

MINUTE ITEM

This Calendar Item No. 25
was approved as Minute Item
No. 25 by the State Lands
Commission by a vote of 3
to 0 at its 2/28/83
meeting.

CALENDAR ITEM

25 1

2/24/83
W 22962
Hoagland
PRC 6378

GEOHERMAL PROSPECTING PERMIT

APPLICANT: Bear Creek Mining Company
2502 North Huachuca Drive
Tucson, Arizona 85745
ATTN: Larry Grogan, Landman

AREA, TYPE, LAND AND LOCATION:
Approximately 40 acres of sovereign land
located on the southeastern shore of Salton
Sea approximately four miles southwest
of the town of Niland, Imperial County.

LAND USE: Geophysical, geological and geochemical
exploration to target drillsites for explora-
tion drilling to assess geothermal potential
of the area and to drill at lease one geo-
thermal well.

TERMS OF THE PROPOSED PERMIT:
Initial period: Two years.
Renewal options: One period not exceeding
two years.
Surety bond: \$10,000.
Special: Upon discovery of geothermal
resources in commercial
quantities within the
permit area, permittee
will be entitled to a

A 75

S 38

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preferential lease upon notice of intention to exercise this right; subject, however, to the discretion of the Commission and review of environmental documentation pertaining to full field development of the resources.

CONSIDERATION: Rental of \$1 per acre during the first year; \$5 per acre during the second year and \$25 per acre per annum during any period of extension, unless a well has been drilled.

In case a preferential lease is executed, it will provide for rental of \$1 per acre per annum, and a royalty of 10 percent of gross revenues received from the sale of steam and five percent from the sale of mineral products or chemical compounds, with a minimum royalty of \$2 per acre per annum.

PREREQUISITE TERMS, FEES AND EXPENSES:

Filing fee and processing costs have been received.

STATUTORY AND OTHER REFERENCES:

- A. P.R.C.: Div. 6, Parts 1 and 2; Div. 13; Div. 20.
- B. Cal. Adm. Code: Title 2, Div. 3; Title 14, Div. 6

AB 884: 4/14/83.

OTHER PERTINENT INFORMATION:

1. Bear Creek Mining Company has applied for a Geothermal Prospecting Permit to explore for geothermal resources beneath the State parcel near the south end of Salton Sea, Imperial County, to determine the availability, quantity, and quality of geothermal resources. The use to be made of any resources discovered will depend upon its temperature, pressure, volume and mineral

CALENDAR ITEM NO. 25 (CONT'D)

content; but the applicant is seeking a resource suitable for the generation of electricity.

2. Because of an existing commercial industrial lease on the surface of the State parcel, the applicant proposes to drill into State lands from sites located on private lands it has leased along the north and western boundaries of the State parcel.

ENVIRONMENTAL INFORMATION:

1. A Negative Declaration was prepared by Imperial County pursuant to CEQA and implementing regulations. A Notice of Determination has been received.
2. The project is situated on land not identified as possessing significant environmental values. A staff review of available environmental information indicates no reason to identify the subject parcel as having such values at this time.

APPROVALS REQUIRED:

Division of Oil and Gas, Regional Water Quality Control Board and the County of Imperial Planning Department.

EXHIBITS:

- A. Land Description.
- B. Location Map.
- C. Negative Declaration.

IT IS RECOMMENDED THAT THE COMMISSION:

1. CERTIFY THAT A NEGATIVE DECLARATION WAS PREPARED BY IMPERIAL COUNTY PURSUANT TO THE PROVISIONS OF THE CALIFORNIA ENVIRONMENTAL QUALITY ACT AND SUCH DOCUMENT WAS REVIEWED AND CONSIDERED. (CAC 15083, 15085).
2. FIND THAT CHANGES OR ALTERATIONS HAVE BEEN REQUIRED IN, OR INCORPORATED INTO THE PROPOSED PROJECT WHICH MITIGATE OR AVOID THE SIGNIFICANT ENVIRONMENTAL EFFECTS THEREOF AS IDENTIFIED IN THE COMPLETED NEGATIVE DECLARATION.

3. AUTHORIZE ISSUANCE TO BEAR CREEK MINING COMPANY OF A TWO-YEAR GEOTHERMAL PROSPECTING PERMIT WITH THE RIGHT TO REQUEST A PREFERENTIAL LEASE IN THE EVENT GEOTHERMAL RESOURCES ARE DISCOVERED IN COMMERCIAL QUANTITIES ON THE PERMIT; THE COMMISSION MAY EXTEND THE PERMIT TERM FOR A PERIOD NOT TO EXCEED TWO YEARS; IN CONSIDERATION OF ANNUAL RENTS IN THE AMOUNT OF \$1 PER ACRE FOR THE FIRST YEAR, ESCALATING TO \$5 PER ACRE FOR THE SECOND YEAR, AND \$25 PER ACRE DURING ANY EXTENSION UNLESS A WELL HAS BEEN DRILLED, IN THE LAND DESCRIBED ON EXHIBIT "A" ATTACHED HERETO. THE PERMIT WILL AUTHORIZE GEOTHERMAL EXPLORATION INCLUDING THE DRILLING OF GEOTHERMAL WELLS. THE PERMIT WILL FURTHER PROVIDE THAT ANY PREFERENTIAL LEASE WILL HAVE A RENTAL OF \$1 PER ACRE PER ANNUM, A ROYALTY OF 10 PERCENT OF GROSS REVENUES FROM THE SALE OF STEAM, FIVE PERCENT FROM THE SALE OF MINERAL PRODUCTS OR CHEMICAL COMPOUNDS, WITH A MINIMUM ANNUAL ROYALTY OF \$2 PER ACRE PER ANNUM. THE PERMIT WILL FURTHER PROVIDE THAT BEFORE ISSUANCE OF ANY PREFERENTIAL LEASE A STUDY OF THE ENVIRONMENTAL IMPACTS OF DEVELOPMENT OF THE PERMITTED AREA MUST BE PREPARED AND CERTIFIED. THE PERMIT SHALL NOT AFFECT THE DISCRETION OF THE COMMISSION TO APPROVE OR DENY THE ISSUANCE OF SUCH A LEASE BASED UPON ITS REVIEW OF THIS ENVIRONMENTAL STUDY. THE PERMIT TO BE USED IS THE FORM ON FILE IN THE OFFICE OF THE COMMISSION.

