

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
COLORADO RIVER BASIN REGION

ORDER NO. 78-51

WASTE DISCHARGE REQUIREMENTS  
FOR  
UNION OIL COMPANY OF CALIFORNIA  
GEOHERMAL WELLS  
Brawley Area - Imperial County

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

1. Union Oil Company of California (hereinafter also referred to as the discharger), 135 Main Street, Brawley, CA 92227, submitted a Report of Waste Discharge dated March 13, 1978.
2. The discharger proposes to drill up to 35 deep-test exploratory geothermal wells in the Brawley Area of Imperial County. Present plans are that 5 wells (Veysey No. 7, 8, 9, 10, and 11) will be drilled in the beginning and perhaps 12 wells will be drilled in the next two years. The drilling of the remainder of the wells will depend upon the test results from the first wells. The possible well locations are as follows:

Section 16, T13S, R14E, SBB&M

<u>Well No.</u>	<u>Location</u>
Veysey No. 7 (Alternate)	500'N, 2000'E, of SW corner
Veysey No. 5	1150'E, 2150'S, of NW corner
Veysey No. 4	1150'E, 750'S, of NW corner
Veysey No. 3	1150'E, 2150'S, of NW corner
Veysey No. 8, 9, 10, 11	500'N, 2500'E, of SW corner
Tow No. 1	500'N, 2050'E, of SE corner
Veysey No. 7	500'N, 2400'E, of SW corner

Section 9, T13S, R14E, SBB&M

<u>Well No.</u>	<u>Location</u>
Marsh No. 1	500'E, 350'N, of SW corner
C.H. Black No. 1	2000'E, 1800'N, of SW corner

*Rescinded by  
86-51  
7/9/86*

Section 21, T13S, R14E, SBB&M

<u>Well No.</u>	<u>Location</u>
Langford No. 1	2200'W, 300'N, of SE corner
Veysey No. 2	1800'S, 1300'W, of NE corner

Section 22, T13S, R14E, SBB&M

<u>Well No.</u>	<u>Location</u>
Gisler No. 1	1300'E, 400'N, of SW corner
Homer Slater No. 3	1500'W, 800'S, of NE corner
Del Rio Country Club No.1	1000'S, 300'E, of NW corner

Section 20, T13S, R14E, SBB&M

<u>Well No.</u>	<u>Location</u>
Dutton No. 1	200'W, 3450'S, of NE corner
D'Arrigo Bros.Co. No. 1	2100'E, 400'N, of SW corner
Tow No. 3	900'N, 2400'E, of SW corner
N-S Cattle Co. No. 1	2200'S, 200'W, of NE corner
Tow No. 2	900'E, 2000'S, of NW corner

Section 23, T13S, R14E, SBB&M

<u>Well No.</u>	<u>Location</u>
Alamitos Land Co. No. 1	1750'W, 300'N, of SE corner
Homer Slater No. 1	700'E, 2200'S, of NW corner

Section 14, T13S, R14E, SBB&M

<u>Well No.</u>	<u>Location</u>
D.H.Cox No. 2	2250'E, 2000'N, of SW corner
J.C.Rogers No. 1	1750'W, 750'S, of NE corner
Homer Slater No. 2	900'E, 500'N, of SW corner

Section 15, T13S, R14E, SBB&M

<u>Well No.</u>	<u>Location</u>
Jimenez No. 2	1800'W, 2250'N, of SE corner
Jimenez No. 3	2550'E, 3000'N, of SW corner
Jimenez No. 1	1938'W, 764'S, of NE corner
Cox No. 1	1900'N, 100'W, of SE corner
Veysey No. 1	1800'N, 250'E, of SW corner

Section 17, T13S, R14E, SBB&M

<u>Well No.</u>	<u>Location</u>
A.H.Kruger No. 2	2200'S, 1500'W, of NE corner
Donbee Farms, Inc. No. 1	2200'S, 2000'W, of NE corner
Kruger No. 1	450'W, 1850'N, of SE corner

3. Drilling mud and drilling cuttings in the amount of 346,000 gallons per well, would be discharged to a mud sump located near each well. The mud and cuttings will then be removed from the sump and discharged at a solid waste disposal site approved to receive this waste.
4. Well cleanout water in the amount of 374,000 gallons per well, would be discharged to the mud sump. After some evaporation of the liquid, the residue would be removed and discharged at a disposal site approved to receive this waste.
5. Flow from production testing of geothermal wells would be injected subsurface.
6. The drilling mud components which may be used are:

Magcogel (Bentonite)	Geo-Gel (Sepiolite)*
Tannathin (Lignite)	WL-100 (Sodium Polyacrylate)
Caustic Soda (NaOH)	Drilling Detergent (Soap)
Barite (Barium Sulfate)	Lost Circulation Materials
Bicarbonate of Soda	(Cottonseed hulls, fibers,
Soda Phosphate	mica flakes, cellophane)
Soda Ash	Cement

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.

