

PETER G. MORROS, *Director*

ALLEN BIAGGI, *Administrator*

(775) 687-4670

TDD 687-4678

Administration
Water Pollution Control
Facsimile 687-5856

Mining Regulation and Reclamation
Facsimile 684-5259

STATE OF NEVADA

KENNY C. GUINN

Governor



Waste Management
Corrective Actions
Federal Facilities

Air Quality
Water Quality Planning

Facsimile 687-6396

DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

DIVISION OF ENVIRONMENTAL PROTECTION

333 W. Nye Lane, Room 138

Carson City, Nevada 89706

June 29, 2000

Ms. Donna Potter
Empire Energy, LLC
P.O. Box 40
Empire, Nevada

RE: Draft Copy of the Underground Injection Control (UIC) Permit UNEV87041 for Empire Energy, LLC Geothermal Power Project.

Dear Donna:

Enclosed are the drafts for the UIC permit UNEV87041 and fact sheet. The public notice was sent to the *Reno Gazette-Journal* for publication no later than July 15, 2000. A 30-day public comment period follows the **actual** date of publication. If the public notice generates sufficient interest, a public hearing will be held. In the absence of a public hearing, we would anticipate issuing the permit shortly after the comment period ends.

Please note that the permit enclosed is a draft and is subject to change. Changes could be made due to comments made by Empire Energy, LLC, the public and/or based on any additional information that I may become aware of during the public notice period.

Any comments you have regarding the draft permit should be submitted **as soon as possible** so changes can be discussed during the public comment period.

Sincerely,

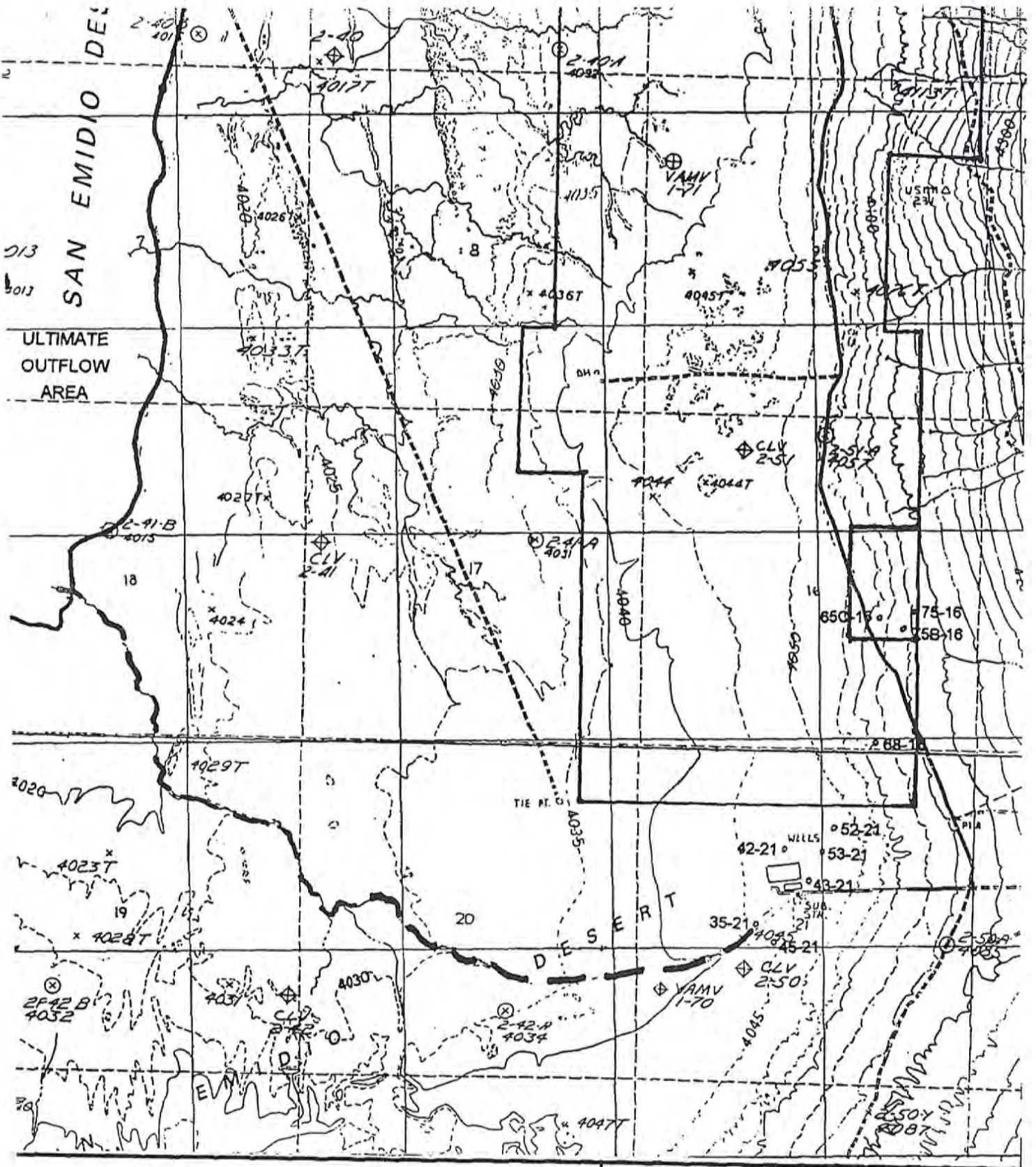
A handwritten signature in cursive script that reads "Russ Land".

