

MINUTE ITEM

This Calendar Item No. 44
was approved as Minute Item
No. 44 by the State Lands
Commission by a vote of 2
0 at its 8-22-80
ing.

CALENDAR ITEM

44.

8/80
W 40178
Freckman
PRC 5890

NEGOTIATED SUBSURFACE OIL AND GAS LEASE

APPLICANT: Shell Oil Company
P.O. Box 92047, Worldway Center
Los Angeles, CA 90009

AREA: 52.50 acres of Tide and Submerged land
within the bed of the Sacramento River,
Fremont Area (see Exhibits "A" and "B"),
Sacramento and Yolo Counties.

PROPOSED ACTION: Section 6815 of the Public Resources Code
provides that the Commission may negotiate
and enter into leases for compensation
to the State for the development of State
lands through drilling from adjoining lands
in two situations. First, where it appears
that wells drilled upon private or public
lands are draining or may drain oil or
gas from lands owned by the State. Second,
where the competitive bid provisions of
Section 6827 of the Public Resources Code
are impracticable by reason of the small
size or irregular configuration of the
property, or because of the property's
inaccessibility from surface drill sites
reasonably available or obtainable.

The staff believes that a negotiated lease
is appropriate here because of the property's
inaccessibility from surface drill sites
reasonably available or obtainable.

The State parcel is surrounded by lands
under lease to the applicant. Surface drillsites
on the State parcel would be inaccessible,
because the land is beneath the Sacramento
River. Therefore, the applicant intends
to drill directionally into the State parcel
from a drillsite located on adjacent land
east of the parcel. It is proposed to enter
into a negotiated lease with the applicant,
pursuant to Section 6815 of the Public
Resources Code.

A 4, 5

S 3, 4

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| CALENDAR PAGE | 227 |
| MINUTE PAGE | 1891 |

CALENDAR ITEM NO. 44. (CONTD)

Under the proposed negotiated oil and gas lease, Shell Oil Company would agree to pay in money to the State annually in advance, as rental, the sum of \$20 per acre, a 30% royalty on natural gas produced, and for oil, a percentage determined in accordance with the sliding scale schedule (16 2/3% minimum to 50% maximum at 500 B/D/well) attached to the lease on file in the Office of the State Lands Commission. Shell Oil Company also would agree to pay the State 5% of the value of all oil or gas produced by wells drilled through the parcel into adjacent lands.

PREREQUISITE ITEMS:

In accordance with the State guidelines for implementation of the California Environmental Quality Act of 1970, as amended, Commission staff conducted an Initial Study for the project and concluded that the proposed work would not result in a significant effect on the environment. As a result of the findings of the Initial Study, the preparation of an EIR is not required. As such, a Negative Declaration (Exhibit "C") was prepared and circulated to concerned agencies and to the public.

In accordance with Section 6873.2 of the Public Resources Code, "Notice of Public Hearing with Respect to the Policies of the State Lands Commission Relating to the Leasing of State-owned Tide and Submerged lands in the Fremont Area of the Sacramento River near the Elkhorn Subdivision, Sacramento and Yolo Counties, for Oil and Gas Extraction." was published on December 20, 1979 and December 27, 1979. The hearing was held on March 6, 1980, in Room 127, Food and Agriculture Building, 1220 "N" Street, Sacramento, California. Comments were received from the Yolo County Community Development Agency. These comments were adequately addressed by Commission staff to the satisfaction of Yolo County Community Development Agency.

CALENDAR ITEM NO. 44. (CONTD)

The proposed lease has been reviewed by staff counsel who have advised that the proposed negotiated lease will comply with the applicable provisions of the law and the rules and regulations of the Commission.

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

IT IS RECOMMENDED THAT THE COMMISSION:

1. DETERMINE THAT AN EIR HAS NOT BEEN PREPARED FOR THIS PROJECT BUT THAT A NEGATIVE DECLARATION HAS BEEN PREPARED BY COMMISSION STAFF.
2. CERTIFY THAT THE NEGATIVE DECLARATION (EIR ND 263) HAS BEEN COMPLETED IN COMPLIANCE WITH CEQA OF 1970, AS AMENDED, AND THE STATE GUIDELINES, AND THAT THE COMMISSION HAS REVIEWED AND CONSIDERED THE INFORMATION CONTAINED THEREIN.
3. DETERMINE THAT THE PROJECT WILL NOT HAVE A SIGNIFICANT EFFECT ON THE ENVIRONMENT.
4. FIND THAT THE GRANTING OF THE LEASE WILL HAVE NO SIGNIFICANT EFFECT UPON THE ENVIRONMENTAL CHARACTERISTICS IDENTIFIED PURSUANT TO SECTION 6370.1, OF THE PUBLIC RESOURCES CODE.
5. FIND THAT, IN ACCORDANCE WITH SECTION 6815, OF THE PUBLIC RESOURCES CODE, AS TO THE 52.5 ACRES OF TIDE AND SUBMERGED LANDS, SACRAMENTO AND YOLO COUNTIES, THAT THE PROVISIONS OF SECTION 6827 ARE IMPRACTICAL BY REASON OF ITS INACCESSIBILITY FROM SURFACE DRILL SITES REASONABLY AVAILABLE OR OBTAINABLE.
6. AUTHORIZE THE ISSUANCE OF A SUBSURFACE OIL AND GAS LEASE ON 52.50+ ACRES OF TIDE AND SUBMERGED LANDS DESCRIBED IN EXHIBIT "A" AND SHOWN IN EXHIBIT "B" ATTACHED, AND BY REFERENCE MADE A PART HEREOF, PURSUANT TO DIVISION 6, OF THE PUBLIC RESOURCES CODE; TO SHELL OIL COMPANY FOR CONSIDERATION OF AN ANNUAL RENTAL OF \$20 PER ACRE, AND AS ROYALTY ON NATURAL GAS PRODUCTION, A 30% SHARE OF ITS VALUE; ON OIL, A PERCENTAGE DETERMINED IN ACCORDANCE WITH THE SCHEDULE ATTACHED TO THE LEASE AND 5% OF THE VALUE OF ALL OIL AND GAS PRODUCED BY WELLS DRILLED THROUGH STATE LANDS INTO ADJACENT PRIVATE LANDS. THE PERFORMANCE BOND IS TO BE IN THE AMOUNT OF \$100,000.

EXHIBIT "A"

LAND DESCRIPTION

W 40178

DESCRIPTION OF PARCEL TO BE LEASED

All that certain real property situate in the counties of Sacramento and Yolo, State of California, more particularly described as follows:

That portion of the bed of the Sacramento River lying northerly and westerly of the southerly prolongation of the west line of Section 1, T9N, R3E, M.D.M. and southerly and easterly of the northwesterly line of Lot 28 of the Elkhorn Subdivision as shown on the official plat thereof filed for record in the Office of the Yolo County Recorder on February 6, 1912 in Book 2 of Maps at Page 51.

