STATE OF NEVADA
DIVISION OF ENVIRONMENTAL PROTECTION

TEMPORARY AUTHORIZATION TO INJECT/DISCHARGE

In compliance with the provisions of the Nevada Revised Statutes (NRS) 445A and the Underground Injection Control (UIC) Regulations in the Nevada Administrative Codes (NAC) 445A.810 to 445A.925, inclusive, the Permittee is authorized to inject and discharge from the wells described below in accordance with the conditions, requirements, and limitations specified in the permit.

TABLE 1. Temporary UIC Permit Information	
General	**Information**
UIC Permit	UNEV2025201T
Site/Facility	Lone Mountain Geothermal Development
Permittee	Ormat Nevada Inc.
Permittee Mailing Address	6884 Sierra Center Parkway, Reno, Nevada 89511
Property Owner(s)	BLM
Well Owner/Operator	Ormat Nevada Inc.
Municipality & County	Esmerelda County
Approved Injection Well Quantity	2
Legal Description (PLSS: MDB&M)	Well 62A-25: SW-NE, Sec 25, T1N, R36E Well 21-31: NE-NW-Sec 31, T1S, R37E
Latitude/ Longitude	Well 62A-25: 37.916551, -117.918557 Well 21-3: 37.916551, -117.918557

Coverage for the injection wells listed above shall **Become Effective on: December 17, 2025**

This Permit Expires on: This Temporary Permit is valid for **90 days** until **March 17, 2026,** pursuant to NAC 445A.890.5.

Date: 12/17/2025

Lisa Aleman
Environmental Scientist
Nevada Division of Environmental Protection

PART 1. INJECTION WELL INFORMATION AND PARAMETER LIMITS

TABLE 2. Injection Well Information and Injection Parameter Limits	
Well ID (Kettleman #)	**62A-25**
API	27-009-90115
NDOM Permit No.	1591
Drilling Completion Date	07/24/2025
APN	27-009-90115
Well Status and Type	Injection Well
Legal description (PLSS: MDB&M)	SW-NE, SEC 25. T1N R36E
Location (Lat/Long: WGS 84)	37.916551, -117.918557
Location (UTM: WGS 84)	419260.99 m E, 4196953.98 m N (Zone 11)
Wellhead Elevation	4848’
Ground Surface Elevation	4811’
Injection Zone	816’ – 1129’
Maximum Injection Pressure (Wellhead)	264 psig
Maximum Injection Rate	2600 gpm
Well ID (Kettleman #)	**21-31**
API	27-009-90114
NDOM Permit No.	1590
Drilling Completion Date	07/07/2025
APN	27-009-90114
Well Status and Type	Injection Well
Legal description (PLSS: MDB&M)	NE-NW, Sec 31, T1S R37E
Location (Lat/Long: WGS 84)	37.897833, -117.908648
Location (UTM: WGS 84)	420111.75 m E, 4194868.61 m N (Zone 11)
Wellhead Elevation	5069’
Ground Surface Elevation	5066’
Injection Zone	3542’ – 6742’
Maximum Injection Pressure (Wellhead)	1126 psig
Maximum Injection Rate	2600 gpm

Psig: pounds per square inch gauge; gpm: gallons per minute

PART II. GENERAL CONDITIONS

II.B **Compliance with Regulations -** The Permittee shall comply with all provisions of the UIC regulations, Nevada Administrative Code (NAC) 445A.810 through 445A.925, Nevada Revised Statute NRS 445A, and all pertinent laws and regulations. Nothing in this permit relieves the Permittee of responsibilities, liabilities or penalties established by any other State, federal or local jurisdiction

II.B **Nevada UIC Permit Requirements for Geothermal Projects -** The Permittee shall comply with all requirements listed in the *Nevada UIC Permit Requirements for Geothermal Projects* (**Attachment 5**), and Table 4 of this permit (**Attachment 4**).

II.C **Notice to Director of Failure to Comply with Terms of Permit (NAC 445A.889) -** If the noncompliance with a condition, requirement or limitation specified in the permit has caused or may cause migration into or between underground sources of drinking water or has introduced or may introduce a contaminant which endangers an underground source of drinking water, or otherwise endangers public health or the environment, **the Permittee shall notify the Director within 24 hours after becoming aware of the circumstances**.

1. **5-Day Report**: A written Report shall be submitted to the Underground Injection Control Program of the Division within five (5) days if, for any reason, the permittee is unable to or does not comply with the conditions, requirements and limitations specified in this permit. The permittee shall provide the Administrator or his representative with the following information:
    i. The exact dates, times, and duration of noncompliance
    ii. The specific cause of noncompliance and exact location
    iii. An estimated volume unauthorized discharge if applicable
    iv. Identification of which injection well(s) are affected
    v. The corrective actions taken and anticipated time of continuance. Steps taken or planned to reduce, eliminate, and prevent recurrence of noncompliance

II.D **Spills -** The permittee is responsible for carrying out notification in the event of a spill. If the permittee has acknowledged that a spill greater than 25 gallons or 3 cubic yards has occurred, notify the Division by calling the **NDEP Spill Hotline, 1-888-331-6337 or an online submission on the NDEP web page** as soon as possible and no later than one working day from the time of discovery. The permittee shall promptly notify the Administrator in writing of each spill, in accordance with the procedure specified in Part III.A.2 above.

