

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

ORDER NO. 78-19

WASTE DISCHARGE REQUIREMENTS
FOR
MAGMA POWER COMPANY
GEOTHERMAL WELLS
East Mesa Area - Imperial County

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

1. Magma Power Company (hereinafter also referred to as the discharger), P.O. Box 2082, Escondido, CA 92025, submitted a Report of Waste Discharge dated October 13, 1977.
2. The discharger has drilled three geothermal wells in the East Mesa Area of Imperial County as follows:

<u>Well No.</u>	<u>Type</u>	<u>Location</u>
44-7	Production	Near center Sec. 7, T16S, R17E, SBB&M
46-7	Injection	Near center Sec. 7, T16S, R17E, SBB&M
48-7	Production	Near S $\frac{1}{4}$ corner Sec. 7, T16S, R17E, SBB&M

3. The discharger proposes to drill two additional geothermal production wells adjacent to Well No. 44-7, two additional geothermal production wells adjacent to Well No. 48-7, and three additional geothermal injection wells adjacent to Well No. 46-7.
4. The discharger also proposes to drill the following geothermal test wells:

<u>Well No.</u>	<u>Location</u>
Magma Smith No. 1	SW $\frac{1}{4}$, Sec. 16, T16S, R17E, SBB&M.
Magma Smith No. 2	SE $\frac{1}{4}$, Sec. 16, T16S, R17E, SBB&M.

Replaced by 88-012

Supervised by 88-13 1/27/88

5. Drilling mud, in the amount of a maximum of 500,000 gallons per well, would be discharged to a mud sump located near each well. The mud will then be removed from the sump and spread on dirt access roads at each site, or taken to a solid waste disposal site approved by the Regional Board to receive this waste. Mud sumps are approximately 60' x 125' x 5' in size with a capacity of about 250,000 gallons.
6. Well clean-out water and short flow testing, in the amount of about 240,000 gallons per well, would be discharged to the mud sump. After some evaporation of liquid, the residue would be removed and discharged at a disposal site approved by the Regional Board to receive this waste, except that wastewater with a Total Dissolved Solids content not exceeding 3,000 mg/l would be discharged on access roads for dust control.
7. Flow from production testing of geothermal wells would be injected subsurface.
8. Liquid waste from filter backwash systems and from sand separation traps would be injected subsurface; solids would be discharged at a solid waste disposal site approved by the Regional Board to receive these wastes.
9. The drilling mud components which may be used are:

Colloidal clay (drilled solids)	Sodium Chloride
Wyoming Bentonite plus .1%	Ground nut shells
Acrylic acid	Lime
Lignite or leonardite brown coal	Barium Sulphate
Caustic Soda (NaOH)	Cypan (Sodium Polyacrylate)
Cane Fiber	Bit Lube
Mica	Thread Dope
Calcium Chloride	Diesel Oil
Drilling detergent (dietha- nolamide)	Bicarbonate of Soda
Cotton seed hulls	Soda Ash
	Wood fiber

Bentonite is the main component; the other substances are additives and may or may not be used depending on the particular drilling conditions.

10. The discharger is hereby informed that there are no solid waste disposal sites in the Colorado River Basin Region at this time that have been approved by the Regional Board to receive geothermal salt wastes.

11. The Water Quality Control Plan for the West Colorado River Basin was adopted on April 10, 1975. The Basin Plan contains water quality objectives for the Imperial Hydrologic Unit.
12. There are no surface waters in the vicinity of the discharge. Shallow groundwaters are of marginal quality and presently are not beneficially used. Deep groundwaters are being tested for potential geothermal power production.
13. The U.S. Geological Survey, Office of the Area Geothermal Supervisor, has prepared Environmental Analysis No. 78, dated September 12, 1977. This report states that this project will not have any significant effects on the environment.
14. Waste disposals from Wells No. 44-7 and 48-7 have been subject to waste discharge requirements contained in Order No. 76-22. Waste disposals from Wells Magma Smith No. 1 and No. 2, and Magma 46-7 have been subject to waste discharge requirements contained in Order No. 77-8.
15. The Board has notified the discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the proposed discharge.
16. 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. The surface discharge of geothermal fluids into any container that could cause flow or seepage to irrigation drains, canals, or to groundwater is prohibited.
3. The discharge to access roads of geothermal fluids having a Total Dissolved Solids concentration in excess of 3,000 mg/l is prohibited.
4. Geothermal fluids shall not be allowed to pond except in the mud sumps.
5. Surface runoff of geothermal fluids is prohibited.

