing facilities at Casa Diablo. The new wells will produce an additional 6,000 gpm (3,010 kph; 4,030 tph; 9,677 ac-ft/yr) of geothermal fluid, nearly doubling current production from Basalt Canyon and bringing total fluid production in the caldera to

approximately 18,000 gpm (9,029 kph; 4,030 tph; 29,032 ac-ft/yr). The new Basalt Canyon wells will produce fluid primarily from a zone of interconnected, permeable fractures within the Bishop Tuff that exist near the southern margin of the resurgent dome. All the produced fluid associated with the CD-IV Project will be returned to a deeper section of the Bishop Tuff in Basalt Canyon (±548 m; 1,800 ft) and/or at Casa Diablo (±600 m; 1,970 ft).

The project approval allows for permitting of up to 16 wells, at 18 possible locations, any of which, depending on reservoir conditions, might be used as either a producer or an injector. This does not mean that 16 wells will be drilled immediately or operated continually. The authorization specifically permits more locations than might be necessary to allow for flexibility based on unanticipated conditions such as new geologic information, potential dry holes, unknown characteristics of the reservoir, sustainable production and injection schemes, and any future need for replacement wells if production characteristics of the reservoir change over time.

Production and injection placement is a critical part of managing a geothermal resource. Approximately half of the wells would be producers and the other half would be injectors. Plans for the CD-IV Project include significant injection returns to the reservoir beneath Basalt Canyon to replace mass, support reservoir pressures, and sustain the geothermal resource. Exact placement of producers and injectors will be determined based on the results of hydraulic testing including flow and stress tests, reservoir performance evaluations, and numerical simulations of production/injection configurations designed to minimize interference, replace mass, and provide pressure support without compromising productivity.

3.3 Hydrogeology

Surface water in the CD-IV Project vicinity consists of perennial streams, ephemeral streams, small lakes, and reservoirs. Snowmelt from the surrounding Sierra Nevada is the principal source of surface water runoff that recharges both the shallow cold groundwater system and deep geothermal system in the Long Valley Caldera. Surface and groundwater flow generally follows topography, flowing from the very high elevation Sierra peaks to the west and south toward the topographic low of Lake Crowley or through the Dry Creek Basin toward Big Springs along the Owens River headwaters to the northeast. Sources of cold groundwater and geothermal recharge include a portion of snowmelt infiltration from surface water features and underflow or subsurface flow in shallow poorly consolidated glacial till or alluvium or in faults and fractures (Sorey 2005, Wildermuth 2009). Some additional recharge comes from higher elevations within the caldera and from the Glass Mountains in the eastern part of the caldera,

but the influx is predicted to be less than recharge from the western and southern topographic margins of the caldera because precipitation is limited east of the Sierra Nevada.

The shallow cold groundwater system is differentiated from the deeper and hotter geothermal system by geologic units, depth, temperature, and fluid chemistry. Groundwater from the Mammoth Groundwater Basin that MCWD pumps to supply the Town of Mammoth Lakes is produced from shallow water-bearing units within the southwestern and southern caldera moat. Shallow non-thermal groundwater in the Mammoth Groundwater Basin is generally colder (7 - 9 °C; 45 - 48 °F), shallower (25 - 265 m; 82 - 870 ft), lower in total dissolved solids (TDS), and found in shallow glacial till, moat basalt and/or alluvium/colluvium aquifers. MCWD groundwater supply wells produce cold groundwater from the hydrologic region drained by the upper reaches of Mammoth Creek. Total cold groundwater production averaged 590 gpm (37 L/s; 950 ac-ft/yr) between 1983 and 2001 (Sorey 2005). The MCWD uses 1,460 ac-ft/yr of groundwater on average but groundwater use can increase to 3,360 ac-ft/yr in extremely dry years (MCWD 2011). Between 2011 and 2015, the MCWD pumped an average of 1,507 acre-feet of groundwater per year with pumped volumes ranging from 407 acre-feet in 2011 to 1,883 acre-feet in 2015 (MCWD 2017).

3.4 Regulatory Framework

The authority to regulate the development and use of geothermal resources on public lands comes from the Geothermal Steam Act of 1970 (P.L. 91-581), as last amended by the Energy Policy Act of 2005 (P.L. 109-58). This Act gave the Secretary of the Interior the authority and responsibility for managing geothermal resources on public lands including National Forest System lands administered by the Inyo National Forest. The law required that the Secretary prescribe regulations necessary to carry out the provisions of the Act, including development and conservation of the geothermal resource, protection of the public interest, diligence in development of the geothermal resource, and protection of water quality and other environmental qualities.

The Secretary has delegated authority and responsibility for managing Federal geothermal resources to the BLM, thus all operations conducted by the Operator of the CD-IV Project are subject to the approval and oversight of the BLM pursuant to the regulations at 43 CFR 3200. The regulations specifically require the Operator to comply with permit conditions of approval, verbal orders that will be confirmed in writing, and other instructions from BLM (43 CFR 3200.4(f), (g) and (h)). The regulations further provide that the BLM may require monitoring to ensure compliance with the regulations at 43 CFR 3200.4, compliance with applicable water quality standards, and compliance with any other environmental parameters which the BLM

may require (43 CFR 3272.12(b)). Finally, the regulations require the Operator to monitor facility operations to address any local environmental resources and concerns with facility operations (43 CFR 3275.12(b)).

4.0 GROUNDWATER MONITORING PLAN

4.1 Baseline Monitoring Well Network

The baseline monitoring well network for the CD-IV Project will be comprised of fourteen (14) cold groundwater monitoring and production wells (shallow groundwater), at least eleven (11) geothermal reservoir monitoring and production wells (geothermal reservoir), and three (3) dual completion (dual depth/dual piezometer) groundwater monitoring wells (Table 1 and Figure 1). One (1) additional geothermal reservoir monitoring well will immediately be added to the baseline monitoring well network as soon as it is drilled and instrumented, if the Operator and MCWD are successful in their effort to cooperatively fund this prospective well via a California Energy Commission (CEC) grant or some other agreement (BLM-2, Table 1 and Figure 1).

Additional wells may be added to the monitoring well network as "wells of opportunity" present themselves or as proposed by the Operator and/or MCWD, and as approved by the BLM after consultation with the Operator, MCWD, and USFS, and coordination with Mono County via the LVHAC.

The BLM may order, at the Operator's expense, that new wells be added to the monitoring well network based on new scientific information and/or the analysis of monitoring data collected as part of this GMRP after consultation with the Operator, MCWD, and USFS, and coordination with Mono County via the LVHAC. Any BLM order requiring the Operator to install a new monitoring well will be in accordance with the regulations (43 CFR 3200.4(f), (g), and (h)), (43 CFR 3270.12(c), (d) and (e)), and (43 CFR 3275.12(b)).

In addition to well data collected pursuant to this plan, streamflow data, climate data, water use data, surface water diversion data, surface water export data, reclaimed water supply data, and pumping data will be integrated into this monitoring program. Wells that comprise the baseline monitoring well network are briefly described below.

4.1.1 Shallow Groundwater Monitoring Well Network

The MCWD currently collects water level data from a network of cold groundwater monitoring and groundwater production wells located within the Mammoth Groundwater Basin that are at least 30.5 m (100 ft) deep. As summarized in Table 1, twelve (12) of these wells (4 monitoring wells and 8 production wells) will be integrated into the shallow groundwater monitoring well network for the CD-IV Project (Figure 1). A subset of these wells will also be used to collect temperature data. Eight (8) of these wells are identified for quarterly geochemical sampling and analyses as part of the shallow groundwater monitoring strategy (Table 1).