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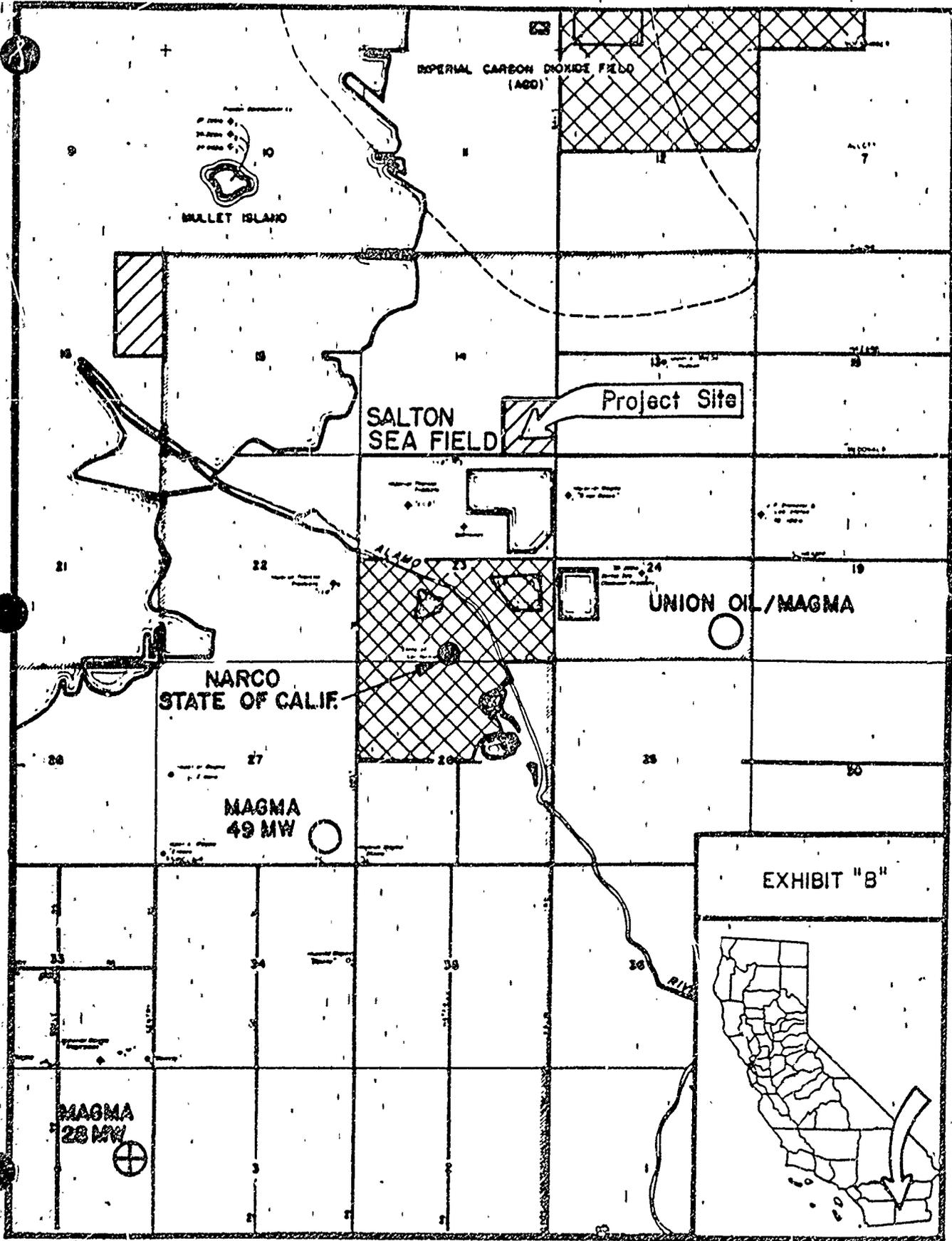
EXHIBIT "A"
LAND DESCRIPTION

W 22962

A parcel of California State sovereign lands in Imperial
County, California, described as follows:

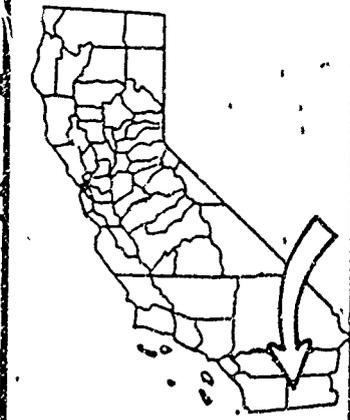
SE $\frac{1}{4}$ of SE $\frac{1}{4}$ of Section 14, T11S, R13E, SBM.

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EXHIBIT "B"



80-1/83



PLANNING DEPARTMENT

COURTHOUSE
EL CENTRO, CALIFORNIA 92243

RICHARD D. MITCHELL
PLANNING DIRECTOR

EXHIBIT "C"

NEGATIVE DECLARATION

83010250

The Imperial County Environmental Evaluation Committee has determined that the following project as designed and applied for will not have a significant impact on the environment, and hereby notices the County's intention to prepare a Negative Declaration.

Please evaluate this project, particularly with respect to site specific conditions which you believe may result in significant environmental effects. Please forward your comments by the date requested below, to the Imperial County Geothermal Planner, Philip Shafer.

Your cooperation will be greatly appreciated.