Containing 52.50+ Acres

EXCEPTING THEREFROM any portions lying landward of the ordinary high water mark of the Sacramento River.

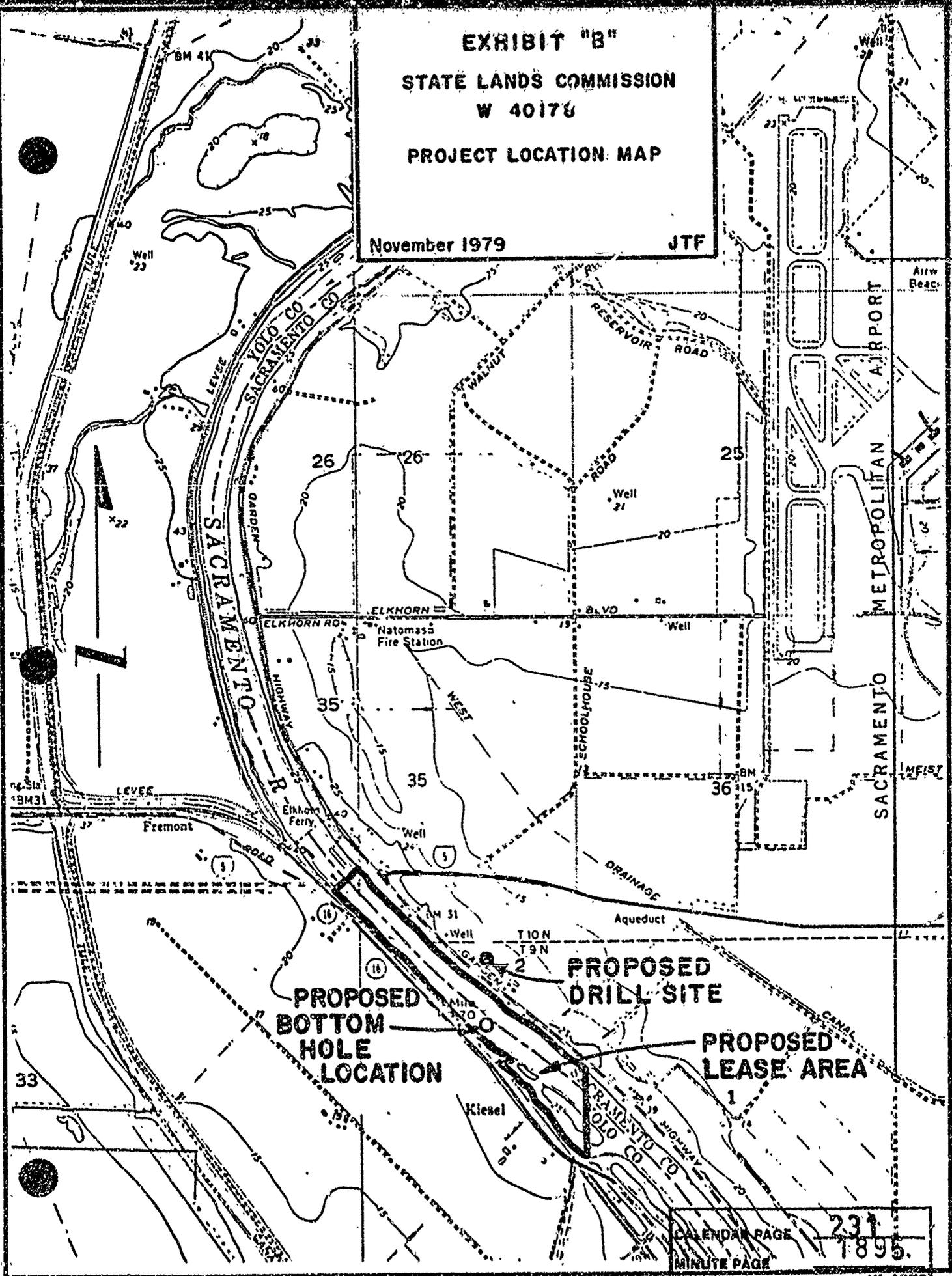
END OF DESCRIPTION

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| CALENDAR PAGE | 230 |
| MINUTE PAGE | 1894 |

EXHIBIT "B"
STATE LANDS COMMISSION
W 40176
PROJECT LOCATION MAP

November 1979

JTF



CALENDAR PAGE 231
MINUTE PAGE 1895
11-1979

STATE LANDS COMMISSION

BENNETH CORY, Controller
 MIKE CURR, Lieut. Gov. Governor
 GUY W. HANNAWAY, Director of Finance
 MARY ANN GRAVES



EXECUTIVE OFFICE
 1607 13th Street
 Sacramento, California 958

WILLIAM F. NORTROP
 Executive Officer

EIR NO 263

File Ref. W 40178

NEGATIVE DECLARATION

Project Applicant: Shell Oil Company

Project Location: State lands within a portion of the bed of the Sacramento River in the Fremont area near the Elkhorn Subdivision in Sacramento and Yolo Counties.

Project Description: To explore for and, if a discovery is made, produce natural gas from the above described State lands.

This NEGATIVE DECLARATION is prepared pursuant to the requirements of the California Environmental Quality Act (Section 21000 et. seq. of the Public Resources Code), the State EIR Guidelines (Section 15000 et. seq., Title 14, of the California Administrative Code), and the State Lands Commission regulations (Section 2901 et. seq. of California Administrative Code).

Based upon the attached Initial Study, it has been found that:

- the project will not have a significant effect on the environment.
- the attached mitigation measures will avoid potentially significant effects.

Contact Person: Ted T. Fukushima
 (916) 322-7813

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Form 13.17 (10/79)

Responses as Needed to Comments on the Initial Study

1. Ref. Letter - Yolo County Planning Dept. - February 26, 1980

A. Visual and Noise impacts on Elkhorn Park:

The only visual impact of this project on Elkhorn Park will be during the drilling phase. Duration of this phase will be 8-14 days pending completion of the well. The drill rig will be visible from the Yolo County side of the Sacramento River both day and night. This assumes 24 hour-a-day operation with night operations obviously requiring illumination. If commercial quantities of gas are encountered, visual impact on Elkhorn Park will be essentially nil. The production facility would have a low profile and would subsequently be hidden behind the levee on the Sacramento County side of the river and therefore invisible from the park in Yolo County.

Audible impact will also only be evidenced during the drilling phase of the project. The increase in noise level will primarily be in the immediate area of the drill rig with very little if any noise reaching the Yolo County side of the Sacramento River. Assuming commercial quantities of gas are discovered, the subsequent production facility would produce almost no noise at all.

