CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

ORDER NO. 88-12

WASTE DISCHARGE REQUIREMENTS
FOR MAGMA POWER COMPANY
GEOTHERMAL DEVELOPMENT WELLS
EAST MESA KNOWN GEOTHERMAL RESOURCE AREA (KGRA)
Imperial County

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

1. Magma Power Company (hereinafter also referred to as the discharger), P.O. Box 56, Holtville, California, 92250, submitted an updated Report of Waste Discharge, dated September 2, 1987.

2. The discharger currently operates a 10 megawatt geothermal test plant in the East Mesa KGRA. Fourteen geothermal wells (production and injection) used to supply hot water to the plant have been drilled at the following locations in T16S, R17E, SBB&M:

Well	Location
44-7	SE¼, NW¼, Section 7
44-7A	SE¼, NW¼, Section 7
44-7B	SE¼, NW¼, Section 7
46-7	NE¼, SW¼, Section 7
46-7A	NE¼, SW¼, Section 7
46-7B	NE¼, SW¼, Section 7
48-7	SE¼, SW¼, Section 7
48-7A	SE¼, SW¼, Section 7
61-7	NW¼, NE¼, Section 7
63-7	SE¼, NE¼, Section 7
81-7	NE¼, NE¼, Section 7
83-7	SE¼, NE¼, Section 7
84-7	SE¼, NE¼, Section 7
88-7	SE¼, SE¼, Section 7

3. A temporary containment basin with an approximate capacity of 250,000 gallons has been constructed at each well site. Drilling mud, drill cuttings, and cleanout fluid have been discharged to the basins. Well start-up fluid will be periodically discharged to the basins.

4. Final disposal of fluids in the basins would be by subsurface injection or evaporation. After removal of free liquid from the basins, residual solid and semi-solid waste would be covered and left in place provided that representative samples from the basins show residual solid wastes to be nonhazardous. Residual solids removed from the basins would be discharged at an approved waste management unit.

5. Production flow testing fluids would be injected subsurface.

6. Geothermal fluids in this portion of the East Mesa KGRA are known to have a Total Dissolved Solids concentration of 6,000 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:

   A. 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.

7. The Regional Board approved on January 28, 1981, September 21, 1983, and November 20, 1985, Negative Declarations SCH #80120501, #83070608, and #85100213 respectively for these wells in accordance with the California Environmental Quality Act and State Guidelines. The Board has determined that there will be no substantial adverse effect on the environment as a result of this project.

8. The geothermal wells and associated temporary containment basins have been subject to Waste Discharge Requirements adopted in Board Orders No. 78-19, 81-6, and 83-74.

9. 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.

10. There are no surface waters in the vicinity of the discharge. Shallow ground waters are of marginal quality and presently are not beneficially used. Deep ground waters are being tested for potential geothermal power production.

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, Magma Power Company 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. Discharges shall be confined to containment basins having liner permeabilities of less than 1 x 10^{-6} cm/sec. and the fluids contained within shall not penetrate through the lining during containment.

3. Each containment basin shall be protected and maintained to ensure its effectiveness.

4. A minimum freeboard of at least two (2) feet shall be maintained at all times in each containment basin.

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 discharged into any subsurface zone which has a total dissolved solids concentration of less than 10,000 mg/l, unless the total dissolved solids concentration of the injection water is less than or equal to that of the receiving water.

7. Saline drilling muds and residual solids, with extractable water containing a total dissolved solids concentration exceeding 6,000 mg/l, and brine and salt wastes, shall be discharged at a Class I or Class II disposal site approved by the Regional Board to receive said waste.

8. Drilling muds and residual solids, with extractable water containing a total dissolved solids concentration which is less than 6,000 mg/l and not containing hazardous waste or halogenated solvents, may be left in the containment basins after removal of all free liquid, and covered, or may be discharged at a disposal site approved by the Regional Board to receive said waste.

9. Final disposal of residual wastes in accordance with Specifications No. 5, 6, 7, and 8, shall be accomplished upon abandonment 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 Order.

10. Operation and closure of these facilities shall be in accordance with Subchapter 15, Chapter 3, Title 23, of the California Administrative Code and any future revisions thereto.

B. Provisions

1. The discharger shall comply with the "Monitoring and Reporting Program No. 88-12", 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 containment basin, the discharger shall submit to the Regional Board a report signed by a California Registered Civil Engineer advising the Executive Officer that the containment 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. The discharger shall submit to the Board, at least 30 days prior to discharge to any constructed facilities, written adequate assurance that money is committed in the amount of $50,000 to insure that all facilities are cleaned up and closed in accordance with the Specifications and Provisions of this Board Order (No. 88-12).

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 Orders No. 78-19, 81-06, and 83-74.

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.

Arthur Swajian

Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

MONITORING AND REPORTING PROGRAM NO. 88-12
FOR
MAGMA POWER COMPANY
GEOTHERMAL DEVELOPMENT WELLS
EAST MESA KNOWN GEOTHERMAL RESOURCE AREA (KGRA)
Imperial County

Location of Discharge: Section 7, T16S, R17E, SBB&M

MONITORING

Magma Power Company shall report monitoring data to the Regional Board in accordance with the following schedule:

1. The discharger shall submit to the Regional Board, within 60 days of the date of adoption of Order No. 88-12, a written report on the proposed method and estimated cost of cleanup and closure of all well sites and associated containment basins in accordance with requirements of Order No. 88-12.

