

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

ORDER NO. 93-025

WASTE DISCHARGE REQUIREMENTS
FOR
SECOND IMPERIAL GEOTHERMAL COMPANY
A CALIFORNIA LIMITED PARTNERSHIP
HEBER GEOTHERMAL UNIT
BINARY POWER PLANT AND GEOTHERMAL WELLFIELD
South of Heber - Imperial County

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

1. The Second Imperial Geothermal Company, A California Limited Partnership (hereinafter referred to as the discharger), 4000 Kruse Way Place, Building One, Suite 255, Lake Oswego, OR 97035, submitted a Report of Waste Discharge, dated December 21, 1992.
2. The proposed project would consist of drilling, testing, construction and operation of geothermal production and injection wells, construction and operation of production and injection pipeline systems and surface facilities related to the geothermal well field; the construction and operation of a 33 MW (net) binary electrical generating facility, and the construction of a 92 Kv transmission line from the power plant to the existing Imperial Irrigation District (IID) transmission line located approximately one mile east of the proposed power plant.
3. The proposed project would also consist of a geothermal wellfield with a sufficient number of wells to produce and inject approximately 6.0×10^6 pounds per hour (approximately 13,500 gallons per minute (gpm)) of geothermal fluid.
4. The discharger proposes to reutilize the following existing facilities previously utilized by Heber Geothermal Demonstration Project: Wells HGU-151 to HGU-157 (Section 30, T16S, R14E, SBB&M); Wells HGU-170 to HGU-171 (Section 31, T16S, R14E, SBB&M); and other existing wells and well locations (Section 31, 32, 33, T16S, R14E, SBB&M).
5. The discharger proposes to drill and operate up to 11 new geothermal production wells and 3 new geothermal injections wells in addition to operating wells previously utilized by the Heber Geothermal Demonstration Project.
6. Treatment chemicals are added to the cooling tower for pH control purposes and for corrosion, scale, and biological growth inhibition.
7. The proposed geothermal well sites would each be 2 acres in size and consist of a wellhead system, geothermal fluid pipelines, temporary drilling fluid basins (mudpit) and geothermal fluid storage basin.
8. The mudpits would be 75 feet long by 75 feet wide by 8 feet deep, and lined with clay to a certified maximum permeability of 1×10^{-6} cm/sec.

The geothermal fluid storage basins, which will hold fluids from flow testing and wellbore cleanouts, would be approximately 0.5 acres in size and would be used for intermittent discharge of geothermal fluid, sand from sand separators, or cooling tower blowdown water.

CHANGE NAME / OWNERSHIP
BY BOARD ORDER NO. RT-2004-0081

03/30/04

SUPERSEDED BY
BOARD ORDER NO. RT-2005-0063

*Change Ownership
By Ord. # 93-149
11/17/93*

These basins would be lined with clay to a certified maximum permeability of 1.0×10^{-6} cm/sec. The clay lining and the berms would be kept in a good condition through the life of the project.

10. The Water Quality Control Plan for the Colorado River Basin Region of California was adopted May 15, 1991 and designates the beneficial uses of ground and surface waters in this Region.
11. The beneficial uses of the ground water of the Imperial Hydrologic Unit are designated in the above Plan for municipal and industrial uses. Shallow ground water in two 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.
12. The Imperial County Planning Department adopted, in June 1992, the final Environmental Impact Report (SCH 77120564) Addendum for a 33 megawatt Geothermal Development at Heber. This addendum indicates that this project would not have a significant effect on water quality.
14. The Board has notified the discharger and all known interested agencies and persons of its intent to prescribe waste discharge requirements for this discharge.
15. The Board in a public meeting heard and considered all comments pertaining to this discharge.
16. Imperial County Planning Department has required the discharger to post a blanket bond in the sum of \$150,000 to "indemnify the County of any cost 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".
17. Prior to discharge, a bond acceptable to the Regional Board's Executive Officer will be posted by the discharger to cover expected cleanup costs for the protection of the waters of the State.
18. Drilling, operation, maintenance and abandonment of geothermal production and injection wells is regulated by the California Division of Oil and Gas (DOG), and regulation of underground injection is the responsibility of DOG. A Memorandum of Understanding between DOG and the State Water Resources Control Board was signed May 19, 1988 by the State Water Resources Control Board (hereinafter referred to as the State Water Board).

