CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

ORDER NO. 86-19

WASTE DISCHARGE REQUIREMENTS
FOR
ORMESA GEOTHERMAL
30 MW (GROSS) GEOTHERMAL BINARY POWER PLANT
EAST MESA KNOWN GEOTHERMAL RESOURCE AREA (KGRA)
IMPERIAL COUNTY

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

1. Ormesa Geothermal (hereinafter also referred to as the discharger), 500 Dermody Way, Sparks, Nevada 89431, submitted a Report of Waste Discharge dated August 20, 1985, with subsequent additions.

2. The discharger proposes to construct a 30MW (gross) binary power plant and to further develop the associated geothermal well field in the East Mesa KGRA on the following leases:

   Federal

   a. CA 966 (2549.09 acres)
   b. CA 967 (1596.19 acres)
   c. CA 1903 (2560.00 acres)
   d. CA 6217 (2552.91 acres)
   e. CA 6218 (2486.04 acres)

   Private

   a. E 1/2 and E 1/2 of the W 1/2, Section 36, T15S, R16E, SBB&M (480 acres).
   b. Section 16, T15S, R17E, SBB&M (640 acres).

   The power plant would be constructed on a 15-acre site in Section 30, T15S, R17E, SBB&M. Site plans are shown in Attachments "A" and "B" appended hereto as a part of this order.

3. Four Waste Discharge Requirements (Orders 76-35, 76-64 (Revised), 80-32 and 82-2) have previously been issued to Republic Geothermal, Inc. for this site. Board Order No. 85-42 amended each of these Orders by updating the ownership to Ormesa Geothermal.

4. A total of ten (10) geothermal wells (production and/or injection) have been drilled and tested to date under the existing Waste Discharge Requirements and are identified as follows (using the Modified Kettleman Well Numbering System):

replaced by 9-001

Well No. (T15S, R17E, SBB&M)

56-19	38-30
18-28	56-30
16-29	58-30
52-29	74-30
16-30	78-30

5. The selection of well sites to be drilled and developed are dependent upon the results of on-going and proposed testing programs. Possible well locations previously approved by existing Waste Discharge Requirements and/or by transmitted letters approved by the Executive Officer are identified as follows:

Well No. (T15S, R16E, SBB&M)

32-25	56-25
38-25	58-25

Well No. (T16S, R17E, SBB&M)

14-5

Well No. (T15S, R17E, SBB&M)

78-19	18-30	34-31
18-20	34-30	36-31
14-29	36-30	38-31
18-29	52-30	52-31
36-29	76-30	54-31
38-29	13-31	72-31
56-29	14-31	83-31
58-29	16-31	88-31
85-29	32-31	14-32
		38-32

6. Geothermal fluids in this portion of the East Mesa KGRA are known to have a Total Dissolved Solids concentration range of 1,600 mg/l to 15,000 mg/l. The fluid does not contain any constituents at levels, either in the fluid or in concentrated salt cake, which are classified as hazardous by the Department of Health Services, Toxic Substances Control Division, in accordance with California Administrative Code, Title 22, Chapter 30, Article 11, Section 66699.

Reference:

1. Report titled, "A Study to Determine the Environmental Effects of an Accidental Release of Hydrothermal Fluids on the East Mesa Ecosystem", Bureau of Reclamation, dated April 10, 1978.

2. Other numerous sources, copies of which are available for review in the Office of the Regional Board.

7. Production flow testing fluids would be discharged to temporary storage basins adjacent to the well heads. These fluids would subsequently be removed and used on access roads, well pads, or other developed project locations for dust control and/or filtered and injected to the subsurface.

8. The Regional Board approved on March 19, 1986 Negative Declaration SCH # 86022622 for this project in accordance with the California Environmental Quality Act and State Guidelines. This Negative Declaration supplements the previously approved EA-EIR 99-100 (SCH #78071842) and all subsequent supplements. The Board determined that there will be no substantial adverse effect on the environment as a result of this project.

9. A temporary storage basin, capable of containing the maximum expected discharge of drilling mud, cuttings, cleanout fluid, and geothermal test fluid including a two (2) foot freeboard would be constructed at each well site.

10. The discharger plans to utilize 100% technical grade isopentane as the hydrocarbon working fluid.

11. Shallow ground water produced from Water Well 1 located near the SW corner of Section 30, T15S, R17E, SBB&M has a reported Total Dissolved Solids (TDS) concentration of 1,600 mg/l.

12. There are no surface waters in the vicinity of the discharge. The nearest surface waters would be Imperial Irrigation District's Highline Canal, located 1 1/4 miles west of the power plant site.