II.E **Injection / Discharge -** During the period beginning on the effective date and lasting through the expiration date of this permit, the Permittee is authorized to:

1. Inject geothermal fluids into the wells listed in **Tables 1** and **2** of this permit into zones below the casing shoe of each well with the intent of recharging injected water into the same or comparable geothermal zone; and
2. As specified in the Operations and Maintenance Manual:
    a. Discharge geothermal water derived from well start-ups, testing and maintenance into beamed discharge basins.
    b. Permittee shall submit documentation (UIC Form U240) on all chemical use requests, and receive Division written approval, prior to use.

II.F **Change in Effluents or Discharge -** All effluents or discharges authorized herein shall be consistent with the terms and conditions of this permit.

1. The discharge of any constituent identified in this permit more frequently than or at a level more than that authorized shall constitute a violation of the permit.

2. Any anticipated facility expansions or other activity which will result in new, different, or increased effluents or discharges must be reported to the Division by submission of a new application. A new application requires complete UIC forms U200 and U202, including all attachments required therein and any additional information requested. The Division will determine whether the facility expansion or other activity requires a minor or major modification, and the appropriate application fee.
3. If such changes will not violate the limitations specified in this permit provide notice to the Division of such changes. Following such notice, the permit may be modified to specify and limit any constituents not previously limited.

II.G **Adverse Impact -** The Permittee shall take all reasonable steps, including such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying effluent or discharge, to prevent any adverse impact to waters of the State resulting from noncompliance with any limitations specified in this permit.

II.H **Facilities Operation -** The Permittee shall always be maintained in good working order and operate as efficiently as possible. All treatment or control facilities, devices or systems installed or used by the Permittee to achieve compliance with the terms and conditions of this permit and shall be in conformance with the plans and specifications filed with the Division. All solid, toxic or hazardous waste shall be disposed of in accordance with the rules and regulations of this Division. All spills and releases shall be reported as required by Nevada Revised Statutes.

II.I **Bypassing -** Any diversion from or bypass of facilities necessary to maintain compliance with the terms and conditions of this permit is prohibited except where unavoidable to prevent loss of life or severe property damage. The Division will have the final authority in the determination of whether a discharge is deemed unavoidable. The Permittee shall promptly notify the Administrator in writing of each such diversion or bypass.

II.J **Contaminants -** Extraction, conveyance, and injection must be accomplished in a manner that prevents the introduction of a contaminant or foreign object not covered by this permit. All fluids extracted will be disposed of by injection with the exception of those discharges approved under Section IV. Fluids.

II.K **Applicable Standards of Other Governmental Agencies. (NAC 445A.843) -** The provisions of any federal, state, county or municipal law or regulation establishing standards for injection wells which afford greater protection to the public welfare, safety, and health and to the groundwater prevail within the jurisdiction of that governmental entity over standards established by NAC 445A.810 to 445A.925, inclusive. Those sections do not replace, or in any way affect the responsibility of any person to comply with the regulations and rules of practice and procedure administered by any other governmental agency.

II.L **Waste -** All solid or hazardous waste shall be disposed of in accordance with the rules and regulations of the Division.

II.M **Right of Entry -** The Permittee shall allow the Administrator and/or their authorized representatives, upon the presentation of credentials:
1. To enter upon the Permittee's premises where a source is located or in which any records are required to be kept under the terms and conditions of this permit; and
2. To have access to, and to copy any records required to be kept under the terms and conditions of this permit; to inspect any monitoring equipment or monitoring method required in this permit; and to perform any necessary sampling to determine compliance with this permit or to sample any effluent or discharge.

II.N **Transfer of Ownership or Control -** No less than 30 days before a planned transfer of ownership, control, and/or management, the Permittee shall submit an original and signed UIC form U250.

II.O **Availability of Reports -** Except for data determined to be confidential under NRS 445A.665, all reports prepared in accordance with the terms of this permit shall be available for public inspection. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in NRS 445A.710.

II.P **Permit Modification, Suspension or Revocation -** After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:

1. Violation of any terms or conditions of this permit.
2. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or
3. A change in any condition, or the existence of a condition, requires either a temporary or permanent reduction or elimination of the permitted activity.

II.Q **Civil and Criminal Liability**

1. Nothing in this permit shall be construed to relieve the Permittee from civil or criminal penalties for noncompliance.
2. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the Permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable State law or regulation.
3. The issuance of this permit does not convey any property rights, in either real or personal property, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, State, or local laws or regulations.

II.R **Schedule of Compliance**

1. A schedule for compliance must require compliance as soon as possible and in no case later than 1 year after the effective date of the permit. (NAC 445A.888).
2. With the consent of the holder of a permit issued pursuant to NAC 445A.810 to 445A.925, inclusive, and without public notice, the Director may make minor modifications to the permit to change an interim compliance date in a schedule of compliance if the new date is not more than 120 days after the date specified in the permit and does not interfere with attainment of the final compliance date requirements. (NAC 445A.902).

II.S **Records Retention -** All records and information resulting from the monitoring activities required by this permit, including all records and analyses performed, calibration and maintenance of instrumentation, and recordings from instantaneous or continuous monitoring instrumentation, shall be retained for a minimum of three (3) years or longer if required by the Director.

II.T **Renewal -** This permit cannot be renewed, and no fee for the Annual Review and Services fee shall be assessed.

PART III. LIMITS

III.A **Injection Pressure -** Well head injection pressure shall not exceed the limit specified in **Table B** of this permit, which shall not exceed the maximum allowable surface injection pressure (MASIP) calculated per the formula shown in NAC 445A.911(2), Calculations for all future wells and following workovers which introduce new injection zones shall be submitted to and approved by the Division prior to use of the well.