PROJECT TYPE Geothermal Exploratory Conditional Use Permit

PROJECT NAME Bear Creek / Salton Sea Exploratory #1 INITIAL STUDY # 1409-82

APPLICANT Bear Creek Mining Co. REFERENCE EIR SCH # 80102409
Salton Sea Master EIR

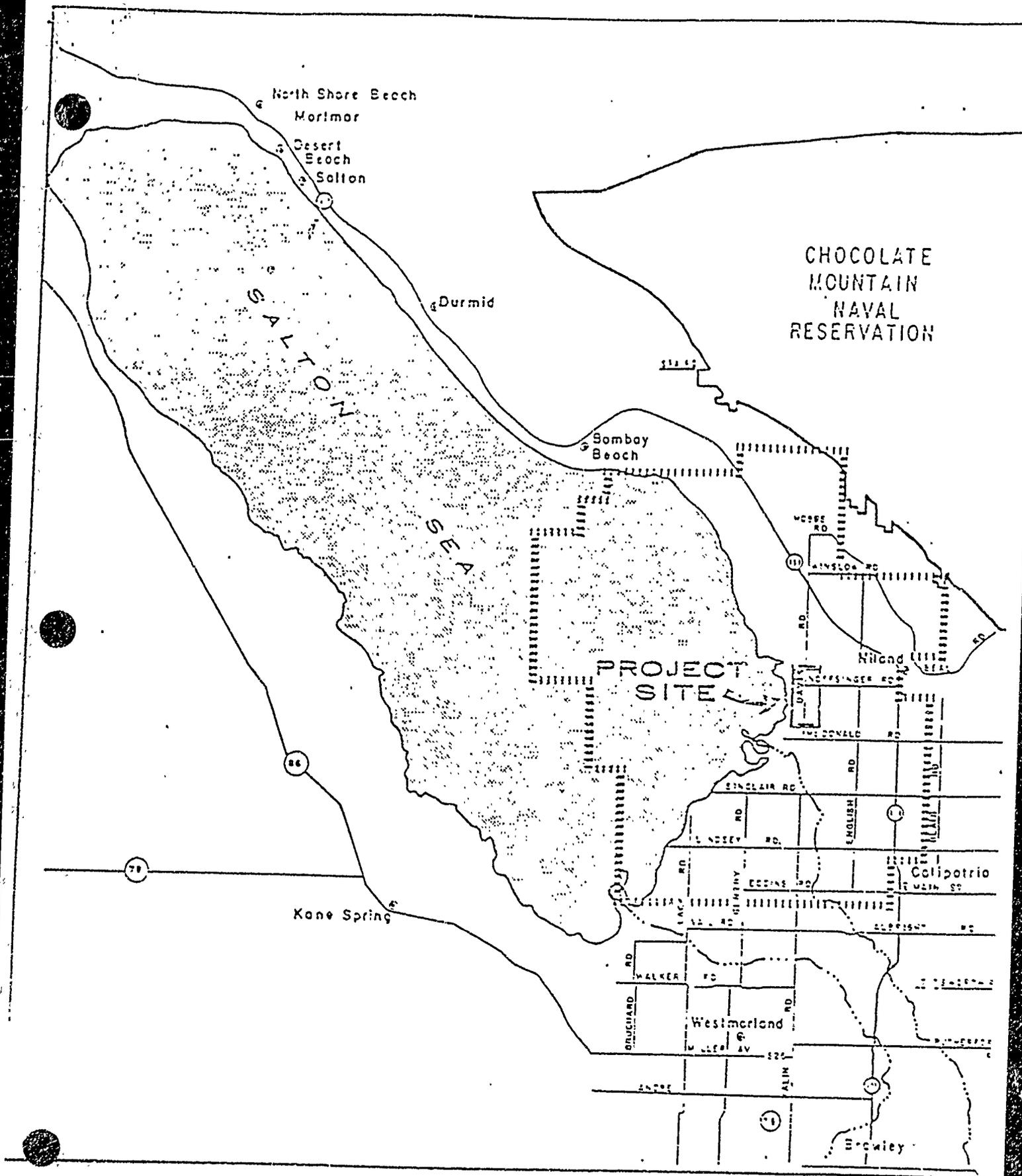
REQUEST COMMENTS BY: Jan 25, 1983

PHILIP SHAFER
Geothermal Planner

Attachments (17 pp):

- Maps and Project Description from Application
- Notes from Initial Study
- Letter re Cultural Resources

