

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

ORDER NO. 79-110

WASTE DISCHARGE REQUIREMENTS
FOR
OCCIDENTAL GEOTHERMAL, INC.
East of Brawley - Imperial County

The California Regional Water Quality Control Board, Colorado River Basin Region, finds that:

1. Occidental Geothermal, Inc. (hereinafter also referred to as the discharger), 5000 Stockdale Hwy., Bakersfield, CA 93309, submitted a Report of Waste Discharge, dated September 24, 1979.
2. The discharger proposes to drill four geothermal wells in the Brawley area. Two wells are to be drilled at each of the following sites:
 - Rutherford Bros. No. 1 SE 1/4 of the SE 1/4 of Section 13, T13S, R15E, SBB&M
 - Rutherford No. 2 NW 1/4 of the SE 1/4 of Section 19, T13S, R16E, SBB&M
3. An impermeable mud sump, 100 feet by 50 feet by 10 feet deep with an approximate capacity of 300,000 gallons, and a impermeable test fluid sump, 270 feet by 270 feet by 10 feet deep with an approximate capacity of five million gallons would be constructed at each site. Each site would utilize about 3.0 acres of surface area.
4. The discharger proposes to discharge into each mud sump a maximum of 90,000 gallons of drilling mud. Following some evaporation, the residual mud would be removed from the sumps and discharged at a solid waste disposal site approved by the Regional Board to receive this waste.
5. The drilling mud components which may be used are:

Bentonite	Tannic Acid	Sodium Bicarbonate
Lignite	Sepiolite	Sodium Tetrphosphate
Caustic Soda	Cypan	Sodium Chloride
Sodium Carbonate	Potassium Hydroxide	Aluminum Stearate

*Cancelled
9/22/88*

Bentonite, Lignite and Sepiolite are the main components; the other substances are additives and may or may not be used depending on the particular drilling conditions. (Sepiolite - a clay-based mud, mined near Latrop Wells, NV).

6. The discharger proposes to discharge into each test sump approximately 20,000 gallons of cleanout fluid and 5 million gallons of flow test fluid. Final disposal would be by subsurface reinjection, or after some evaporation the residual mud would be discharged at a Class I or Class II-1 solid waste disposal site approved by the Regional Board to receive this waste.
7. The discharger is hereby informed that there are no solid waste disposal sites in the Colorado River Basin Region at this time that have been approved by the Regional Board to receive geothermal salt wastes.
8. Flow from production testing of geothermal wells would be injected subsurface.
9. The Water Quality Control Plan for the West Colorado River Basin Region was adopted on April 10, 1975. The Basin Plan contains water quality objectives for Imperial Hydrologic Unit.
10. Beneficial uses to be protected by this Order are as follows:
 - a. Groundwater
 1. Shallow groundwaters at the discharge location are saline and are not beneficially used.
 2. Deep groundwaters are saline and are being investigated for geothermal development.
 - b. New and Alamo Rivers and Imperial Valley Irrigation Drains
 1. Transport of dissolved solids to Salton Sea for agricultural soil salinity control.
 2. Freshwater replenishment for Salton Sea.
 3. Freshwater habitat for fish and wildlife.
 4. Recreation - nonwater contact.
11. Imperial County Planning Department adopted on November 14, 1979, Mitigated Negative Declaration ISN 972-79 for these wells. The Regional Board has reviewed this Negative Declaration. The below waste discharge requirements are designed to assure against any significant adverse effects on water quality.

12. The Board has notified the discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the proposed discharge.
13. The Board in a public meeting heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, Occidental Geothermal, Inc., shall comply with the following:

A. Discharge Specifications

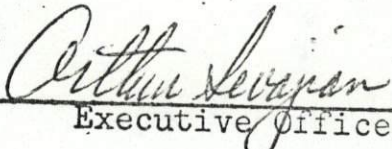
1. Neither the treatment nor the discharge of wastes shall create a pollution or a nuisance as defined in Division 7 of the California Water Code.
2. Geothermal fluids and other wastes shall not enter any rivers, canals, drainage channels, or drains (including subsurface drainage systems) which could provide flow or seepage to Salton Sea.
3. Temporary discharge and/or storage of drilling mud, drill cuttings, cleanout fluid and flow test fluid other than into mud or test sumps from which there is no seepage or overflow, is prohibited.
4. The sumps shall be constructed so that the fluids contained within shall not penetrate through the lining during the containment period. These facilities shall be used for temporary storage only.
5. Adequate protective works and maintenance shall be provided to assure that the sumps will not become eroded or otherwise damaged during the project period, and/or until all well drilling, well cleanout, and flow test materials are removed.
6. A minimum freeboard of at least two (2) feet shall be maintained in the test fluid sumps and one (1) foot in the mud sumps.
7. Flow test sumps shall be constructed to have a permeability not greater than 1×10^{-6} cm/sec.
8. The volume of fluids stored at each site shall not exceed 652,000 gallons (2 acre feet) for more than one year.
9. Fluids discharged by subsurface injection shall not be discharged into any subsurface zone which has a total dissolved solids concentration of less than 10,000 mg/l, unless the quality of the injection water is comparable to that of the receiving water.