2. At least ten (10) days prior to the discharge of any materials into a containment basin, the discharger shall submit to the Regional Board a technical report on the construction of said container, and a certificate signed by a California Registered Civil Engineer stating that the basin and attendant facilities are constructed to meet the requirements contained in Board Order No. 88-12.

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

Constituents	Unit	Reporting Frequency
a. Volume of geothermal wastes contained in each basin	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 unit, and name of unit.	Gallons	Monthly
c. Volume of drilling muds containing less than 6,000 mg/l TDS concentration discharged at a Class III waste management unit and the name of unit.	Gallons	Monthly

Constituents	Units	Reporting Frequency
d. Total dissolved solids concentration of waste fluid injected into each injection well.	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.

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

5. At least ten (10) days prior to destruction or closure of each basin, 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.

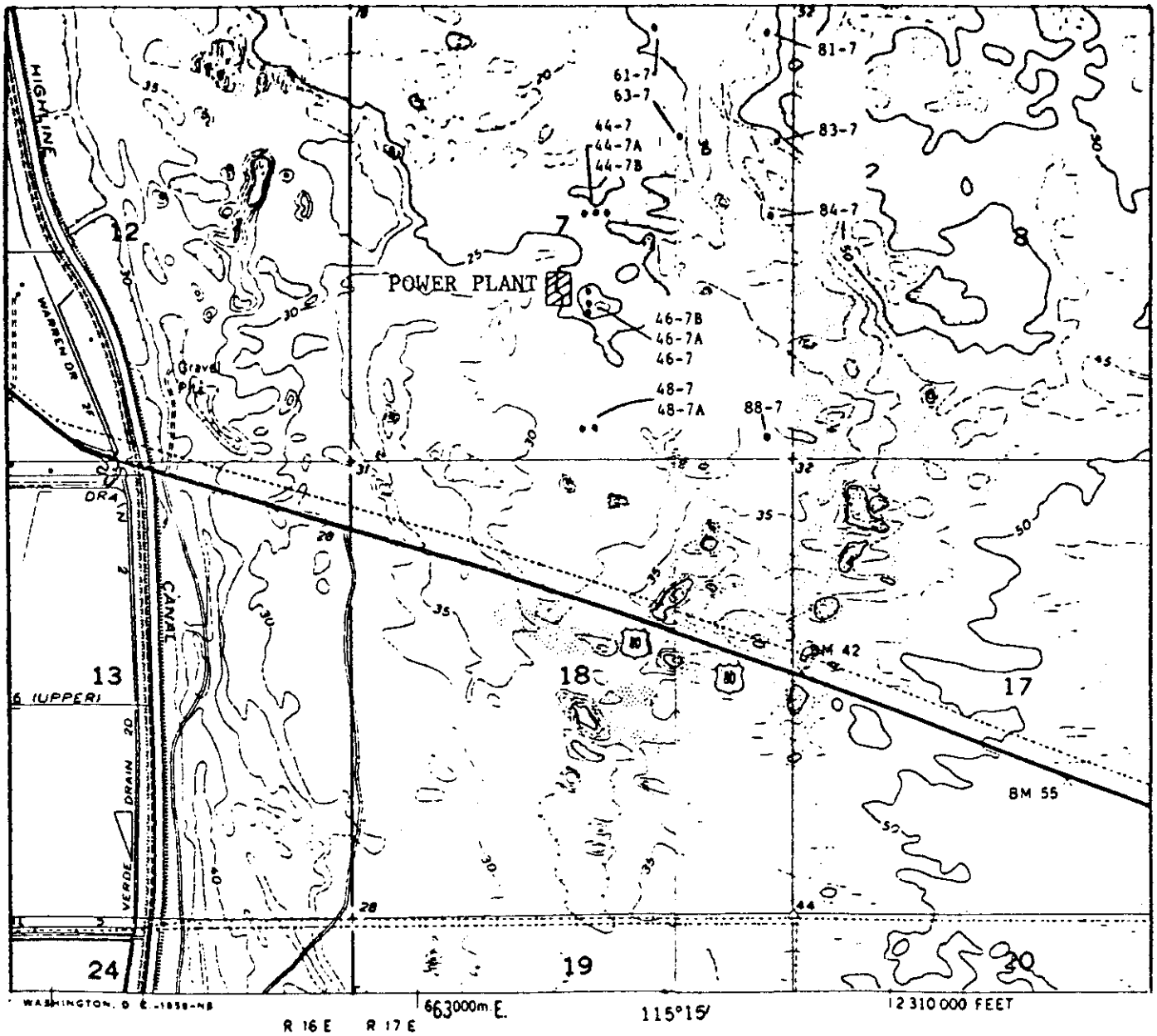
Monthly reports shall be submitted to the Regional Board by the 15th day of the following month. Reports for Item 4 (above) shall be forwarded immediately and shall be preceded by phone communication to the Regional Board's office. Phone No. (619) 346-7491. Copies of the reports submitted to the Board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

January 27, 1988
Date



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NORTH

SITE MAP
MAGMA POWER COMPANY
GEOTHERMAL WELLS
East Mesa Area - Imperial County
Section 7, T16S, R17E, SBB&M
USGS Holtville East and Glamis, SW; 7.5 minute Quadrangles

Order No. 88-12