

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

ORDER NO. 88-7

WASTE DISCHARGE REQUIREMENTS
FOR
CHEVRON GEOTHERMAL COMPANY OF CALIFORNIA
Heber Geothermal Unit
Heber Known Geothermal Resource Area (KGRA)
Production and Injection Wells
Imperial County

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

1. Chevron Geothermal Company of California (hereinafter also referred to as the discharger), P.O. Box 7147, San Francisco, CA 94120-7147, submitted an updated Report of Waste Discharge, dated July 2, 1987.
2. The discharger proposes to drill up to 14 production wells from an 8-acre production island located in the E $\frac{1}{2}$ of the NW $\frac{1}{4}$ of Section 3, T17S, R14E, SBB&M. The wells will be directionally drilled from the production island. These wells will supply geothermal fluid to both the San Diego Gas & Electric Binary Power Plant and the Heber Geothermal Company (Dravo) Dual Flash Power Plant. Fluid supplied to the power plants will be returned through the already existing injection pipelines to injection islands which operate in accordance with existing Waste Discharge Requirements approved by the Regional Board (Orders No. 87-9 and 86-83).
3. The discharger has previously drilled two temperature observation borings in the Heber KGRA in accordance with Waste Discharge Requirements approved by the Regional Board (Order No. 86-31). The following information pertains to these temperature borings:

<u>Boring</u>	<u>Location</u>
GTW #4	NE $\frac{1}{4}$ of SE $\frac{1}{4}$ of Section 4, T17S, R14E, SBB&M
GTW #6	SW $\frac{1}{4}$ of NE $\frac{1}{4}$ of Section 3, T17S, R14E, SBB&M

Both borings were drilled between April 1986 and May 1986.

4. The discharger proposes to convert observation well GTW #6 to an injection well to be used in conjunction with the start-up facility at the production island described in Item 2 above. GTW #6 would be used as a disposal well for geothermal water produced from well start-ups and periodic production tests at the production island.
5. The discharger proposes to convert two previously existing exploratory wells into injection wells to be used for the returned fluid from the San Diego Gas & Electric Binary Power Plant. The following information pertains to the two exploratory wells:

*Changed
of names and
Ownership Bd. Ord. # 92-015
1/22/92*

*Revised
5/21/92*

C.B. Jackson #1

Holtz #1

Date Completed/Constructed:	9/12/74	3/22/73
Total Depth:	5968'	5147'
Exposed Intervals:	2542'-3312'	1852'-3570' 3765'-5107'

Locations in

T16S, R14E, SBB&M: NW $\frac{1}{4}$ of NE $\frac{1}{4}$, Section 32 NW $\frac{1}{4}$ of SE $\frac{1}{4}$, Section 32

6. The following wastes would be produced during construction and operation of the production and injection wells:
 - a. All wells would be drilled using a self-contained mud system. This system recirculates drilling mud and retains cuttings produced during drilling operations. No on-site sump is required or necessary for mud and/or cuttings disposal.
 - b. Well cleanout fluid, in the amount of approximately 500 barrels per well, would flow to portable metal tanks and either be injected back into the reservoir or transported to a waste management facility.
 - c. During well start-up operations and during periods of testing, the production wells would flow to an existing well start-up and testing facility which includes a separator stack and a 1500 barrel cement-lined sand pit. The fluid accumulated during these operations would then be pumped to the existing injection pipeline. Accumulations of sand and unreclaimable fluid in the sand pit would be periodically removed and discharged at a waste management facility.
 - d. Production fluids, during normal operations, would flow directly to the power plant and then flow to the injection island for return to the reservoir.
 - e. Any sand-fluid mixture would be removed from the geothermal fluid and discharged to the production island sand pit, with final disposal by injection and/or to a waste management facility.
 - f. Wastes produced during reworking of wells would be discharged to either the start-up and testing facility or portable tanks, with final disposal by injection and/or to a waste management facility.
7. The Water Quality Control Plan for the Colorado River Basin Region of California was adopted by the Regional Board on November 14, 1984.
8. The beneficial uses of the ground water of the Imperial Hydrologic Subunit, as set forth in the above Plan, are for municipal and industrial purposes in some areas. Shallow ground water in two (2) wells in the Heber area at a depth of 145 to 150 feet, have a total dissolved solids concentration of 9,410 mg/l and 5,410 mg/l, and are not beneficially used. Deep ground water in

the Heber area has a total dissolved solids concentration of 23,000 mg/l and is used for geothermal developments.

9. The Imperial County Planning Department adopted on December 12, 1979, Master Environmental Impact Report No. 213-79 for a 500 megawatt geothermal development at Heber and on August 12, 1987 approved a Notice of Determination for the new island described in Item 2 above. These reports indicate that this project would not have a significant effect on water quality.
10. The Board has notified the discharger and interested agencies and persons of its intent to revise waste discharge requirements for this facility.
11. The Board in a public meeting heard and considered all comments pertaining to the discharge.
12. The Imperial County Planning Department has required that the discharger post a blanket bond in the sum of \$150,000 to "indemnify the County for any costs incurred by the County in repairing any drill, test or production facility site, to as near as possible to its original state, and in abating any public nuisance caused by the principal's exploratory, testing, or producing operations."