10. Drilling muds, with extractable water containing a total dissolved solids concentration exceeding 6,000 mg/l, and brine and salt wastes, shall be discharged at a Class I or Class II-1 disposal site approved by the Regional Board to receive said waste.
11. Drilling muds, with extractable water containing a total dissolved solids concentration which is less than 6,000 mg/l, and not containing hazardous wastes may be disposed at a Class II-2 disposal site approved by the Regional Board to receive said wastes.
12. Final disposal of residual wastes in accordance with Specifications No.9,10. and 11 above, and cleanup of all contents, shall be accomplished upon abandonment of operations. Lack of construction or operational activity on the site for a period of one year shall constitute abandonment for the purposes of this Order.

B. Provisions

1. The discharger shall comply with "Monitoring and Reporting Program No. 79-110" and "General Provisions for Monitoring and Reporting", and future revisions thereto, as specified by the Executive Officer.
2. At least 10 days prior to the discharge of any materials into a mud or test sump, the discharger shall submit to the Regional Board a technical report showing the construction of the sump, and a certificate signed by a California Registered Civil Engineer stating that the sump and attendant facilities are constructed to meet the requirements of this Order.

I, Arthur Swajian, Executive Officer, do hereby certify that the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Colorado River Basin Region, on November 28, 1979.


Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

MONITORING AND REPORTING PROGRAM NO. 79-110

FOR

OCCIDENTAL GEOTHERMAL, INC.

East of Brawley - Imperial County

Location: Section 13, T13S, R15E, SBB&M, and Section 19, T13S, R16E,
SBB&M

MONITORING

Occidental Geothermal, Inc. shall report monitoring data to the Regional Board in accordance with the following schedule:

<u>Constituents</u>	<u>Units</u>	<u>Reporting Frequency</u>
1. Volume of geothermal wastes discharged to each sump	Gallons	Monthly
2. Volume contained in each sump	Gallons	Monthly
3. Total dissolved solids content of waste fluid contained in each sump.	mg/l	Monthly
4. Volume directly reinjected to subsurface strata from each production well	Gallons	Monthly
5. Total dissolved solids concentration of waste fluid injected into each injection well	mg/l	Monthly
6. Total dissolved solids concentration of ground-water contained in strata receiving waste fluid injection	mg/l	At least 10 days prior to commencement of injection
7. Location and depth of each injection well		At least 10 days prior to commencement of injection

<u>Constituents</u>	<u>Unit</u>	<u>Reporting Frequency</u>
8. Calibrated electrical conductivity of flow from tile drain system underlying the area of each sump	micromhos/cm	Daily*, Monday through Friday
9. Within 10 days after the initial discharge of any geothermal fluids from a well, the discharger shall report said initial discharge to the Board.		
10. Immediate reporting of any accidental spillage or release of waste material, and plan for immediate measures being taken to correct same and to limit detrimental effects.		
11. Estimate of total amount (tons) of saline drilling muds and salt and brine waste hauled to Class I or Class II-1 solid waste disposal site - immediately upon completion of haul.		
12. Estimate of total amount (tons) of non-saline drilling muds hauled to a Class II-2 solid waste disposal site - upon completion of operations - reported in final monitoring report.		
13. Report of completion of removal of all geothermal wastes from the sumps - reported within one week following completion of work.		
14. At least 10 days prior to destruction of any sump, the discharger shall request a Regional Board staff inspection and approval of the cleanup procedure.		

REPORTING

The above monitoring program shall be implemented immediately upon commencement of discharge at each site.

Monthly reports shall be submitted to the Regional Board by the 15th day of the following month. Reports for Item 10 (above) shall be forwarded immediately, and if at all possible, shall be preceded by phone communication to the Regional Board's office (714-346-7491). Copies of the reports submitted to the Board pursuant to this Monitoring and Reporting Program shall be maintained at the operations site, and shall also be made available to staff of the Regional Board upon request.

*Tile drain monitoring shall commence one (1) week prior to the initial discharge of geothermal fluids into each sump, and shall continue until wastes are removed from each sump.

Mail reports to:

California Regional Water Quality Control Board
Colorado River Basin Region
73-271 Highway 111, Suite 21
Palm Desert, CA 92260