Russ Land
Underground Injection Control Program
Bureau of Water Pollution Control

Enclosures: draft permit and fact sheet

JRL:I:\WPFILES\BWPC\UIC\PERMITS\EMPENERG\0087041.DFT

cc: Cathe Pool, NDEP Water Permits Supervisor
Laura Bose, USEPA Region 9 w/ enclosures



EXPLANATION

w Path



Scale: 1" = 2000'

AMOR II CORPORATION

Proposed Temporary Surface Discharge

T 30 N

T 29 N

WIND MTL.
MINE

PW-2 ●

PW-3 ●

ALBERG

6

5

4

7

8

9

KOSMOS LEASE HOLDING LLC

51-16 ●

18

17

16

75-16 ●
65C-16 ●
75B-16 ●
76-16 ●

61-21 ●

42-21 ●
52-21 ●
53-21 ●

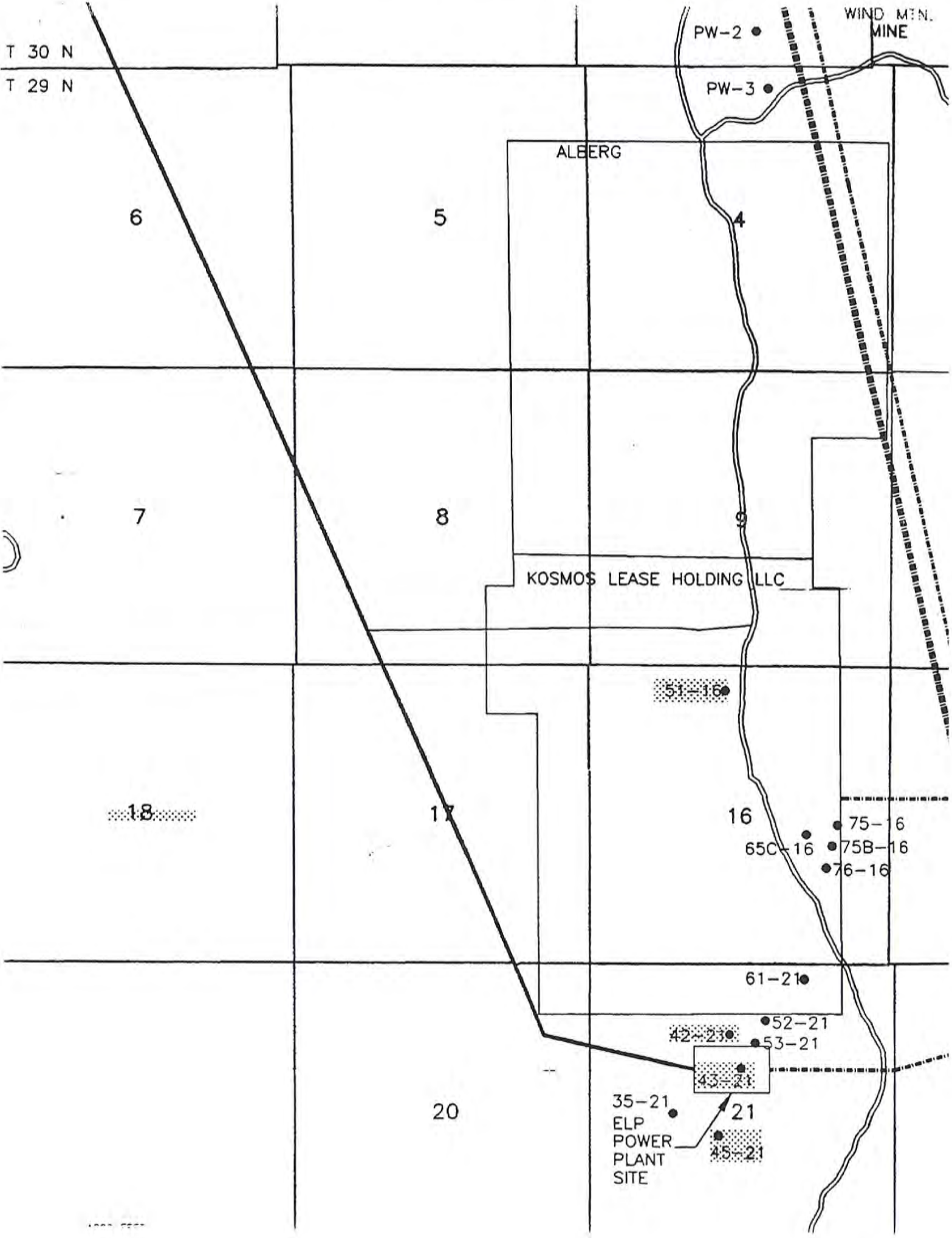
43-21 ●

35-21 ●
ELP
POWER
PLANT
SITE

45-21 ●
21

20

10000 FEET



NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

FACT SHEET

(Pursuant to NAC 445A.874)

Permittee Name: **Empire Energy, LLC.**

Permit Number: **UNEV87041**

A. Description of Discharge

Location: Six (6) injection wells located in Sections 16 and 21, T.29N., R.23E., San Emidio Desert, Washoe County, Nevada. Discharges to basins at the wellsite and other locations near plant may occur under this permit.