IT IS HEREBY ORDERED, Chevron Geothermal 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 cleanout fluid and test fluid shall be discharged for temporary storage into either:
 - a. The well start-up and testing facility as described in Finding No. 6c; or
 - b. Portable metal above ground-containers as approved by the Executive Officer.

The well start-up and testing facility and metal containers shall be protected and maintained to ensure their effectiveness.

3. Final disposal of reclaimable fluid shall be by subsurface injection via the injection well island and/or to a waste management facility approved by the Regional Board to receive such waste.
4. Accumulations of sand and unreclaimable fluid shall be periodically removed and discharged at a waste management facility approved by the Regional Board to receive such waste.
5. Fluids discharged by subsurface injection shall be injected below the fracture pressure of the receiving aquifer and of the confining layer immediately above the receiving aquifer.

6. Fluids discharged by subsurface injection shall not be injected into any aquifer which has a total dissolved solids (TDS) concentration of less than 10,000 mg/l, unless the TDS concentration of the injection water is less than or equal to that of the receiving water and the discharger can demonstrate to the satisfaction of the Executive Officer that injection into said zone will not pose a threat to water quality.
7. Geothermal waste with extractable water containing a TDS concentration exceeding 6,000 mg/l shall be discharged at a Class I or Class II waste management facility approved by the Regional Board to receive such waste, unless an injection alternative is used in accordance with Specification A.6., above.
8. Geothermal waste with extractable water containing a TDS concentration less than 6,000 mg/l, and not containing hazardous constituents as defined in Article 11, Title 22 of the California Administrative Code, and future editions, shall be discharged at a waste management facility approved by the Regional Board to receive such waste, unless an injection alternative is used in accordance with Specification No. A.6., above.
9. Final disposal of residual wastes and cleanup of containment facilities shall be accomplished upon abandonment or closure of operations to the satisfaction of the Executive Officer. Lack of construction or operational activity on site for a period of one (1) year shall constitute abandonment for the purposes of this Order.

B. Provisions

1. The discharger shall comply with the "Monitoring and Reporting Program No. 88-7", and future revisions thereto, as specified by the Executive Officer.
2. Permanent (longer than one (1) year) onsite storage of geothermal fluid, cleanout fluid, and sand-fluid mixtures is prohibited.
3. The discharger shall submit to the Board, at least 30 days prior to commencement of operation at each well, a written report on the proposed method and estimated costs of cleanup and closure of each well site in accordance with the requirements of this Order.
4. The discharger shall submit to the Board, at least 30 days prior to discharge to any newly constructed facilities written adequate assurance that money is committed in the amount of \$10,000 to insure that all facilities are cleaned up and closed in accordance with the specifications and provisions of this Board Order (No. 88-7).
5. Prior to any change of ownership of these operations, the discharger shall transmit a copy of this Order to the succeeding owner/operator, and forward a copy of the transmittal letter to this Board.
6. This Order does not authorize violation of any federal, state, or local laws or regulations.
7. This Order supersedes Board Order No. 86-31.

I, Arthur Swajian, Executive Officer, do hereby certify 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 January 27, 1988.


Executive Officer

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION**

MONITORING AND REPORTING PROGRAM NO. 88-7
FOR
CHEVRON GEOTHERMAL COMPANY OF CALIFORNIA
Heber Geothermal Unit
Production and Injection Wells
Heber Known Geothermal Resource Area (KGRA)
Imperial County

Location of Discharge: NW $\frac{1}{4}$ of Section 3, NE $\frac{1}{4}$ of Section 3, SE $\frac{1}{4}$ of Section 4, T17S, R14E, and NE $\frac{1}{4}$ of Section 32, SE $\frac{1}{4}$ of Section 32, T16S, R14E, SBB&M

MONITORING

Chevron Geothermal Company of California shall report monitoring data to the Regional Board in accordance with the following schedule:

1. The discharger shall submit to the Board, at least 30 days prior to the commencement of operation at each well, a written report on the proposed method and estimated costs of cleanup and closure of each well site in accordance with requirements of Order No. 88-7.
2. The discharger shall submit a monthly report containing the following information:

<u>Parameter</u>	<u>Units</u>	<u>Reporting Frequency</u>
a. Volume and type of geothermal waste contained in each container.	Gallons	Monthly
b. Volume of drilling muds containing greater than 6,000 mg/l TDS concentration discharged at a Class I or Class II waste management facility, and name of facility.	Gallons	Monthly
c. Volume and TDS concentration of drilling mud containing less than 6,000 mg/l TDS discharged at a waste management facility, approved by the Regional Board, and name of facility.	Gallons and mg/l	Monthly
d. Volume and total dissolved solids (TDS) concentration of waste fluid injected into each injection well.	Gallons and mg/l	Monthly
e. Total dissolved solids concentration of ground water contained in strata proposed to receive waste fluid injection.	mg/l	At least 10 days prior to commencement of injection

3. Immediate reporting of any accidental spillage or release of waste material, and immediate measures taken to correct same and to limit detrimental effects.

