CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

ORDER NO. 87-9

WASTE DISCHARGE REQUIREMENTS
FOR
CHEVRON GEOTHERMAL COMPANY OF CALIFORNIA
Heber Geothermal Project - Binary Power Plant
Production and Injection Wells
South of Heber - 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 October 30, 1986.

2. The discharger has presently drilled seven (7) geothermal production wells on a 5-acre production island located in the SW 1/4, Section 33, T16S, R14E, SBB&M. These wells supply geothermal fluid to the 65 megawatt (gross) electric power generating plant operated by San Diego Gas & Electric. All wells have been directionally drilled from a production island immediately adjacent to the power plant and are the first seven listed below:

Well	Completion Date	Total Depth (measured)	Exposed Interval
HGU-101	07/20/84	7300'	4330'-6538'
HGU-102	05/13/84	6760'	3500'-6728'
HGU-103	08/11/84	6659'	4271'-6290'
HGU-104	06/04/84	4720'	2800'-4592'
HGU-105	08/31/84	5232'	2395'-5011'
HGU-106	06/20/84	4935'	2906'-4796'
HGU-107	02/16/84	10,749'	4430'-10,727'
HGU-108	to be completed in '86	Est. 6900'	Est. 4000'-6000'
HGU-109	to be completed in '87	Est. 8200;	Est. 6000'-8000'
HGU-110	to be completed in '87	Est. 4500'	Est. 2000'-4000'
HGU-111	to be completed in '87	Est. 4500'	Est. 2000'-4000'
HGU-112	to be completed in '87	Est. 8500'	Est. 6000'-8000'
HGU-113	to be completed in '87	Est. 6500'	Est. 4000'-6000'

changed of name + ownership Bd. Ord. # 92-015 Jan. 22/92

Superseded by Bd. Ord. #92-030 5/13/92

3. The discharger proposes to drill and operate up to 15 production wells (including the thirteen wells listed above) on the production island in Section 33.

4. The discharger has presently drilled seven (7) injection wells from a 3.5 acre injection island located in the SE 1/4, Section 30, T16S, R14E, SBB&M. All wells have been directionally drilled from the injection island.

Well	Completion Date	Total Depth (Measured)	Exposed Interval
HGU-151	11/06/84	4500'	2002'-4383'
HGU-152	09/27/84	4812'	2116'-4630'
HGU-153	12/01/84	6710'	4115'-6580'
HGU-154	10/20/84	6688'	4175'-6572'
HGU-155	12/17/84	4727'	2022'-4382'
HGU-156	10/19/86	6935'	Est. 3800'-6000'
HGU-157	11/17/86	6934'	4164'-6790'

5. The discharger proposes to drill and operate up to twelve injection wells (including seven (7) wells listed above) on the injection island in Section 30.

6. The discharger proposes to convert the existing observation well, Holtz No. 2 and drill up to two (2) additional injection wells from a 1-acre injection island located in the SE 1/4, Section 31, T16S, R14E, SBB&M. The two (2) additional wells would be directionally drilled from the injection island. The following information pertains to Holtz No. 2:

   Completed in 1972 by Magma Power

   Total Depth: 5000', Straight Hole

   Well workover: Chevron March 1984

   Recompleted with 8-5/8" linear;

   Exposed interval 3180'-3520', 3906'-4945'

7. 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.

g. The 3.5 acre injection island has a well backflow facility which includes a series of metal tanks with a combined capacity of 2,500 barrels and a separator stack. These will be used to receive geothermal fluid during well maintenance. A proposed sand pit could be constructed in the future to receive from 60,000 to 120,000 gallons of fluid and scale per year resulting from interior pipeline cleaning. Final disposal of wastes would be by injection and/or to a waste management facility.

   The southerly 1.0 acre injection island will not have a backflow facility installed. However, if a backflow system becomes necessary, a temporary facility similar to the one described above will be constructed.

8. The facility has been subject to waste discharge requirements adopted in Board Order No. 83-70.

9. The Water Quality Control Plan for the Colorado River Basin Region of California was adopted by the Regional Board on November 14, 1984.

10. 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.

11. 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. This report indicates that this project would not have a significant effect on water quality.

12. The Board has notified the discharger and interested agencies and persons of its intent to revise waste discharge requirements for this facility.

13. The Board in a public meeting heard and considered all comments pertaining to this proposed revision.

14. Imperial County Planning Department has required that the dicharger post a blanket bond in the sum of $150,000 to "idemnify 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. 7c; or

   b. Portable metal or other 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.

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.

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. 87-9", 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 are 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. 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.

5. This Order does not authorize violation of any federal, state, or local laws or regulations.

6. This Order supersedes Board Order No. 83-70.

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 21, 1987.