Characteristics: Discharges are primarily injectate consisting of geothermal fluids derived from the San Emidio Desert geothermal reservoir on the east side of the valley, and discharges of geothermal fluids to basins. The geothermal fluid has a total dissolved solids concentration of approximately 4,500 mg/l, and elevated levels of sodium (1,400 mg/l), chloride (2,320 mg/l), boron (6 mg/l), and fluoride (5 mg/l) are present. Any chemical treatment for scale or corrosion will require approval by the Division prior to use. (Note: Cooling water blowdown ranges of TDS (1600-2400 mg/l), pH (8.3-8.8), chloride (600-850 mg/l), fluoride (0.75-1.5 mg/l), boron (1.2-2.0 mg/l).)

Production temperature: 280-305 degF

Injection temperature: 185-210 degF

Injection rate : 4000 gpm (2000 average)

B. Synopsis

Empire Energy, LLC (Empire Group, LLC is the parent company) currently owns and operates the Empire Geothermal Power Plant in Section 21, Township 29 North, Range 23 East, MDBM, Washoe County, Nevada. Empire Group is also the parent company of Empire Foods, LLC, the owner and operator of the garlic and onion dehydration plant in Section 16, T29N R23E, approximately one (1) mile to the north of the power plant. (AMOR II Corporation previously owned the power plant, and San Emidio Resources owned and operated the geothermal well field on private lands by the dehydration plant)

Prior to 1997, the power plant, the dehydration plant, the geothermal resource on the private lands in Sections 16 and 21, and the geothermal leases on the public lands in Section 21 were previously owned or controlled by unrelated entities. At this time, all are owned or controlled by Empire Group, LLC. UIC permit UNEV87041 was previously held in the name of Amor II Corporation, and expired injection permit UNEV94211 was held in the name of San Emidio Resources. Recently the permittee requested the above name change (Empire Energy, LLC) for financing reasons. Bonding requirements were met prior to name change. In this renewal application, Empire Group, LLC has requested to combine the two permits into permit UNEV87041 to operate the wellfield as one entity in the name of Empire Energy, LLC.

Geothermal production for both facilities is primarily from wells near the dehydration plant on private lands in Section 16 (as of 6/2000 - 75-16, 75B-16, 76-16 and 65C-16 (shut-in)), with some production from the power plant field (currently 52-21). Approximately 500 gallons per minute (gpm) of geothermal fluid (from PW 75B-16) is utilized in the dehydration plant as a heat source for the dryers. The fluid is then mixed with additional geothermal fluids for a total flow of approximately 900 gpm to the wetlands west of dehydration plant and 200 gpm to injection well 51-16. 3500-4000 gpm is produced from the other wells and piped to the power plant to the south. Geothermal fluid is piped through a heat exchanger at the power plant and injected into injection wells (listed below) within a shallower, cooler geothermal zone near the power plant.

In addition to the five (5) injection wells near the power plant, an additional injection well (51-16) is maintained near the dehydration plant for use when the power plant is not operating, or when the flow from the dehydration plant is not needed at the power plant.

Cooling water blowdown from the power plant is currently discharged to the surface on private land north of the power plant or will be used for irrigation. Water used for cooling at the power plant and potable water for the dehydration plant is supplied from a potable water well located approximately 4.5 miles northwest of the facilities, just south of Empire Farms, in Section 36, T30N R22E. The only wells known to exist in the area of review are associated with geothermal development.

Geologic reports of the area indicate that geothermal fluids naturally migrate to the playa from the east side of the valley (Water Resources Reconnaissance Series Report #44, April 1968) and commingle with ground water recharge to the playa principally from the west side of the valley. Geothermal fluids migrate up the fault system of the east side of the valley, and naturally discharge into the valley fill material at varying depths. No fresh water aquifers have been identified in the project area and the shallow ground water is similar in quality to the geothermal fluids.

Injection wells as of May 2000

The following table outlines the injection wells presently in use or proposed for use.

Well	Location T29N R23E	WH Elev	Depth	DOM#	Injection Interval	Max Inj Press
51-16	NE1/4NW1/4 SEC. 16 40° 23' 18" 119° 24' 14"	?	993 ft	280	102'-993' (WL - 23')	
42-21	NE1/4NW1/4 SEC. 21 40° 22' 18" 119° 24' 17"	?	800 ft	161	250'-800'	
43-21	SE1/4NW1/4 SEC. 21 40° 22' 11" 119° 24' 14"	?	320 ft	107	85'-320'	
45-21	NE1/4SW1/4 SEC. 21 40° 21' 59" 119° 24' 21"	?	800 ft	164	101'-800'	
35-21	SEC. 21	?	306 ft			
53-21	SEC. 21	?	350 ft	187		

*LATITUDE AND LONGITUDE DERIVED FROM USGS 7 1/2 MINUTE QUADRANGLE SHEETS, SAN EMIDIO DESERT NORTH AND SAN EMIDIO DESERT SOUTH.

C. Receiving Water Characteristics

The produced geothermal fluid is injected back into the same or similar reservoir (see Part A above). Ground water at all depths surrounding the project is of geothermal nature or influence and poor quality, evident by hot springs, mud pots and fumaroles surrounding the facility. Shallow holes have been dug near power plant and dehydration facility and the ground water is of similar quality to the geothermal fluids. Shallow aquifer water quality is generally poor consisting of total dissolved solids (4,600 mg/l), fluoride (5.10 mg/l), boron (6.0 mg/l) and chloride (2,410 mg/l).

