

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

ORDER NO. 81-22

WASTE DISCHARGE REQUIREMENTS
FOR
UNION OIL COMPANY OF CALIFORNIA
FOR
SINCLAIR NO. 4 GEOTHERMAL WELL AND
BRINE CONTAINMENT BASINS
Near Salton Sea - Imperial County

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

1. Union Oil Company of California, P.O. Box 1805, Indio, CA 92201, submitted a report of waste discharge dated December 9, 1980. The proposed discharge would be to holding basins which contain salt wastes from previous operations at this site. Responsibility for these existing wastes is assigned by active Board Order No. 74-63 to Lee Chemical, Inc. Geothermal Energy and Mineral Corporation and T.H. and A. Denman.

Union Oil Company of California, by letter dated May 14, 1980, states that as operator for itself and others, it has assumed the vested interests of Lee Chemical Corporation, Inc., Geothermal Energy and Mineral Corporation, and T.H. and A. Denman.

2. Union Oil Company of California proposes to utilize the holding basins at this site for temporary storage of brine produced from testing of nearby geothermal wells which are planned as part of a 10 megawatt demonstration geothermal power plant to be located near Salton Sea. Union Oil states that it is not known when the basins would receive brine or when they would be abandoned. Union Oil states that it would study the existing salt to determine if it can be beneficially used, reinjected, or hauled to an authorized disposal site.
3. The brine holding basins and Sinclair Well No. 4 are located in the W 1/2, SE 1/4, Section 4, T12S, R13E, SBB&M. Total basin area is approximately 65 acres, and the basins contain about 133,000 tons of salt. Sinclair No. 4 geothermal well has been abandoned because of casing failure. The facilities are known by the name of "Gemcor," short for "Geothermal Energy and Mineral Corporation".

*Dispersed
wt
89-005
1/25/89*

4. Geothermal fluids produced by Sinclair Well No. 4 contain the substances Manganese, Arsenic, Lead, Zinc and Barium, which in sufficient concentration are classified as a hazardous waste by the State Department of Health Services, Hazardous Materials Management Section. Two samples of salt waste obtained by the Regional Board from the containment basins, and analyzed by the Department of Health Services laboratory in Los Angeles, show Lead, Arsenic and Barium at concentrations sufficient for classification of the materials as hazardous.
5. The existing containment basins are constructed of compacted clay. The agricultural tile drains situated beneath the basins have been cut off from the remainder of the field tile drainage system and drain to a sump. This sump, when the discharge was formerly active, contained a sump-pump which returned any basin seepage into the tile drains back to the containment basins. Despite this precaution, Lawrence Livermore Laboratory, in its water quality baseline monitoring program in Imperial Valley, found that salts were leaching from the basins and entering into the agricultural tile drainage system located in the field east of the ponds. This leakage was pumped into Vail 4A Drain at Sump 116.
6. The materials contained in these basins constitute Group 1 wastes under the State Board's regulations relating to Waste Disposal to Land. However, the present waste location and containment basins do not qualify as a site approved for permanent storage of Group 1 wastes.
7. The Water Quality Control Plan for the West Colorado River Basin Region was adopted on April 10, 1975. The Basin Plan contains water quality objectives for Imperial Hydrologic Unit.
8. The total dissolved solids content of ground and surface waters at the location of proposed discharge are as follows:
 - a. Shallow groundwaters collected in agricultural tile drainage systems and discharged to surface waters range from 6,000 to 16,000 mg/l, TDS.
 - b. Deep groundwaters investigated for geothermal development range from 260,000 to 388,000 mg/l, TDS.
 - c. Vail 4A Drain, from 1,900 to 4,400 mg/l, TDS.
 - d. Salton Sea, about 38,000 mg/l, TDS
9. Beneficial uses to be protected by this Order are as follows:
 - a. Groundwater
 1. Shallow groundwaters at the proposed discharge location are saline and are discharged to surface drains.