IT IS HEREBY ORDERED, that in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, the discharger shall comply with the following:

A. Discharge Specifications

1. The treatment or disposal of wastes at this facility shall not cause pollution or nuisance as defined in Sections 13050(l) and 13050(m) of Division 7 of the California Water Code.
2. Geothermal cleanout fluid, test and production fluid, and geothermal fluid and sand from the sand separators shall be discharged for temporary storage, for a maximum period of one year, into metal or other above-ground containers, or equivalent, approved by the Regional Board's Executive Officer.
3. All basins and containers shall be constructed, protected, and maintained to ensure their effectiveness.
4. 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.
5. Final disposal of residual wastes and cleanup of all containment basins and sumps shall be accomplished to the satisfaction of the Regional Board's Executive Officer upon abandonment

or closure 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 Board Order.

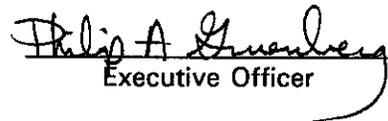
6. All containment basins shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods having a predicted frequency of once in 100 years.
7. Flow to the geothermal fluid basins shall be dissipated to prevent damage to the clay liner.
8. Fluids discharged by subsurface injection shall not be injected into any subsurface aquifer which has a TDS concentration of less than 10,000 mg/L, unless the TDS of the injection water is less than or equal to that of the receiving water, or the discharger can demonstrate to the satisfaction of the Regional Board's Executive Officer that injection into said zone will not pose a threat to water quality.
9. 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.
10. Geothermal waste shall be discharged at a waste management facility approved by the Regional Board to receive such waste.
11. Final disposal of residual wastes and cleanup of containment facilities shall be accomplished upon abandonment or closure of operations to the satisfaction of the Regional Board's 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 Board Order. Closure shall be carried out in accordance with Chapter 15, Article 8, for Class II impoundments.
12. All fluids discharged by subsurface injection shall not be injected into any subsurface aquifer without the approval of the California Division of Oil and Gas.
13. The waste disposal facility shall be designed, constructed, operated, and maintained to prevent inundation or washout due to floods having a predicted frequency of once in 100 years.
14. Once the wells at each well site in Findings No. 4 and 5 have been completed, their respective mudpits shall have all the drilling muds and cuttings removed and disposed of in a manner acceptable to the Regional Board's Executive Officer. The final disposal of these wastes and the final closure of the respective mudpits shall be completed within 60 days of the completion of the drilling of the respective wells.
15. Solids which may accumulate in the concrete cooling tower basin may not be spread on the surrounding property until an analysis has been performed to ensure that there are no constituents in hazardous concentrations, and verbal or written approval for such a disposal is obtained by the discharger from the Regional Board's Executive Officer.
16. Permanent (longer than 1 year) disposal or storage of geothermal waste in on-site temporary containment basins is prohibited.
17. Drilling muds and cuttings shall be deposited in basins lined with a minimum of 18 inches of clay having a minimum permeability of 10^{-6} cm/sec or an equivalent liner approved by the Regional Board's Executive Officer.

B. Provisions

1. The discharger shall comply with "Monitoring and Reporting Program No. 93-025", and future revisions thereto, as specified by the Regional Board's Executive Officer.

2. Permanent (longer than one (1) year) on-site storage of geothermal fluid, cleanout fluid, and sand-fluid mixtures are prohibited.
3. Two feet of freeboard must be maintained at all times in the mudpits and storage basins.
4. 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 Board Order.
5. Prior to any change in ownership or management of this operation, the discharger shall transmit a copy of this Board Order to the succeeding owner/operator, and forward a copy of the transmittal letter to the Regional Board.
6. This Board Order does not authorize violation of any federal, state, or local laws or regulations.
7. The discharge of hazardous or designated wastes to other than a waste management unit authorized to receive such waste is prohibited.

I, Philip A. Gruenberg, 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 March 31, 1993.


Executive Officer

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

MONITORING AND REPORTING PROGRAM NO. 93-025
FOR
SECOND IMPERIAL GEOTHERMAL COMPANY
A CALIFORNIA LIMITED PARTNERSHIP
HEBER GEOTHERMAL UNIT
BINARY POWER PLANT AND GEOTHERMAL WELLFIELD
Heber Geothermal Unit in Imperial County

Location of Discharge: Sections 31, 32, and 33, T16S, R14E, SBB&M

MONITORING

Second Imperial Geothermal Company, A California Limited Partnership, 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 in Board Order 93-025.
2. The discharger shall submit a monthly report containing the following information:

<u>Parameter</u>	<u>Unit</u>	<u>Reporting Frequency</u>
Date, volume and type of geothermal waste discharged to each storage basin	Gallons	Quarterly
Volume of geothermal wastes extractable water 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	Quarterly
Date, Volume and type of geothermal waste discharged to each metal container and mud pit. Volume and type of geothermal wastes discharged at a waste management facility and name of facility.	Gallons	Quarterly

3. Immediate reporting of any accidental spillage or release of waste material, and immediate measures taken to correct same and to limit detrimental effects.
4. Submit report on liner specifications signed by a Registered Geologist or Engineer.