B. Subsidence Potential

The State Lands Commission held a public hearing on March 6, 1980 concerning the policies of the Commission relating to this project. Also considered was a plan to control pollution and subsidence. Commission staff pointed out at this meeting that recorded subsidence in the immediate area of the proposed lease is very slight. Also as per the Initial Study, removal of natural gas is not a significant cause of subsidence in this region because:

- (1) The gas-bearing sands are generally quite thin, ranging from 10 to 50 feet in thickness, and can only compact a small amount.
- (2) The sands are relatively competent and resist compaction.

- (3) The water drive commonly fills the sand in, erstices as the gas is withdrawn.
- (4) Water is not extracted with the gas.
- (5) The volume of gas withdrawn is very small relative to the rock column involved.

The lessee, upon discovery of natural gas, will be required to determine a more recent subsidence rate before large volumes of gas are produced from this lease. This will be accomplished by precision level surveys of bench marks J 1031 and K 1031 located northeast of the proposed project drillsite. The lessee will also be required to establish at least one bench mark on both sides of the river adjacent to the proposed lease to effectively monitor subsidence. The lessee established bench marks will be tied by precise leveling with the control network of J 1031 and K 1031. The bench marks set by the lessee will be surveyed each year.

C. Encroachment of the "Proposed Lease Area"...

This is a valid concern in that the project location map that was part of the Initial Study was in error. A corrected map was presented at the public hearing on March 6, 1980 and a copy is attached herein. The Land Description, Exhibit "A" of the Initial Study, is correct however.

D. The Royalty Issue

The County of Yolo and Shell Oil Company have entered into a lease for certain lands (44.96 acres) along the west bank of the Sacramento River (Yolo County Agreement 75-94). This lease establishes a rental and royalty for the property described therein. The lease that the State and Shell Oil Company propose to enter into is a subsurface lease on the tide and submerged lands described in the Initial Study and will not involve Yolo County.

STATE LANDS COMMISSION

W 40178

PROJECT LOCATION MAP

"Enlarged and Corrected"

SACRAMENTO & YOLO COUNTIES

APRIL 1980

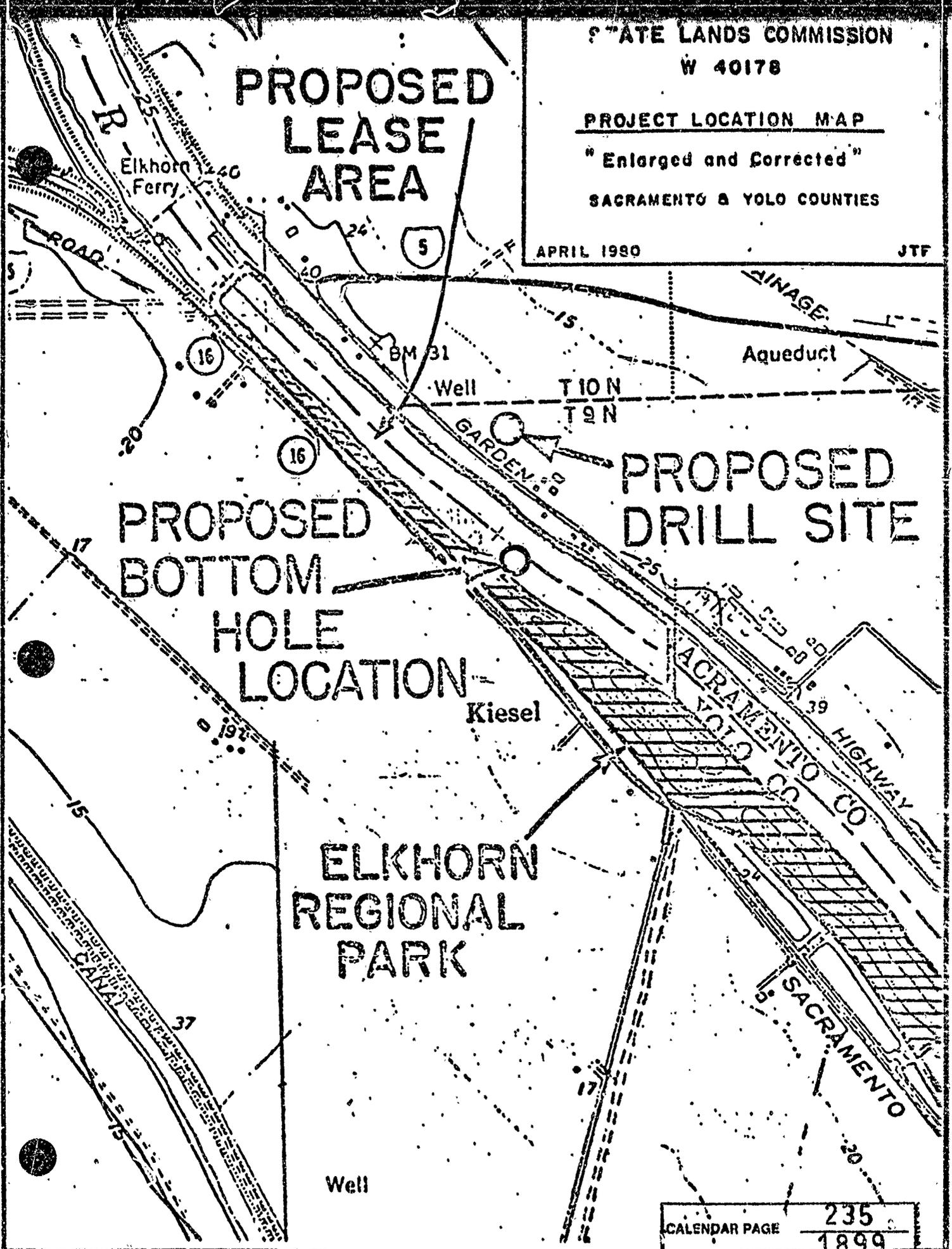
JTF

PROPOSED
LEASE
AREA

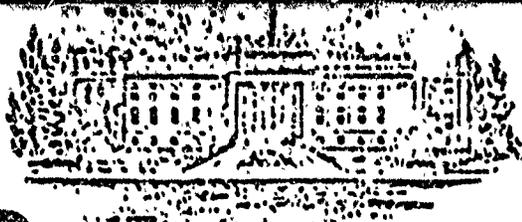
PROPOSED
DRILL SITE

PROPOSED
BOTTOM
HOLE
LOCATION

ELKHORN
REGIONAL
PARK



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|---------------|----------|
| CALENDAR PAGE | 235 |
| MINUTE PAGE | 1899 |
| | NEL 4-80 |



COUNTY OF YOLO

PLANNING DEPARTMENT
292 WEST BEAMER
WOODLAND, CALIFORNIA 95695
TELEPHONE 666-8556
AREA CODE 916

February 26, 1980

Mr. John Freckman
State Lands Commission
100 Oceangate, Suite 300
Long Beach, CA 90802

| | |
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| DATE | FEB 28 1980 |
| 3 | DJE |
| | CFE |
| 2 | ADW |
| | RGP |
| 1 | LTTE ✓ |
| Inc. # | |
| FILE: | 40178 |

Dear John:

Enclosed is a copy of my report to the Board of Supervisors and a copy of Minute Order 80-95 regarding the oil and gas lease near Elkhorn Park. Basically, the County is concerned with:

- A. Visual and noise impacts on Elkhorn Park
- B. Subsidence potential
- C. Encroachment of the "Proposed Lease Area" above the mean high water mark and onto the Elkhorn Park property (west river bank)
- D. The royalty issue

The Minute Order requests a more detailed map with Elkhorn Park boundaries and proposed lease area shown. The Board also requests that you address the environmental issues (A & B above) with regard to local public recreation and wildlife preserve activities at Elkhorn Park, and forward the resulting Negative Declaration to us.