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. 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.

9. 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. Limited public fishing activity.
10. Imperial County Planning Department has prepared Environmental Impact Reports No. 54-74 (dated March 29, 1974), 74-74 (dated November 5, 1974), 111-75 (dated September 28, 1975), 127-76 (dated January 17, 1976) and 162-77 (dated August 5, 1977) for these wells. Said reports state that this project will not have any significant adverse environmental effects upon the environment.
11. The Board has notified the discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the proposed discharge.
12. The Board in a public meeting heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, Union Oil Company of California 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 the Salton Sea or any canals, drainage channels, or drains (including subsurface drainage systems or aquifers) which could provide flow or seepage to Salton Sea.

3. Temporary discharge and/or storage of drilling mud, drilling cuttings and cleanout water other than into mud sumps from which there is no seepage or overflow, is prohibited.
4. Mud sumps shall be constructed so that the fluids contained within shall not penetrate through the lining during the containment period.
5. Adequate protective works and maintenance shall be provided to assure that mud sumps will not become eroded or otherwise damaged during the project period, and/or until all well drilling and cleanout materials are removed.
6. A minimum freeboard of at least two (2) feet shall be maintained in mud sumps.
7. 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.
8. Drilling muds, with extractable water containing a total dissolved solids concentration exceeding 6,000 mg/l, shall be discharged at a disposal site approved to receive said waste. Drilling muds, with extractable water containing a total dissolved solids concentration which is less than 6,000 mg/l, and not containing hazardous wastes such as chromium, may be either disposed of at the site or disposed of at a Class II disposal site approved to receive said wastes.
9. Final disposal of residual Group I wastes, as explained in Specifications No. 7 and 8 above, shall be accomplished:
  - a. Upon abandonment of operations. Lack of construction or operational activity at the site for a period of one year shall constitute abandonment for the purposes of this Order, or
  - b. Within 90 days after an approved Class II-1 site is placed into operation, in Imperial County.whichever occurs first.

#### B. Provisions

1. The discharger shall comply with "Monitoring and Reporting Program No. 78-51" and "General Provisions for Monitoring and Reporting", and future revisions thereto, as specified by the Executive Officer.
2. Prior to the discharge of any materials into a mud sump, the discharger shall submit to the Regional Board a technical report showing the construction of said 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.

3. Prior to the discharge of any fluids into any mud sump, the discharger shall submit a map of the tile drainage system underlying the sump.
4. This Order is for the discharge of only drilling mud, drilling cuttings and well cleanout water from the exploratory wells specified in Finding No. 2 (above).

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 July 12, 1978.

  
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Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
COLORADO RIVER BASIN REGION

MONITORING AND REPORTING PROGRAM NO. 78-51  
FOR

UNION OIL COMPANY OF CALIFORNIA  
GEOTHERMAL WELLS  
Brawley Area - Imperial County

Location: Sections 9, 14, 15, 16, 17, 20, 21, 22, 23, T13S, R14E, SBB&M

MONITORING

Union Oil Company of California 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 mud sump.	Gallons	Monthly
2. Volume contained in each mud sump.	Gallons	Monthly
3. Total dissolved solids content of waste fluid contained in each mud sump	mg/l	Monthly
4. Volume directly reinjected to subsurface strata from each geothermal 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 groundwater contained in strata receiving waste fluid injection	mg/l	At least 10 days prior to commencement of injection

*Revised by  
86-51  
7/9/86*

<u>Constituents</u>	<u>Units</u>	<u>Reporting Frequency</u>
7. Location and depth of each injection well		At least 10 days prior to commencement of injection
8. Within 10 days after the initial discharge of any geothermal fluids from a well, the discharger shall report said initial discharge to the Board.		
9. 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.		
10. Estimate of total amount (tons) of drilling muds hauled to a Class II solid waste disposal site - upon completion of operations - reported in final monitoring report.		
11. Report of completion of removal of all geothermal wastes from mud sumps - reported within one week following completion of work.		
12. At least 10 days prior to destruction of any mud 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 9 (above) shall be forwarded immediately, and if at all possible shall be preceded by phone communication to the Regional Board's office. (Phone (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.