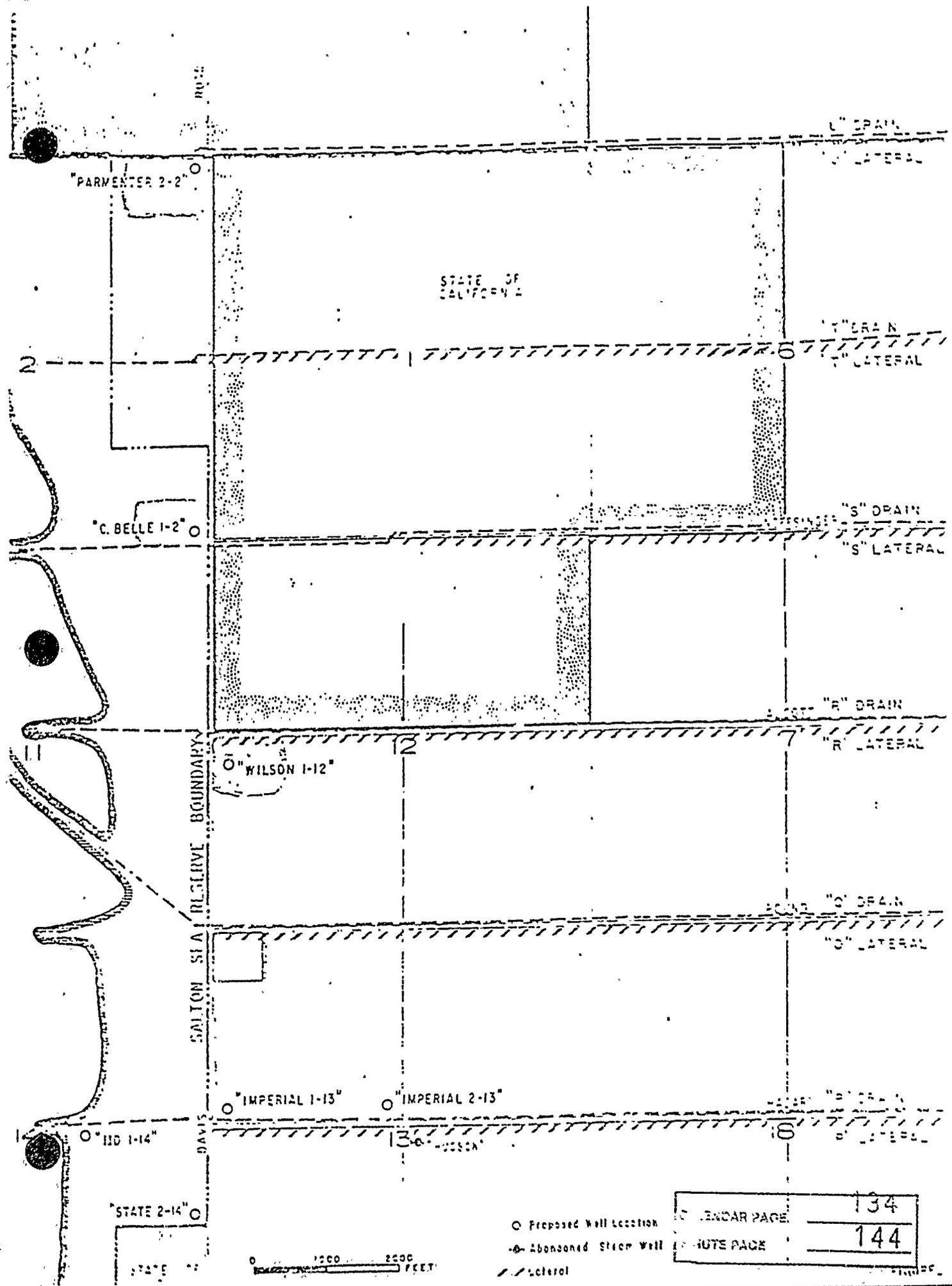
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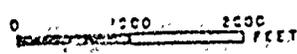
STUDY AREA FOR
GEOHERMAL OVERLAY ZONE

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STATE OF CALIFORNIA

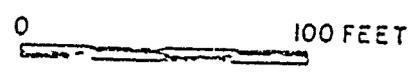
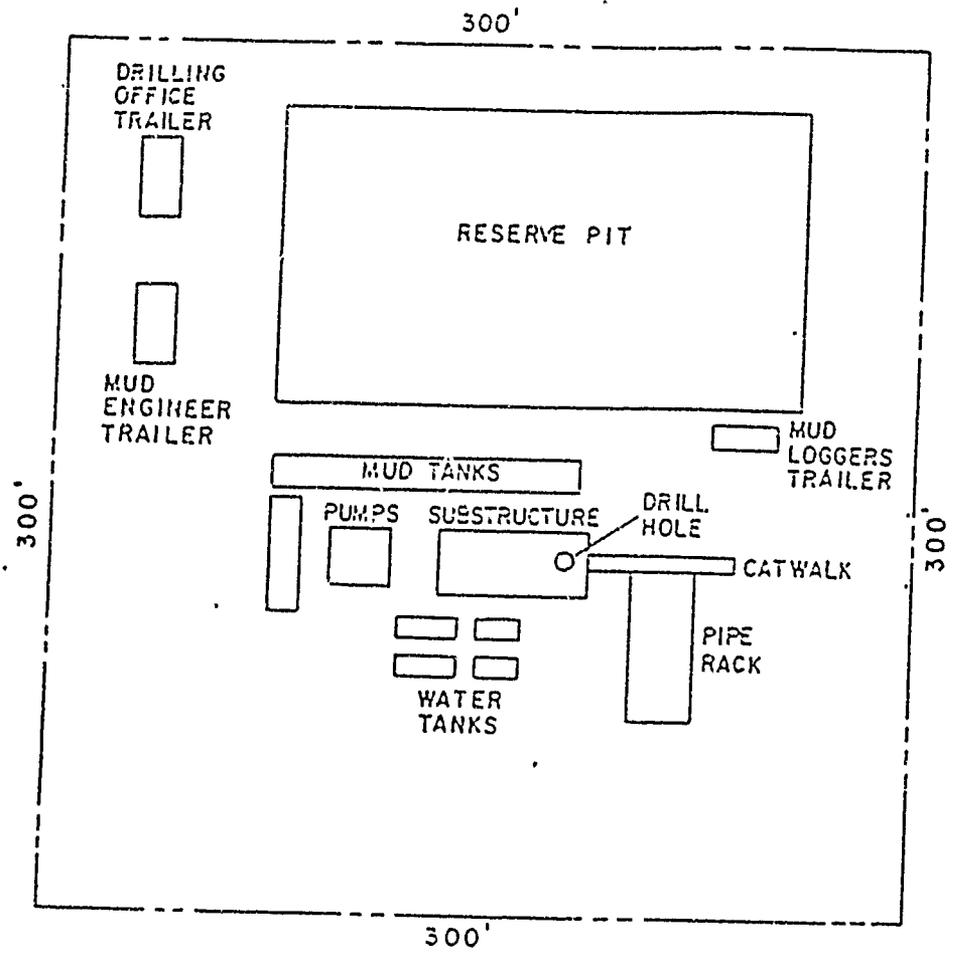