D. Procedures for Public Comment

The Notice of the Division's intent to modify and reissue a permit authorizing the facility to inject into the ground water of the State of Nevada subject to the conditions contained within the permit, was sent to the *Reno Gazette-Journal* for publication no later than July 15, 2000. The notice was mailed to interested persons on our mailing list (see Attachment A). Anyone wishing to comment on the proposed permit modification can do so in writing for a period of 30 days following the date of the public notice.

All written comments received during the comment period will be retained and considered in the final determination. A public hearing on the proposed determination can be requested by the applicant, any affected state, any affected interstate agency, the regional administrator of EPA or any interested agency, person or group of persons.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determines to be appropriate. All public hearings will be conducted in accordance with NAC 445A.238.

The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to NRS 445A.605.

E. Proposed Determination

The Division has made the tentative determination to modify and reissue the permit contingent upon comments received during the public comment period and the public hearing. If no significant negative impacts due to injection are identified during this process, it is the intent of the Division to reissue the permit.

F. Proposed Effluent Limitations and Special Conditions

See Part I.A of the permit.

G. Rationale for Permit Requirements

Verification that the quality of fluid discharged to the injection well(s) remains constant. Confirmation that fluids disposal does not adversely affect the existing hydrologic regime.

Prepared by: Russ Land

Date: May 2000

JRL:I:\WPFILES\BWP\CUI\C\PERMITS\SEMPENERG\0087041.FS

NOTICE OF PROPOSED ACTION

by the
State of Nevada
Department of Conservation and Natural Resources
Division of Environmental Protection
333 West Nye Lane
Carson City, Nevada 89706-0851

PUBLIC NOTICE

The Administrator, Division of Environmental Protection, Department of Conservation and Natural Resources, Carson City, Nevada is issuing the following notice of proposed action under the Nevada Revised Statutes and the Safe Drinking Water Act.

The Administrator has received a request to reissue Underground Injection Control permits UNEV94211 and UNEV87041 which was applied for by the following applicants:

Empire Energy, LLC
P.O. Box 40
Empire, Nevada 89405

The Administrator has prepared tentative determinations regarding the permit which, in brief, are:

The permittee has submitted a renewal application for Underground Injection Control (UIC) permits UNEV94211 (former San Emidio Resources, Inc. project) and UNEV87041 (formerly permitted under AMOR II Corporation). The permittee operates a geothermal electrical power generation plant and a dehydration plant that uses the geothermal fluids in the San Emidio Desert southwest of the town of Empire, Nevada. Since all the wells are currently under one owner, permit UNEV94211 will be cancelled and the conditions incorporated into permit UNEV87041 that will authorize injection into six (6) wells located in Sections 16 and 21, T.29N., R.23E., Washoe County, Nevada. The injection zone for all wells is within the geothermal reservoir.

On the basis of preliminary review of the requirements of the Nevada Revised Statutes (NRS) and the Safe Drinking Water Act, and implementing regulations, the Administrator proposes to reissue permit UNEV87041 (including conditions from permit UNEV94211) as stated above.

Persons wishing to comment upon or object to the proposed permit by the Administrator or request a hearing pursuant to Nevada Administrative Code, Water Pollution Control section, should submit their comments or request in writing, within thirty (30) days either in person or by mail to:

Russ Land
Department of Conservation and Natural Resources
Division of Environmental Protection
333 West Nye Lane
Carson City, Nevada 89706-0851

All comments or objections received within thirty (30) days will be considered in the formulation of final determinations regarding the permit. If written comments indicate a significant degree of public interest in the proposed permit, the Administrator shall hold a public hearing. A public notice of such hearing will be issued not less than thirty (30) days prior to the hearing date.

The application, draft permit, comments received, and other information are on file and may be copied at the office of the Division of Environmental Protection, 333 West Nye Lane, Carson City, Nevada, or copies may be obtained by writing to the above address or by calling Russ Land of the Bureau of Water Pollution Control of the Division of Environmental Protection at (775) 687-4670.

Please bring the foregoing notice to the attention of all persons whom you know would be interested in this matter.

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

AUTHORIZATION TO INJECT/ DISCHARGE

In compliance with the provisions of the Nevada Revised Statutes and the Nevada Underground Injection Control Regulations,

**Empire Energy, LLC
P.O. Box 40
Empire, Nevada 89405**

is authorized to inject into **five (5) injection wells and surface discharge as stipulated by this permit** located at:

Empire Energy, LLC Geothermal Power Project in the San Emidio Desert, Washoe County, in Sections 16 or 21, T.29N., R.23E. MDBM.

in accordance with limitations, requirements and other conditions set forth in Parts I and II hereof.