Table 1. Baseline Monitoring Well Network and Parameters to be Monitored by Individual Well

Well Type	Well Name	Well Status	Monitoring Entity	Monitoring Parameters & Frequency			
				Temperature	Pressure	Water Level	Geochemical
Shallow Groundwater Monitoring Wells	MCWD 14	Existing	MCWD			D (t)	
	MCWD 19	Existing	MCWD			D (m)	
	MCWD 24	Existing	MCWD			D (t)	
	MCWD 26	Existing	MCWD & GMRP Selected Contractor	D (t)		D (t)	Q
	MCWD 33	Existing	MCWD	D (t)			Q
	SC-1	Existing	Ormat & GMRP Selected Contractor	D (t)		D (t)	
	SC-2	Existing	Ormat & GMRP Selected Contractor	D (t)		D (t)	
Shallow Groundwater Production Wells	MCWD 1	Existing	MCWD & GMRP Selected Contractor			D (t)	Q
	MCWD 6	Existing	MCWD & GMRP Selected Contractor			D (t)	Q
	MCWD 15	Existing	MCWD & GMRP Selected Contractor			D (t)	Q
	MCWD 16	Existing	MCWD & GMRP Selected Contractor			D (t)	Q
	MCWD 17	Existing	MCWD			D (t)	Q
	MCWD 18	Existing	MCWD & GMRP Selected Contractor			D (t)	
	MCWD 20	Existing	MCWD & GMRP Selected Contractor			D (t)	Q
	MCWD 25	Existing	MCWD & GMRP Selected Contractor			D (t)	Q
Dual Completion Monitoring Wells	Ormat 14A-25	Existing	GMRP Selected Contractor	Q (VTP)	D (b)		Q
	Ormat 28A-25	Existing	GMRP Selected Contractor	Q (VTP)	D (b)		Q
	BLM-1	Existing	GMRP Selected Contractor	Q (VTP)	D (b)		Q

	BLM-2	Existing	GMRP Selected Contractor	Q (VTP)	D (b)	D (t)	Q
Geothermal Reservoir Monitoring Wells	Ormat 12-31	Existing	Ormat	D (b)	D (b)		
	Ormat 65-32	Existing	Ormat	D (b)	D (b)		
	Ormat 48-29	Existing	Ormat	D (t)	D (t)		
	Ormat 28-34	Existing	Ormat	D (b)	D (b)		
	Ormat CW-3	Existing	Ormat	D (t)	D (t)		
	BLM-3	Existing	GMRP Selected Contractor	Q (VTP)	D (b)		Q
	USGS CH10B	Existing	Data Pulled from NWIS		D (b)		
	Ormat 28-25	Existing	GMRP Selected Contractor	Q (VTP)	D (b)		Q
	BLM-2	Existing	GMRP Selected Contractor	Q (VTP)	D (b)		Q
Geothermal Reservoir Production Wells	Ormat 57-25	Existing	Ormat & GMRP Selected Contractor	D (b)	D (b)		Q
	Ormat 66-25	Existing	Ormat & GMRP Selected Contractor	D (b)	D (b)		Q
	Ormat 12-25[1]	Existing - idle	Ormat	TBD	D (b)		TBD
	Ormat 14-25[1]	Existing - idle	Ormat	TBD	D (b)		TBD

MCWD monitoring wells 14, 19, 24, 26, and 33 are located within 1.4 - 3.7 km (0.9 - 2.3 mi) of producing geothermal wells in Basalt Canyon (as measured from well 57-25) and are included in the shallow groundwater monitoring well network. MCWD production wells 1, 6, 15, 16, 17, 18, 20, and 25 are located within 2.9 - 4.3 km (1.8 - 2.7 mi) of the producing geothermal well field and are also included in the shallow groundwater monitoring well network. All of these wells will be monitored for potential adverse effects on the shallow cold groundwater system from CD-IV Project operations (Table 1 and Figure 1).

MCWD wells 17, 24, 26, and 33 are located within 1.4 - 3.4 km (0.9 - 2.1 mi) of producing geothermal wells in Basalt Canyon (as measured from well 57-25). These wells along with geothermal wells 28-25, 14-25, 57-25, and 12-31 (*see* Section 4.1.2) and dual completion wells 14A-25, 28A-25, and BLM Off-Lease 1 (*see* Section 4.1.3) are considered "sentinel" wells that will likely provide the earliest indication of potential adverse effects on the shallow cold groundwater system from CD-IV Project operations (Table 1 and Figure 1).

[1] Geothermal wells 12-25 and 14-25 are likely to become production or injection wells once the CD-IV Project comes on-line. Collection of temperature and geochemistry data will be added to any future production well.

Monitoring Parameters & Frequency Codes

D = Daily Average, Q = Quarterly, TBD = To Be Determined, (t) = Transducer, (b) = Bubbler Tube, (m) = Manual, VTP = Vertical Temperature Profile

Additional MCWD owned wells may be added to the shallow groundwater monitoring well network as proposed by the MCWD, and as approved by the BLM after consultation with the Operator, and USFS.

Two existing USGS cold groundwater monitoring wells located below the confluence of Mammoth Creek and Sherwin Creek (SC-1 and SC-2 (to be acquired by the MCWD)) are incorporated into the shallow groundwater monitoring well network as part of the shallow groundwater monitoring strategy (Figure 1). These wells will be used to monitor pressure (water level) and temperature (Table 1).

4.1.2 Geothermal Reservoir Monitoring Well Network

The Operator currently collects pressure and temperature data from a network of geothermal monitoring and production wells that range from 82 - 694 m (270 - 2,276 ft) deep and are located within the Early Rhyolite and Bishop Tuff geothermal reservoirs of Casa Diablo and Basalt Canyon. As summarized in Table 1, nine (9) of these wells (5 monitoring wells and 4 production wells) will be integrated into the geothermal reservoir monitoring well network for the CD-IV Project (Figure 1). One (1) additional geothermal monitoring well that will be part of the geothermal reservoir monitoring well network has been approved by the BLM in consultation with the USFS and has been drilled and instrumented by the Operator (28-25, Table 1 and Figure 1). Funding for prospective geothermal monitoring wells has been secured and allowed BLM to have USGS drill wells BLM-1, BLM-2, and BLM-3 (Table 1 and Figure 1). The BLM holds a special use permit from the USFS for these off-lease geothermal monitoring well (BLM-1, BLM-2, and BLM-3, Table 1 and Figure 1). Pressure data will be collected from all wells within the geothermal reservoir monitoring well network. Temperature data will be collected from at least nine (9) of these wells. At least two (2) of these wells are identified for quarterly geochemical sampling and analyses as part of the geothermal reservoir monitoring strategy (Table 1). The MCWD has also secured funding and with coordination of the USGS drilled well MCWD-33 to be added to the geothermal monitoring network (Table 1 and Figure 1).

Pressure and temperature data for the geothermal reservoir monitoring well network will be collected from a mixture of static monitoring wells, idle producers and/or injectors, and active producers and/or injectors. All geothermal production wells in Basalt Canyon will be linked online to the generation facilities to provide real-time reporting of pressure data. These data will be used to monitor effects from CD-IV Project operations and to manage utilization of the Federal geothermal reservoir. Collection and reporting of these data will be part of the Operator's standard operating procedures for the CD-IV Project in accordance with BLM permit requirements.

Any new Operator-owned monitoring geothermal well drilled as part of the CD-IV Project will be added to the geothermal reservoir monitoring well network. Additional pre-existing Operator-owned wells may be added to the geothermal reservoir monitoring well network as proposed by the Operator, and as approved by the BLM after consultation with the MCWD, and USFS.

The BLM may also order, at its sole discretion, that additional pre-existing Operator-owned wells be added to the monitoring well network after consultation with the Operator, MCWD, and USFS, and coordination with Mono County via the LVHAC. Any BLM order requiring the Operator to incorporate additional pre-existing Operator-owned wells into the monitoring well network will be in accordance with the regulations (43 CFR 3200.4(f), (g), and (h)), (43 CFR 3270.12(c), (d) and (e)), and (43 CFR 3275.12(b)).

One existing USGS geothermal monitoring well (CH10B) located east of Casa Diablo near Hot Creek Gorge will also be incorporated into the geothermal monitoring well network as part of the geothermal reservoir monitoring strategy (Figure 1). This well will be used to monitor geothermal reservoir pressure (Table 1).