SALTON SEA RESERVE BOUNDARY



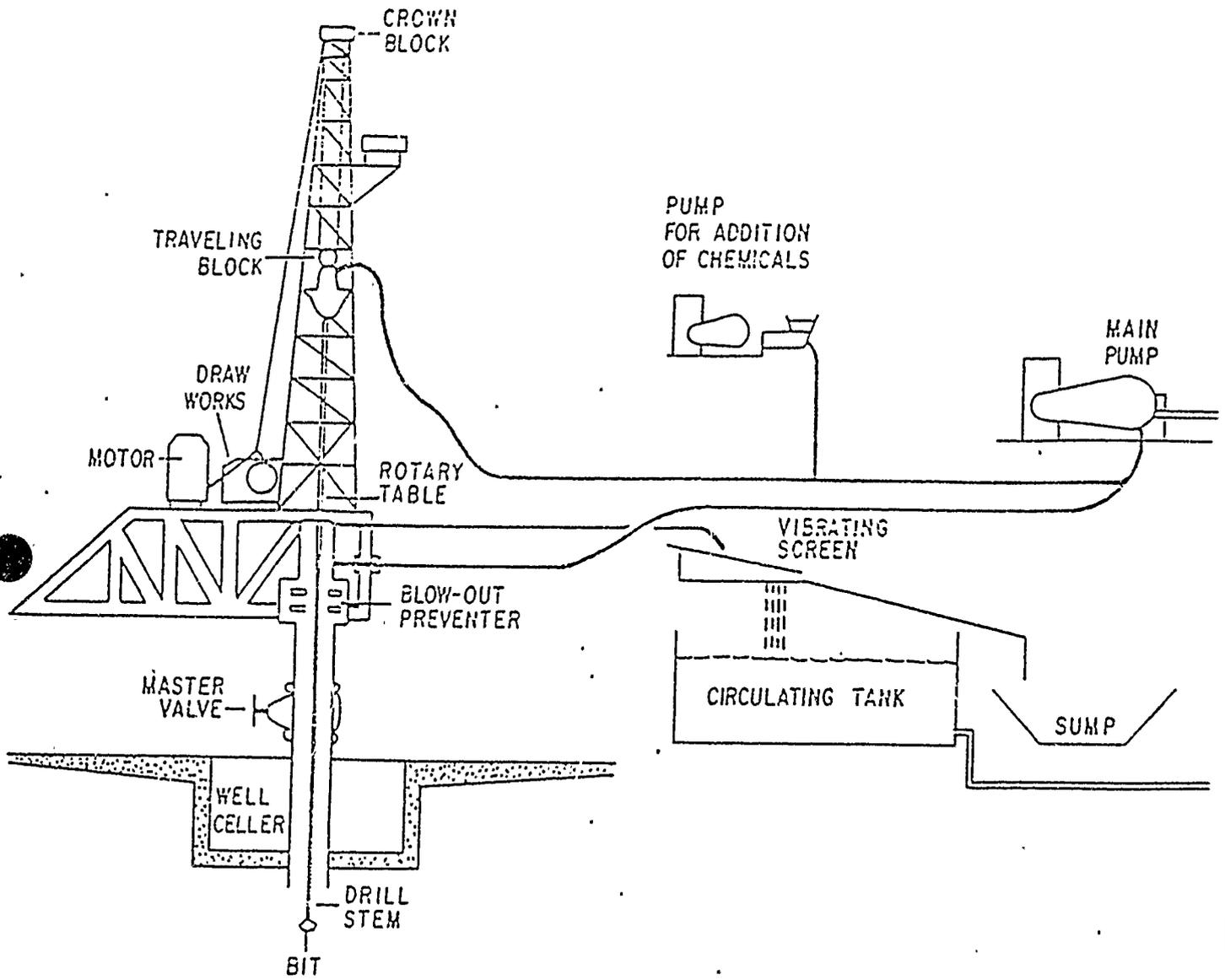
- Proposed Well Location
- ◻ Abandoned Steel Well
- Lateral

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WELL SITE PLAN

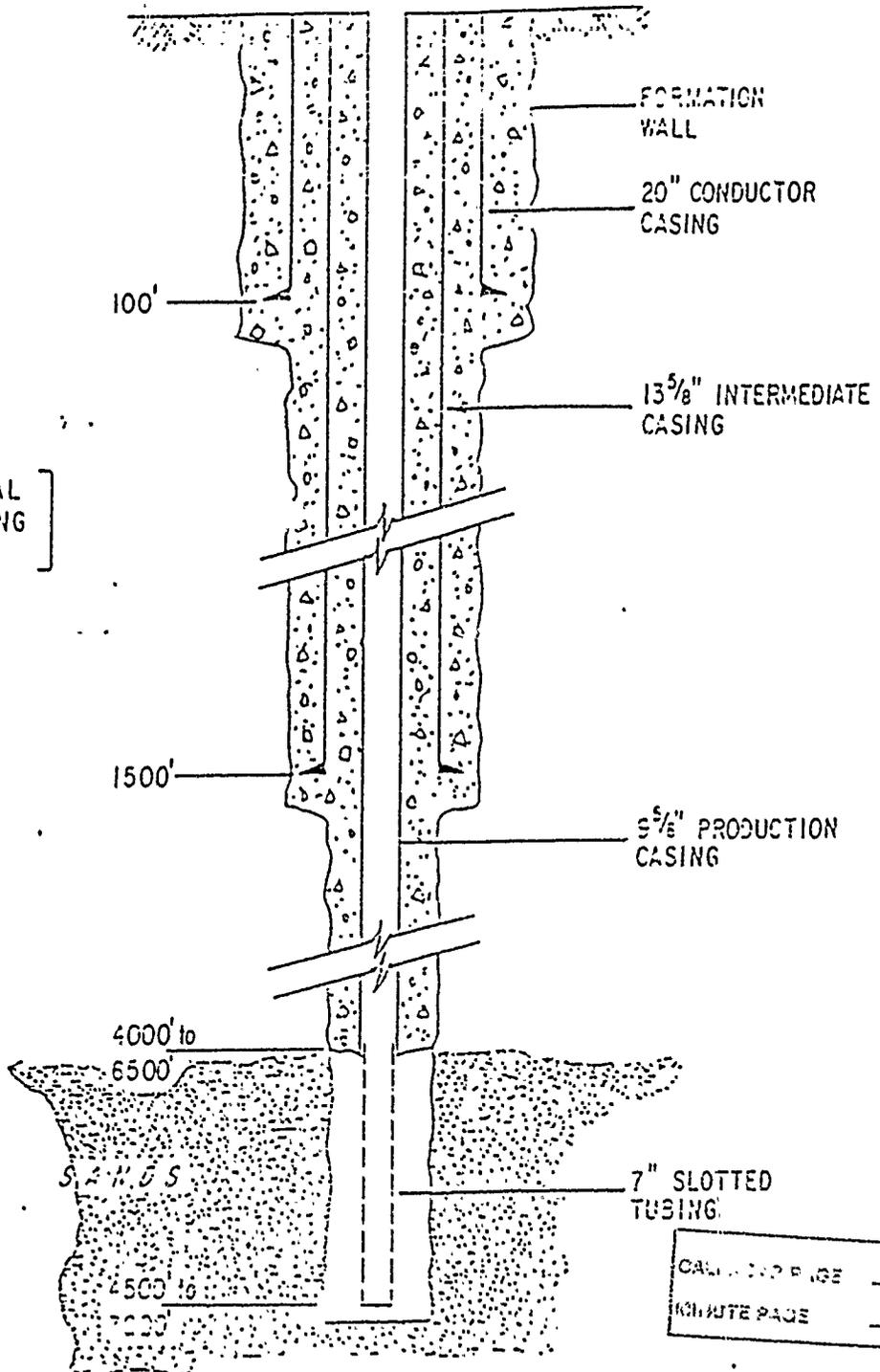
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TYPICAL DRILLING MUD CYCLE