This permit shall become effective **Month XX, 2000**

This permit shall expire at midnight, **Month XX, 2005**

Signed this _____ day of _____

Russ Land
Underground Injection Control Program
Bureau of Water Pollution Control

JRL:\WPF\FILES\BWPC\UIC\PERMITS\EMPENERG\0087041.PMT

TABLE 1**Permittee shall notify the Division when:**

Activity	Time Frame	Required Action	Approval required
Construction of new, or conversion of existing well to, injection well	30 days prior notice	prior to construction, submit plans; after completion, well information and submit results of water sample from receiving formation (can be extended for lab processing)	written only
Initial injection to well	10 days prior notice	conduct mechanical integrity test and submit water sample results within time frame	written only
Any modification/workover of injection well	10 days prior notice	submit Sundry Notice or summary of activity	written; possible verbal
Testing of injection well / mechanical integrity testing	1)30 days prior notice; 2) within 90 days after test	1) submit proposal 2) submit results of test to the Division	written; possible verbal
Construction of production well	within 60 days after completion of work	submit well information and results of water sample(s) of produced well water	n/a
Major modification/workover of production well	within 60 days after completion of work	submit well information 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 chemical information including product name, amount and concentration to be used, location of use, etc	written; possible verbal
Well Stimulation/ Acidization	10 days prior notice	submit proposal including type and amount of chemical(s)	written; possible verbal
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	as soon as possible but no later than the end of one working day	Contact Division of Environmental Protection (687-4670 x3023)	n/a
Surface Discharges	48 hours prior notice for discharges greater than 2000 gpm; for discharges greater than 2000 gpm, contact Division within one (1) business day at 775-687-4670 x3150.	All maintenance procedures, including plant startup/shutdown, requiring discharge of more than 2,000 gpm must have prior approval from the Division. Procedures must be submitted in writing to the Division at least 48 hours prior to work. All emergency system upsets requiring discharge of more than 2,000 gpm shall be reported to the Division within 24 hours.	written, possible verbal

PART I

A. GENERAL SECTION

1. During the period beginning on the effective date of this permit and lasting through the expiration date, the permittee is authorized to
 - a. inject geothermal fluids into a maximum of six (6) injection wells located in Sections 16 and 21, T.29N., R.23E., Washoe County, Nevada;
 - b. discharge geothermal fluids derived from well start-ups, testing and maintenance activities into infiltration basins or approved drainage, located adjacent to the project's geothermal wells; and
 - c. upon notifying the Division and receiving written approval, inject cooling tower blowdown water into approved injection well(s), if necessary. Permittee shall submit documentation on all chemical additives to the UIC Program prior final approval.
2. **The permittee shall comply with the conditions of Table 1 of this permit and notify the Division in accordance with Table 1 upon occurrence of any activity listed.**
3. The permittee shall comply with all provisions of the UIC regulations, NAC 445A.810 to 445A.925, inclusive, and all other pertinent laws and regulations. Nothing in this permit relieves the permittee from responsibilities, liabilities or penalties established by any other State, federal or local jurisdiction.
4. 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 in accordance with Table 1 ("Chemical or petroleum spills greater than 25 gallons...") of this permit and as required by NAC 445A.345 to 445A.348.
5. All facilities and ancillaries 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.
6. The permittee shall submit the annual review and services fee in accordance with NAC 445A.872 no later than July 1st of every year until the permit is terminated. The permittee shall submit a **renewal application 180 days prior to the expiration of this permit.**

B. INJECTION AND SURFACE DISCHARGE LIMITS

1. Extraction, surface conveyance and injection must be accomplished in a closed system, such that unauthorized additions or releases do not occur. All fluids extracted will be disposed of by injection with the exception of those surface discharges authorized by this permit and which require approval or authorization per Nevada Water Pollution Control law. The permittee is constrained to inject only those natural produced fluids from wells located near the power plant (currently 52-21) and the current dehydration plant (75-16, 65C-16, 75B-16, and 76-16), and other production wells within the project area that have received prior written approval from the Division.
2. The introduction of any chemical additive(s) to disposed waters (geothermal or cooling tower blowdown) requires written authorization from the Division (please refer to Table 1). Notification is required for any usage changes to the previously approved chemicals. The use of certain chemical additives may require modification of monitoring requirements.
3.
 - a. Geothermal fluids shall be disposed in such a manner that they do not present a hazard to the public, livestock, wildlife or the beneficial use of the waters of the State. The permittee is constrained to inject/discharge only those natural geothermal fluids produced from the San Emidio Desert geothermal reservoir, and the associated cooling tower blowdown.
 - b. Fluids derived from well maintenance procedures or testing may be diverted on a short term basis to holding ponds constructed for such located on site. Fluids discharged to such ponds may contain previously-approved additives.
 - c. All maintenance procedures including plant startup/shutdown, requiring discharge of geothermal fluids of more than **2,000 gpm** must have prior approval from the Division. Procedures must be submitted in writing to the Division at least 48 hours prior to work. All emergency system upsets requiring discharge of more than **2,000 gpm** shall be reported to the Division within one (1) business day.
 - d. **All ponds/basins (related to the power plant and wellfield) to be constructed must be reviewed and approved, in writing, by the Division prior to construction.**
4. Injection shall be limited by the permittee as specified below:
 - a. The injection pressure will not exceed the maximum pressure as calculated per NAC 445A.911 (2). Calculations shall be submitted to and approved by the Division prior to use of the wells.
 - b. Surface breakthrough of injected fluids is prohibited at any location in the well field

C. MONITORING AND REPORTING

1. Samples taken in compliance with the monitoring requirements specified in this permit shall be taken at the following locations:
 - a. **Semi-annually (Table 2 marked (SA)) and Annually (all of Table 2)** at a sampling port at the injection wellhead or on the injection piping downstream of injection pump, whichever is appropriate;
 - b. **Annually (Table 2)** at the sampling port at each production well; and
 - c. **Semi-annually (Table 2 marked (SA))** for the cooling water blowdown injection, **if occurring**. The flow rate will be recorded at time of sampling and submitted with report.