REPORTING

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

Quarterly monitoring reports shall be submitted to the Regional Board by January 15, April 15, July 15, and October 15 of each year.

Submit monitoring reports to:

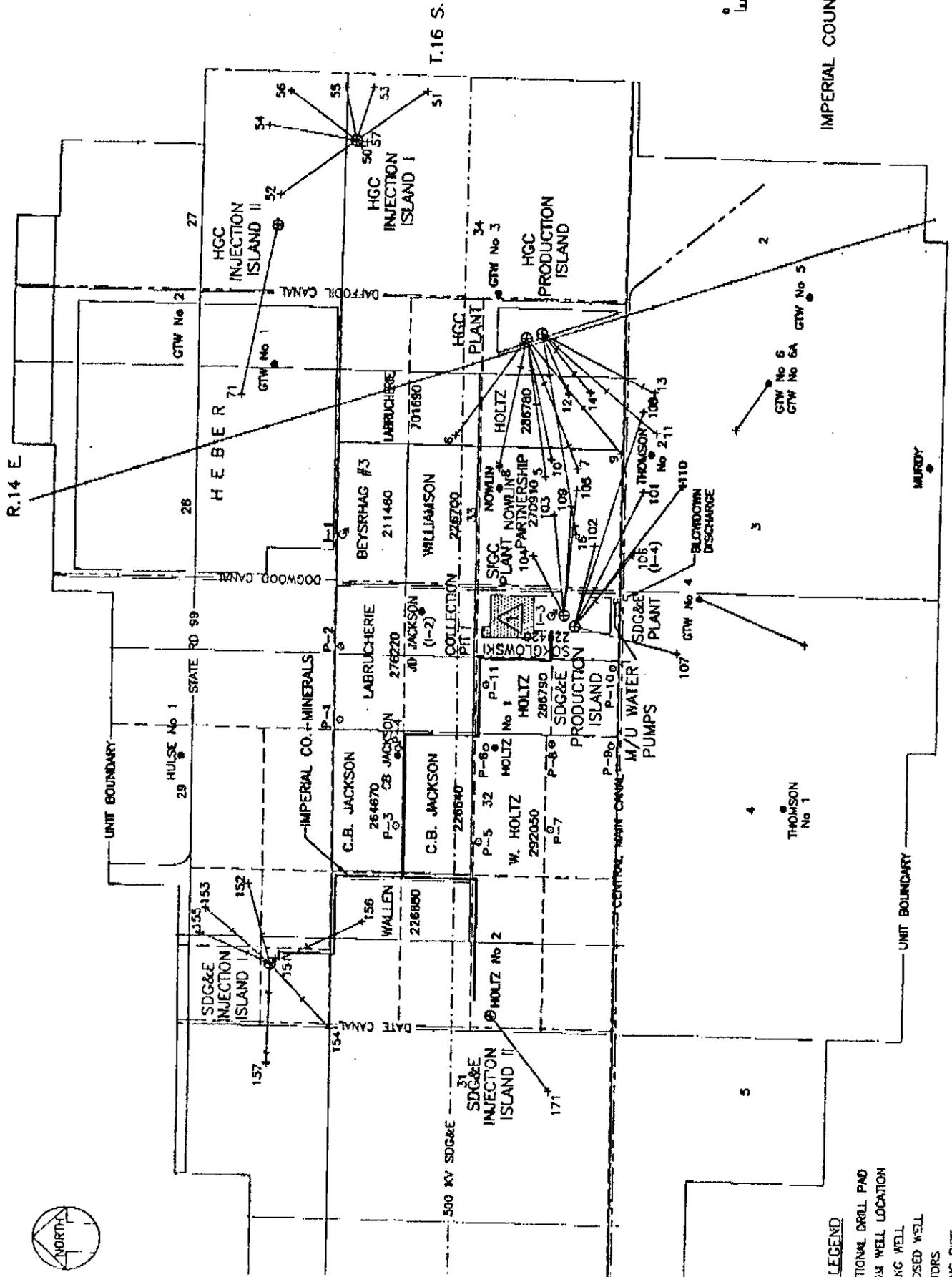
California Regional Water Quality Control Board
Colorado River Basin Region
73-720 Fred Waring Drive, Suite 100
Palm Desert, CA 92260