4.1.3 Dual Completion (Dual Depth/Dual Piezometer) Monitoring Wells

As summarized in Table 1, four (4) dual completion (dual depth/dual piezometer) groundwater monitoring wells (14A-25, 28A-25, BLM-1, and BLM-2, Table 1 and Figure 1) will be part of the overall hydrologic monitoring well network for the CD-IV Project. All of these wells will be used to collect pressure, temperature, and geochemical data in the shallow and intermediate hydrologic zones. Geochemical sampling and analyses will be conducted quarterly by the GMRP Selected Monitoring Contractor consistent with the overall strategy for monitoring geochemistry throughout the monitoring well network (Table 1).

Pressure, temperature, and geochemical data from these wells will be used to assess the vertical gradient between the shallow and intermediate hydrologic zones and to provide the earliest detection of any potential adverse effects on the shallow cold groundwater system from CD-IV Project operations. At least two (2) of these dual completion monitoring wells will be paired with geothermal reservoir wells (1 production and 1 monitoring) to assess the vertical gradient between the shallow, intermediate, and deep hydrologic zones (14A-25/14-25 and 28-A25/28-25, Table 1 and Figure 1).

The BLM drilled 2 new dual completion wells, BLM-1 and BLM-2 utilizing special use permits from the USFS at off-lease locations. These wells have been fully instrumented and added to the monitoring network.

4.2 Hydrologic Monitoring Parameters

Hydrologic parameters that will be monitored include temperature, pressure, water level, streamflow, and geochemical data. Table 1 summarizes the wells included in the baseline monitoring well network, parameters to be measured at each well, and frequency of data collection for each parameter being monitored. Figure 1 provides a spatial display of the well locations. Baseline monitoring was achieved in November of 2019, and baseline monitoring data continued to be collected until the production wells were started for initial stress testing in May of 2022.

A third-party contractor will be selected to perform the monitoring. An RFP will be submitted by the MCWD and the GMRP will review and select a contractor from those proposals. The MCWD will act as a financial pass-through between the operator and the contractor.

A third-party oversight contractor will be selected to perform periodic audits of the data collection, reporting quality, and offer additional technical analysis on the state of the reservoir.

4.2.1 Temperature Monitoring

Collection and analysis of temperature data will be used to characterize baseline conditions, to assess changes over time, and to determine the effects of CD-IV Project operations on fluid temperatures within both the shallow cold groundwater aquifer and the Federal geothermal reservoir. Temperature data will be collected from shallow groundwater and geothermal reservoir wells as summarized in Table 1.

The temperature monitoring strategy will be adaptive. Both the frequency of sampling and the wells to be sampled may be modified to meet specific testing and/or monitoring needs as proposed by the Operator and/or MCWD, and as approved by the BLM after consultation with the Operator, MCWD, and USFS, or as required by the BLM based on new scientific information and/or the analysis of monitoring data collected as part of this GMRP.

4.2.2 Geothermal Reservoir Pressure Monitoring

Static geothermal reservoir pressure monitoring will be conducted in dedicated monitoring wells and idle or shut-in production wells. Static reservoir pressures will be obtained by bubbler tube or transducer readings, depending on well status and reservoir temperature. Sampling will be conducted at the frequency described in Table 1.

Dynamic geothermal reservoir pressure monitoring will be conducted in production wells. Dynamic reservoir pressures will be obtained by bubbler tube readings at the depth of the pump. When production wells are in service, bubbler tube readings (with a small correction for nitrogen density in the tube) will measure the "dynamic" downhole pressure, which is equal to the static reservoir pressure minus the pressure drawdown. Collection and reporting of these data will be part of the Operator's standard operating procedures for the CD-IV Project in accordance with BLM permit requirements. Static geothermal reservoir pressure data will be used to verify the accuracy and precision of calculated dynamic reservoir pressure values. Sampling will be conducted at the frequency described in Table 1.

The geothermal reservoir pressure monitoring strategy will be adaptive. Both the frequency of sampling and the wells to be sampled may be modified to meet specific testing and/or monitoring needs as proposed by the Operator and/or MCWD, and as approved by the BLM after consultation with the Operator, MCWD, and USFS, or as required by the BLM based on new scientific information and/or the analysis of monitoring data collected as part of this GMRP.

4.2.3 Shallow Groundwater Aquifer Water Level Monitoring

Collection and analysis of water level data will be used to characterize baseline conditions, to assess changes over time, and to determine if CD-IV Project operations cause adverse impacts to the availability and sustainability of neighboring shallow groundwater resources. Water level data will be collected from shallow groundwater wells as summarized in Table 1.

The water level monitoring strategy will be adaptive. Both the frequency of sampling and the wells to be sampled may be modified to meet specific testing and/or monitoring needs as proposed by the Operator and/or MCWD, and as approved by the BLM after consultation with the Operator, MCWD, and USFS, or as required by the BLM based on new scientific information and/or the analysis of monitoring data collected as part of this GMRP.

4.2.4 Streamflow Monitoring

Collection and analysis of streamflow data will be used to characterize baseline conditions, to assess changes over time, and to determine if CD-IV Project operations cause adverse impacts to the availability and sustainability of the surface water resource from Mammoth Creek. Streamflow data will be collected from the following stream-gages on Mammoth Creek: Hot Creek (City of Los Angeles Department of Water and Power), Old Mammoth Road (MCWD), and Twin Falls (MCWD).

The streamflow monitoring strategy will be adaptive. The stream-gages to be sampled may be modified to meet specific testing and/or monitoring needs as proposed by the Operator and/or MCWD, and as approved by the BLM after consultation with the Operator, MCWD, and USFS, or as required by the BLM based on new scientific information and/or the analysis of monitoring data collected as part of this GMRP.

4.2.5 Geochemical Monitoring

Collection and analysis of fluid and gas samples will be used to characterize baseline chemistry, to assess potential changes over time, and to determine if CD-IV Project operations cause adverse impacts to the quality and/or quantity of neighboring shallow groundwater resources and/or the surface water resource from Mammoth Creek. Samples will be collected from designated wells (shallow groundwater, geothermal reservoir, and dual-completion) on a quarterly basis and from designated stream-gage sites on Mammoth Creek twice a year by the GMRP Selected Monitoring Contractor. Samples will be analyzed by a California State Certified Laboratory that performs Title 22 analyses (Table 1). A standardized list of field and lab parameters will be measured at the time of sampling and analysis respectively, and samples will be analyzed for a standardized list of water quality constituents, non-condensable/dissolved gases, and isotopes (Table 2).

Table 2. Constituents and Parameters to be Sampled with Notes

Constituents and Parameters to be Sampled	**Units and Notes**
Acid Neutralizing Capacity (ANC)	Field and Lab (Field Raw Water Alkalinity)
Arsenic (As)	µg/l
Boron (B)	µg/l
Bromide (Br)	µg/l
Calcium (Ca)	mg/l
Chloride (Cl)	mg/l
Fluoride (F)	mg/l
Lithium (Li)	µg/l
Magnesium (Mg)	mg/l
Nitrogen, ammonia (NH_3) as N	mg/l
Nitrogen, as nitrite (NO_3)	mg/l
pH	Field and Lab
PO_4	mg/l

Potassium (K)	mg/l
Residue, 180 Degrees Celsius (TDS)	mg/l
Rubidium (Rb)	µg/l
Silica (Si)	mg/l
Sodium (Na)	mg/l
Specific conductance	Field and Lab (µS/cm)
Sulfate (SO_4)	mg/l
Temperature	Field and Lab (°C)
Non-Condensable/Dissolved Gases	
H_2S[1]	Initially 14A-25 and 28A-25 only
Isotopes	
D/H ratio (Deuterium/Hydrogen)	
$^{18}O/^{16}O$ ratio	
Tritium (^3H)	One-time sample of 14A-25, 28A-25, MCWD 26, and other select MCWD production wells (TBD) to establish existing concentrations; then, annual sampling from select geothermal production wells in Basalt Canyon (TBD)
Additional Constituents and Parameters	Consistent with the adaptive monitoring framework of the GMRP, additional constituents and parameters may be added for specific tests or to improve monitoring effectiveness based on new information

[1] H_2S will be sampled in "dissolved format" and collected from the stream of brine/liquid using standard practices, cooled and preserved to prevent conversion to SO_4. H_2S in the separated gas phase cannot be reliably collected from low flow single-phase monitoring wells. Variations as a result of potential geothermal contamination will be more accurately detected using this method.