2. Samples of fluid from the locations identified in Part I.C.1 will be collected and analyzed for the following constituents:

Table 2

Total Dissolved Solids, mg/l (SA)	Calcium	Manganese
Elect. Conductivity, umhos/cm,25°C - FM (SA)	Carbonate	Mercury
pH, standard units - FM (SA)	Chloride (SA)	Nitrate as N (SA)
Alkalinity	Chromium	Potassium
Antimony	Copper	Silica
Arsenic	Fluoride	Sodium
Barium	Iron	Sulfate
Bicarbonate	Lithium (SA)	Zinc (SA)
Boron (SA)	Magnesium	total - 24

- a) **The detection limits for the constituents listed above must be listed in reports (in place of ND) and must be at least as low as primary or secondary drinking water standards when applicable.** Reports shall state that metals were sampled and analyzed as dissolved, total recoverable or total.
- b) The Division may increase or decrease the monitoring of any constituents as listed for good cause.
- c) Analyses shall be performed by a laboratory certified by the State of Nevada where applicable. Testing methods for constituents must be EPA or Division approved.

3. The following parameters will be monitored by the permittee and be reported as specified in Part I.C.4.

Parameter	Monitoring Frequency & Location
a. Production rate, gpm	Three readings per day recorded on the operator's log sheet
b. Injection rate, gpm	Instantaneous gauge at the injection wellhead. Three readings per day recorded on the operator's log sheet
c. Injection pressure, psig	Instantaneous gauge at the injection wellhead. Three readings per day recorded on the operator's log sheet
d. Injection temperature, F	Three readings per day recorded on the operator's log sheet
e. Surface discharge volumes	Estimated volumes based on flow rate and duration of discharge

All gauges used for compliance with this permit shall be calibrated on a routine basis and documented in the monitoring reports under Part I.C.4.

Operations Procedures

4. The permittee shall submit **quarterly reports** which contain the following data:
- Check list form attached to this permit as **Attachment B**, submit with every report;
 - The results of the chemical analyses as required by Parts I.C.1. The permittee shall include a **five-year historical chart** showing the following values for the injectate and surface discharge: **TDS, chloride, fluoride, boron, lithium, and injection rate and pressure (showing monthly averages)**;
 - For each month in the reporting period the total **volume of fluid injected** (in gal/month), and for each month in the reporting period the average and highest **injection rate** reported in gpm (Note: please report cooling tower blowdown separately from geothermal waters);
 - For each month in the reporting period the average and highest **injection pressure** reported in psig;
 - For each month in the reporting period the average and lowest **injection temperature** reported in degF;
 - For each discharge of **cooling water or geothermal fluids to the ground surface**, whether authorized or unauthorized, report the date(s), type of fluid discharged, quantity, location, reason for the discharge, and any remedial action taken;
 - For each month in the reporting period, the **total volume produced** for each well in gallons per month;

- h. **Summary narrative analysis of monitoring activities** for that 3 month period. The 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, the type of action taken; any spills or releases at the site, all tests performed on the wells within the project area, any changes in the chemistry of the injection fluids or the ground water system and description of gauge calibration activities; and
- i. A list of all chemical additives used during the quarter in the produced-geothermal fluids, including but not limited to, lubricating oil, scale and corrosion inhibitors, biocide, etc. **Include product name, application rate, total amount/volume used during the reporting period, and amount of chemical stored on site as of the report date.**

Along with the 4th quarter report, the permittee shall also submit:

- j. A list of all production, injection, observation and test wells located within the project area and utilized by the permittee or their affiliates. Said 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. All wells reported after the effective date of this permit will require submittal of a map indicating their location.

Additional Requirements

5. Samples and measurements taken as required herein shall be representative of the volume and/or nature of the subject of interest.
6. Test Procedures

Test Procedures for the analyses of required constituents shall comply with applicable analytical methods cited and described in tables IA - IE of 40 CFR part 136 or in appendix III of 40 CFR part 261, under which such procedures may be required, unless other procedures are approved by the Administrator. All analyses conducted pursuant to permit requirements must be performed by a laboratory certified by the State of Nevada.

7. Recording of Results

For each measurement or sample taken pursuant to the requirements of this permit, the permittee shall record the following information:

- a. the exact place, date, and time of sampling;
- b. the dates the analyses were performed;
- c. the person(s) who performed the analyses;
- d. the analytical techniques or methods used;

- e. the results of all required analyses; and
- f. the precision and accuracy of the analytical data.

8. Reporting

Monitoring results and other requirements obtained during the previous three months shall be summarized for each month and reported no later than the 28th day of the month following the completed reporting period. Signed copies of these, and all other reports required herein, shall be submitted to the UIC Program Officer at the following address:

Division of Environmental Protection
Bureau of Water Pollution Control/UIC Program
333 W. Nye Lane
Carson City, NV 89706-0851

9. 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, using approved analytical methods as specified above, the results of such monitoring results shall be made available to the Division upon request.