The Board has directed the County Council to investigate the royalty issue and they will contact the appropriate individuals from your agency.

If you need any clarification or have any questions, please call.

Sincerely,
David Bolland
DAVID BOLLAND
Planning Intern

Janet Raygiero

DB/js
Encl.

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| CALENDAR PAGE | 236 |
| MINUTE PAGE | 1900 |

STATE LANDS COMMISSION

CONNETH CORY, Controller
MIKE ... Lieutenant Governor
MICHAEL ... SILBERMAN, Director of Finance

EXECUTIVE OFFICE
1807 - 13th Street
Sacramento, California 95814

WILLIAM F. NORTHROP
Executive Officer



File Ref.: W 40178

INITIAL STUDY CHECKLIST

I. BACKGROUND INFORMATION

A. Applicant: SHELL OIL COMPANY
P. O. BOX 92047
WORLD WAY CENTER
LOS ANGELES, CA 90009

B. Checklist Date: 1 / 15 / 80

C. Contact Person: JOHN T. FRECKMAN
Telephone: (213) 590-5213 ATSS: (635-5213)

D. Purpose: To explore for and, if a discovery is made, produce natural gas from the State lands described in Exhibit "A" (Land Description)

E. Location: State lands within a portion of the bed of the Sacramento River in the Fremont area near the Elkhorn Subdivision in Sacramento and Yolo Counties (see Exhibit "B" - Project Location Map)

F. Description: See attached description of project.

0. Persons Contacted: See list of persons or agencies contacted (attached)

ENVIRONMENTAL IMPACTS

(Explain all "yes" and "maybe" answers)

| | <u>Yes</u> | <u>Maybe</u> | <u>No</u> |
|--|-------------------------------------|-------------------------------------|-------------------------------------|
| A. Earth. Will the proposal result in: | | | |
| 1. Unstable earth conditions or in changes in geologic substructures? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Disruptions, displacements, compaction, or overcovering of the soil? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Change in topography or ground surface relief features? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 4. The destruction, covering, or modification of any unique geologic or physical features? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Any increase in wind or water erosion of soils, either on or off the site? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 6. Changes in deposition or erosion of beach sands, or changes in siltation, deposition or erosion which may modify the channel of a river or stream or the bed of the ocean or any bay, inlet, or lake? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 7. Exposure of people or property to geologic hazards such as earthquakes, landslides, mudslides, ground failure, or similar hazards? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| B. Air. Will the proposal result in: | | | |
| 8. Substantial air emissions or deterioration of ambient air quality? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Yes Maybe No

- 9. The creation of objectionable odors?
- 10. Alteration of air movement, moisture or temperature, or any change in climate, either locally or regionally?

C. Water. Will the proposal result in:

- 11. Changes in the currents, or the course or direction of water movements, in either marine or fresh waters?
- 12. Changes in absorption rates, drainage patterns, or the rate and amount of surface water runoff?
- 13. Alterations to the course or flow of flood waters?
- 14. Change in the amount of surface water in any water body?
- 15. Discharge into surface waters, or in any alteration of surface water quality, including but not limited to temperature, dissolved oxygen or turbidity?
- 16. Alteration of the direction or rate of flow of ground waters?
- 17. Change in the quantity of ground waters, either through direct additions or withdrawals, or through interception of an aquifer by cuts or excavations?
- 18. Substantial reduction in the amount of water otherwise available for public water supplies?
- 19. Exposure of people or property to water related hazards such as flooding or tidal waves?

D. Plant Life. Will the proposal result in:

- 20. Change in the diversity of species, or number of any species of plants (including trees, shrubs, grass, crops, and aquatic plants)?
- 21. Reduction of the numbers of any unique, rare or endangered species of plants?
- 22. Introduction of new species of plants into an area, or in a barrier to the normal replenishment of existing species?

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23. Reduction in acreage of any agricultural crop?

E. Animal Life. Will the proposal result in:

24. Change in the diversity of species, or numbers of any species of animals (birds, land animals including reptiles, fish and shellfish, benthic organisms, or insects)?

25. Reduction of the numbers of any unique, rare or endangered species of animals?

26. Introduction of new species of animals into an area, or result in a barrier to the migration or movement of animals?

27. Deterioration to existing fish or wildlife habitat?

F. Noise. Will the proposal result in:

28. Increase in existing noise levels

29. Exposure of people to severe noise levels?

G. Light and Glare. Will the proposal result in:

30. The production of new light or glare?

H. Land Use. Will the proposal result in:

31. A substantial alteration of the present or planned land use of an area?

I. Natural Resources. Will the proposal result in:

32. Increase in the rate of use of any natural resources?

33. Substantial depletion of any nonrenewable resources?

J. Risk of Upset. Will the proposal result in:

34. The involvement of a risk of an explosion or the release of hazardous substances (including, but not limited to, oil, pesticides, chemicals, or radiation) in the event of an accident or upset conditions?

K. Population. Will the proposal result in:

35. The alteration, distribution, density, or or growth rate of the human population of the area?

L. Housing. Will the proposal result in:

36. Affecting existing housing, or create a demand for additional housing?

Yes

Maybe

No

M. Transportation/Circulation. Will the proposal result in:

37. Generation of substantial additional vehicular movement?

38. Affecting existing parking facilities, or create a demand for new parking?

39. Substantial impact upon existing transportation systems?

40. Alterations to present patterns of circulation or movement of people and/or goods?

41. Alterations to waterborne, rail, or air traffic?

42. Increase in traffic hazards to motor vehicles, bicyclists, or pedestrians?

N. Public Services. Will the proposal have an effect upon, or result in a need for new or altered governmental services in any of the following areas:

43. Fire protection?

44. Police protection?

45. Schools?

46. Parks and other recreational facilities?

47. Maintenance of public facilities, including roads?

48. Other governmental services?

O. Energy. Will the proposal result in:

49. Use of substantial amounts of fuel or energy?

50. Substantial increase in demand upon existing sources of energy, or require the development of new sources of energy?

P. Utilities. Will the proposal result in a need for new systems, or substantial alterations to the following utilities:

- 51. Power or natural gas?
- 52. Communication systems?
- 53. Water?
- 54. Sewer or septic tanks?
- 55. Storm water drainage?
- 56. Solid waste and disposal?

