

California Regional Water Quality Control Board  
North Coast Region

NOTIFICATION, MONITORING, AND REPORTING PROGRAM NO. R1-2002-0089

FOR

CALPINE CORPORATION  
FOURMILE HILL GEOTHERMAL EXPLORATION DRILLING PROJECT  
GLASS MOUNTAIN KNOWN GEOTHERMAL RESOURCE AREA  
AND  
U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE  
AND  
U.S. DEPARTMENT OF INTERIOR, BUREAU OF LAND MANAGEMENT

Siskiyou County

**NOTIFICATION**

PRIOR TO CONSTRUCTION

The discharger shall submit a notice, in writing, to the Regional Water Board at least seven days prior to any construction associated with drilling site preparation, well drilling, and road construction. The notice shall include:

1. Proposed construction dates
2. Location of the facilities
3. Description of the facilities
4. Method of construction
5. Proposed location of ultimate disposal of drilling muds

CERTIFICATION PRIOR TO DISCHARGE

The discharger shall submit a written certification to the Regional Water Board after construction or reconstruction of a drilling waste disposal sump and prior to any discharge. The certification shall include the following information:

1. Permeability of the drilling waste disposal sump liner
2. Thickness of the drilling waste disposal sump liner

PROGRESS REPORTS

The discharger shall notify the Regional Water Board, in writing, no later than five days after the following events:

1. First waste discharge to a drilling waste disposal sump
2. Completion of each well drilled within the lease area

3. Completion of waste discharge to a drilling waste disposal sump
4. Completion of drilling waste disposal sump closing activities

### WASTE TRANSFERS

The discharger shall record all transfers of waste from drilling waste disposal sumps. The record shall include the type and amount of waste removed and the location of the new disposal site. This information shall be submitted to the Regional Water Board monthly, by the first day of the second month following the monitoring period.

### CIRCULATION LOSS

The discharger shall immediately notify the Regional Water Board of any circulation loss during the construction of a well at depths less than 1300 feet. The notice shall include:

1. Location of the well,
2. Well depth at the circulation loss,
3. Amount of drilling mud lost, and Method of correction.

## **MONITORING**

### DRILLING

During well drilling operations, at each circulation loss event, representative samples of the drilling mud mixture being used during circulation loss shall be obtained. Drilling mud samples shall be analyzed for Total Metals and pH.

Upon completion of well drilling and testing operations and prior to abandonment of each site, representative samples residual liquid wastes (geothermal fluids) and/or solids shall be obtained from each containment sump. The residue shall be analyzed for the constituents listed below as well as other constituents typically found in geothermal wastes, using composite samples, to demonstrate that the wastes are not designated or hazardous and is compatible with on-site disposal as described in Findings No. 11 and 12.

### GEOHERMAL FLUIDS TRANSFER PIPELINE

Prior transfer, geothermal fluids grab samples shall be collected and analyzed for the constituent samples listed below as well as other constituents typically found in geothermal fluids. Grab samples shall be collected four hours after the fluids start discharging into the sump.

<b><u>Constituents</u></b>	<b><u>Units</u></b>
pH	pH units
Specific Conductivity	micromhos/cm
Total Suspended Solids	mg/L
Total Dissolved Solids	mg/L
Ammonia	mg/L
Chlorides	mg/L
Nitrate	mg/l
Nitrite	mg/L
Antimony	mg/L
Arsenic	mg/L
Beryllium	mg/L
Boron	mg/L
Cadmium	mg/L
Cobalt	mg/L
Copper	mg/L
Chromium	mg/l
Mercury	mg/l
Iron	mg/L
Lead	mg/L
Molybdenum	mg/L
Nickel	mg/L
Selenium	mg/L
Silver	mg/L
Sulfate	mg/L
Sulfite	mg/L
Thallium	mg/L
Vanadium	mg/L

#### **EARTHQUAKE EVENT 5 MAGNITUDE OR GREATER**

The discharger shall monitor the integrity of the freshwater/geothermal fluid transfer pipeline following the occurrence of a magnitude 5 or greater earthquake event.

#### **REPORTING**

##### **DRILLING**

In reporting the monitoring data, the discharger shall submit monitoring reports to the Regional Water Board such that they are received by the first day of the second month following the monitoring period. The data shall be summarized in such manner to illustrate clearly the compliance with waste discharge requirements.

GEOHERMAL FLUIDS TRANSFER PIPELINE

Analysis results from grab samples shall be submitted to the Regional water board 24 hours before geothermal fluid transfer commences.

Ordered by \_\_\_\_\_

Susan A. Warner  
Executive Officer

September 26, 2002