2. Deep groundwaters are saline and are being investigated for geothermal development
- b. Vail 4A Drain
1. Transport of dissolved solids to Salton Sea for agricultural soil salinity control.
 2. Freshwater replenishment for Salton Sea.
 3. Freshwater habitat for fish and wildlife.
 4. Recreation-nonwater contact.
10. The Board has notified the discharger and interested agencies and persons of its intent to update waste discharge requirements for the discharge.
 11. The Board in a public meeting heard and considered all comments pertaining to the discharge.
 12. Union Oil Company of California, at the Board's public meeting on May 20, 1981, submitted the following time schedule which the Company proposes for removal of all salt, brine and other wastes from the existing containment basins:

UNION OIL COMPANY OF CALIFORNIA

BRINE CONTAINMENT BASIN CLEANUP SCHEDULE
WASTE DISCHARGE ORDER NO. 81-22

ALTERNATIVE I - BENEFICIAL USE OF SALT

<u>Operation</u>	<u>Time Required</u>	<u>Date</u>
Design and Construct 100+/day Batch Pilot Salt Facility	1 mo.	6/81
Operate Pilot Facility	2 mo.	
Analyze Data	1 mo.	
Prepare Feasibility Study of 1 T/D Continuous Feed Pilot Unit and 50 T/D Commercial Unit	2 mo.	
	} 6 mo.	
<u>Continuous Feed Pilot Unit 1 T/D</u>		1/82
Obtain Expenditure Authority	1 mo.	
Design Facility	6 mo.	
Order Material	2 mo.	
Construct Facility	3 mo.	
Operate Facility	1 mo.	
Evaluate Results	1 mo.	
Prepare Feasibility Study for Commercial Unit	1 mo.	
	} 14 mo.	
		3/83

<u>Operation</u>	<u>Time Required</u>	<u>Date</u>
<u>Commercial Unit 50 T/D</u>		
Obtain Expenditure Authority	2 mo.	
Obtain CUP and/or Other Permits as Required	6 mo.	
Secure Market Contracts	2 mo.	
Design Facility	2 mo.	
Order Material	6 mo.	
Construct Facility	3 mo.	6/84
Operate Facility 50 T/D 15,000 T/yr	8yr.	6/92
* * * * *		

ALTERNATIVE II - REINJECTION

Determine Infeasibility of Beneficial Use	20 mo.	6/81
Obtain Expenditure Authority	2 mo.	3/83
Design Facility	2 mo.	
Order Material	6 mo.	
Obtain CUP and/or Other Permits for Disposal Well(s)	9 mo.	1/84
Drill Wells	3 mo.	
Install Facilities	1 mo.	6/84
Dissolve and Inject Pond Material	36 mo.	6/87
* * * * *		

ALTERNATIVE III - HAUL TO DISPOSAL SITE

Determine Infeasibility of Beneficial Use	20 mo.	6/81
Determine Infeasibility of Reinjection	20 mo.	3/83
Haul to Disposal Site	24 mo.	1/85
		1/87

13. These containment basins constitute an ongoing project in accordance with provisions of the California Environmental Quality Act (Public Resources Code Section 21000 et. seq.) and Title 23, California Administrative Code, Chapter 3, Subchapter 17, Section 2715, because the governmental approvals on or after April 5, 1973 do not involve a greater degree of responsibility or control over such activity than the governmental approvals received prior to that date.

IT IS HEREBY ORDERED, the discharger shall comply with the following:

- A. Discharge specifications for proposed Union Oil Company of California discharge to brine containment basins subsequent to May 20, 1981:

1. Neither the treatment nor the discharge of wastes shall cause a pollution or a nuisance as defined in Division 7 of the California Water Code.
2. Temporary discharge and/or storage of flow test geothermal fluid other than into containment basins or other containers having a lining permeability of 1×10^{-8} cm/sec, or less, is prohibited, and the fluids contained within shall not penetrate through the lining during the containment period.
3. Adequate protective works and maintenance shall be provided to assure that containment basins will not become eroded or otherwise damaged during the project period, and/or until all flow test materials are removed.
4. A minimum freeboard of at least two feet shall be maintained in each containment basin.
5. Permanent disposal of any waste is prohibited at this site.
6. Residual wastes contained in basins shall be removed and discharged by subsurface injection or at an approved Class I or Class II-1 disposal site by not later than 60 days following completion of each flow test.
7. 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 contained in the injection water is less than or equal to that of the receiving water.
8. Geothermal fluids and other wastes shall not enter any rivers, canals, drainage channels, or drains (including subsurface drainage systems) which could provide flow or seepage to Salton Sea.