Q. Human Health. Will the proposal result in:

- 57. Creation of any health hazard or potential health hazard (excluding mental health)?
- 58. Exposure of people to potential health hazards?

R. Aesthetics. Will the proposal result in:

- 59. The obstruction of any scenic vista or view open to the public, or will the proposal result in the creation of an aesthetically offensive site open to public view?

S. Recreation. Will the proposal result in:

- 60. An impact upon the quality or quantity of existing recreational opportunities?

T. Archaeological/Historical. Will the proposal result in:

- 61. An alteration of a significant archeological or historical site, structure, object, or building?

U. Mandatory Findings of Significance.

- 62. Does the project have the potential to degrade the quality of the environment reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

- | | <u>Yes</u> | <u>Maybe</u> | <u>No</u> |
|--|--------------------------|--------------------------|-------------------------------------|
| 63. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 64. Does the project have impacts which are individually limited, but cumulatively considerable? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 65. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

III. DISCUSSION OF ENVIRONMENTAL EVALUATION

- See attachment of the same title

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| MINUTE PAGE | 190.7 |

On the basis of this initial evaluation:

- I find the proposed project **COULD NOT** have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared.
- I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on an attached sheet have been added to the project. A **NEGATIVE DECLARATION** will be prepared.
- I find the proposed project **MAY** have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required.

Date: 1/18/80

John T. Freckman

JOHN T. FRECKMAN
Energy and Mineral Resources Engineer

For The State Lands Commission

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| CALENDAR PAGE | <u>244</u> |
| MINUTE PAGE | <u>1908</u> |

EXHIBIT "A"

LAND DESCRIPTION.

All that certain real property situate in the counties of Sacramento and Yolo, State of California, more particularly described as follows:

That portion of the bed of the Sacramento River lying northerly and westerly of the southerly prolongation of the west line of Section 1, T. 9 N., R. 3 E., M.D.B. & M. and southerly and easterly of the northwesterly line of Lot 28 of the Elkhorn Subdivision as shown on the official plat thereof filed for record in the Office of the Yolo County Recorder on February 6, 1912 in Book 2 of Maps at Page 51.

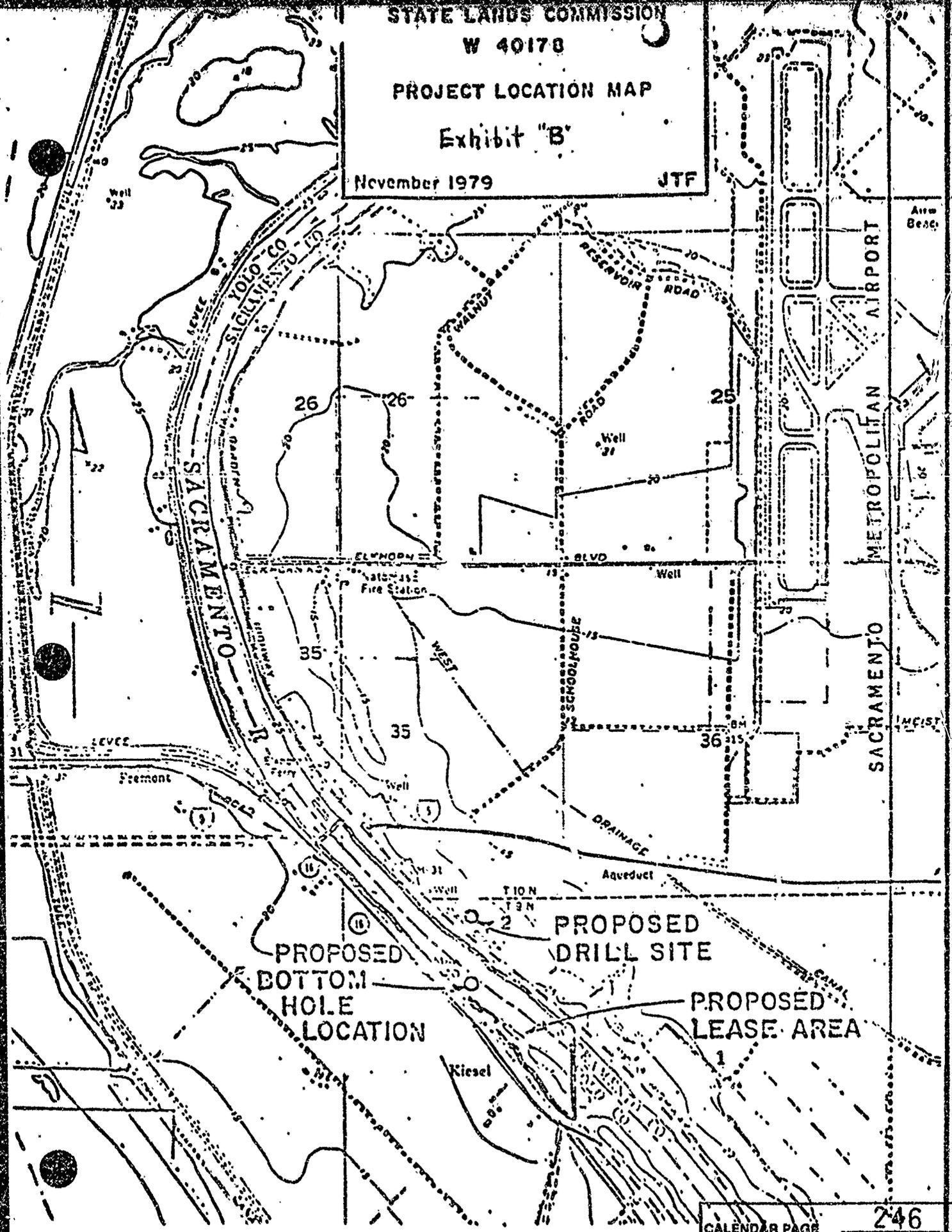
Containing 52.50+ acres

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STATE LANDS COMMISSION
W 40178
PROJECT LOCATION MAP
Exhibit "B"

November 1979

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F. Description of Project:

Issuance of a subsurface Oil and Gas Lease on the above described State lands to Shell Oil Company. The applicant proposes to drill one well on privately owned land to the east of the Sacramento River. The proposed well location is to be approximately 1,555' Westerly and 265' Southerly of the Northeast corner of Section 2, T. 9 N., R. 3 E., M.D.B.M., Sacramento County. The well will be directionally drilled to a target location beneath the Sacramento River approximately 1,550' Westerly and 1,350' Southerly of the Northeast corner of Section 2, T. 9 N., R. 3 E., M.D.B.M., Yolo County (see exhibit "B").