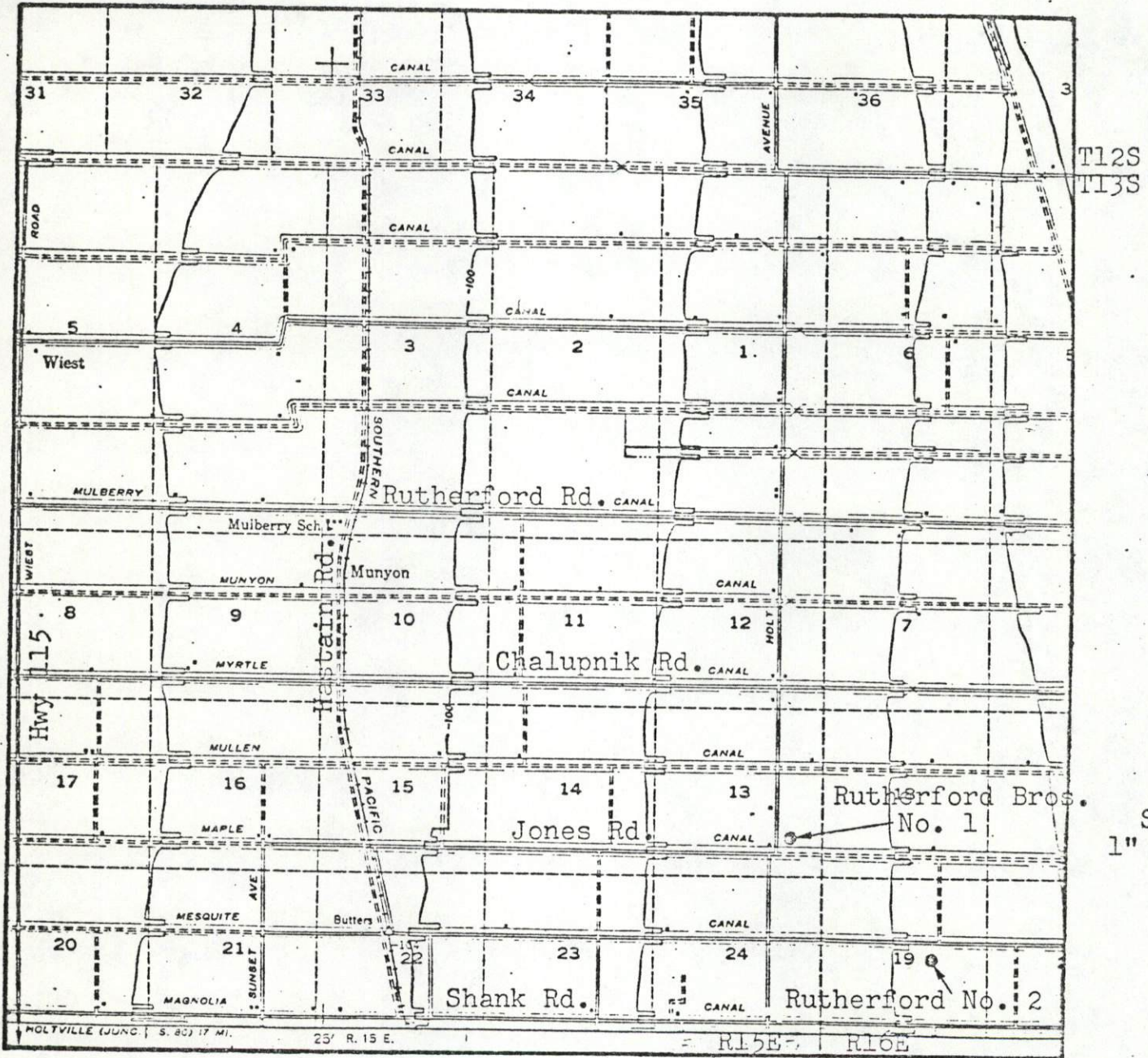
Ordered by

Arthur Sevajian
Executive Officer

November 28, 1979

Date

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD - 7



SITE MAP

OCCIDENTAL GEOTHERMAL, INC.
 East of Brawley - Imperial County
 Section 13, T13S, R15E, SBB&M, and
 Section 19, T13S, R16E, SBB&M
 USGS. Iris 15 min. Topographic Map

Order No. 79-110

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

GENERAL MONITORING AND REPORTING PROVISIONS

GENERAL PROVISIONS FOR SAMPLING AND ANALYSIS

Unless otherwise noted, all sampling, sample preservation, and analyses shall be conducted in accordance with the current edition of "Standard Methods for the Examination of Water and Waste Water" or approved by the Executive Officer.

All analyses shall be performed in a laboratory certified to perform such analyses by the California State Department of Public Health or a laboratory approved by the Executive Officer.

All samples shall be representative of the waste discharge under the conditions of peak load.

GENERAL PROVISIONS FOR REPORTING

For every item where the requirements are not met, the discharger shall submit a statement of the actions undertaken or proposed which will bring the discharge into full compliance with requirements at the earliest time and submit a timetable for correction.

By January 30 of each year, the discharger shall submit an annual report to the regional board. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year. In addition, the discharger shall discuss the compliance record and the corrective actions taken or planned which may be needed to bring the discharge into full compliance with the waste discharge requirements.

The discharger shall file a written report within 90 days after the average dry-weather flow for any month that equals or exceeds 75% of the design capacity of the waste treatment or disposal facilities. The report shall contain a schedule for studies, design, and other steps needed to provide additional capacity or limit the flow below the design capacity prior to the time when the waste flow rate equals the capacity of the present units.