The geochemical monitoring strategy will be adaptive. Both the frequency of sampling and the list of constituents to be analyzed may be modified to meet specific testing and/or monitoring needs as proposed by the Operator and/or MCWD, and as approved by the BLM after consultation with the Operator, MCWD, and USFS, or as required by the BLM based on new scientific information and/or the analysis of monitoring data collected as part of this GMRP. The GMRP Selected Monitoring Contractor will coordinate both routine and specialized geochemical sampling efforts.

4.3 Baseline Monitoring Period

The minimum required baseline monitoring period was completed before CD-IV Project production commenced which was eighteen (18) months after the first complete set of monitoring data was collected from all wells included in the baseline monitoring well network (Table 1), this baseline monitoring was achieved in November 2019. Wells Ormat 28-25 and BLM 1 were drilled and instrumented prior to commencement of the 18-month pre-production baseline monitoring period. Baseline monitoring data continued to be collected by the network from all wells drilled until the beginning of production well stress tests in May of 2022.

Historical hydrological monitoring data from the portion of the Long Valley Caldera that comprises the geothermal reservoir in Basalt Canyon and the shallower cold groundwater aquifer of the Mammoth Groundwater Basin will be reviewed and summarized for integration with baseline monitoring data for the CD-IV Project as outlined in Section 5.3.

4.4 Hydraulic Testing

Hydraulic testing of proposed geothermal production and injection wells must be completed before the BLM will authorize the use of any well for the CD-IV Project. Because hydraulic testing has the potential to induce measurable responses in the hydrologic system, these tests provide opportunities to evaluate the potential effects of production on both the Federal geothermal reservoir and the shallower cold groundwater aquifer. These tests also provide opportunities to inform management of the geothermal reservoir including pumping and injection strategies that may be needed to avoid, minimize, and/or mitigate potential adverse effects to either reservoir. Two types of hydraulic testing are anticipated as the CD-IV Project progresses: 1) Flow (Well Characterization) Tests, and 2) Stress Tests.

4.4.1 Flow (Well Characterization) Tests

Flow tests are typically performed by the Operator to characterize a new well's potential usefulness in the overall geothermal resource production and injection scheme. Flow tests are pre-planned and must be authorized by the BLM prior to implementation. Each flow test will likely be unique (purpose, design, and length of test; frequency of data collection; use of a tracer; etc.) and will require the development of a test-specific protocol. Individual flow test protocols will be developed by the Operator in accordance with the testing protocol framework outlined in Section 4.4.3 and in consultation with the BLM, MCWD, and USFS. The Operator shall submit each individual flow test protocol to the BLM for final review and approval as part of the required Geothermal Sundry Notice used to authorize the proposed test.

4.4.2 Stress Tests

Stress tests will be required by the BLM whenever the Operator proposes a significant change to the production and injection scheme for the CD-IV Project (for example, bringing new production wells online). Stress testing can be used to create an amplified pressure signal that may be detectable in both the geothermal reservoir and the shallower cold groundwater system. Stress tests often employ a step-rate strategy to produce a pressure signal which may be differentiated from other water level signals produced from nearby municipal water supply wells cycling on and off. Like flow tests, stress tests are pre-planned and must be authorized by

the BLM prior to implementation. Each stress test will also likely be unique and will require the development of a test-specific protocol. Individual stress test protocols will be developed by the Operator in accordance with the testing protocol framework outlined in Section 4.4.3 and in consultation with the BLM, MCWD, and USFS. The Operator shall submit each individual stress test protocol to the BLM for final review and approval as part of the required Geothermal Sundry Notice used to authorize the proposed test.

Initial stress testing was completed in May and June of 2022 for production wells 47-25, 14B-25, 14-C25 and injection wells 54A-32 and 54B-32.

4.4.3 Hydraulic Testing Protocol Framework

The framework outlined below provides an overview of steps required to develop test-specific protocols to implement hydraulic testing. A test-specific protocol is required for each individual test (flow or stress) and the test-specific protocol must be submitted to the BLM for final review and approval as part of the required Geothermal Sundry Notice for each test. Each approved test protocol will become an addendum to this GMRP.

Pre-test (a minimum of 30 days in advance of testing)

- Designate:
  - Wells to be tested;
  - Ormat and MCWD monitoring points (wells) within the monitoring well network; and
  - Test duration.
- Specify:
  - When geothermal wells will be turned on and off;
  - Geothermal well production (flow) rates;
  - MCWD groundwater production schedule before, during, and after test; and
  - Recording rates and data quality parameters for designated monitoring wells.
- Establish a day-by-day test schedule.
- Develop a detailed timeline of action items to be completed by ORMAT and MCWD prior to, during, and after the hydraulic test.
- Establish a contact network and backups.
- Complete QA/QC tests and checks of monitoring equipment for all designated monitoring points (wells) within the planned test-specific monitoring well network:
  - Assure transducer depth, operation, settings and data recording;
  - Assure bubbler tube depth, operation, settings and data recording; and

    - Assure continuous data collection.
- Initiate standardized monitoring at times specified in the monitoring protocol:
    - Set all recording rates for specified (heightened) data collection settings;
    - Begin collecting detailed monitoring data at all specified monitoring points; and
    - Maintain continuous uninterrupted data collection at any other monitoring points in the monitoring well network.
- Coordinate geochemical sampling
    - Review:
        - Sample collection plans;
        - Analyte list;
        - Collection methodologies, handling, and lab coordination; and
        - Special sampling/analysis needs.
    - Specify:
        - Required coordination with the GMRP Selected Monitoring Contractor and/or any contracted analytical laboratories;
        - Geothermal wells to be sampled and analyzed during the test;
        - MCWD wells to be monitored during the test;
        - Obtain, calibrate and test multi-meter for field test parameters;
        - Define minimum parameters in standardized collection format; and
        - Required site preparations for sampling efforts and required site condition following test completion.

Test

- Execute BLM approved test plan.
- Maintain communication at specified intervals.
    - Appraise contact network of test progress on a daily basis.
    - Identify and implement any required changes in the approved test plan.
    - Alert contact network regarding any deviations from anticipated results or specified changes that exceed anticipated response levels in either the geothermal system or the shallow cold groundwater system.
- Record and tabulate test data in the BLM approved format.
- Collect geochemical samples from wells as specified in the BLM approved test plan.
- Monitor field chemistry parameters for designated MCWD wells and producing geothermal wells in the BLM approved format - including field monitoring equipment calibration verification.
- Avoid any disruptions in pressure measurements in designated monitoring points (wells) within the BLM approved test-specific monitoring well network.

- Shut geothermal well(s) down after the specified test period - record recovery response.
- Complete post-test QA/QC tests and checks of monitoring equipment for all designated monitoring points (wells) within the BLM approved test-specific monitoring well network to assure instrumentation operated and recorded as planned.

Post-test (after the pumping portion of the test is completed)

- Continue collecting monitoring data (pressure, temperature, production rates, and water quality field parameters) at designated intervals and for the time period (minimum 30 days) specified in the BLM approved test plan.
- Complete geochemical sampling of designated wells as specified in the BLM approved test plan.
- Assemble and reduce data.
- Review monitoring data for reliability and completeness as specified in the BLM approved test plan.
- Notify contact network as specified in the BLM approved test plan.
- Alert contact network regarding any deviations from anticipated results or specified changes that exceed anticipated response levels in either the geothermal system or the shallow cold groundwater system.
- Prepare draft report within sixty (60) days following completion of the pumping portion of the test in consultation with the BLM, MCWD, and USFS.
- Review draft report in coordination with the LVHAC.
- Prepare final report including interpretations, review of lessons learned, and recommendations for future tests within ninety (90) days following completion of the pumping portion of the test in consultation with the BLM, MCWD, and USFS.