Drilling will be done with conventional rotary equipment in strict compliance with Manual #M07 (Oil and Gas Well Blowout Prevention in California), as provided by the California Division of Oil and Gas. Work will also be in compliance with all safety and pollution regulations adopted by Federal, State, and Local agencies.

Prior to moving in drilling equipment, the surface location will be surveyed and staked, the drilling pad built, and a mud sump dug. The drilling pad will be graded, leveled, and surfaced with gravel to insure a sound base for the drilling rig. The sump will be used to collect cuttings and any excess drilling mud. Upon completion of surface preparations, a 20±" hole will be dug to 30±' with a dry hole auger and 16" conductor casing set. The rotary drilling rig will then be moved on location and drilling will commence.

Initially, an 11" hole will be drilled to approximately 750' with a bentonitic fresh water mud. The open hole will be logged and 8-5/8" casing will be run and cemented to the surface. Blowout equipment will be installed and tested in accordance with Manual #M07. A 7-7/8" hole will then be directionally drilled to a true vertical depth of 3,000±'. The open hole interval will be logged and evaluated for productivity.

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In the event that gas is found in commercial quantities, 5-1/2" casing will be run and cemented to surface. Well-head equipment will be installed and four holes will be shot in the casing above the potential completion interval(s). A water shut off (W.S.O.) test will be performed to insure that there is no communication with fresh water sands. The completion interval(s) will be opened to production by jet perforating the 5-1/2" casing. The rig will then move out and the mud sump will be drained and backfilled to the original grade. A portable testing unit will then be moved on location and the well will be production tested for open flow potential. It is estimated that six days will be required for drilling to total depth and four additional days will be required for perforating and testing.

To complete the project, surface facilities consisting of a two phase gas/water separator, water storage tank, and a flow meter will be installed. The gas will be transported to a central dehydrating plant located in Section 26, T. 10 N., R. 3 E., M.D.B.M., via pipeline. Produced water will be trucked away and disposed of in an approved disposal site. From the central dehydration facility, produced gas will flow through the existing Steelhead Pipeline to the Shell Martinez Refinery.

In the event the well proves non-commercially productive, cement plugs will be placed in accordance with D.O.G. requirements, a steel plate will be welded on at surface, the fluid in the sump will be hauled to an acceptable disposal site, and the location will be restored to its original condition.

The environmental characteristics associated with the drilling of this well should be no different from that associated with other gas wells in the area. The fact that the drilling objective lies beneath the Sacramento River bed necessitates drilling the hole directionally from a nearby surface location. The drilling will be planned to insure that the hole will in no way interfere or communicate with the Sacramento River. Continuous monitoring of hole conditions and surface equipment will be maintained during drilling in strict compliance with D.O.G. standards.

G.

PERSONS OR AGENCIES CONTACTED

MEMOS

California Department of Fish and Game
California Department of Conservation, Division of Oil & Gas
State Water Resources Control Board
Solid Waste Management Board
California Department of Health
The Reclamation Board
O.P.R. Clearinghouse, Attn.: Laurie Wright
California Department of Parks and Recreation

LETTERS

Shell Oil Company, Attn.: J. E. Mathews
Sacramento County APCD
Sacramento County Planning Department
City of Sacramento Planning Commission
Yolo County Planning Department
Yolo-Solano APCD
U. S. Army Corps of Engineers

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| MINUTE PAGE | <u>1913</u> |

DISTRIBUTION LIST FOR MEMOS

Department of Fish and Game
Attention: E. C. Fullerton
1416 Ninth St.
Sacramento, CA 95814

Department of Fish and Game
Region 2
1701 Nimbus Rd.
Rancho Cordova CA 95670

Department of Conservation
Division of Oil and Gas
1416 Ninth St. Room 1316
Sacramento, CA 95814

John Huddleston
State Water Resources Control Board
2125 19th Street
Sacramento, CA 95670

Solid Waste Management Board
Attention: Bob Sleppy
825 K Street, Suite 300
Sacramento, CA 95814

Department of Health
Attention: Kenneth Buell
714 P Street, Room 430
Sacramento, CA 95814

Reclamation Board
Attention: Mel Schwartz
1416 Ninth St. Room 204-5
Sacramento, CA 95814

Office of Planning and Research
Attention: Laurie Wright
1400 10th Street
Sacramento, CA 95814

Department of Parks and Recreation
Attention: James Trynce

1200 "K" Street Mall
Sacramento CA 95814

| | |
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DISTRIBUTION LIST FOR LETTERS

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Shell Oil Company
P. O. Box 92047
Worldway Center
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Sacramento County Air Pollution Control District
3701 Branch Center Rd.
Sacramento, CA 95814

* Sacramento County Planning Department
827 7th Street
Sacramento, CA 95814

* City Hall - City of Sacramento Planning Commission
915 I Street
Sacramento, CA 95814

* Yolo County Planning Department
Attention: Mr. Robert A. Peterson
Planning Director

292 West Beamer
Woodland, CA 95695

Yolo-Solano
Air Pollution Control District
P. O. Box 1006 - Attn.: Mr. James A. Koslow
Air Pollution Control Officer
Woodland, CA 95695

U. S. Army Corps of Engineers
Attention: George C. Weddell
650 Capitol Mall
Sacramento, CA 95814

III. DISCUSSION OF ENVIRONMENTAL EVALUATION

- No. 2. Construction of the drill-pad and access road will disrupt some vegetation and soil. The disruption will include an area slightly larger than one acre depending on the length of the access road. The access road will intersect the Garden Highway, a levee road paralleling the Sacramento River.
- If natural gas is found in commercial quantities, the drill-pad will be reduced to an area of approximately one quarter acre for the permanent surface facility. Produced gas will be transported to a central dehydrating plant located in Section 26, T. 10.N., R. 3 E., via pipeline.
- No. 3. Possible subsidence in the project area is discussed in Exhibit "D". Also incorporated is a plan for subsidence control as required by Section 6873.2 of the Public Resources Code. (Exhibit "E").
- No. 8. A minor amount of temporary air pollution will be emitted during the operation of the diesel engines supplying power to the drilling activity. Exhibit "C" (attached) presents emission data on these engines. Pollution should be approximately equivalent to that contributed by several diesel-powered trucks. Duration should be 8 - 14 days pending completion.
- No. 20. During the construction phase, approximately one acre of crops would be removed for the drilling pad. If commercial quantities of gas are found, the production facility will only require approximately one quarter acre. The crop cover would be re-established for the previously disturbed area. If there is no gas found, the site will be returned to its original state.
- No. 23. One acre of crops will be disturbed. (See Nos. 2 and 20 above.)
- No. 24. Minor disturbances by the construction and drilling operation. Due to the existing pattern of repeated disturbance, animal use of this habitat fluctuates with the season and state of the crops.
- No. 27. Deterioration will be of short term except for the one quarter acre of land needed for a permanent surface facility if commercial quantities of gas are encountered. (See No. 24 above.)
- No. 28. There will be an increase in noise level in the immediate area of the drill site due to the construction equipment and drilling machinery. Mufflers will be installed on the drilling rig diesel engines to help mitigate the noise. This will be a short-term impact because the construction, drilling, and testing phases will last only approximately twelve days.
- No. 30. The drilling rig will be highly visible at night due to the outdoor lighting required for the around-the-clock activity. This will be a short-term effect as described in No. 28 above.