III.B **Temperature of the Discharged Fluids -** The temperature of discharged fluids shall not:

1. Degrade ground water.
2. Compromise well integrity.
3. Harm the public, wildlife and/or environment.

III.C **Zone for Injection (NAC 445A.839) -** The Permittee is constrained to inject only fluids that are naturally produced from the aquifer hosting the injection zone within the permitted project area that have received prior written approval from the Division. Injected water shall remain in the zone for injection that has been identified through the UIC application process. Injected water must not migrate into unauthorized underground sources of drinking water (all aquifers within this State regardless of the quality of the water, except those exempted), shallow formations, or the surface.

III.E **Surface Discharge -** Surface discharge to basins shall be limited to those in the Operations and Maintenance Manual.

III.F **Chemical Additives -** The introduction of any chemical additive to the injectate requires written authorization from the Division through submission of UIC Form U240.

PART IV. FLUIDS

IV.A Geothermal fluids shall be disposed of in such a manner that they do not present a hazard to livestock, wildlife, or the beneficial use of the waters of the State.

1. Discharge basins associated with the permitted wells shall be fenced off and always maintained in a proper manner to not allow wildlife or livestock to be endangered by these constructed devices or the water within them.
2. If any wildlife is trapped or found dead in basins, **the Permittee shall notify the Nevada Department of Wildlife within 24 hours after becoming aware of the discovery.**

IV. B Fluids derived from maintenance procedures or well testing may only be diverted on a short-term basis to separately permitted holding/discharge basins constructed for such located on the site. Fluids discharged to such ponds may contain previously approved additives. All discharge basins must be constructed according to the approved plan submitted and reviewed.

IV.C No chemical additives shall be added to the geothermal fluids or cooling prior to injection or disposal without prior written approval by the Division (UIC Form U240 Chemical Request form). The use of any type of chemical additive in either the injectate or cooling system may require modification of monitoring requirements. All approved U240 Chemical Request forms shall be maintained in the Operations and Maintenance Manual. All chemical additives shall be inventoried and reported.

PART V. MONITORING AND SAMPLING REQUIREMENTS

V.A The Permittee shall submit monitoring and sampling reports in accordance with Table 3 for the following reporting periods: 0-45 days after authorization to inject and 46-90 days after authorization to inject.

V.B Monitoring and Sampling Requirements - Please submit Attachment 1 – *Check List Form* and Attachment 3 – *Reporting Format Templates* with every monitoring report.

1. The Permittee shall perform the following monitoring and sampling:

TABLE 3. Monitoring and Sampling Requirements				
Injection Parameter	**Injection Well**	**Data Presentation**	**Location**	**Frequency**
Provide a table listing all production, injection, and all other wells including the following information: Well name, installation date, well location (latitude and longitude), well type, well operating status, well depth, slotted/perforated intervals and/or open depths, and any other relevant features. Include a well schematic of piping and monitoring and sampling locations identified			With each submission of monitoring and sampling required in this table.	With each submission of monitoring and sampling required in this table.
Documentation of calibrations performed for all gauges used for compliance with this permit.			With each submission of monitoring and sampling required in this table.	Documentation of Calibrations performed for all gauges used for compliance with this permit.
A table listing all chemical additives put into circulation above-ground or in wells, including the following information: product name, amount/volume, and rate used.			With each submission of monitoring and sampling required in this table.	A table listing all chemical additives put into circulation above-ground or in wells, including the following information: product name, amount/volume, and rate used.
Water Quality per UIC Sample List 2 (See attachment 2)	62A-25 21-31	Include a copy of the Sample collection form, U230, ad chain-of-custody. NOTE: The UIC Program requires inorganic analyses of metals for "Total Metals" in which samples are not filtered and are preserved wit a weak acid in the field.	Collect sample of geothermal fluid from port at (1) production wells, and (2) injection wellheads)	**Immediately Before Injection.** **After 45 days of injection.** **After 90 days or at cessation of injection.**
Injection Rate (gpm)	62A-25 21-31	For each week in the reporting period: Total volume (gal), highest, lowest no zero and mean-average injection rates (gpm) must be measured	Monitoring gauge at wellhead. reading from HMI is acceptable)	Once Daily (24hr)
Injection Pressure (psi)	62A-25 21-31	For each week in the reporting period: Total volume (gal), highest, lowest no zero and mean-	Monitoring gauge at wellhead. reading from HMI is acceptable)	Once Daily (24hr)

		average injection pressures (psi) must be measured.		
Injection Temperature (°F)	62A-25 21-31	For each week in the reporting period: Lowest and highest injection temperatures (°F)	Monitoring gauge at wellhead. reading from HMI is acceptable)	Once Daily (24hr)
Water Discharges to reserve, basins on, or adjacent to, the permitted wells.	62A-25 21-31	Monitor flow rate and duration of discharge based on these parameters)	Discharge basins	Fluid volumes discharged to basins shall be reported

V.C **Accessibility -** The Permittee shall notify the Division in writing immediately upon becoming aware of any situation that prevents access to any of the monitoring wells/points. The reason for this inaccessibility and corrective action measures necessary to resolve the situation shall be noted in the next UIC report.