ORDERED BY: Philip A. Greenberg
Executive Officer

March 31, 1993

Date

HEBROS



0 500 1000 1500 2000
SCALE (FEET)

IMPERIAL COUNTY, CALIFORNIA



LEGEND

- OPTIONAL DRILL PAD
- OR WELL LOCATION
- 2" X 2" WELL
- 4" X 4" WELL
- 20" DR
- 2" X 2" PIPE

W. 33, TOWNSHIP 18 SOUTH, RANGE 14 EAST S.B.M.D

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HEBER-GEOTHERMAL PROJE
C.A.
BLOCK PLAN

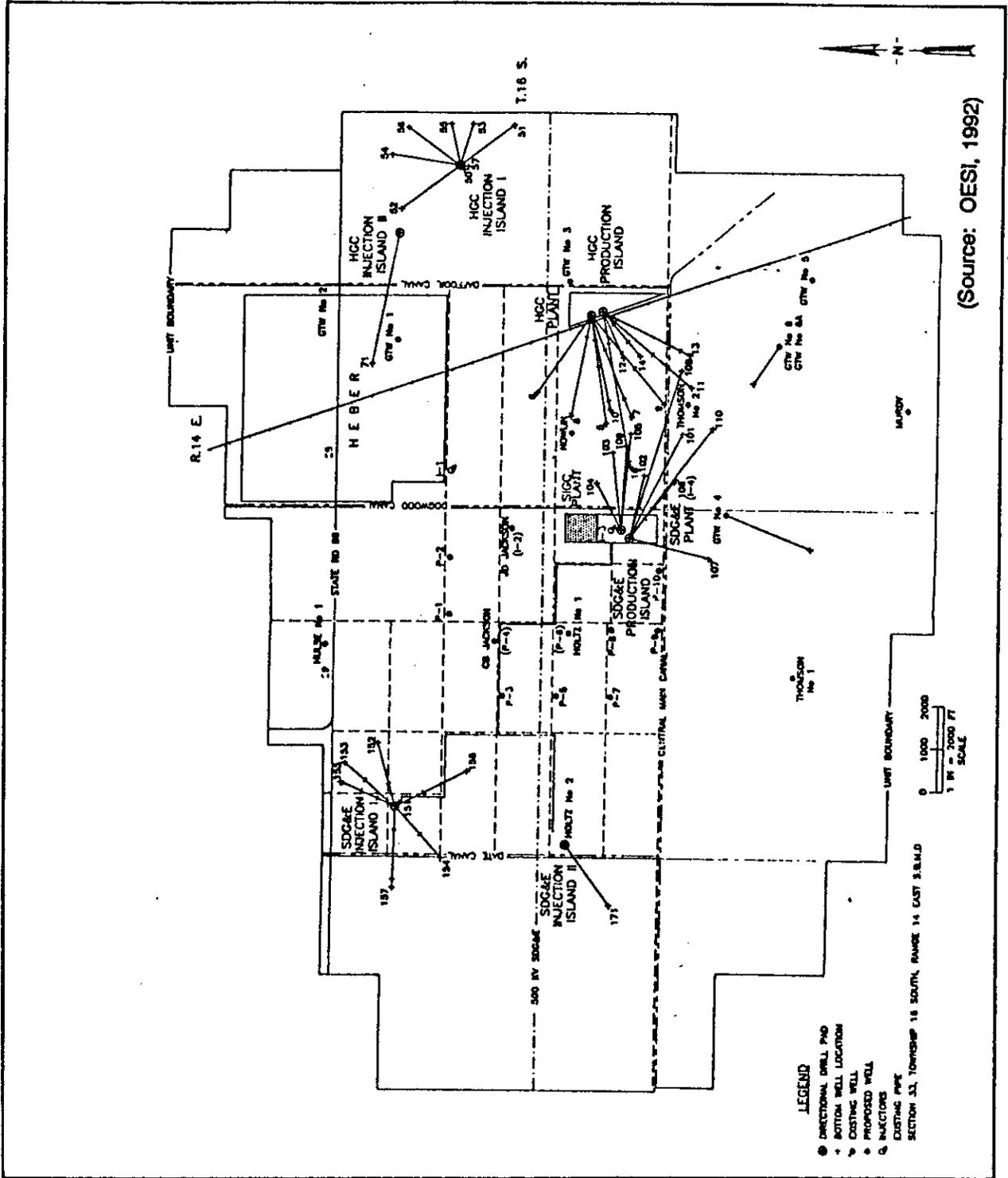


Figure 1: Heber Geothermal Field Project Facilities Map