III. DISCUSSION OF ENVIRONMENTAL EVALUATION (cont) -2-

- No. 32. The rate of removal of natural gas will increase, provided commercial production of gas is obtained through the exploratory phase of the project.
- No. 33. Natural gas, if a commercially producible amount is found, is the only nonrenewable resource that will be removed.
- No. 34. Certain operations performed in drilling and production work are considered critical with respect to well control, fire, explosion, oil spills and other discharges or emissions. The critical operations may occur during drilling, well completion, well maintenance and construction. All applicable standards and regulations will be followed in the design and construction of the surface facilities and gathering line to the central dehydration plant. Routine inspections will be conducted and in the event of a leak, field personnel will be dispatched to locate and repair it.

EMISSIONS
DIESEL POWERED INDUSTRIAL ENGINE
EMISSION FACTORS AND RATES

750 H.P.¹

| | <u>g/hp. hr.²</u> | <u>at 75%³</u> <u>load factor</u> | <u>g/sec.</u> | <u>tons/mo.</u> |
|------------------------------------|------------------------------|---|---------------|-----------------|
| Carbon Monoxide (CO) | 3.030 | 2.27 | 0.47 | 1.37 |
| Exhaust Hydrocarbons (HC) | 1.120 | 0.84 | 0.17 | .51 |
| Evaporative Hydrocarbons | None | -- | -- | -- |
| Crankcase Hydrocarbons | None | -- | -- | -- |
| Nitrogen Oxides (NO _x) | 14.000 | 10.50 | 2.18 | 6.30 |
| Aldehydes | 0.210 | 0.16 | 0.03 | .12 |
| Sulfur Oxides (SO _x) | 9.931 | 0.70 | 0.15 | .42 |
| Particulate (Part) | 1.000 | 0.75 | 0.16 | .45 |

1. Total H.P. - two engines of approximately 350 hp. and 400 hp. will be used.
2. Data obtained from EPA, AP-42 Supplement 5; December 1975, p. 3.3.3-1.
3. Hoisting operations will require 675 hp. for approximately 6 hours/day and drilling operation will require 525 hp. 18 hours/day.

load factor 1 = $675/750 = 90\%$

load factor 2 = $525/750 = 70\%$

Average load factor = $\frac{(0.90)(6) + (0.70)(18)}{24} = 75\%$

Another impact that could occur is subsidence. An analysis of subsidence possibilities in this area of the Sacramento River follows:

General Comment

Variations in land level (including subsidence) in this area of the Sacramento River region are generally attributed to two causes:

Ground water withdrawal and
Tidal fluctuations

The extraction of natural gas is not a significant cause of subsidence in this region because:

- (1) The gas-bearing sands are generally quite thin, ranging from 10 to 50 feet in thickness, and can only compact a small amount.
- (2) The sands are relatively competent and resist compaction.
- (3) The water drive commonly fills the sand interstices as the gas is withdrawn.
- (4) Water is not extracted with the gas.
- (5) The volume of gas withdrawn is very small relative to the rock column involved.

Site-Specific Observations

With respect to the location of the proposed project, tidal fluctuations can be discounted because of very small elevation changes (measured in tenths of a foot or less) which are cyclical in nature.

Groundwater withdrawal, is the probable cause of the small elevation changes. However, it is not possible to rule out entirely tectonic or isostatic crustal readjustments.

One of the best sources of historic information regarding land level variations in the vicinity of the proposed project is the recurrent survey data of the National Geodetic Survey. Their readings record bench mark elevations over a considerable time span, up to 30 years in many cases. The following are their recordings of the bench mark stations located in the general vicinity of this proposed project:

(1)

DESCRIPTION OF BENCH MARK

| | | |
|--|---------------------|---------------------------|
| Designation ... E 1031 | State...California | County...Sacramento |
| Nearest town... Sacramento | County...Sacramento | Chief of party...C. Symms |
| Distance and direction from nearest town...5.6 miles northwest | | Leveling date...Oct. 1959 |
| Character of mark... A disk | | Stamping...E 1031 1959 |
| Established by...C&GS | | |

Detailed description...About 5.6 miles northwest along State Highway 24 from the Southern Pacific station at Sacramento, 91 feet east-northeast of the center of the junction of Leona Circle leading east, 81 feet east of the center line of the highway, 38 feet north of the center line of the side road, 2½ feet southwest of power pole 6137, 3 feet west of a fence, 2.0 feet west of a witness post, about 2½ feet lower than the highway and in the top of a concrete post flush with the ground.

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(2)

RECOVERY NOTE, BENCH MARK

Designation... Paso State... California County... Sacramento
 Nearest town... Sacramento Described in... 381214-108 Chief of party... Leon Smith
 Distance and direction from nearest town... 6.9 miles northwest
 Character of mark... C&GS tri. sta. disk Recovery date... Jan. 1970
 Also horizontal control point... [X] Stamping... PASO 1959
 Established by... C&GS Present Condition... Good
 Detailed report... 1.6 miles north along Interstate Highway 5 from the Southern Pacific Company railroad station at Sacramento, thence 1.5 miles west along Garden Highway, thence 3.8 miles north along El Centro Road, 80 feet northeast of the center of the intersection of Del Paso Road, 72.7 feet east of the centerline of El Centro Road, 35.0 feet north of the centerline of Del Paso Road, 23.8 feet north-northwest of a guyed powerline pole, 12 feet east of the centerline of a dirt road, 7.4 feet west of a metal witness post, about 3 feet lower than El Centro Road, and set in the top of a concrete post 0.1 foot below the surface of the ground.

(3)

DESCRIPTION OF BENCH MARK

Designation... F 1031 State... California County... Sacramento
 Nearest town... Sacramento County... Sacramento Chief of party... C. Symns
 Distance and direction from nearest town... 8.25 miles northeast
 Character of mark... A disk Leveling date... Oct. 1959
 Established by... C&GS Stamping... F 1031 1959
 Detailed description... About 7.1 miles northwest along State Highway 24 from the Southern Pacific station at Sacramento, thence 1.15 miles west along Del Paso Road, 156 feet southeast of the center of the junction of a drive north to the Navregin's, 39 feet southwest of the center line of the road, 3 1/2 feet northwest of a power pole, 2.5 feet northwest of a witness post, about 1/2 foot lower than the highway and in the top of a concrete post projecting 0.1 foot.