13. Cooling towers would be built at the power plant in two batteries of 11 cells each. Each battery of cooling towers would be erected in a concrete basin which is used for cooling water storage.

14. The geothermal fluid injection system would consist of injection pumps, distribution piping, injection well metering facilities, and other components necessary to dispose of the geothermal liquid from the power plant. Geothermal fluid treatment is not part of the geothermal fluid injection system at this time.

15. The Water Quality Control Plan for the Colorado River Basin Region of California was adopted on November 14, 1984. The Basin Plan contains water quality objectives for the Imperial Hydrologic Unit.

16. The Board has notified the discharger and interested agencies and persons of its intent to prescribe Waste Discharge Requirements for the proposed discharge.

17. The Board in a public meeting heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, Ormesa Geothermal 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 geothermal test fluid shall be discharged for temporary storage into either:

   (a) Earthen basins with a minimum six inch thickness of clay lining having a coefficient of permeability of $1x10^{-6}$ cm/sec or less. Clay lining shall be defined as: at least 30 percent of the material, by weight, passing a No. 200 U.S. Standard Sieve; or

   (b) Earthen basins lined with a plastic liner of not less than 40 mil thickness; or

   (c) Metal or other type containers as approved by the Executive Officer.

   All such basins or containers shall be protected and maintained to ensure their effectiveness.

   These fluids shall be removed within 30 days, and discharged by subsurface injection or neutralized, as necessary, and spread without ponding on adjacent project operational property which is owned or controlled by the discharger, or discharged at a Class II waste management unit.

3. A minimum freeboard of at least two (2) feet shall be maintained at each temporary lined storage basin.

4. Fluids discharged by subsurface injection shall be injected below the fracture pressure of the receiving aquifer or of the confining layer immediately above the receiving aquifer.

5. 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 concentration 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 Executive Officer that injection into said zone will not pose a threat to water quality.

6. The nontoxic residual drilling mud and drill cuttings discharged to the reserve basins shall be neutralized, as necessary, and spread on adjacent project operational property which is owned or controlled by the discharger, or removed to a waste management unit approved by the Regional Board to receive such waste.

7. Solids which may accumulate in the concrete cooling tower basins shall be removed and trucked to a disposal site acceptable to the Regional Board.

8. **Prior to the disposal of any materials removed from the temporary lined storage basins or the reserve basins other than by subsurface injection or surface discharge to access roads, well pads, or other developed project locations, the discharger shall inform the Executive Officer concerning the nature and volume of the materials and the proposed location of disposal.**

9. Final disposal of residual wastes and cleanup of containment basins and reserve basins 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. 86-19", and future revisions thereto, as specified by the Executive Officer.

2. At least ten (10) days prior to the discharge of any material into a temporary lined storage basin, the discharger shall submit to the Regional Board a report signed by a California Registered Civil Engineer or a Certified Engineering Geologist advising the Executive Officer that the temporary lined storage basin and attendant facilities are constructed to meet the requirements of this Order.

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 a manner that will not adversely effect water quality.

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

5. This Order supersedes Board Orders No. 76-35, 76-64 (Revised), 80-32 and 82-2.

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 March 19, 1986.

Arthur Swajian
Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

MONITORING AND REPORTING PROGRAM NO. 86-19
FOR
ORMESA GEOTHERMAL
30 MW (GROSS) GEOTHERMAL BINARY POWER PLANT
EAST MESA KNOWN GEOTHERMAL RESOURCE AREA (KGRA)
Imperial County

Location of Discharge: Sections 19, 20, 21, 28, 29, 30, 31, and 32, T15S, R17E, SBB&M
Sections 19, 28, 29, and 30, T15S, R17E, SBB&M
Section 25, T15S, R16E, SBB&M
Section 5, T16S, R17E, SBB&M

MONITORING

Ormesa Geothermal 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 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. 86-19.

2. At least ten (10) days prior to the discharge of any materials into a temporary storage basin or other container, the discharger shall submit to the Regional Board a report signed by a California Registered Civil Engineer advising the Executive Officer that the temporary storage basin or construction of said container and attendant facilities are constructed to meet the requirements contained in Board Order No. 86-19.

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

Constituents	Unit	Reporting Frequency
a. Volume of discharges contained in each temporary storage basin.	Gallons	Monthly
b. Total dissolved solids concentration of waste fluid injected into each injection well.	mg/l	Monthly
c. 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

4. **During well drilling operations a representative sample of drilling mud shall be analyzed for halogenated solvents and results reported to the Regional Board within 15 days. If drilling muds are found to contain halogenated solvents they cannot be discharged to on-site sumps and must be discharged to a Class I waste management facility. Volume of drilling muds discharged and name of facility shall be forwarded to the Regional Board.**

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

6. Report of completion of removal of all geothermal waste from temporary storage basins within one (1) week following completion of work.