4.5 Adaptive Monitoring Approach

This groundwater monitoring plan is designed to be adaptive to knowledge and information gained through monitoring, testing, and regular operation of the geothermal production system and the MCWD production system. New or existing wells may be added to, or deleted from, the baseline monitoring well network. Monitoring parameters and the frequency of data collection may be changed. Additional flow and stress tests may be required over time. All changes to the GMRP must be approved by the BLM, after consultation with the Operator, MCWD, and USFS, prior to implementation.

Testing opportunities associated with well shutdowns for repair, temporary power plant shutdowns, and other unplanned and unanticipated events will be utilized to the fullest extent

possible as opportunities to evaluate the effects of such changes on both the Federal geothermal reservoir and the shallow cold groundwater system. The Operator is required to provide prompt notification to the BLM and MCWD of all unanticipated events potentially offering a meaningful coordinated test opportunity.

5.0 DATA MANAGEMENT, REPORTING, AND PLAN EVALUATION

Monitoring data was compiled and reported on a quarterly basis for the first four years following approval of this GMRP and will continue until otherwise determined to change. Thereafter, monitoring data will be compiled and reported on a semi-annual basis unless data variability indicates the need for quarterly reports. An annual report that summarizes the results of the previous years' monitoring efforts will also be prepared.

The monitoring data, databases, data summaries, analyses, evaluations, reports, and numerical model simulations required pursuant to this GMRP will be provided to the BLM and shared with the Operator, MCWD, USFS,GBUAPCD, and third-party oversight contractor except where prohibited by Federal law and regulation to protect confidential, proprietary information (43 CFR 3278). These monitoring data, databases, data summaries, analyses, evaluations, reports, and numerical model simulations will also be shared with the LVHAC to complement and add to hydrologic data already in existence for the Long Valley Caldera. Consistent with law and regulation, proprietary data may only be shared outside of a confidentiality and non-disclosure agreement if agreed to by the Operator.

The specific requirements for data management, reporting, and evaluation are described below.

5.1 Collaboration and Coordination

The BLM, in collaboration with the Operator, MCWD, USGS, USFS and GBUAPCD, facilitated quarterly monitoring plan implementation coordination and data review meetings during the first four years of plan implementation. To the extent practicable, two of the quarterly meetings per year are scheduled in coordination with the LVHAC. Following the initial four-year implementation period, semi-annual monitoring plan implementation coordination and data review meetings will be scheduled in coordination with the LVHAC unless data variability indicates the need for quarterly meetings.

5.2 Quality Assurance and Quality Control

All sampling procedures and associated quality assurance protocols will conform to USGS standards as described in the USGS National Field Manual (NFM, Chapter A4). Unless otherwise specified or mandated by water quality requirements, the resolution of analytical reporting will be that specified in Table 2 and analytical variance will be concentrations within ± 20 percent relative difference (USGS Design, Analysis, and Interpretation of Field Quality-Control Data for Water-Sampling Projects) for replicate samples. Cation/anion balances will be calculated for all analytical results as a general quality check and to assure that no constituent is misreported. At a minimum, quality assurance and quality control measures will include the following:

- Sample collection, shipping, and handling under standard chain-of-custody (COC) procedures. Common practice includes signed and certified copies of all COC documentation to interested parties.
- Field sampling conditions that conform to USGS sampling practice such as:
    - Field sample filtration
    - Field parameter measurements (pH, conductivity, temperature, alkalinity)
    - Fixed or preserved samples as required for specific analytes
    - Sampling pressure and temperature including well head pressure (WHP) and well head temperature (WHT) for geothermal brine and gas samples to accurately correct to downhole conditions
    - Flowing/purging wells to establish steady-state conditions prior to sampling
- All samples will be shipped with a trip blank of distilled water to assure the integrity of the shipping and handling process.
- Replicate samples will be collected for specific monitoring points of interest including, but not limited to:
    - Highest temperature geothermal production well(s)
    - Highest temperature surface manifestations (hot springs/fumaroles)
    - Highest flow rate surface manifestations (hot springs/fumaroles)
    - Groundwater or geothermal wells with anomalous temperature, chemistry or acute pressure-temperature variations
    - 10% random duplicates
- A California State Certified Laboratory that performs Title 22 analyses will be selected by the BLM, in consultation with the Operator, USFS, and MCWD, and contracted by the Operator to analyze all replicate samples to evaluate the precision and accuracy of the analytical results and to evaluate any immediate constituents of concern that may occur in one sample period.
- Collection of at least one isolated background sample from a designated sample point of known chemistry with a well-documented long-term water quality monitoring record. This sample point will be selected by the BLM in consultation with the GMRP.

- All geochemical sampling reports will be transmitted directly to the BLM by the testing laboratory.

Data quality assurance and quality control measures will include a quarterly assessment of monitoring apparatus functionality that identifies any equipment adjustments, repairs, or upgrades that are needed to assure the consistent and reliable collection of the hydrologic system monitoring data outlined in this GMRP. This quarterly assessment will be performed by the owner of the well and/or monitoring equipment and reported to the BLM. Or if determined, this would move to semi-annual.

Data records will be reviewed whenever notable departures from baseline pressure or temperature conditions are observed or, at a minimum, on a quarterly basis during the 18-month pre-production baseline monitoring period for the CD-IV Project to evaluate variations in data reliability and monitoring equipment or potential changes in hydrologic conditions. The BLM, in consultation with the Operator, MCWD, USFS, GBUAPCD, and third-party oversight contractor will lead this data record review.

5.3 Review and Summary of Historical Monitoring Data

The Operator, in consultation with the BLM, MCWD, and USFS, will prepare a review and summary of historic hydrological monitoring data for the portion of the Long Valley Caldera that comprises the geothermal reservoir in Basalt Canyon and the shallow cold groundwater aquifer of the Mammoth Groundwater Basin in coordination with the LVHAC. This summary should incorporate historic hydrological monitoring data available from MPLP, the MCWD and USGS. Data to be included in this review and summary will be identified in collaboration with the parties outlined above.

This historical data review and summary will be integrated with monitoring data collected during the 18-month pre-production baseline monitoring period for the CD-IV Project. This integration of current and past monitoring data will be used by the BLM to establish the expected range of variability in the deep geothermal system, the shallow cold groundwater system, and surface flows in Mammoth Creek in relation to climate, local seismic activity, seasonal recharge, surface water diversion and use, surface water export, and pumping conditions including shallow groundwater production and geothermal production from wells 57-25 and 66-25 in Basalt Canyon.

5.4 Data Sharing and Reporting

The Operator, in consultation with the BLM, MCWD, USFS and GBUAPCD, will maintain a shared relational database to be used for monitoring data review and analyses in coordination with the LVHAC. In addition to data collected pursuant to this plan, the database shall integrate climate data, shallow groundwater use data, surface water diversion and use data, reclaimed water supply data, surface water export data, and pumping data. The structure, content, management, maintenance, and location of this shared relational database will be developed in cooperation with the parties outlined above. The proposed database schema was submitted for BLM approval prior to the first full data collection effort of the 18-month pre-production baseline monitoring period for the CD-IV Project. The database is currently up-to-date, contains all GMRP collected data (Table 1), and is updated on a continuous basis following each monitoring event.

The Operator, in consultation with the BLM, MCWD, and USFS, will ensure the timely preparation of all required monitoring reports. A standardized monitoring report format was developed in cooperation with the parties outlined above.

The Operator, in consultation with the BLM, MCWD, and USFS, will ensure the timely processing and compilation of pressure and temperature data. Processed and compiled pressure and temperature data for the previous quarter will be submitted for review to the BLM by the 15th day of the 1st month of each succeeding quarter. Or similar if determined to be semi-annual.