V.D **Minimum Requirements**

1. Water samples shall be:
   a. Collected by grab method
   b. Unfiltered for metals analysis; unless otherwise approved by the Division in writing
2. A laboratory certified by the State of Nevada must perform analyses. Testing methods for constituents must be EPA or Division approved and meet drinking water analysis requirements.
3. The detection limits for the constituents listed above must be at least as low as primary or secondary drinking water standards when applicable.
4. When sampling for radioactive constituents, ensure the laboratory reports only the adjusted gross alpha, as the drinking water standard of 15 pCi/L is an adjusted standard that subtracts radon and uranium from the total activity. Uranium is added in List 2 to verify value and additional activity.
5. The UIC Program requires inorganic analyses of metals for "Total Metals" in which samples are not filtered and are preserved with a weak acid in the field. Any exceptions to this policy must be requested and pre-approved by the Division prior to the sampling event. It must be clearly stated in all reports which analyses were performed.
6. Annual samples shall be collected during the same month each year.
7. Samples collected to satisfy monitoring requirements prescribed herein for characterization of ground water or surface water at different times, or time scales, relative to the period of injection authorized under this permit shall be collected during the same day.
8. Each water sample shall be collected using UIC Form U230 – UIC Field Sampling & Monitoring Summary, a copy of which shall be sent to the UIC/OSDS Branch upon submission to the laboratory, as proof of submission, and included, along with the results of analyses, in the UIC report.
9. Test procedures for the analyses of required constituents shall comply with applicable analytical methods cited in 40 CFR 141 and under state of Nevada Drinking Water Program approved analytical methods, under which such procedures may be required, unless other procedures are approved by the Administrator.

10. Samples and measurements collected/taken as required herein shall be representative of the volume and/or nature of the subject of interest.

V.E Recording of Results - For each measurement or sample taken pursuant to the requirements of this permit, the Permittee shall record the following information using UIC Form U230 – UIC Field Sampling & Monitoring Summary. Information shall include:

1. The exact place, date, and time of sampling
2. The dates the analyses were performed
3. The person(s) who performed the analyses
4. The analytical techniques or methods used
5. The results of all required analyses
6. The precision and accuracy of the analytical data

V.F Elemental Mercury - During all workovers, repairs, etc., of wells or in any part of the facility in contact with geothermal fluid sample geothermal fluid at wellhead and analyze for Elemental mercury

V.G Additional Monitoring by Permittee - If the Permittee monitors any constituent at the locations(s) designated herein more frequently than required by this permit, or monitors additional constituents than required by this permit, the results of such monitoring results shall be made available to the Division upon request.

V.H Modification of Monitoring Requirements - The Permittee may increase monitoring frequency or increase the number of constituents analyzed at any of the location(s) beyond those required by this permit for technology or research purposes without disclosure of such additional analyses to the Division. The Permittee shall be in good standing with the Division and maintain compliance with all required reporting activities of this permit.

PART VI. REPORTING

VI.A Reporting Requirements - The Permittee is required to notify the Division immediately upon becoming aware of:

1. Any elevated water levels.
2. Constituents in any wells or surface waters being monitored under the terms of this permit that exceeds 1 standard deviation of non-outlier values.
3. Any leaks in heat exchanger units or non-native fluid associated with any portion of infrastructure comprising the above- or below-ground fluid conveyance system, including but not limited to fluids used for cooling, lubrication, heat transfer, etc., associated with operations and maintenance.
4. Depending on the magnitude of the change in elevation, change in constituents, or leaks, the Division may require the Permittee to conduct a hydrogeologic investigation, increase monitoring, cease injection and/or any other actions deemed necessary by the Division so as to determine the cause and/or any necessary mitigation.

VI.D Submissions - Permittee-signed hard copies of these, and all other reports required herein, shall

be submitted to the following address:

Nevada Division of Environmental
Protection Bureau of Water
Pollution Control
Attn: UIC Program (Injection
Monitoring Report) 901 S. Stewart
Street, Suite 4001
Carson City, NV 89701

SECTION VII. WELL CONSTRUCTION AND WORKOVER SECTION

VII.A The Permittee Shall Construct all production, test and other wells in compliance with all State and Federal Regulations such that unauthorized releases do not occur.

VII.B **Routine Procedures -** When standard or routine procedures for injection well cleanouts are developed, such procedures will be submitted to the Division for approval and included in the Operations and Maintenance Manual

VII.C **Treatment -** No stimulation, acidization, or other treatment of the injection well are authorized under this permit.

VII.D **The Permittee Shall Notify the Division**

1. Within 60 days following the construction or reworking of production, test or other wells, the Permittee shall submit plans and drawings of the completed well as constructed, and the chemical analysis (UIC Sample List 2) of the production waters. The Division may remove chemical species from the list if the permittee satisfactorily demonstrates said species are not significant to the analysis of injection operations and have no potential impacts.
2. **Prior to any construction of (or conversion to) all future injection wells.**
3. **Following construction or reworking and prior to injection of the injection wells identified in this permit, the Permittee shall submit the information specified in the UIC form U120 – UIC Injection Well Completion Report.**

VII.F **Plugging Plan Modification -** An approved plan for plugging and abandoning has been submitted to and on file with the division. If the Permittee or Division determines at a future date that the plugging and abandonment plan requires modification, upon approval by the division will become a part of this permit.

ATTACHMENT 1 – UIC MONITORING REPORT SUMMARY AND CHECK LIST

Please submit this completed two-page attachment with every monitoring report.