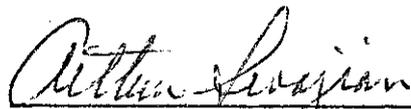
6. Mud sumps shall be constructed so that the fluids contained within shall not penetrate through over one-half the thickness of the lining during the containment period.
7. Adequate protective works and maintenance shall be provided to assure that mud sumps will not become eroded or otherwise damaged during the project period, and/or until all geothermal materials are removed.
8. A minimum freeboard of at least two (2) feet shall be maintained in mud sumps.
9. 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 quality of the injection water is comparable to that of the receiving water.
10. Drilling muds, with extractable water containing a total dissolved solids concentration exceeding 6,000 mg/l, shall be discharged at a disposal site approved by the Regional Board to receive said waste. Drilling muds, with extractable water containing a total dissolved solids concentration which is less than 6,000 mg/l, may be either disposed of at the site or disposed of at a Class II disposal site approved by the Regional Board to receive said wastes.
11. Final disposal of residual wastes, in accordance with Specification Nos. 9 and 10 above, and cleanup of all contents, 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.

B. Provisions

1. The discharger shall comply with "Monitoring and Reporting Program No. 78-19", and "General Provisions for Monitoring and Reporting", and future revisions, thereto, as specified by the Executive Officer.
2. Prior to the discharge of any geothermal materials into a mud sump, the discharger shall submit to the Regional Board a technical report showing the construction of said sump, and a certificate signed by a California Registered Civil Engineer stating that the sump and attendant facilities are constructed to meet the requirements of this Order.

3. This Order supersedes Board Orders No. 76-22 and 77-8.

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 25, 1978.


Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

MONITORING AND REPORTING PROGRAM NO. 78-19

FOR

MAGMA POWER COMPANY

GEOHERMAL WELLS

East Mesa Area - Imperial County

Location of Waste Discharges: Sections 7, 16 and 18, T16S, R17E,
SBB&M

MONITORING

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

<u>Constituent</u>	<u>Units</u>	<u>Reporting Frequency</u>
1. Volume of waste contained in each Mud Sump	Gallons	Monthly
2. Total Dissolved Solids content of waste fluid contained in each Mud Sump	mg/l	Monthly
3. Total Dissolved Solids content of waste fluid extracted from drilling muds removed from mud sumps*	mg/l	Monthly
4. Volume of wastes removed from Mud Sumps and location of discharge	Gallons or tons	Monthly
5. Volume reinjected to subsurface strata from each geothermal well	Gallons	Monthly

*Soil-water extract analysis as approved by the Executive Officer.

<u>Constituent</u>	<u>Units</u>	<u>Reporting Frequency</u>
6. Total Dissolved Solids concentrations of waste fluid injected into each injection well	mg/l	Monthly
7. Total Dissolved Solids concentration of groundwater contained in strata receiving waste fluid injection	mg/l	Monthly
8. Location and depth of each injection well		At least 10 days prior to commencement of injection
9. Within 10 days after the initial discharge of geothermal fluids from a well, the discharger shall report said initial discharge to the Board.		
10. Prior to the initial discharge of geothermal fluids to access roads, the discharger shall inform the Regional Board of the Total Dissolved Solids content of the fluid to be discharged.		
11. Immediate reporting of any accidental spillage or release of waste material, and plan for immediate measures being taken to correct same and to limit detrimental effects.		
12. Report of completion of removal of all geothermal wastes from mud sumps - reported within one week following completion of work.		
13. At least 10 days prior to destruction of any mud sump, 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 11 (above) shall be forwarded immediately, and if at all possible shall be preceded by phone communication to the Regional Board's office. Phone No. (714) 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.