REPORTING

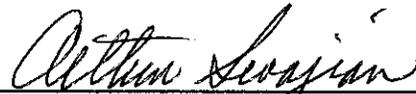
Except for Item 1, the above monitoring program shall be implemented immediately upon commencement of discharge at each site.

Monthly reports shall be submitted to the Regional Board by the 15th day of the following month. Written reports for Item 3 shall be forwarded immediately and shall be preceded by phone communication to the Regional Board's office. Phone No. (619) 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:

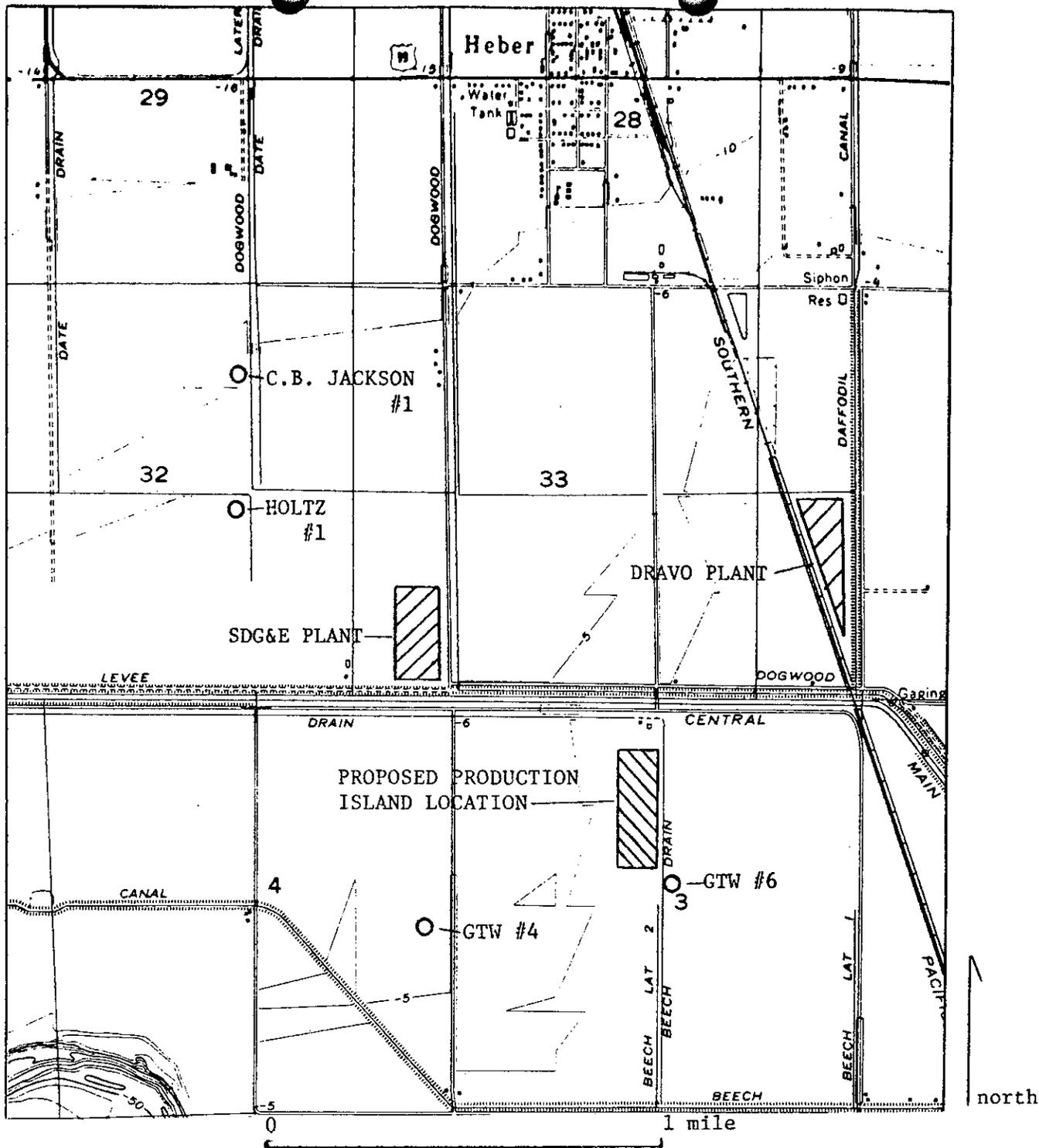
California Regional Water Quality Control Board
Colorado River Basin Region
73-271 Highway 111, Suite 21
Palm Desert, CA 92260

ORDERED BY:


Executive Officer

January 27, 1988
Date

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD-7



SITE MAP

CHEVRON GEOTHERMAL COMPANY OF CALIFORNIA
 Heber Geothermal Unit
 Production and Injection Wells
 Heber KGRA - Imperial County
 Sections 3 and 4, T17S, R14E, and
 Section 32, T16S, R14E, SBB&M
 USGS Heber 7.5 Min. Quadrangle