B. Discharge Specifications for Existing Brine Containment Basins:

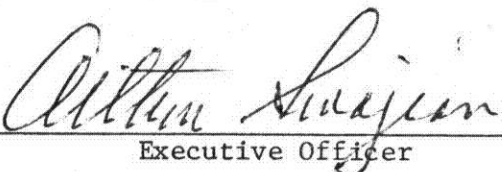
1. The discharge of additional geothermal fluids into the existing earthen containment basins is prohibited.
2. Adequate protective works and maintenance shall be provided to assure that containment basins will not become eroded or otherwise damaged until all geothermal wastes are removed therefrom.
3. Permanent disposal of the wastes presently contained in these basins is prohibited at this location.
4. Geothermal wastes contained in earthen basins shall be removed and discharged by subsurface injection, or at an approved Class I or Class II-1 disposal site, or by beneficial reuse of salt, by not later than the date set forth in the time schedule of specific actions contained in Finding No. 12 for the chosen method of disposal.

5. 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 contained in the injection water is less than or equal to that of the receiving water.
6. Geothermal fluids and other wastes shall not enter any rivers, canals, drainage channels, or drains (including subsurface drainage systems) which could provide flow or seepage to Salton Sea.

C. Provisions

1. The discharger shall comply with "Monitoring and Reporting Program No. 81-22" and future revisions thereto, as specified by the Executive Officer.
2. By not later than October 15, 1981, the discharger shall submit adequate assurances that monies are available in an amount sufficient to ensure the cleanup and closure of the containment basin site in a manner that will not pose an adverse threat to the environment.
3. At least 5 days prior to the discharge of any geothermal fluids into a newly constructed containment basin, the discharger shall submit to the Regional Board a technical report showing the construction of said basin, and a certificate signed by a California Registered Civil Engineer stating that the basin and attendant facilities are constructed to meet the requirements of this Order.
4. Quarterly reports shall be submitted by January 15, April 15, July 15 and October 15 of each year on progress in removal of geothermal wastes from existing containment basins, as set forth under B.4. and the time schedule of specific actions contained in Finding No. 12. The first report shall be submitted by October 15, 1981.

I, Arthur Swajian, Executive Officer, do hereby certify that 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 May 20, 1981.


Executive Officer

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
COLORADO RIVER BASIN REGION

MONITORING AND REPORTING PROGRAM NO. 81-22
FOR
UNION OIL COMPANY OF CALIFORNIA
FOR
SINCLAIR NO. 4 GEOTHERMAL WELL AND
BRINE CONTAINMENT BASINS
Near Salton Sea - Imperial County

Location: W 1/2, SE 1/4, Section 4, T12S, R13E, SBB&M

MONITORING AND REPORTING

- A. Monitoring for Discharge Specification A and Provision C.3. for discharges of geothermal fluids to brine containment basins subsequent to May 20, 1981.

<u>Constituents</u>	<u>Units</u>	<u>Reporting Frequency</u>
1. Volume of geothermal wastes discharged to containment basins.	Gallons	Monthly
2. Volume contained in basins.	Gallons	Monthly
3. At least 5 days prior to the discharge of any geothermal fluids into a newly constructed containment basin, the discharger shall submit to the Regional Board a technical report on the construction of said basin, 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. 81-22.		
4. 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.		
5. Report of completion of each flow test and date by which materials are to be removed.		
6. Report of completion of removal of all geothermal fluids from containment basin(s) - reported within one week following completion of work.		
7. At least 10 days prior to destruction of a containment basin, the discharger shall request a Regional Board staff inspection and approval of the cleanup procedure.		

B. Reporting for A (above)

The above monitoring program shall be implemented immediately upon construction of each basin.

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 if at all possible, shall be preceded by phone communication to the Regional Board's office (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 the 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

C. Monitoring for Discharge Specification B

1. At least 10 days prior to the destruction of a containment basin, the discharger shall request a Regional Board staff inspection and approval of the cleanup procedure.

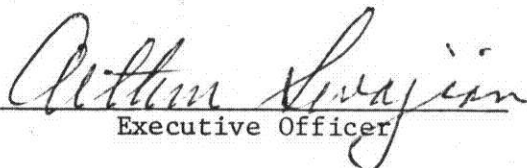
D. Reporting for Discharge Specification B

1. Reporting shall be in accordance with Waste Discharge Requirement Provision C.4., and with Monitoring Program C.1. (above).