(4)

DESCRIPTION OF BENCH MARK

Designation... G 1031 State... California County... Sacramento
 Nearest town... Sacramento County... Sacramento Chief of party... C. Symns
 Distance and direction from nearest town... 9.25 miles northwest
 Character of mark... A disk Leveling date... Oct. 1959
 Established by... C&GS Stamping... G 1031 1959
 Detailed description... About 7.1 miles northwest along State Highway 24 from the Southern Pacific station at Sacramento, thence 2.15 miles west along Del Paso Road, 41 feet southeast of the center of the junction of Power Line Road, 23 feet south of the center line of Del Paso Road, 34 feet east of the center line of Power Line Road, 1 1/2 feet northeast of a power pole, 1.2 feet northwest of a witness post, about level with the roads and in the top of a concrete post flush with the ground.

(5)

DESCRIPTION OF BENCH MARK

Designation... H 1031 State... California County... Sacramento
 Nearest town... Sacramento County... Sacramento Chief of party... C. Symns
 Distance and direction from nearest town... 10.25 miles northwest
 Character of mark... A disk Leveling date... Oct. 1959
 Established by... C&GS Stamping... H 1031 1959
 Detailed description... About 7.1 miles northwest along State Highway 24 from the Southern Pacific station at Sacramento, thence 2.15 miles west along Del Paso Road, thence 1.0 mile north along Power Line Road, 47 feet southwest of the center of the intersection of Bayou Way, 37 feet west of the center line of the road

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(5) Con.

34 feet south of the center line of the way, 19.4 feet southwest of the center of the west end of a 36-inch pipe culvert under the road, 6 feet west of a power pole, 1.7 feet southwest of a witness post, about level with the road and in the top of a concrete post flush with the ground.

Recovered as Described 1968

(6)

DESCRIPTION OF BENCH MARK

Designation...J 1031 State...California County...Sacramento
Nearest town...Sacramento County...Sacramento Chief of party...C. Symms
Distance and direction from nearest town...11.25 miles northwest
Character of mark...A disk Leveling date...Oct. 1959
Established by...C&GS Stamping...J 1031 1959
Detailed description...About 7.1 miles northwest along State Highway 24 from the Southern Pacific Station at Sacramento, thence 2.15 miles west along Del Paso Road, thence 1.5 miles north along Power Line Road, thence 0.5 mile west along Meister Way, 45 feet southwest of the center of the junction of a dirt farm road south, 19 feet south of the center line of the way, 9 feet east of the extended center line of a dirt road north, 25 feet west of an irrigation lock, 24 feet northwest of a power pole, 1.5 feet north of a witness post, about level with the way and in the top of a concrete post projecting 0.2 foot.

Recovered as Described 1968

(7)

| | | |
|--|----------------------------|-------------------------------|
| Designation: K 1031 | State: California | County: Sacramento |
| Nearest Town: Sacramento | County: Sacramento | Chief of Party: R. A. Dowd |
| Distance and Direction From Nearest Town: 12.35 miles northwest | | Recovery Date: 1/26/68 |
| Character of Mark: Standard BM Disk | | Stamping: K 1031 1959 |
| Established By: USCGS | Present Condition: Good | |

Detailed Report:

This mark was recovered in good condition. A new recovery description is as follows:

About 7.1 miles northwest along State Highway 24 from the Southern Pacific station at Sacramento, thence 2.15 miles along Del Paso Road, thence 1.0 miles north along Power Line Road, thence 2.0 miles west on Airport Freeway to Garden Hwy exit, thence 0.3 miles to Meister Way (dirt road), turn right and head north-east for 0.6 miles, turn right and continue east for 0.5 miles. The mark is 35' southeast of the center of the junction of a dirt road south, 27 feet south of the center line of the way, 21 feet east the center line of the road, 19.6 feet northwest of the northwest corner of a concrete irrigation box, 6 feet north of a walnut tree, 15 feet west of the west boundary fence for the Sacramento Metropolitan Airport, 1.5 feet east of a witness post, about level with the road and in the top of a concrete post flush with the ground.

| | |
|--------------|------|
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(6)

| | | |
|--|---------------------------------|-------------------------------|
| Designation: L 1031 | State: California | County: Sacramento |
| Nearest Town: Sacramento | County: Sacramento | Chief of Party: R. A. Dowd |
| Distance and Direction From Nearest Town: 13.55 miles northwest | | Recovery Date: 1/26/68 |
| Character of Mark: Standard BM Disk | | Stamping: E 1031 1959 |
| Established by: C&GS | Present Condition: Destroyed | |

Detailed Report:

This station has been destroyed. The concrete monument has been moved from its original position; the disk has been removed from the concrete.

While these eight bench mark stations documented in 1959 range widely throughout the project area, only three have been read since that time.

| | <u>1959</u> (Feet) | <u>1968</u> (Feet) | <u>SUBSIDENCE</u> |
|----|-----------------------|-----------------------|-------------------|
| #5 | 12.326 | 12.326 | .000 |
| #6 | 14.682 | 14.642 | .040 |
| #7 | 15.282 | 15.282 | .000 |

In reviewing the available records, the low and nonexistent changes support the observation that historic subsidence in this region is very minimal.

EXHIBIT "E"

(SUBSIDENCE CONTROL PLAN)

The lessee, upon the discovery of natural gas and/or oil, will be required to determine a more recent subsidence rate before large volumes of gas are produced from the subject lease. This will be accomplished by precision leveling surveys of bench marks (U.S.G.S., USC & GS, and others) in the area. The lessee will also be required to establish bench marks (preferably one on each side of the lease area) which will be tied by precise leveling into the control network. Such bench marks set by the lessee shall be surveyed each year and the control network surveyed every two years.

Since it has been established that during subsidence (due to the removal of subsurface elements) bench marks will move toward the center or toward the area of deepest subsidence, such procedure could serve to effectively detect areal subsidence.

A well may be drilled and programmed to include a casing joint survey. A "casing joint survey" is a procedure in which a magnetic tool is lowered into the well and, as it is withdrawn, records the magnetic density of the casing. Lengths of casing can be accurately determined by such technique and comparisons with later surveys or "runs" may indicate casing deformation, a possible result of subsidence. While a casing joint survey may not reveal a total subsidence rate, it will permit the operator to determine if casings opposite the producing sands are undergoing deformation. These surveys would be run about every two years as part of the subsidence monitoring procedure.

Many gas sands in the delta region are repressured with a partial or full waterdrive mechanism. If the reservoir has a natural water-drive, then a withdrawal rate could be determined which would allow the formation pressures to remain fairly stable or constant. This condition could negate any subsidence attributed to gas production.

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LONG BEACH

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