The GMRP Selected Monitoring Contractor, in consultation with the BLM, MCWD, USFS and the Operator, will ensure the timely processing and compilation of geochemical data. Geochemical data and analytical results will be incorporated into the online GMRP database at, https://mgcdb.herokuapp.com/dataviewer/.

5.5 Model Simulation Forecasting and Reporting

Numerical simulation models have been developed for both the deep geothermal reservoir in Basalt Canyon and the shallow cold groundwater aquifer of the Mammoth Groundwater Basin. These models should be reviewed annually and updated as new data becomes available or as major system variations occur.

At least 60 days prior to beginning increased production from Basalt Canyon as part of the CD-IV Project, the Operator will provide the BLM with geothermal reservoir model projections based on the proposed production and injection plan. These model projections will include predicted changes in geothermal reservoir pressure and temperature throughout the

monitoring well network over time. Model projections will be provided in digital map format suitable for importing into ArcGIS. Model projections will be compared to observed changes in both the deep geothermal system and the overlying shallow cold groundwater system.

The Operator will prepare and submit to the BLM annual reports that evaluate the match between the system performance forecasts from numerical simulations and the empirical data collected from the monitoring well network. These evaluations will be used to assess the quality and reliability of numerical projections and to identify potential departures from expected or projected trends that may predict potential detrimental impacts to the hydrologic system.

Geothermal reservoir model evaluations will be conducted in consultation with the BLM, MCWD, and USFS in coordination with the Thermal Subcommittee of the LVHAC. Because of the proprietary nature of the compiled data and modeling codes, data may only be shared outside of a confidentiality and non-disclosure agreement if agreed to by the Operator.

5.6 Production Reporting and Verification

The Operator will submit concise quarterly reports of the production and injection rates for all operating wells in Basalt Canyon. These reports will be submitted to the BLM beginning with the first quarterly monitoring report of the 18-month pre-production baseline monitoring period for the CD-IV Project.

BLM will conduct monthly production verification compliance monitoring throughout the life of the CD-IV Project.

5.7 Independent Third Party Review

The BLM may retain, at the Operator's expense, an independent third-party expert to review any monitoring data, databases, data summaries, analyses, evaluations, reports, or numerical model simulations submitted pursuant to this GMRP. A third-party monitor will be discussed during the first year of plant operations. The third-party monitor may be a private contractor, a university, or other government agency that will be decided on and chosen by the BLM after consultation with the GMRP.

5.8 Plan Evaluation and Modification

The BLM, in consultation with the Operator, MCWD, USGS, USFS and GBUAPCD, reviewed and evaluated this GMRP on an annual basis for the (first four years) following approval, in January 2017. Moving forward, the objective of an annual review will be to determine if modifications are needed to increase plan effectiveness, to address unforeseen data needs, and/or to ensure timely implementation of appropriate response actions to prevent potential adverse effects to either the Federal geothermal resource or the shallow cold groundwater aquifer and/or the surface water resource from Mammoth Creek that provide the domestic water supply for the Town of Mammoth Lakes.

The BLM, in consultation with the Operator, MCWD, USFS and GBUAPCD, may modify this GMRP at any time as needed to increase plan effectiveness, address unforeseen data needs, and to ensure timely implementation of appropriate response actions. BLM will specify both the changes to the established monitoring protocols that shall be implemented and a timeframe in which the changes must be implemented.

5.9 Winter Access Plan

During the winter months it is sometimes necessary for plowing to occur to reach wells for monitoring. This may create large disruptions to the local recreation activities. When plowing is needed, the monitoring contractor will consult with the USFS, BLM, and the operator at least 2 weeks prior to monitoring. A plowing plan will be developed to limit impacts to recreation. The third-party contractor will then contact a plowing service provider to have the well pads plowed, with the operator covering the costs.

There may be occasions where plowing to some well pads are deemed too impactful to the area. These wells will then not be sampled for that monitoring period. This will be decided on an as needed basis, by the GMRP.

6.0 RESPONSE ACTION PLAN

6.1 Response Framework

Observed variations in pressure, temperature, water level, streamflow, and/or geochemical monitoring data that document notable departures from baseline conditions and/or historical long-term trends in either the deep geothermal reservoir or the shallow groundwater system and/or the surface water resource from Mammoth Creek, or that document notable departures from geothermal model projections of expected pressure and temperature responses in the

deep geothermal reservoir over time, will trigger a comprehensive data review and analysis to determine the appropriate course of action using the following guidelines:

- The BLM will notify the Operator, MCWD, USFS and GBUAPCD in writing that a data review and analysis is being initiated.

- The BLM, in consultation with the Operator, MCWD, USFS and GBUAPCD, will lead this data review and analysis to determine if there is a direct or cause-and-effect relationship between use of the Federal geothermal resource in Basalt Canyon for the CD-IV Project and observed or predicted changes in the shallow groundwater aquifer and/or the surface water resource from Mammoth Creek that provide the domestic water supply for the Town of Mammoth Lakes.

- The BLM, at its sole discretion after consultation with the USFS as the responsible "*surface management agency*" (43 CFR 3200.1), may order a full or partial shutdown of production and/or injection operations in Basalt Canyon pursuant to 43 CFR 3200.4 and 43 CFR 3270.12 while this data review and analysis is being completed to protect the "*quality of surface and subsurface waters*" and to prevent "*undue and unnecessary degradation of the land [National Forest]*" (43 CFR 3275.12(a)(1) and (a)(2)).

- This data review and analysis will be completed within 120 days of being triggered.

- Based on the results of this data review and analysis, the BLM will issue an order regarding the response action(s), if any, the Operator must take to avoid, minimize, and/or mitigate potential adverse effects to either the Federal geothermal resource or the shallow cold groundwater aquifer and/or the surface water resource from Mammoth Creek that provide the domestic water supply for the Town of Mammoth Lakes. A BLM decision affecting the Operator's utilization operations may be appealed in accordance with the regulations at 43 CFR 3200.5 (43 CFR 3279.11).

Monitoring parameters and metrics that will be considered during this data review and analysis include, but are not limited to:

- Pressure, temperature, and/or geochemical (water quality) changes or trends within the monitoring well network based on monitoring data that exceed expected variations during hydraulic testing;

- Pressure, temperature, and/or geochemical changes or trends within the monitoring well network based on monitoring data that exceed expected variations during CD-IV production;

- Pressure, temperature, and/or geochemical changes or trends within the Basalt Canyon geothermal reservoir that exceed expected variations based on monitoring data, modeling results, and geothermal and groundwater production levels;

- Pressure, temperature, and/or geochemical changes or trends within the shallow groundwater aquifer that exceed expected variations based on monitoring data, modeling results, and geothermal and groundwater production levels;

- Surface flow and/or geochemical changes or trends in Mammoth Creek that exceed expected variations based on monitoring data measured at the Hot Creek, Old Mammoth Road, and Twin Falls stream-gages as corrected for climate and diversion effects.

6.2 Range of Potential Response Actions

The range of potential response actions that may be required to be implemented by the Operator based on the response framework outlined above include, but are not limited to:

- Revise the GMRP to improve early detection capabilities and response effectiveness.
    - Validate data accuracy and analytical results
    - Adjust, repair, or replace monitoring apparatus and/or monitoring wells
    - Resample and reanalyze monitoring data
    - Increase data collection and reporting frequency
    - Modify or expand the parameters being monitored
    - Expand or adjust the monitoring well network
    - Install additional monitoring wells
    - Require other monitoring plan adjustments as deemed appropriate by the BLM after consultation with the Operator, MCWD, and USFS

- Modify production and/or injection operations in Basalt Canyon to avoid or minimize potential adverse effects to the quantity and/or quality of the shallow cold groundwater

resource of the Mammoth Groundwater Basin and/or the surface water resource from Mammoth Creek.