10. Records Retention

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

11. Modification of Monitoring Frequency, Location and Sample Type

After considering monitoring data, stream flow, discharge flow and receiving water conditions, the Division may, for just cause, modify the monitoring frequency, location and/or sample type by issuing an Order to the permittee.

D. WELL CONSTRUCTION AND WORKOVERS

- 1. The permittee shall construct all injection wells pursuant to NAC 445A.908.
- 2. The permittee shall submit plans and drawings of all proposed injection well(s)

construction or workovers to the Division, and must receive written approval prior to drilling. Prior to use and following construction or reworking of the injection well, the permittee shall submit the information specified in NAC 445A.909 of the Underground Injection Control Regulations. **The chemical analysis required under NAC 445A.909© shall include all primary and secondary drinking water constituents, metals and gross alpha and gross beta as listed in Attachment C (profile 1).**

3. The permittee shall give 10 days advance notice to the Division of any planned major workover of an injection well. Verbal approval may be given by the Division for such workovers. When standard or routine maintenance procedures for injection well cleanouts are developed such procedures will be submitted to the Division for approval.
4. If the holder of the permit or the Division finds that any of the injection wells fail to demonstrate mechanical integrity during a test or a loss of mechanical integrity becomes evident during operation, the operation of said injection well must be stopped immediately, and may not be resumed until approved by the Division.
5. The permittee shall conduct mechanical integrity tests (MIT) on the injection wells: 1) prior to initial use of the injection well; 2) at least once every five (5) years on all required injection wells; or 3) per Division MIT policy. These tests must demonstrate that there are no significant leaks in the injection well casing, and if required by the Division, demonstrate that there is no significant fluid movement behind the casing. The method used to demonstrate the integrity of the well will be reviewed by the Division within thirty (30) days after submission of a request to approve said methodology. The permittee must receive approval from the Division prior to conducting the mechanical integrity test. The results of the test, including relevant logs and interpretative reports, must be submitted to the Division within 90 days after the completion of the tests. The Division may, by written notice, require the permittee to demonstrate mechanical integrity if loss of mechanical integrity is evidenced by well failure or by other information.
6. An approved plan for plugging and abandonment has been submitted to the Division and is included as **Attachment A** to this permit. If the permittee or Division determines at a future date that the plugging and abandonment plan requires modification, the modified plan, upon approval by the Division, will be incorporated into this permit.

E. Schedule of Compliance

1. **Within 120 days of the issuance of this permit**, the permittee shall submit to the Division one water sample collected at the sampling port of the injection line and at the outfall of the surface discharge for the constituents listed on **Attachment C (profile 1)**.

2. **Within 120 days of the issuance of this permit**, the permittee shall submit the results of two water samples collected 48 hours apart from the sampling port of the injection line and analyzed for total petroleum hydrocarbons.
3. The permittee shall achieve compliance with the conditions, limitations and requirements of the permit at the commencement of relevant activity.
4. The Administrator may, upon the request of the permittee, and after public notice, revise or modify a schedule of compliance in an issued permit if he determines good and valid cause (such as an act of God, a strike, materials shortage or other event over which the permittee has little or no control) exists for such revision.

PART II

A. MANAGEMENT REQUIREMENTS

1. Change in Effluents or Discharge

All effluents or discharges authorized herein shall be consistent with the terms and conditions of this permit. The discharge of any constituent identified in this permit more frequently than or at a level in excess of that authorized shall constitute a violation of the permit. Any anticipated facility expansions, or treatment modifications which will result in new, different, or increased effluents or discharges must be reported by submission of a new application or, if such changes will not violate the limitations specified in this permit, by notice to the permit issuing authority of such changes. Following such notice, the permit may be modified to specify and limit any constituents not previously limited.

2. Noncompliance Notification

If, for any reason, the permittee does not comply with or will be unable to comply with the conditions, requirements and limitations specified in this permit, the permittee shall provide the Administrator with the following information, in writing, within five (5) days of becoming aware of such conditions:

- a. A description of the noncompliance; and,
- b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate and prevent recurrence of the noncompliance.

3. Facilities Operation

The permittee shall at all times maintain 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.

4. 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 minimize any adverse impact to waters of the State resulting from noncompliance with any limitations specified in this permit.

5. 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, in accordance with the procedure specified in Part II.A.2 above.

B. RESPONSIBILITIES

1. Right of Entry

The permittee shall allow the Administrator and/or his authorized representatives, upon the presentation of credentials:

- a. 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
- b. 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.

2. Transfer of Ownership or Control

In the event of any change in ownership or control, the permittee shall notify the succeeding owner of the existence of this permit, in writing, at the earliest possible date to allow sufficient time for the succeeding owner to demonstrate financial responsibility to the Division within 30 days prior to transfer of ownership. The letter shall include the date agreed upon by both parties for the transfer of ownership. A copy of the letter shall be forwarded to the Administrator. All transfers of permits

shall be approved by the Administrator of the Division of Environmental Protection. The Administrator may require modification, or revocation with subsequent reissuance of the permit, to change the name of the new permittee and incorporate additional requirements as deemed necessary due to any changes made to the injection wells or system by the new permittee.

3. 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.

4. 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:

- a. Violation of any terms or conditions of this permit;
- b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or
- c. A change in any condition that requires either a temporary or permanent reduction or elimination of the effluent or discharge.

5. Civil and Criminal Liability

- a. Nothing in this permit shall be construed to relieve the permittee from civil or criminal penalties for noncompliance.
- b. 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.
- c. 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.