Mail reports to:

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

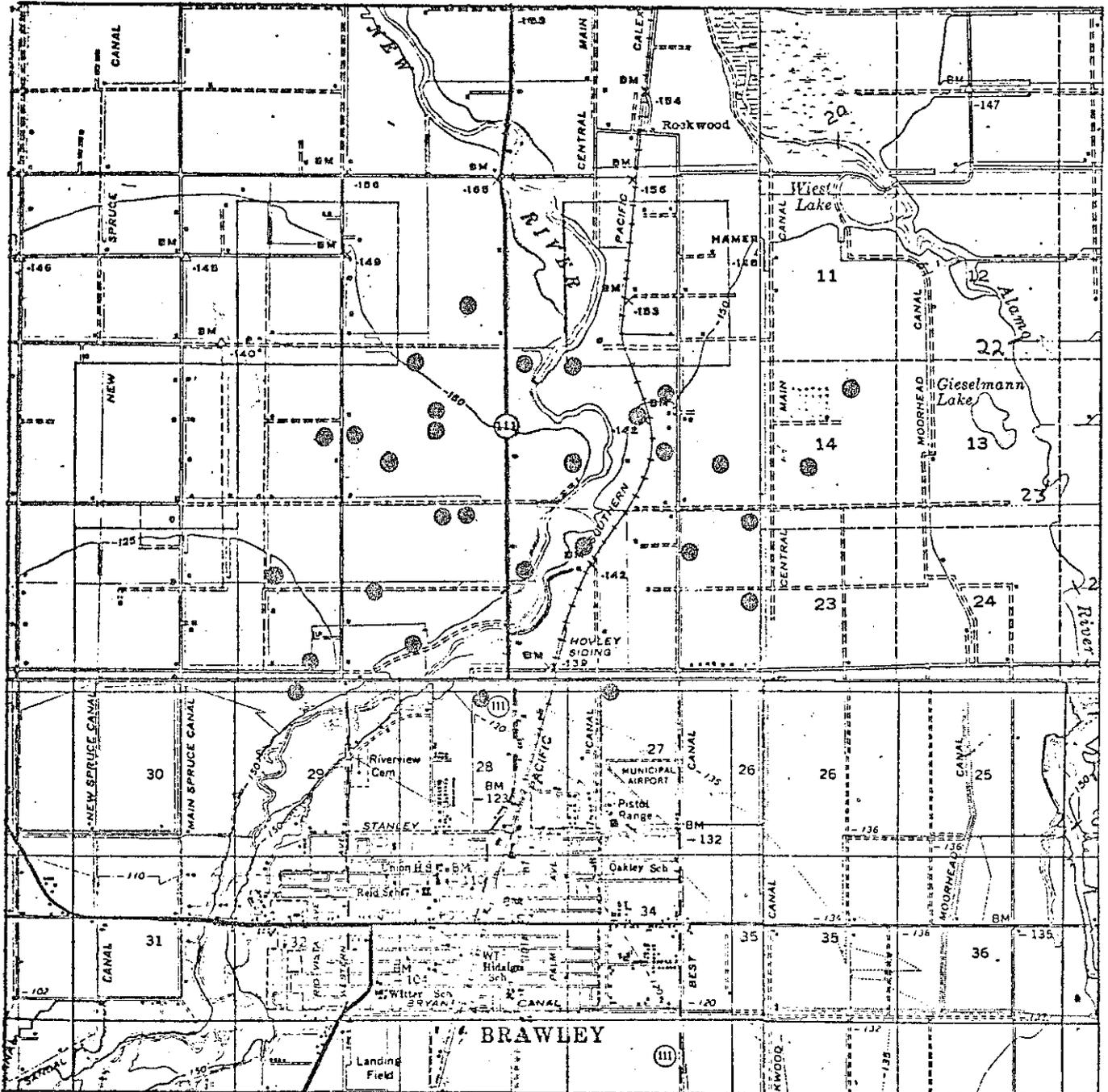
Ordered by

*Arthur Swajan*  
Executive Officer

July 12, 1978

Date

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD - 7



SITE MAP

UNION OIL COMPANY OF CALIFORNIA  
GEOTHERMAL WELLS  
Brawley Area - Imperial County  
U.S.G.S. Brawley, Calipatria, Holtville, Iris  
15' Topographic Maps



Scale:  
1" = 1 Mile

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