- Increase injection
- Reorient production and injection
- Reduce CD-IV Project production
- Reduce production from wells 57-25 and 66-25
- Reduce all production
- Suspend CD-IV Project production
- Suspend production from wells 57-25 and 66-25
- Suspend all production
- Require other utilization plan adjustments as deemed appropriate by the BLM after consultation with the Operator, MCWD, USGS, USFS and GBUAPCD

- Mitigate adverse effects to the quantity and/or quality of the shallow cold groundwater resource of the Mammoth Groundwater Basin and/or the surface water resource from Mammoth Creek.
    - Drill replacement shallow groundwater production well(s) in area(s) not affected by CD-IV Project production
    - Abandon and plug any production well that contributes to shallow groundwater contamination
    - Abandon and plug any injection well that contributes to shallow groundwater contamination
    - Fund the construction and operation of shallow groundwater and/or surface water treatment facilities or systems
    - Require other mitigations as deemed appropriate by the BLM after consultation with the Operator and MCWD

7.0 REFERENCES

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8.0 FIGURE 1

Figure 1. Monitoring well network (*see* next page)

US Department of the Interior
BUREAU OF LAND MANAGEMENT
Bishop Field Office
Bishop, California
(760) 872-5000
www.ca.blm.gov/bishop
Date Prepared: 1/12/2017
Project: GMRP Figure 1

118°58'0"W 118°56'0"W 118°54'0"W 118°52'0"W 118°50'0"W

37°40'0"N 37°38'0"N

N

12-25 14-25 14A-25 57-25 66-25 28A-25 28-25 12-31 48-29 65-32 28-34 CW-3 CH10B

BLM1 BLM2

#17 #20 #16 #25 #1 #19 #26 #24 #18 #15 #14 #6

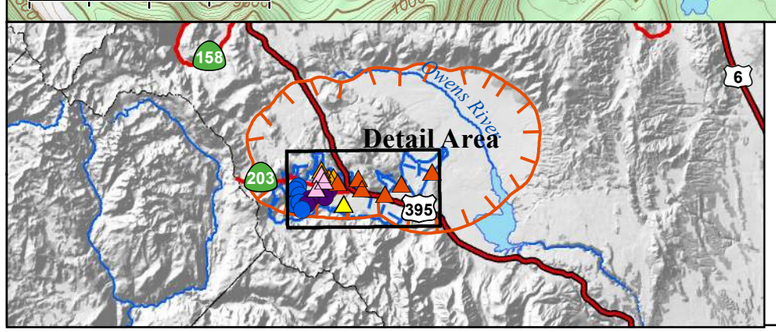
SC-1 SC-2

Mammoth Lakes

Mammoth Creek Hot Creek Sherwin Creek Laurel Creek Convict Creek Sherwin Lakes

203 395

0 0.25 0.5 1 Miles



- Approved Well Pad Sites
- Approved Plant & Substation
- Double Pipeline
- Single Pipeline
- Triple Pipeline
- Dual Depth Wells- Monitoring
- Geothermal Wells- Monitoring
- Geothermal Wells- Production
- USGS Wells- Shallow
- Long Valley Caldera
- MCWD Wells- Monitoring
- MCWD Wells- Production
- US Hwy
- State Hwy
- Mammoth Groundwater Basin
- Bureau of Land Management
- Forest Service
- State
- Local Government
- Private

HYDROGEOLOGY AND ENVIRONMENTAL SERVICES

MARCH 13, 2024

REQUEST FOR QUALIFICATIONS

ATTACHMENT 2 – SAMPLE MASTER SERVICES AGREEMENT

AGREEMENT BETWEEN
MAMMOTH COMMUNITY WATER DISTRICT AND
_____ FOR AS-NEEDED HYDRO-GEOLOGICAL SERVICES

THIS AGREEMENT is made effective as of _____, 2024 in Mammoth Lakes, California, between Mammoth Community Water District ("District") and _____ ("Consultant"), concerning as-needed hydrogeological services.

Recitals:

WHEREAS, the District desires to retain the services of Consultant on an as-needed basis; and

WHEREAS, Consultant desires to perform as-needed hydro-geological and related engineering services requested by the District on the terms and conditions set forth below;

Agreement:

NOW, THEREFORE, the parties agree as follows:

1. Description of Work.

The work requested of the Consultant by the District shall be performed on a task order basis. Upon on a written request by the District, Consultant shall prepare a specific scope of work, budget, and schedule for each task order. Each task order shall reference this Agreement, and include exhibits setting forth the scope of work, cost and schedule. Upon written approval by the District to proceed, the Consultant shall proceed with completion of the work under the applicable task order. Each task order shall state that it is subject to the Agreement and each of its terms, which shall be incorporated by reference into the task order.

Consultant shall provide all labor, equipment, material and supplies required or necessary to properly, competently, and completely perform the work or render the services under this Agreement. Consultant shall determine the method, details and means of doing the work or rendering the services, in cooperation with District staff.

2. Compensation.

The total cost of the work described in each task order shall be specified in the task order, and shall not exceed the approved cost unless amended by the District in writing. Compensation shall be on a time and materials basis, using the rate schedule included as part of the task order. The task order cost information shall be summarized by primary work breakdown and deliverables. Each task order shall be identified as an "Attachment" to this Agreement.

3. Term of Agreement.

This Agreement shall become effective on the date first above-stated and will continue in effect for five years from such date, unless sooner terminated as provided in paragraph 10.

4. Payment for Services.

Consultant shall submit to the District itemized bills for the services rendered. If the work is satisfactorily performed, the District shall pay such bill within 30 days after its receipt. Should the District dispute any portion of any bill, the District shall pay the undisputed portion within the time stated above, and at the same time, advise the Consultant in writing of the disputed portion.

5. Documents and Electronic File Deliverables.

All documents, including drawings, specifications, and computer software prepared by Consultant pursuant to this Agreement, are instruments of service in connection with the specific task order for which they were prepared. They are not intended or represented to be suitable for reuse by District or others for other than the task order services for which they were prepared. Any reuse without written verification or adaptation by Consultant for the specific purpose intended will be at District's sole risk and without liability or legal exposure to Consultant; and District shall indemnify and hold harmless Consultant against all claims, damages, losses, and expenses including attorney's fees arising out of or resulting from such reuse. All documents and electronic file deliverables, as listed and described in each Task Order, shall be provided to the District in their most current version, in the event that either party exercises the termination rights under Paragraph 10.

6. Compliance with Laws.

Consultant agrees that it shall conduct its work and perform its services in compliance with all laws and regulations of the County of Mono, State of California, and any officer, department, or agency thereof, as well as other laws and regulations as may be applicable thereto.

7. Errors and Omissions Insurance.

Consultant shall have such errors and omissions insurance for the benefit of the District as shall protect the Consultant, its officers, officials, directors, employees and agents from claims based on alleged errors or negligent acts or omissions which may arise from Consultant's operations or performance of professional services under this Agreement, whether claims be made during or subsequent to the term of this Agreement, and whether such operations or performance be by Consultant or its employees, consultants, agents or anyone else directly or indirectly employed by any of the foregoing. The amount of this insurance shall not be less than $2,000,000.

Said policy shall be continued in full force and effect during the term of this Agreement and for a period of three (3) years following the completion of the services provided for in this Agreement. In the event of termination of said policy, new coverage shall be obtained for the required period to insure for the prior acts of Consultant during the course of performing services under the terms of this Agreement.

Consultant shall provide to the District a certificate of insurance on a form acceptable to the District indicating the deductible or self-retention amounts and the expiration date of said policy, and shall provide renewal certificates within ten (10) days after expiration of each policy term.