Mail reports to:

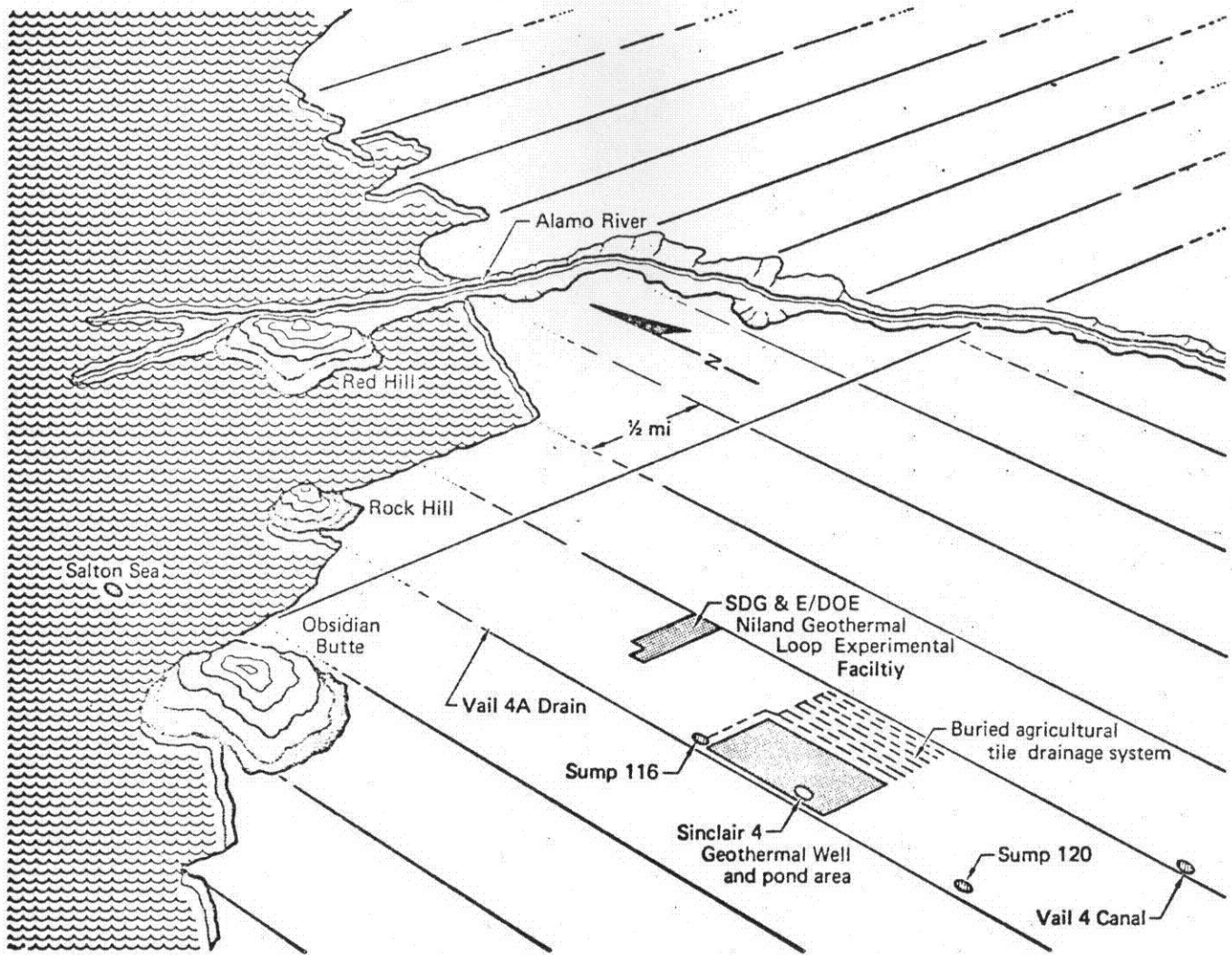
California Regional Water Quality Control Board
Colorado River Basin Region
73-271 Highway 111, Suite 21
Palm Desert, CA 92260

ORDERED BY:


Executive Officer

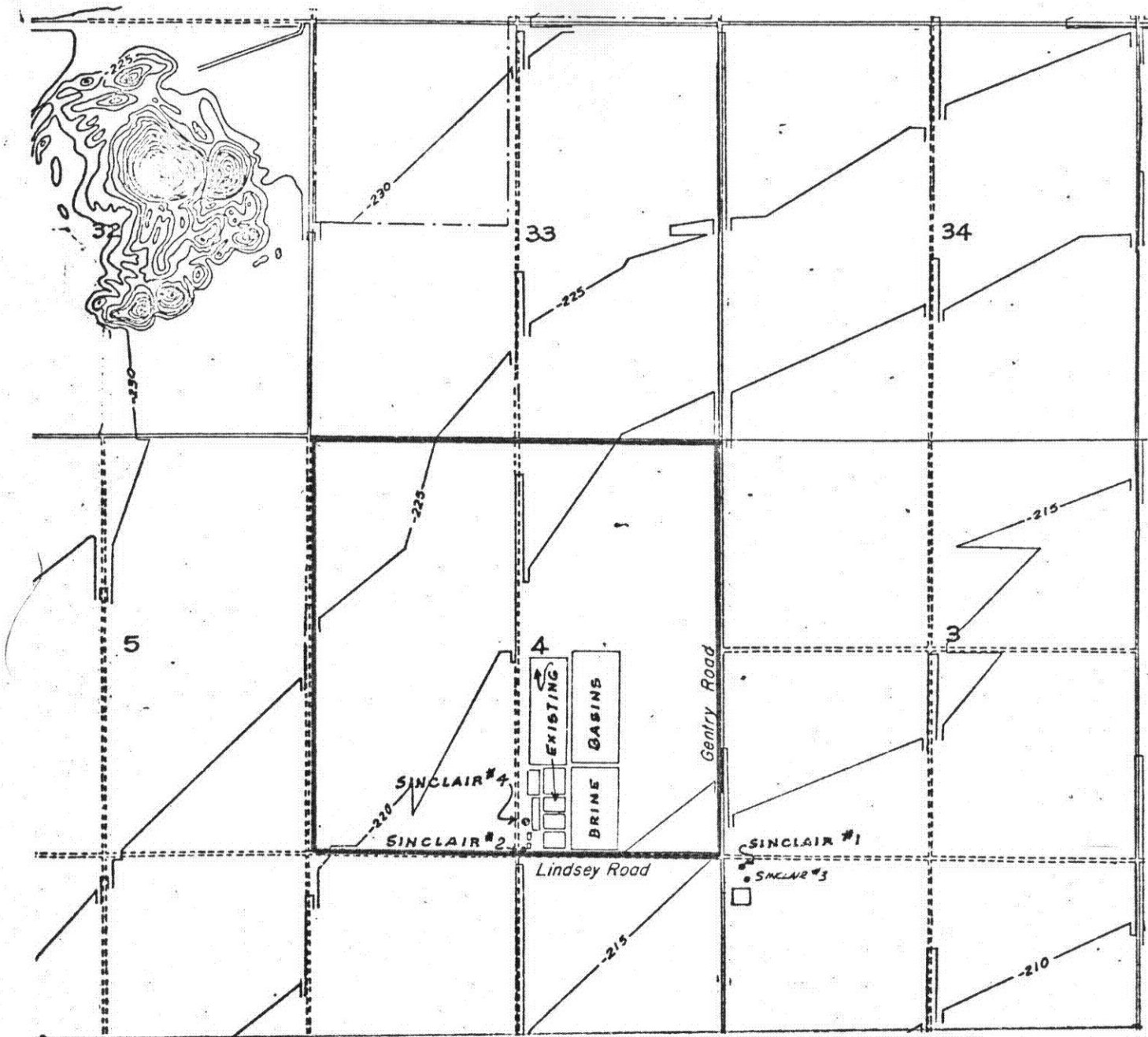
May 20, 1981

Date



SITE MAP NO. 2
GEMCOR BRINE HOLDING BASINS
Near Salton Sea - Imperial County
W 1/2, SE 1/4, Section 4, T12S, R13E, SBB&M
Niland 7.5' Topographic Map

Order No. 81-22



SITE MAP NO. 1
GEMCOR BRINE HOLDING BASINS
Near Salton Sea - Imperial County
W 1/2, SE 1/4, Section 4, T12S, R13E, SBB&M
Niland 7.5' Topographic Map



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Scale
1" = 2000'