- **Check to ensure all conditions required by the UIC permit are in the report.**
- **Check off each item below that is in the report.**

Submit the following data and information (use Division required formats if stated):

1. _____This check list form (Attachment 1), filled in and submitted with the lab results. Submit with every report.
2. _____ The results of the chemical analyses performed in that reporting period, including copies of field notes, U230 forms, original lab reports and tables for each well listing constituents sampled.
3. _____Each month in the reporting period, the total volume of fluid produced (gal/month) per well and the mean-average, lowest (non-zero) and highest production rate (gpm or lb/hr) per production well
4. _____ For each reporting period, the total volume of fluid injected (in gal/month) and the mean-average, lowest (non-zero), and highest injection rate for each injection well reported in gpm
5. _____For each reporting period, report items a and b to the Division in accordance with the table format in Attachment 3, for each injection well.
    a. average, lowest (non-zero) and highest injection pressure, in psig
    b. average, lowest (non-zero) and highest injection temperature, in degrees F
    (Note: actual injection pressure plotted with rates under Item 6 below)
6. _____ For each injection well during the reporting period, a single plot with both injection rate and wellhead pressure vs. time. The data for these plots shall be collected at the same time and the plots shall show one set of values for every seven day period
7. _____Estimated volume for each reporting period of fluid diverted to surface discharge and the character of each type of fluid diverted (i.e. production, injection, cooling tower blowdown, etc.).
8. _____Summary narrative analysis of monitoring activities for that reporting period, including mercury observed during maintenance procedures. Narrative shall include, but not be limited to, any problems encountered that had or have the potential to have affected the well integrity or the water quality, and the type of action taken, any spills or releases at the site, fumarolic activity, and all tests performed on the wells within the project area.
9. _____List of all chemical additives used in the produced-geothermal and cooling tower fluids, including but not limited to, scale and corrosion inhibitors, biocide, etc, which were used at the project during the quarter. Include product name and amount/volume and/or rate used, and amount of chemical stored on site as of the report date.
10. _____List of all production, injection, observation and test wells located within the project area and utilized by the Permittee. List shall be chronological, listing the newest wells first, and shall include date of installation, depth, type of well, status (abandoned, plugged, not-in-use, etc.), well identification and location.

* The purpose of this check-list is to assist the Permittee and the UIC program staff in ensuring all permit conditions for monitoring are submitted.

ATTACHMENT 2 - UIC SAMPLE LIST 2 INORGANIC

Nevada Division of Environmental Protection

Underground Injection Control Program - Sampling and Monitoring Report Form

Facility Name :	**Depth of sampled water's origin :**
Facility Owner:	**County:**
NDEP UIC Permit # :	**Location sample taken :**
Well ID # :	**Sampler :**
Type of Well : Monitor Production Injection	**Date Sampled :**
UIC Sample List 2- Inorganic Extended	**Name of Laboratory :**

Parameter	Units	DW Standards	Results	Method
total dissolved solids	mg/L	500 - 1000		Approved analytical methods can be found at the Bureau of Safe Drinking Water webpage: http://ndep.nv.gov/bsdw/oversight.htm or http://ndep.nv.gov/bsdw/docs/approved-analytica_methods.pdf
pH	standard units	6.5 - 8.5		
chloride	mg/L	250 - 400		
fluoride	mg/L	4		
sulfate	mg/L	250 - 500		
nitrate (as nitrogen)	mg/L	10		
nitrite (as nitrogen)	mg/L	1		
aluminum	mg/L	0.05-0.2		
antimony	mg/L	0.006		
arsenic	mg/L	0.01		
barium	mg/L	2		
beryllium	mg/L	0.004		
cadmium	mg/L	0.005		
chromium	mg/L	0.1		
copper	mg/L	1.0-1.3		
lead	mg/L	0.015		
iron	mg/L	0.3 - 0.6		
magnesium	mg/L	125 - 150		
manganese	mg/L	0.1		
mercury	mg/L	0.002		
nickel	mg/L	0.1		
selenium	mg/L	0.05		
silver	mg/L	0.05		
thallium	mg/L	0.002		
zinc	mg/L	5		
total uranium	ug/L	30		
adjusted gross alpha*	pci/L	15		
gross beta	mrem	4		
alkalinity (CaCO3)	mg/L	-		
bicarbonate	mg/L	-		
boron	mg/L	-		
calcium	mg/L	-		
carbonate	mg/L	-		
Elect. Conductivity	umhos/cm	at 25 degC		
lithium	mg/L	-		
molybdenum	mg/L	-		
phosphorus, total	mg/L	-		
potassium	mg/L	-		
silica	mg/L	-		
sodium	mg/L	-		
total suspended solids	mg/L	-		
turbidity	NTU	-		

Comments:

Rev 7/2013

Note: A completed UIC U230 Form is required for all UIC-related samples (produced, injected & monitoring point waters)

Detection limits must be at least as low as primary or secondary drinking water standards where applicable.

Nevada Certified Laboratory must be used for all UIC samples, lab must be certified the method being used.

Metals shall be sampled and analyzed as total metals. Please indicate detection limit instead of stating "Non-Detect" or "ND".

When TDS is high, 200.8 can't be used. See EPA's Approved

Methods for Inorganic Chemicals and Other Contaminants at http://www.epa.gov/safewater/methods/inch_tbl.html.

*Adjusted gross alpha particle activity doesn't include radon and uranium activity.