CONTINUED ON PAGE	135 A
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[OPTIONAL
16" CASING
TO 500']



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TYPICAL EXPLORATORY WELL CONFIGURATION

I. INTRODUCTION

Bear Creek Mining Company is proposing to drill and test up to six exploratory wells to be located on lands located about 3.5 miles west of Niland in Imperial County. The results of previous shallow temperature gradient testing programs indicate additional geothermal resource testing is justified. The proposed project is, to the best of Bear Creek's knowledge, compatible with existing zoning and the identified goals, policies, and objectives of the County of Imperial as stated in the Geothermal Element of the General Plan.

The information submitted in this proposal to the County of Imperial as part of Bear Creek's application for a Geothermal Exploration Permit is for the purpose of providing the County sufficient data in order to carry out its responsibilities as environmental Lead Agency for the State as defined in the California Environmental Quality Act. The following is a list of Agencies to whom applications for permits will be submitted in the near future:

1. Imperial County Air Pollution Control District,
for the required Authority to construct permits.
2. California Regional Water Quality Control Board - Colorado
River Basin Region,
for the required Waste Discharge Order.
3. California Division of Oil and Gas,
for the required drilling and injection permits.

The information which follows consists of Bear Creek's description of the proposed exploration project including the location of the project, the identification of the existing environmental setting, a discussion of the proposed operations, and a list of the ways Bear Creek proposes to avoid all potentially significant environmental impacts associated with an exploration project of this type. Bear Creek believes that this information, when used with the information provided on the attached Application Environmental Information form and on the Application for Geothermal Exploration Permit form, should be adequate for preparation of the Initial Study and provide the factual basis for finding that our project, as proposed, will not have a

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significant effect on the environment. Bear Creek will, of course, provide any additional information the County may need to carry out their responsibilities as CEQA Lead Agency.

II. PROJECT DESCRIPTION

- A. Project Location - The six exploratory wells will be drilled from a choice of seven possible locations on lands owned or leased to Bear Creek Mining Company in the general vicinity of the community of Niland, Imperial County, California. The approximate well site locations and corresponding well identification numbers are provided below and shown on Figures 2 and 3. Surveyed well locations will be provided for each exploratory well prior to initiating the proposed operations.

IID 1-14 2800'± south, 1700'± west of the northeast corner of Section 14, Township 11 South, Range 13 East, SBB&M.

State 2-14 3850'± south, 160'± west of the northeast corner of Section 14, Township 11 South, Range 13 East, SBB&M.

Imperial 1-13 2460'± south, 180'± east of the northwest corner of Section 13, Township 11 South, Range 13 East, SSB&M.

Imperial 2-13 2460'± south, 2460'± east of the northwest corner of Section 13, Township 11 South, Range 13 East, SBB&M.

Wilson 1-12 2805'± east of the northwest corner of Section 12, Township 11 South, Range 13 East, SBB&M.

C. Belle 1-2 160'± north, 160'± west of the southeast corner of Section 2, Township 11 South, Range 13 East, SBB&M.

Parmenter 2-12 165'± south, 270'± west of the northeast corner of Section 2, Township 11 South, Range 13 East, SBB&M.

Exploratory well Imperial 1-13 is now scheduled to be drilled first.

B. Environmental Setting - The project area is within the area of study covered in the Salton Sea Anomaly Master Environmental Impact Report by Westec Services, Inc. (see Figure 2) and is fully described in Section III of that document.

B.1 Site Specific - None of the land within the project area is under cultivation, nor is it suitable for agricultural development. The soil of the proposed well sites consists of sandy loams and silty clays. Slopes are 0 to 2 percent. The well site locations except the State 2-14 (which will be inspected prior to drilling) were inspected by qualified personnel from the Imperial Valley College Museum and no evidence of archaeological material or threatened or endangered plant species were found. The inspection report is included as part of this proposal as Attachment A.

Only one residence is located in the general vicinity of the proposed project area, with no residence within one-half mile of any of the seven proposed well sites. All well sites are located at least three miles from the unincorporated community of Niland sphere of influence, as determined by the Imperial County Local Agency Formation Commission. The Salton Sea Reserve is located adjacent to all of the proposed well sites. The southern boundary of the Wister Waterfowl Management Area is adjacent to the three northern proposed well sites.

All exploratory well locations are located on land zoned for recreation with G-Overlay. Current zoning regulations allow for geothermal exploratory well drilling in any zone with approval of a Conditional Use Permit for Geothermal Exploration.

C. Discussion of Operations - Activities associated with the proposed exploration project will conform to the applicable laws and regulations of the California Division of Oil and Gas, Regional Water Quality Control Board, Imperial County Air Pollution Control District, Imperial Irrigation District, Imperial County Health Department, and the Imperial County Building

Inspection Division. Project activities can be grouped generally into one of four categories: (1) Site Preparation, (2) Well Drilling and Casing, (3) Well Clean-out and Testing, and (4) Well Site Clean-up and Restoration.