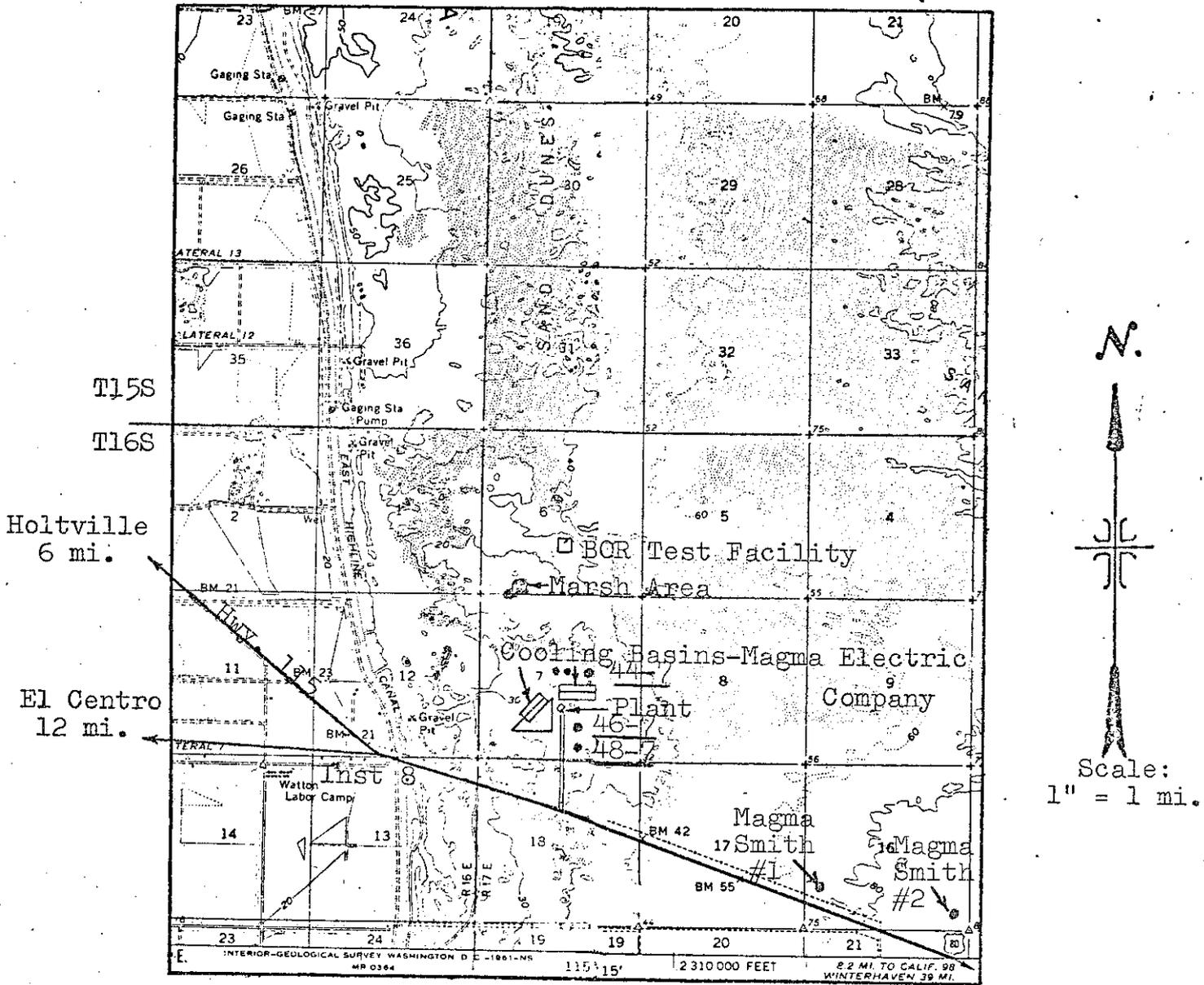
Mail reports to:

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

ORDERED BY: Arthur Rojjan
Executive Officer

January 25, 1978
Date

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD-7



SITE MAP
MAGMA ELECTRIC COMPANY
GEOTHERMAL FACILITY
 East Mesa Area - Imperial County
 Sec. 7, 16 & 18, T16S, R17E, SBB&M
 Holtville and Glamis 15 min. Topographic Maps

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