7. At least ten (10) days prior to destruction of each temporary storage basin, the discharger shall request a Regional Board staff inspection and approval of the cleanup procedures.

REPORTING

Except for Items 1 and 2, above, the above monitoring program shall be implemented immediately upon commencement of discharge at each site.

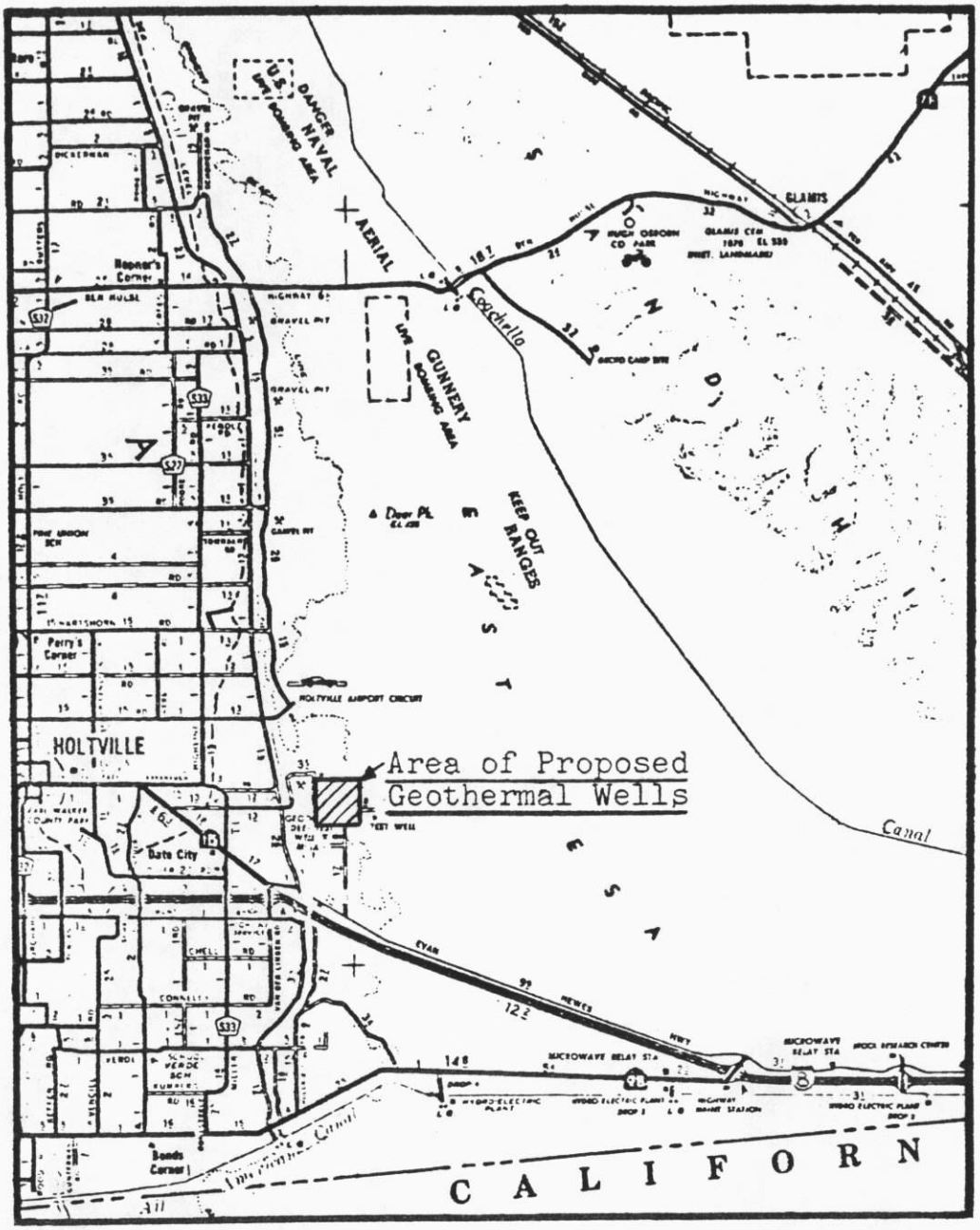
Monthly reports shall be submitted to the Reigional Board by the 15th day of the following month. Reports for Item 4 (above) shall be forwarded immediately and shall be preceded by phone communication to the Regional Board's office. Phone No. (619) 346-7491. Copies of the reports submitted to the Board 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: Arthur Sarafian
Executive Officer