C.1 Site Preparation - Although the proposed well sites are nearly level in their present condition, some grading and compaction would be necessary to develop flat drill pads of about 1.5 acres (.7 ha). Site preparation would include grading operations to construct a reserve pit (drilling sump) 100 feet (31 m) long by 50 feet (16 m) wide by 5 feet (2 m) deep. A 3-foot freeboard would be allocated in the sump so the effective capacity would be 25,000 cubic feet (700 m³) or 4500 barrels. Construction of the reserve pit would be in accordance with approved engineering practices. Each pit and its embankment would be covered with native soils or bentonite clays if necessary such that its permeability would not exceed 1×10^{-6} cm per second which is the Regional Water Quality Control Board (RWQCB) requirement for short-term (less than one year) storage of muds and brines. A typical well site plan is shown on Figure 4. Conditions at each well site will modify this typical plan accordingly.

A well site will not be constructed until immediately before drilling operations are to begin at that site. Well site preparation, including drilling rig assembly, should require about 1 week for each well pad. Construction activities would be during daylight hours, and would employ 10 to 15 people on site. No permanent structures will be erected. Fugitive dust generated during construction activity will be minimized by sprinkling water on exposed dirt surfaces. Existing County and field roads will provide adequate access and no new roads are planned.

C.2 Well Drilling and Casing Program - Drilling operations are carried on 24 hours a day, 7 days a week until total depth is reached. An estimated 2 to 3 weeks would be required to

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drill each well. Employment would be provided for 25 persons working in 6 person shifts.

All drilling operations, including the drilling program, casing program, and provision of blowout prevention equipment (BOPE), would take place under the regulations and supervision of the State of California Division of Oil and Gas (CDOG).

The wells would be drilled to a total projected depth of $\pm 7,000$ feet (2133 m). One of the wells would be used as a reinjection well if production testing is to be done. The depth of this well would be selected on the basis of future field tests.

C.2a Drilling Equipment - The proposed wells would be drilled with a rotary drilling rig. Though exact conditions may vary somewhat from those mentioned below due to drilling rig availability, it is anticipated that the rotary drilling rig used would have a capacity of drilling to at least 7,000 feet (2133 m). Such a drilling rig is normally equipped with a 1000 horsepower (hp) drawworks. An independently-powered 800-hp mud pump would supply the hydraulics needed to drill efficiently. The mast and substructures are typically rated at 400 tons capacity or sufficiently overrated to provide an adequate margin of safety according to good engineering practices.

C.2b Drilling Fluid - Drilling fluid, usually referred to as drilling "mud", is primarily a mixture of water (about 95 percent) and clay (about 5 percent). The clay is typically sepiolite and/or bentonite. The mud also contains varying quantities of additives depending on the particular drilling conditions and the company doing the drilling. The additives expected

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to be used for the subject drilling program are presented in Table I. As shown, no chromates or other heavy metals would be used.

Table I
ADDITIVES TO DRILLING MUD FOR 7000 FOOT WELLS

Bentonite	13,440 pounds	(6,097 kg)
Caustic Soda	1,400 pounds	(637 kg)
Sepiolite	33,600 pounds	(15,239 kg)
Lignite	4,480 pounds	(2,030 kg)
Lime	448 pounds	(203 kg)
Cottonseed Hulls	minor	
Gypsum	minor	
Barite	minor	

About 100 to 150 barrels of water per day would be needed (for 15 to 20 days) to make up the drilling mud necessary to drill 7,000 feet (2133 m). Thus, 1500 to 3000 barrels of drilling mud would be utilized per well. Water is to be supplied by the Imperial Irrigation District from various laterals and drains adjacent to the well sites. Irrigation piping (3 inch, 7.6 cm) would be used to convey the water to each drill site.

Drilling mud serves the following functions:

- 1) Remove cuttings from the well bore.
- 2) Control subsurface pressure.
- 3) Cool and lubricate drill bit and pipe.
- 4) Prevent walls from caving.
- 5) Prevent formation damage.
- 6) Provide maximum information from formations penetrated.
- 7) Suspend cuttings when circulation stops.
- 8) Support weight of drill string and casing.

The mud is circulated through a closed loop system as illustrated in Figure 5. After coming out of the drill hole, the mud passes through a desilter and across a fine screen shale shaker, separating cuttings from the mud. The mud then passes through a cooling tower (depending on bottom hole temperature), which reduces the temperature by about 80°F (27°C), and is returned to the drill hole via mud pumps. The cuttings would be stored in the reserve pit and concentrated by evaporation as much as possible until transported to an approved sanitary landfill. The appropriate disposal site would be determined after chemical analysis of the residue.

C.2c Casing Program - The drilling procedure is initiated by drilling a relatively large diameter hole to approximately 100 feet (31 m), and setting a 20-inch (51 cm) conductor pipe to protect against washouts and shallow lost circulation zones. A 17-1/2 inch (44 cm) hole is then drilled to approximately 1500 feet (457 m) and about 1500 feet (457 m) of 13-5/8 inch (35 cm) surface casing is run and cemented in place. An optional 16" (40 cm) casing string may be used between 100' (31 m) to a depth of 500' (152 m) to prevent excess sloughing within the well. This casing serves to protect against contamination of groundwater aquifers, sloughing shale and lost circulation zones.

After the 13-5/8 inch (35 cm) surface casing is cemented in place, a 12-1/4 inch (31 cm) hole is drilled to a point above the producing interval. A 9-5/8 inch (24.5 cm) casing string is run and cemented back to the surface. An 8-1/2 inch (21.6 cm) hole is drilled through the producing interval to total depth, and a 7-inch (17 cm) blank and preslot-

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ted perforated liner is hung from approximately 100 feet (30 m) to 500 feet (152 m) below the base of the 9-5/8 inch (24.5 cm) casing. (Figure 6)

C.3 Well Cleanout and Testing - After completion of the drilling phase the blowout prevention equipment would be removed and the annulus wellhead valves installed. The wellbore fluids must be cleaned out by flowing the well into the reserve pit. This removes drilling muds and cuttings from the walls of the wellbore so that testing can be done without drilling fluid contamination. Well cleanout flow is limited to the capacity of the storage area (reserve pit) which is about 2×10^5 gallons (7.6×10^5 liters). This fluid would be evaporated and the residue trucked to an approved disposal site which would be selected on the basis of chemical analysis of the residue.