ATTACHMENT 3 – REPORTING FORMAT TEMPLATES

REPORTING PERIOD: □ 0-45 days □ 45-90 days

Production Volumes & Rates for Well 13-6	
Volume (gal)	**Production Rate (gpm)**

Injection Volumes & Rates						
Well Name	**Injection Volume (gal)**			**Injection Volume (gpm)**		
	Min	**Mean**	**Max**	**Min**	**Mean**	**Max**
62A-25						
21-31						

Injection Temperature and Highest Pressure		
Well Name	**Average Temperature (°F)**	**Injection Volume (psig)**
62A-25		
21-31		

Note: The Permittee may add rows to accommodate additional injection wells. The Permittee will substitute actual injection numbers for the placeholders above.

ATTACHMENT 4- Notifications to the Division

Table 4 -Permittee shall notify the Division when:

Activity	Time Frame	Required Action to NDEP	Approval required
Construction of new, or conversion of existing well to, injection well		Submit Sundry Notice to NDOM, see NDEP website for any required documentation, or contact NDEP with questions about MIT testing. Provide approved Sundry Notice to NDEP.	NDOM approval
Initial injection to well	30 days prior notice to NDEP	UIC Completion Report, including mechanical integrity test, and submitting water sample results.	Written approval to inject from NDEP after submission of Completion Report.
Any modification of injection well	Before work over	Submit Sundry Notice to NDOM, see NDEP website for any required documentation, or contact NDEP with questions about MIT testing.	NDOM approval
	Before placing well back into service.	Submit completion report to NDEP, water sample if necessary.	NDEP written approval
Testing of injection well / MITs	45 days prior notice	Submit proposal to NDEP	NDEP written approval
Construction of production well	within 60 days after completion of work	Submit well schematic with entry info, and results of water sample(s) of produced well water	n/a
Major modification of production well	within 60 days after completion of work	Submit updated well schematic, and results of water sample from well (examples: deepening, perforate casing, etc.)	n/a
Minor modification of production well	next quarterly report	Summary of work (examples: pump work, casing scraping, etc.)	n/a
Chemical Treatment of Water or Tracer tests	30 days prior notice	Submit UIC Form U240 to NDEP	NDEP written approval
Well Stimulation/ Acidization		Submit Sundry Notice to NDOM	NDOM approval
Chemical or petroleum spills greater than 25 gallons or 3 cu-yds of effected soil or spills greater than Reportable Quantity listed in 40 CFR 302.4	Immediately and no later than the end of one working day	Contact Division of Emergency Management (775-688-2830) and Division of Environmental Protection (888-331-6337)	n/a
Discovery of spills or noncompliance	Within 5 days	Submit a written 5-Day Report with a detailed description of the event (See Part II.A.2).	n/a

Nevada Division of Environmental Protection
Bureau of Water Pollution Control
Underground Injection Control Program

FACT SHEET

Nevada UIC Permit Requirements for Geothermal Projects

- UIC form U230 must be filled out and submitted with all water samples collected for UIC requirements or purposes; data unaccompanied by a completed U230 cannot be utilized
- This is guidance to all geothermal operators for new and existing projects
- UIC permits for new geothermal projects only cover UIC discharges

As of January 2008, a Permit to Drill from the Nevada Division of Minerals (NDOM) fulfills the UIC program requirement to obtain a permit to drill an injection well.

A UIC permit from NDEP serves as authorization to inject into any injection well listed on the permit (barring exceptions documented in this fact sheet):

1. For authorization to inject: the UIC permit application must be submitted, and the UIC permit issued
2. A UIC application must be submitted to NDEP at least **180** days prior to injection.
3. An Injection Well Completion Report must be submitted for any newly drilled, repaired, or idle/inactive (and recently MI-tested) injection well that is included in an application for first-time issuance of a UIC permit from NDEP
4. For applications to modify (whether or not concurrently with an application for permit renewal) an existing UIC permit to reflect the addition of a newly drilled, repaired, or idle/inactive (and recently MI-tested) injection well located within the Area of Review defined in the most recently approved application for first-time issuance, renewal, or modification of a UIC permit: submit an Injection Well Completion Report within 30 days following well completion
5. If the injection well is not located within the Area of Review defined in the most recently approved application, contact the UIC Program in the BWPC Permits Branch to discuss the AOR and associated permitting requirements
6. NOTE: Injection up to 7 days can be approved by the NDOM.

Part 1 – Injection Well Construction Requirements and Completion Report

A. The following are required pursuant to NAC 445A.908, and other 445A regulations.

NOTE: Failure to properly record, document, and submit the necessary information will lead to denial of an application for a first-time issuance, renewal, or modification of a UIC permit.

B. UIC Required Actions for Injection Wells:

1. Static Temperature Survey - all injection wells require a static temperature survey to be conducted after the well has been completed (survey shall be run after the well has been flowed and has had time to stabilize from drilling, testing, etc. for at least 72 hours or other NDEP-approved time).