8. General Insurance.

Consultant, at its sole cost and expense, shall procure and maintain for the duration of this Agreement the following types and minimum coverage limits of insurance:

Type	Limits	Scope
General liability	$1,000,000 per occurrence	at least as broad as ISO CG 0001
Automobile liability	$1,000,000 per occurrence	at least as broad as ISO CA 0001, Code 1, any auto
Excess/Umbrella liability	$1,000,000	
Workers' compensation	Statutory limits	

The general and automobile policies shall be endorsed to name the District, its directors, officers, officials, employees, volunteers and agents as additional insureds regarding liability arising out of the services rendered pursuant to this Agreement. Consultant shall provide the District with ISO CG 2010 endorsement form or equivalent. The coverage shall contain no special limitations on the scope of protection afforded to the District, its directors, officers, officials, employees, agents or volunteers. Consultant's coverage shall be primary and shall apply separately to each insured against whom a claim is made or suit is brought, except with respect to the limits of the insurer's liability. District's insurance, if any, shall be excess and shall not contribute with Consultant's insurance. The workers' compensation policy shall be endorsed to include a waiver of subrogation against the District, its directors, officials, officers, employees, volunteers and agents.

The insurance is to be placed with insurers with a current A.M. Best's rating of A:VII or better, unless otherwise acceptable to District. Prior to commencing the services provided for herein, Consultant shall provide to District original endorsements evidencing this insurance signed by a person authorized to bind coverage on behalf the insurer(s). The certificates and policies shall provide that 30 days' written notice of any material change, reduction of coverage or cancellation of the insurance policies will be provided to the District. The requirements as to the types, limits, and the District's approval of insurance coverage to be maintained by the

Consultant are not intended to and shall not in any manner limit or qualify the liabilities and obligations assumed by the Consultant under the Agreement. In addition, in the event any change is made in the insurance carrier, policies or nature of coverage required under this Agreement, Consultant shall notify the District prior to making such changes.

9. Indemnification and Hold Harmless.

Consultant shall protect, indemnify, hold harmless and defend the District, its directors, officials, officers, employees, volunteers and agents, from and against any and all suits, actions, judgments, legal or administrative proceedings, arbitrations, claims, demands, causes of action, damages, liabilities, interest, attorney's fees, fines, penalties, losses, costs and expenses of whatsoever kind or nature, including but not limited to those arising out of injury to or death of Consultant's employees, which arise out of, pertain to, or relate to the negligence, recklessness, or willful misconduct of Consultant, its employees, agents or sub-consultants (hereinafter collectively referred to as "Claims" or singularly referred to as a "Claim), except to the extent the sole negligence or willful misconduct of an indemnified party proximately causes the loss, claim, demand, cost, suit, judgment, penalty, fine, interest, attorney's fees, action, cause of action, damage, expense or liability.

Neither termination of this Agreement nor completion of the acts to be performed under this Agreement shall release Consultant from its obligations under this paragraph 9, as to any Claims, so long as the event upon which such Claim is predicated shall have occurred prior to the effective date of any such termination or completion and arose out of, pertained to, or related to performance or operations under this Agreement by Consultant, its employees, agents or consultants, or the employee, agent or consultant of any one of them.

Submission of insurance certificates or submission of other proof of compliance with the insurance requirements in this Agreement does not relieve Consultant from its obligations under this paragraph 9. The obligations of this paragraph 9 shall apply whether or not such insurance policies shall have been determined to be applicable to any of such damages or claims for damages.

The District may withhold from payment due Consultant hereunder, with 30 days written notice to Consultant, such amounts as, in the District's opinion, are sufficient to provide security against all loss, damage, expense, penalty, fine, cost, claim, demand, suit, cause of action, judgment, or liability covered by the foregoing provisions.

In any and all claims against the District, or its directors, officers, officials, directors, employees, volunteers or agents, by any employee of the Consultant, any sub-consultant, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the obligations under this paragraph 9 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Consultant or any sub-consultant under Worker's Compensation acts, disability benefit acts or other employee benefit acts.

10. Termination.

This Agreement may be terminated at any time and for any reason by the District upon five days advance written notice to Consultant. In the event of such termination, Consultant is to be fairly compensated for all work performed to the date of termination as calculated by the District based on paragraph 2 hereof; provided that such compensation shall not in any case exceed the maximum sum set forth in paragraph 2 hereof. Compensation under this paragraph shall not include costs related to lost profit associated with the expected completion of the work or other such payments relating to the benefit of the bargain.

11. Entire Agreement.

This writing constitutes the entire agreement between the parties relative to the services specified herein, and no modifications hereof shall be effective unless and until such modification is evidenced by a writing signed by both parties to this Agreement. There are no understandings, agreements, conditions, representations, warranties, or promises with respect to the subject matter of this Agreement except those contained in or referred to in this writing.

12. Independent Contractor.

13. It is expressly understood and agreed by the parties that Consultant's relationship to the District is that of an independent contractor. All persons hired by Consultant and performing the Work shall be Consultant's employees or agents. Consultant and its officers, employees and agents are not District employees, and they are not entitled to District employment salary, wages or benefits. Consultant shall pay, and District shall not be responsible in any way for, the salary, wages, workers' compensation, unemployment insurance, disability insurance, tax withholding, and benefits to and on behalf of Consultant's employees. Consultant shall, to the fullest extent permitted by law, indemnify District, and its officers, employees, volunteers and agents, from and against any and all liability, penalties, expenses and costs resulting from any adverse determination by the federal Internal Revenue Service, California Franchise Tax Board or other federal or state agency concerning Consultant's independent contractor status. Successors and Assignment.

This Agreement shall be binding on the heirs, successors, executors, administrators, and assigns of the parties; however, Consultant agrees that it will not assign, transfer, convey, or otherwise dispose of this Agreement or any part thereof, or its rights, title or interest therein, or its power to execute the same without the prior written consent of the District.

14. Severability.

If any provision of this Agreement is held to be unenforceable, the remainder of this Agreement shall be severable and not affected thereby.

15. Waiver of Rights.

Any waiver at any time by either party hereto of its rights with respect to a breach or

default, or any other matter arising in connection with this Agreement, shall not be deemed to be a waiver with respect to any other breach, default or matter.

16. Remedies not Exclusive.

The use by either party of any remedy specified herein for the enforcement of this Agreement is not exclusive and shall not deprive the party using such remedy of, or limit the application of, any other remedy provided by law.

17. Notices.

All notices, statements, reports, approvals, or requests or other communications that are required either expressly or by implication to be given by either party to the other under this Agreement shall be in writing and signed for each party by such officers as each may, from time to time, authorize in writing to so act. All such notices shall be deemed to have been received on the date of delivery if delivered personally or by a commercial overnight delivery service, or three days after mailing if enclosed in a properly addressed and stamped envelope and deposited in a United States post office for delivery. Unless and until notified otherwise in writing, all notices shall be addressed to the parties at their addresses shown below:

Mammoth Community Water District
Attn: General Manager
1315 Meridian Blvd., P.O. Box 597
Mammoth Lakes, California 93546

_____
Attn: _____
Consultant Address
Consultant Address

18. Sub-consultants.

No subcontract shall be awarded or an outside consultant engaged by Consultant unless prior written approval is obtained from the District. Any approved sub-consultant shall comply with the insurance requirements of paragraphs 8 and 9 hereof or be covered by Consultant's insurance.

19. Licensing.

Consultant represents that its professional employees working under this agreement are licensed by the California Board for Professional Engineers, Land Surveyors, and Geologists, and that Consultant's license(s) is in good standing and will be kept in good standing during the term of this Agreement.

IN WITNESS WHEREOF, the parties execute this Agreement on the day and year first above written.

MAMMOTH COMMUNITY WATER DISTRICT

By: _____
Thomas R. Smith
President, Board of Directors

Attest:

By:_____
Mark Busby
Secretary, Board of Directors

_____

By: _____

Name: _____

Title: _____

HYDROGEOLOGY AND ENVIRONMENTAL SERVICES

MARCH 13, 2024

REQUEST FOR QUALIFICATIONS

ATTACHMENT 3 – NON-COLLUSION DECLARATION

ATTACHMENT 3 – NONCOLLUSION DECLARATION

NONCOLLUSION DECLARATION TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID (PUBLIC CONTRACT CODE SECTION 7106)

The undersigned declares:

I am the _____ (Title) of _____ (Bidder), the party making the foregoing bid.

The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____ _____, at _____, _____.

Authorized Signature: _____

Printed Name: _____