Arthur Swajian
Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

MONITORING AND REPORTING PROGRAM NO. 87-9
FOR
CHEVRON GEOTHERMAL COMPANY OF CALIFORNIA
Heber Geothermal Project - Binary Power Plant
Production and Injection Wells
South of Heber - Imperial County

Location of Discharge: SE 1/4 of Section 30, SE 1/4 of Section 31, and SW 1/4 of Section 33, 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. 87-9.

2. The discharger shall submit a monthly report containing the following information:

Parameter	Units	Reporting Frequency
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.

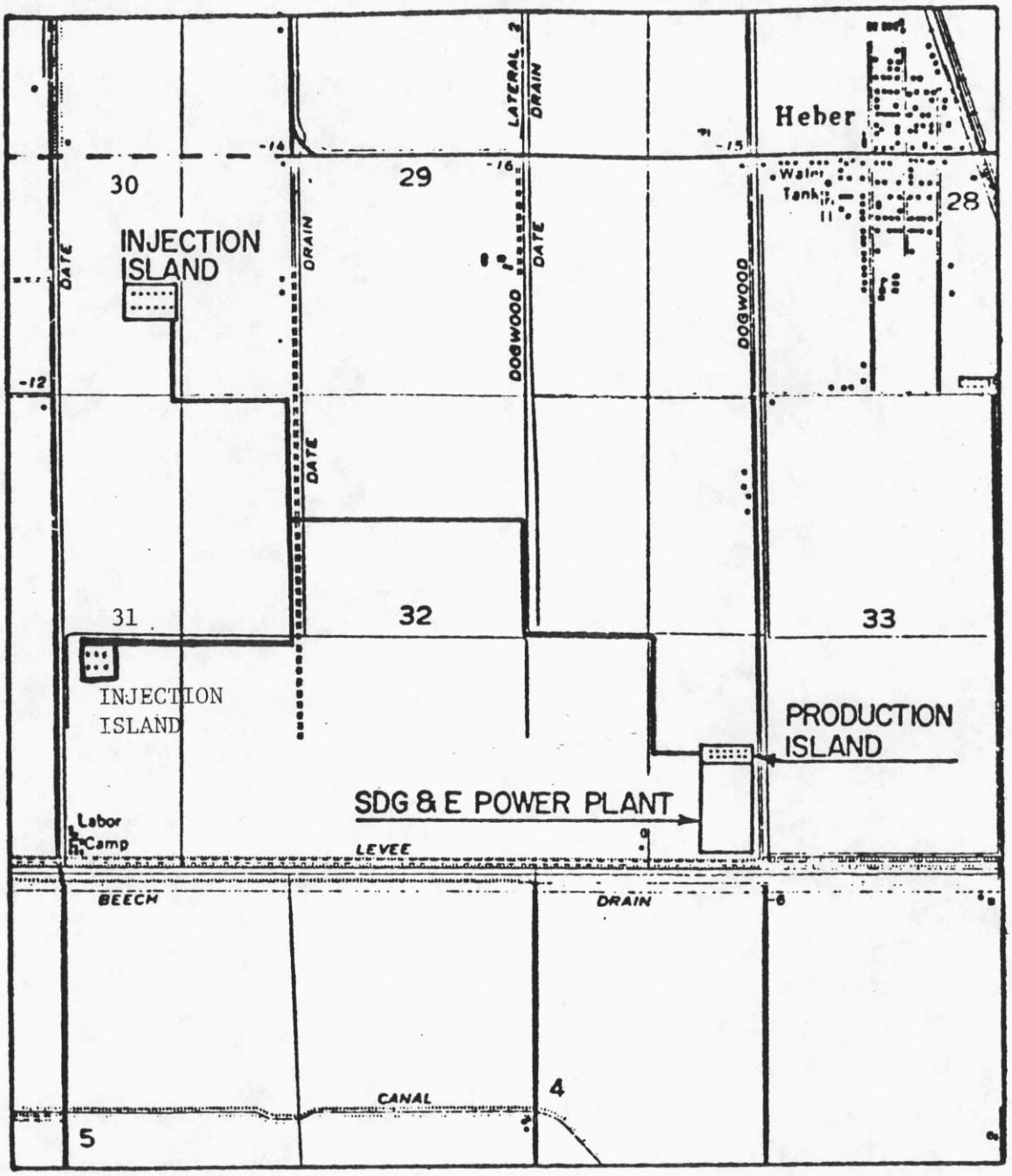
Monthly reports shall be submitted to the Regional Board by the 15th day of the following month. Written reports for Item 3 shall be forwarded immediately and shall be preceded by phone communication to the Regional Board's office. Phone No. (619) 346-7491. Copies of the reports submitted to the Board 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 21, 1987
Date



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Scale
1" = 2,000'

SITE MAP

CHEVRON GEOTHERMAL COMPANY OF CALIFORNIA
Heber Geothermal Project - Binary Power Plant
Production and Injection Wells
South of Heber - Imperial County
SE¼ of Section 30, SE¼ of Section 31, and SW¼ of Section 33, T16S, R14E, SBB&M
USGS Heber 7.5 min. Topographic Map