2. Mechanical Integrity Testing

- The operator shall plan for and determine the maximum allowable injection pressure based on the last string of cemented casing (Per NAC 445A.911.1 – The pressure for injection at the wellhead of an injection well must not exceed that which is calculated to initiate new fractures or propagate existing fractures in the zone for injection or the confining formation between the zone for injection and underground sources of drinking water.)
- The operator is required to demonstrate internal and external integrity of the injection well during construction. The following items are required to be completed, documented and submitted with the Injection Well Completion Report.

a. Part 1 – Internal Integrity
   - **i. During Construction**
   - ii. Casing pressure test – use chart recorder and provide charts
     1. Intermediate casing string
     2. Liner laps require testing as well
     3. (can be conducted with BOPE pressure testing)
   - iii. Optional - Casing/cement evaluation tools (sonic, ultrasonic, etc)
   - **iv. Operational Testing**
   - **v.** Casing pressure test with packer
   - **vi.** Temperature and spinner logs
   - **vii.** Sonic/ultrasonic casing/cement evaluation logs
   - **viii.** Casing evaluation logs for internal/external corrosion

b. Part 2 – External Integrity
   - **i. During Construction**
   - ii. Cementing Records – required for all wells (appropriate calculation and placement methods shall be listed in drilling program)
   - iii. Shoe/formation integrity test after last cemented string of casing (drill out 5 – 10 feet below shoe and run test – DO NOT FRACTURE FORMATION)
   - iv. Optional - Cement Bond/Variable Density Log
   - v. Optional - Other methods that have received prior written approval from NDEP
   - vi. NOTE: additional testing may be required under the issued UIC permit (e.g. surveys after 1-2 years of operation)
   - vii. **Operational Testing**
   - viii. Radioactive survey (where allowed by State Health)
   - ix. Noise log (note: minimum noise at surface around wellhead)
   - x. Time-interval static temperature survey (e.g. 12/24 hour), (note this test depends on background temperature profile of well.)
   - xi. Temperature & spinner log may satisfy requirement on some wells depending on well environment and design. It will need to close measure for losses immediately below the casing shoe. Test may satisfy if no loss, however, loss below shoe does not demonstrate loss to the surrounding formation or upward behind casing. More testing would then be required.

Compile and submit a **MIT Summary Report** of the above tests and logs, which contains the following information:

1. A list of all internal and external integrity tests conducted for each well with date and time of each test, and the depths covered;
2. A discussion of the intent of the test(s) – what would the test show? And what zones and casing features were focused on.
3. What company conducted the test(s), and who oversaw/witnessed the test(s) for the operator and state;
4. Conditions of the injection well(s) prior to the test (e.g. static, drilling, injecting at #### gpm, etc.);
5. Conditions of the well(s) during the test(s), such as, operating conditions of the well, water level, changes in status/conditions of the well during the test, anomalies witnessed prior to or during the test, gauge calibration and condition for any gauges used, etc.;
6. **Interpretation and conclusions of the test results stating whether each well meets the internal and external regulatory requirements in UIC regulations. This part should be done in conjunction with the service company.**

C. UIC Considerations for Injection Wells – (items evaluated during application review process.)

Injection String Casing Point – If the casing point is shallower than the target in the drilling program, the operator must ensure that (1) the zone below the shoe is within the same reservoir from which the source fluid (geothermal "brine") was extracted by the production well(s); and that (2) the completion report includes documentation showing the "new" casing point in addition to data from hydrogeologic monitoring and modeling demonstrating that the zones for injection and production occupy the same formation/reservoir/aquifer.

Wellhead Design and Site Location

- Wellhead must be equipped above the ground or above cellar bottom with valves for the observation of pressure for each annular opening of the well, temperature and flow rate. Pressure gauge shall be at the wellhead or as close as physically possible.
- Wellhead shall have valves that are protected and operational during the life of the well.
- Well Signage – all injection wells shall have at a minimum a sign with the well name/number, operator's name and phone, well location.

D. Corrosion Prevention Plan

1. The submitted plan must provide documentation required for the Injection Well Completion Report, describing measures that might needed to be taken during and after injection well to prevent surface and downhole corrosion during the life of the well (NAC 445A.908 "..The casing and cement used in the construction of each injection well must be designed to endure for the life expectancy of the well). The plan may include measures that will be evaluated. NOTE: Failure to employ corrosion prevention measures may require more frequent casing integrity evaluation (MITs)
2. Standard requirements:
   a. Injection casing string shall not be in contact with soil.
   b. Injection casing string shall be sealed or configured to prevent "standing" water from coming in contact with string.
   c. In areas where shallow boiling zones occur, the annular space between the intermediate and injection casing string shall be sealed at surface, and if necessary, a "gas cap" applied to this annular space.

E. Completion Report (NAC 445A. 909)
http://ndep.nv.gov/bwpc/docs/uic_%20frorm_checklist_class2_geothermal_injection_wells.pdf

To request the addition of an injection well—located within the Area of Review defined in the most recently approved application for first-time issuance, renewal, or modification of a UIC permit—to an existing UIC permit, a completion report with the following documentation is due within 30 days after drilling completion *and* 30 days before reissuance of the permit, modified to reflect addition of the requested injection well(s):

1. As-built well schematic
2. Daily drilling reports
3. Cementing record
4. Public Land Survey System coordinates (Township, Range, Section, Quarter-quarter section)
5. Geospatial location of wellhead, including UTM and Latitude/Longitude (with projection or geoid)
6. Deviation records
7. Static temperature survey(s)
8. Copies of all E-logs
9. Photos of wellhead showing cathodic protection methods
10. Photos of wellhead or pipeline showing temperature, pressure and flow rate gauges
11. Document signage has been posted for the well at the wellhead location
12. Water sample results from injection zone(s)
    a. See Part 3 and UIC Sample List 2 for sampling requirements
    b. (if multiple injection zones in different "formation" within the same wellbore, contact NDEP staff to discuss if each zone would need to be tested)

Note: if **confidentiality** is being requested, ensure every page is stamped indicating so. Not all records can be held confidential, so please indicate your reasoning for the request to justify for our review.

