

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

FACT SHEET

(pursuant to NAC 445A.236)

Permittee: USG Nevada, LLC
P.O. Box 10
Empire, Nevada 89405

Permit: NEV94003

Locations: U.S. Geothermal Inc. San Emidio Geothermal Power Plant
San Emidio Desert, Washoe County, Nevada
Township 29N, Range 23E, Sections 16 and 21 MDB&M

Generating Plant Location: Latitude: 40° 22' 10" N
Longitude: 119° 24' 20" W
Discharge Location: Latitude: 40° 22' 27" N
Longitude: 119° 24' 30" W

Flow: 0.5 Million Gallons per Day (MGD)

Drinking Water Protection Areas and Wellhead Protection Areas:

The facility is not located within a Drinking Water Protection Area (DWPA) around any public water supply well. There is currently no established Wellhead Protection Area (WHPA) for this location.

Bureau of Corrective Actions:

There are no Bureau of Corrective Actions remediation sites within one mile of this location.

General Description:

Permit NEV94003, as originally issued to Empire Foods, LLC, , incorporated Groundwater Discharge Permit NEV99013 and temporary Groundwater Discharge Permit TNEV2000382, both issued to Empire Energy, LLC. The Empire Group, LLC owned both Empire Energy LLC and Empire Foods LLC.

The original NEV94003 authorized the Permittee to discharge three (3) separate wastewater streams. The first waste stream discharge was spent wash water (from potable source) and blanch water (from geothermal source). Wash water was used to wash onions and garlic prior to processing. The wash water was treated by screening to remove onion and garlic debris, followed by settling in a lined settling pond. This water was stored in an irrigation pond and land applied via pasture spray irrigation, or was discharged to one of two 10-acre evapotranspiration/percolation saltgrass fields via flood irrigation. The maximum permitted combined discharge to the settling pond is 0.40 MGD for any one day. The maximum 30-day average flow to the settling pond is 0.30 MGD.

The second discharge stream was geothermal water used in the dehydration plant. Approximately 50% of the fluid from the dehydration plant was pumped to the geothermal power plant for power generation; and was subsequently re-injected as authorized by Permit UNEV87041. The remainder was cooled and discharged to one of two wetland areas in the San Emidio Desert.

The third discharge stream is from the power plant cooling towers. The geothermal power plant

imports potable water for use in the cooling towers from a well approximately 5 miles away from the facility. Sulfuric acid, bleach and phosphoric acid are used to control pH, algae and corrosion. A bleed-off stream from the cooling towers is used to control the build up of dissolved solids in the cooling water. The current permit authorizes the Permittee to discharge the water from the cooling towers to either an approximately two-acre evaporation/infiltration pond or a pasture for spray irrigation. The overflow from the pond is discharged to an adjacent wetland area where it infiltrates, evaporates or is utilized by the wetland vegetation.

Due to economic conditions, ownership of the dehydration facility reverted to Intermountain Federal Landbank Association, and the facility discharge ceased in 2004. The Permittee requested at that time that references to the dehydration plant wash/bleach water discharge (waste stream one, above) be removed from the permit. In April 2008, the Empire Energy generating facility was purchased by U. S. Geothermal Inc., which submitted the application for renewal of the permit in 2009. At that time, the Permittee requested that references to the geothermal discharges associated with dehydration plant (waste stream two, above) also be removed from the permit. The renewed permit will be for discharge from the power plant cooling tower only (waste stream three, above).

Discharge Flow and Characteristics:

The cooling tower bleed-off discharge is potable water that has been re-circulated through the cooling system, thereby concentrating any contained impurities. During the period from January 2005 through September 2010, the following discharge characteristics of the cooling water bleed-off fluid were reported in Discharge Monitoring Reports:

Parameter	Permit Limit	Average	Maximum	Minimum
Flow (MGD)	0.22	0.182	0.36	0.02
Total Dissolved Solids (mg/l)	5000	1972.6	4100	320
pH (Standard Units)	6.5 to 9.5	8.459	8.97	5.2

Receiving Water Characteristics:

The groundwater in the vicinity of the discharges ranges from 0 to 10 feet below ground surface, meets all primary drinking water standards except fluoride, 7.7 mg/l, and exceeds the secondary standards for total dissolved solids, 11,035 mg/l; chloride, 5,000 mg/l; sulfate, 1,400 mg/l; iron, 0.97 mg/l; and manganese, 0.99 mg/l; with elevated concentrations magnesium, 330 mg/l. The playa groundwater is similar to the geothermal fluid for most constituents but has higher total dissolved solids content.

Proposed Discharge Limitations and Monitoring Requirements:

The discharge shall be limited and monitored by the Permittee as specified below:

Monitoring Locations:

- a. Discharge from the four (4) inch PVC pipe to the evaporation/infiltration pond;
- b. Flow meter on discharge pipe to evaporation/infiltration pond; and
- c. From the constructed wetlands, as far from the pond overflow as possible.

TABLE I.A.1: DISCHARGE LIMITATIONS AND REQUIREMENTS

PARAMETER	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS		
	30 - Day Average	Daily Maximum	Sample Location	Measurement Frequency	Sample Type
Flow (MGD)	0.50	Monitor and Report	b	Continuous	Flow Meter
Total Dissolved Solids (mg/l)	4,000	5,000	a	Monthly	Discrete
pH ¹ (Standard Units)	6.5 to 9.5		a	Monthly	Discrete
Profile I ²	Monitor and Report		c	Annually	Discrete

- (1). Field measurement.
- (2). A copy of the Profile I is included as Appendix A. Sample and report results in the 4th Quarter Discharge Monitoring Report (DMR).

Schedule of Compliance and Special Conditions:

The Permittee shall implement and comply with the provisions of the schedule of compliance after approval by the Administrator, including in said implementation and compliance, any additions or modifications that the Administrator may make in approving the schedule of compliance.

- a. The Permittee shall achieve compliance with the effluent limitations upon issuance of the permit.
- b. **By MMM DD, 2011**, the Permittee shall submit for review and approval an O & M Manual, compiled in accordance with appropriate sections of guidance document WTS-2, “*Minimum Information Required for an Operation and Maintenance Manual for a Wastewater Treatment Plant*”, and signed by an engineer registered in the State of Nevada.

Rationale for Permit Requirements: Monitoring is required to verify that the discharged fluids are of similar, or better, quality than the playa groundwater and that the fluid temperature has been reduced to a level that will not adversely impact wildlife or the public.

Proposed Determination: The Division has made the tentative determination to issue the proposed permit for a period of five (5) years.

Procedures for Public Comment: The Notice of the Division’s intent to renew a permit authorizing the facility to discharge extracted shallow groundwater into the groundwater, subject to the conditions contained within the permit is being sent to the **Reno Gazette Journal** for publication. The notice is being mailed to interested persons on our mailing list. Anyone wishing to comment on the proposed permit can do so in writing for a period of thirty (30) days following the date of the public notice. The comment period can be extended at the discretion of the Administrator. The deadline date at the Division for receipt of all comments pertaining to this public notice period is **March 4, 2011 at 5:00 P.M.**

A public hearing on the proposed determination can be requested by the applicant, any affected State, any affected interstate agency, the Regional Administrator or any interested agency, person or group of

persons. The request must be filed within the comment period and must indicate the interest of the person filing the request and the reasons why a hearing is warranted.

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 must 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.

Prepared by: Janine O. Hartley, P.E.
Draft: December 2010

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