March 19, 1986
Date



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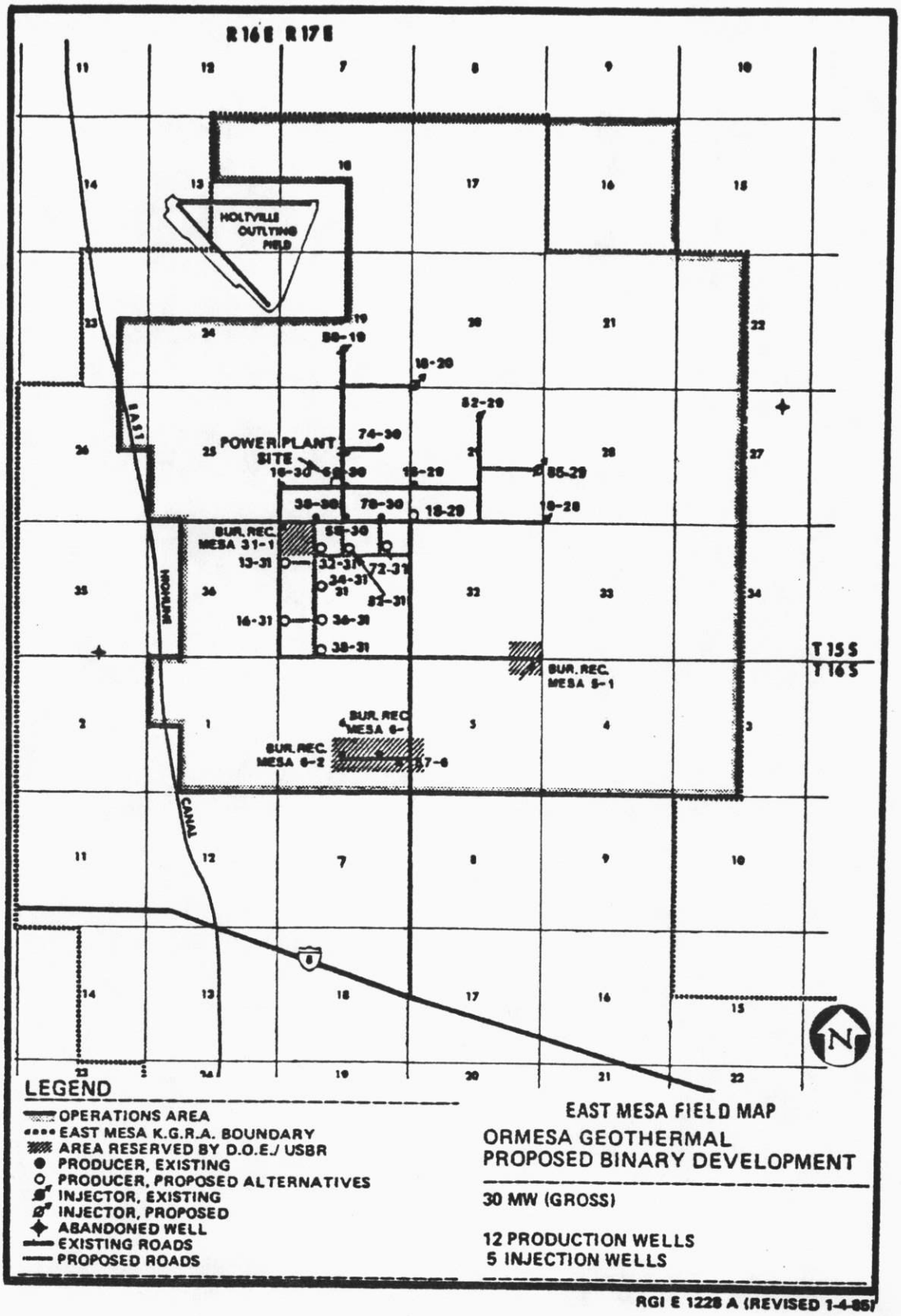
Scale:

1" = 4.5 mi.

ATTACHMENT A

SITE MAP
ORMESA GEOTHERMAL
30 MW (GROSS) GEOTHERMAL BINARY POWER PLANT
EAST MESA KNOWN GEOTHERMAL RESOURCE AREA (KGRA)
IMPERIAL COUNTY



ATTACHMENT B

ORMESA GEOTHERMAL

Order No. 86-19