Attachment A

Plugging and Abandonment Plan

ATTACHMENT B

UIC Monitoring Report Summary and Check List - UNEV50033

Please submit this completed page with every monitoring report.

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

	Sampling point	Water Chem
a.	the sampling port downstream of the power plant but prior to any diversions to individual injection well(s);	Annually
b.	Production wells; and	Annually
c.	surface discharge at rock muffler, <i>SPRAY</i>	Quarterly

	Parameter	Monitoring Frequency & Location
a)	Production rate, gpm	Continuous recording gauge(s) at the power plant site.
b)	Injection rate, gpm	Daily readings from wellhead gauge(s).
c)	Injection pressure, psig	Daily readings from wellhead gauge(s).
d)	Injection temperature, degF	Continuous recording gauge at the power plant or on gauge(s) at the wellhead.
e)	surface discharge flow rate	Daily average flow rate to rock muffler and other surface discharges

- _____ a. Check list form attached to this permit as Attachment B, submit with every report ;
- _____ b. The results of the chemical analyses as required by Parts I.C.1. The permittee shall include a **five-year historical chart** showing the following values for the injectate and surface discharge: **TDS, chloride, fluoride, boron, lithium, and injection rate and pressure (showing monthly averages)**;
- _____ c. For each month in the reporting period the total volume of fluid produced and the total volume of fluid injected (gal/month) and the average and highest production and injection rate (Note: report blowdown separate from geothermal waters);
- _____ d. For each month in the reporting period, the average and highest injection pressure for each injection well reported in psig ;
- _____ e. For each month in the reporting period the average and lowest injection temperature reported in deg. F;
- _____ f. For each month in the reporting period, the total monthly volume and average rate (gallons per minute) of water discharged from the rock muffler outfall pipe or other surface discharge outfalls;
- _____ g. Summary narrative analysis of monitoring activities for that 3 month period. 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; and all tests and wellhead maintenance performed on the wells within the project area;
- _____ h. A list of all chemical additives used during the quarter in the produced-geothermal, including but not limited to, scale and corrosion inhibitors, biocide, etc. Include product name and amount/volume and/or rate used, and amount of chemical stored on site as of the report date ; and
- Annually
_____ i. list of all production, injection, observation and test wells located within the project area and utilized by the permittee or their affiliates. Said 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. All wells reported after the effective date of this permit will require submittal of a map indicating their location.

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

Attachment C

UIC Comprehensive Constituent List

Primary and Secondary Drinking Water Standards						
for Receiving Ground Water						
Analysis for the following constituents must be submitted with a UIC application or for approval of new sources of water (do not sample for any constituent that has been crossed out)						
Analysis must be conducted by a State of Nevada Certified Laboratory						
Parameter	Units	Standard	EPA Method	Method Description		
TDS	mg/L	500 - 1000	EPA 160.1	gravimetric		
pH	standard units	6.5 - 8.5	EPA 150.1	electrometric		
electrical conductivity	umhos/cm	at 25 degC	EPA 120.1	conductivity cell		
alkalinity (CaCO3)	mg/L	-	EPA 310.0	titrimetric		
silica	mg/L	-				
calcium	mg/L	-	EPA 200.7	ICP		
sodium	mg/L	-	EPA 200.7	ICP		
magnesium	mg/L	125 - 150	EPA 200.7	ICP		
potassium	mg/L		EPA 200.7	ICP		
chloride	mg/L	250 - 400	EPA 200.7	ICP	EPA 300.0	Ion Chromatography
sulfate	mg/L	250 - 500	EPA 200.7	ICP		
nitrate as N	mg/L	10	EPA 300.0	Ion Chromatography		
bicarbonate	mg/L		EPA 310.1			
carbonate	mg/L		EPA 310.1			
Metals						
antimony	mg/L	0.006	EPA 200.8	ICP-MS		
arsenic	mg/L	0.05	EPA 200.8	ICP-MS		
barium	mg/L	2	EPA 200.8	ICP-MS		
beryllium	mg/L	0.004	EPA 200.8	ICP-MS		
boron	mg/L		EPA 200.8	ICP-MS		
cadmium	mg/L	0.005	EPA 200.8	ICP-MS		
chromium	mg/L	0.1	EPA 200.8	ICP-MS		
copper	mg/L	1.3	EPA 200.8	ICP-MS		
fluoride	mg/L	4	EPA 300.0	Ion Chromatography		
lead	mg/L	0.015	EPA 200.8	ICP-MS		
iron	mg/L	0.3 - 0.6	EPA 200.7	ICP-OES		
manganese	mg/L	0.1	EPA 200.8	ICP-MS		
mercury	mg/L	0.002	EPA 245.1	AA Cold Vapor		
nickel	mg/L	0.1	EPA 200.8	ICP-MS		
selenium	mg/L	0.01	EPA 200.8	ICP-MS		
silver	mg/L	0.5	EPA 200.8	ICP-MS		
thallium	mg/L	0.002	EPA 200.8	ICP-MS		
zinc	mg/L	5	EPA 200.8	ICP-MS		
gross alpha	pci/L	15				
gross beta	pci/L	50				
turbidity	mg/L					

Note: the standard values listed above are for reference only, the actual limitations are based on baseline constituent values of the geothermal water.