Testing procedures would then be initiated to define various parameters of the resource. Limited production testing would be done by flowing into the reserve pit while chemical tests are conducted. After two or more wells are completed, a sustained production flow test of up to 4 weeks would be accomplished by reinjecting the produced fluid into one of the wells converted for reinjection purposes (subject to CDOG approval).

During sustained production tests, the reservoir fluid flows from the production well into a fluid/steam separator vessel, then continues through the system while monitored for such physical parameters as flow rate, steam quality, percent steam, temperature, and various chemical characteristics. The steam phase is vented to the atmosphere, and the remaining fluid (spent brine) travels to storage tanks and then to injection facilities.

C.4 Well Site Cleanup and Restoration - Upon completion of any flow test, the wells will be capped for future use. All well sites will be cleaned up in accordance with County of

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Imperial standards, which would include removal of all equipment and material not in use for testing. The residue from drilling fluids and testing would be removed as provided for in Section C.3. Well cellars will be fenced to prevent unauthorized access.

Upon abandonment of the well, site will be returned as nearly as feasible to pre-construction conditions.

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NOTES FOR INITIAL STUDY #1409-82 - BEAR CREEK EXPLORATORY #1

- 2.1.4 a. There will be minor grading to level the drill sites and construct sumps. These will be removed and the sites restored at the end of the project. The impact will be temporary and insignificant.
- 2.2.2.e. In the event of a spill, hot, saline fluids might reach some drains and the sea. The required blow-out preventing equipment, sumps, graded site with protecting berms, and required availability of remedial crews and equipment, coupled with the short duration of the project reduces probability of impact to insignificance.
- 2.4.6. There is the possibility that some H₂S or other gasses might be encountered and released to the atmosphere. Although the chances of such release are low, the applicant has employed an abatement technique and will take whatever steps are necessary to prevent the creation of objectionable odors.
- 2.5. The project will generate noise. The techniques described in the application will be employed, as well as others, as may be necessary, to prevent unacceptable noise levels reaching receptors.
- 2.8.g. Although successful results of the project might lead to development of production facilities, Public Resources Code, Section 21030.1 specifically exempts geothermal exploratory projects from addressing those possible impacts.
- 2.8.h. and 2.10.a. The project might be perceived as impinging on the quality of nearby recreational activities and natural views. The brief period of the project reduces this to insignificance.
- 2.10.b. The project will be night lighted. The shielding to confine direct rays to the project, absence of nearby agricultural fields (with night "crop dusting"), and brief period, keeps this impact insignificant.

GENERAL
NOTE

A site specific archaeological and biological survey was conducted and found no cultural resources or rare or endangered botanical species.

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I.V.C. MUSEUM



29 October 1982
Mr. Larry Grogan,
Division Landman
Bear Creek Mining Company
2502 North Huachuca Drive
Tucson, Arizona 85745

Dear Mr. Grogan,

Pursuant to your letter of 22 October 1982, I examined each of the six proposed well sites described below, and found them free of significant prehistoric or historic cultural resources the drill activity might impact. Too, there were no rare or endangered botanical species within any of the site plots.

PARMENTER 2-12. -220' elevation. 165' S, 270' W of NE corner Section 2, T11S R13E. The site area has been extensively plowed and leveled. There are scatters of imported gravel and rock. Minor trash scatters also occur within the borders, as broken concrete, cans, and cigarette butts.

BELLE 1-2. 160' N, 160' W of SE corner Section 2, T11S R13E. -223' elevation. The area has experienced total impaction. Old farm buildings are on the W edge of the property. Though the site has been scraped and plowed, indigenous plants are recurring. Large blocks of pumice flotsam, pebble scatters, excavation units, pipe fragments, and trash scatters were noted.

WILSON 1-12. -225' elevation. 2205' S, 200' E of NW corner of Section 12, T11S R13E. S side of Alcott Road R Lateral. Area has been totally impacted by leveling and plowing. Now uncultivated, tamarisk and desert brush has sprouted within the site boundaries. An abandoned farm machine is along the W line.

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142 MARK STREET EL CENTRO, CA. 92543	

IID 1-14. -230 elevation. 2500' S, 1700' E of NE corner Section 13, T11S R13E. At end of dike along edge of Salton Sea. The drill site is on artificially formed terrain, and hence would contain no aboriginal material. There are no natural configurations within the drill area.

IMPERIAL 1-15. -220 elevation. 2150' S, 130' E of NW corner Section 13, T11S R13E. Severely impacted parcel from leveling and plowing. Indigenous brush has been returning. Some light trash scatters were noted.

Imperial 2-13. -220 elevation. 2460' S, 2460' E of NW corner Section 13, T11S R13E. Large block of pumice noted on ditch bank, probably placed there by whoever found it as flotsam in the site area. Ponds occur to the north; the site area is being reclaimed in indigenous growth.

Each of the site areas covers approximately a 400' square area. The parcels and their access roads were examined for resources likely to be impacted, as well as plants on the California botanical lists of rare and endangered species.

On archaeological and botanical grounds there is no reason to delay or to deny the permits for which Bear Creek Mining Company has applied to the County of Imperial. It is possible though unlikely that subterranean archaeological resources might exist within the proposed drill site areas. Should such drilling or construction activity expose unusual items of stone, bone, or ceramic material, all activity should cease until the discoveries can be examined by a qualified archaeologist.

Sincerely yours,

Jan von Werlhof,
Director and Sr. Archaeologist, IVCM

cc: Richard Mitchell, Director,
County of Imperial Planning Department

Sherilee von Werlhof, Coordinator,
IVC Foundation Environmental Studies

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FILE NO.	159