Part 2 – Discharge of Produced or Plant Water

A. Discharges to Drilling Sumps
   1) Drilling sumps (reserve basins) are permitted by the NDOM
   2) Drilling sumps that will be used during the life of the well must be constructed in accordance with discharge basins, as described below.
   3) Discharge (to drilling sumps) associated with flow testing is limited to **7** days under a permit from NDOM; discharge to any basin beyond **7** days requires the appropriate water pollution control discharge permit from the NDEP Bureau of Water Pollution Control
   4) Discharges outside of these basins or other containment devices require specific NDEP approval; ***authorization to discharge into a basin does not authorize discharge outside the basin, for which an operator must obtain a separate water pollution control discharge permit***

B. Discharges to Basins
   1) Basins receiving geothermal and other plant water must be designed and constructed to safely manage water and prevent contamination of surface and ground water
   2) Minimum requirements for geothermal storage basins include the following:
      a. Discharge basins shall be lined to prevent infiltration of water, unless the requirement in item B.2.b (below) has been satisfied
      b. Lining of discharge basins shall be waived if it can be demonstrated that ground water degradation will not occur due to lesser water quality of the discharged fluid and/or leaching of soil salts. A waiver of the basin liner requirement requires evaluation of the following:

1. Water quality and flow rates of discharge
2. Elevation and gradient of water table
3. Ground water quality at/below the water table (monitoring well(s) may be required)

c. Interior embankments shall be no steeper than 3:1 (horizontal : vertical)
d. Minimum freeboard (based on basin area): 2 ft for <1 ac or 3ft for 1 ac
e. Shall not be located within 100-yr floodplain without reasonable accommodations, and account for 25-yr, 24-hr storm events. Protection measures shall be in place as needed
f. Discharge and overflow locations shall be constructed to prevent erosion and washout

3) Geothermal fluids shall be disposed of in such a manner as to not present any hazard to livestock, wildlife, or the beneficial use of the waters of the State. ***All surface basins shall be fenced off and maintained in proper manner at all times as to not allow wildlife or livestock to be endangered by these constructed devices or the water within them. If any wildlife is trapped or found dead in basins, the Nevada Department of Wildlife shall be contacted immediately.***
4) All supplies of water for livestock shall demonstrate approval to NDEP from the Nevada Department of Agriculture.
5) No chemical amendments shall be added to injectate (or precursor fluids – i.e., produced brine and plant effluent) prior to injection or disposal without prior written an approved chemical use authorization request (Division-signed form U240)
6) Samples of water discharged to surface basins shall be collected (at the outfall into the basin, not from the water in the basin) at least once during discharges lasting ≤3 days; a second must be collected for discharges lasting >3 days

Part 3 – Sampling Requirements

A. The following sampling requirements are required for all production and injection wells, and shall be filed with NDEP as part of the UIC application.
   1. As of October 1, 2010, UIC Form U230 must be used and submitted with all water samples.
   2. Samples shall be taken following construction of all production and injection wells. Sample shall be taken after well has been flowed to clean drilling mud from well.
   3. Samples shall be taken after the well has been flowed for a period of time to ensure drilling fluids have been flushed from the wellbore, and the water is representative of the geothermal reservoir.
   4. Geothermal water shall be sampled and analyzed for the constituents listed in ***UIC Sample List 2, at minimum*** – ***NDEP may require monitoring of additional analytes***
   5. All analyses conducted in fulfillment of UIC permit conditions or application requirements must be performed by a State of Nevada Certified Laboratory (List can be found at http://ndep.nv.gov/bwqp/lab/labservice.htm)
   6. All sampling reports shall include the following information with submitted to NDEP:
      a. Time and Date of Sample
      b. Sample location (provide the exact location taken)
      c. Sampler name and affiliation
      d. Name of laboratory conducting analysis (must be state certified)
      e. Chain of Custody sheet
      f. Indicate if sample was field filtered or not

Part 4 – Standard Requirements

A. All solid, toxic or hazardous waste shall be disposed in accordance with the rules and regulations of this Division. All spills and releases shall be reported as required by Nevada Revised Statutes. The use of any other additive(s) requires written authorization from the Division prior to injection. All spills of refined products shall be cleaned up immediately; soil removed and properly disposed of per local, state and federal rules. (This applies to any location on project site). Report spill of greater than 25 gallons or 3 cu yds impacted to NDEP at 1-888-331-6337 (in-state number) For questions on reporting, call 775-687-9368

B. All facilities encompassed by this permit shall conform to the plans and specifications filed with the Division of Environmental Protection and shall be maintained in good working order at all times. Standard drilling materials are approved for use on all wells; however, use of any non-standard or toxic chemical must be submitted to NDEP for review

   Addition of a well located within the Area of Review defined in the most recently approved application for first-time issuance, renewal, or modification of a UIC permit requires submission of an injection well completion report to the UIC program in the NDEP Bureau of Water Pollution Control for review within 30 days after completion of the well, and **30 days before** the permit is reissued following modification to reflect authorization to inject into the requested well(s)

C. Monitoring & Reporting:
   Operator must submit an Injection Well Completion Report to the Nevada UIC Program in the NDEP–BWPC to request addition of a well to an existing permit

SUBMIT TO:
Nevada Division of Environmental Protection
BWPC | Permits Branch
UIC Program
901 S. Stewart Street, Suite 4001
Carson City, Nevada 89701