

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 10/30/81
meeting.

CALENDAR ITEM

25

10/30/81
W 40194
Graber
PKC 6078

NEGOTIATED SUBSURFACE OIL AND GAS LEASE

APPLICANT: Hilliard Oil and Gas, Inc.
8020 Morningside Drive
Loomis, California 95650

LOCATION: Sacramento River at Grays Bend, Sutter
and Yolo Counties.

ACREAGE: 80 acres.

TYPE OF LAND: Tide and submerged.

PERTINENT INFORMATION:

P.R.C. Section 6815 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 P.R.C. Section 6827 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 potential for drainage from adjacent private lands, its small size and irregular configuration and its inaccessibility from surface drill sites reasonably available or obtainable.

The State parcel is surrounded by lands under lease to the applicant (see Exhibit "A"). Surface drillsites on the State parcel would be inaccessible, because the land is beneath the Sacramento River.

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-1-

CALENDAR PAGE	103A
MINUTE PAGE	2132

Under the proposed negotiated oil and gas lease, the applicant initially plans to drill through the State parcel and bottom on private lands. The applicant agrees to pay the State 5 percent of the value of all oil and gas produced by wells drilled through the parcel into private lands. If such drilling causes drainage of State lands the lease provides for an offset well.

In the event the applicant drills and bottoms on State land, it would agree to pay in money to the State annually in advance, as rental, the sum of \$10 per acre, a 30 percent royalty on natural gas produced, and for oil, a percentage determined in accordance with the sliding scale schedule (16 2/3 percent minimum to 50 percent maximum at 500 barrels per day per well) attached to the lease on file in the Office of the State Lands Commission. Hilliard Oil and Gas, Inc. also would agree to pay the State 5 percent 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 CEQA, 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 P.R.C. Section 6873.2, "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 Grays Bend Area of the Sacramento River, Sutter and Yolo Counties, for Oil and Gas Extraction." was published on March 11, 1981. The hearing

CALENDAR ITEM NO. 25 (CONTD)

was held on May 13, 1981, in Woodland City Council Chambers, 300 First Street, Woodland, California. No comments were received at the hearing.

In accordance with P.R.C. Section 6818, the Director of Parks and Recreation was notified of the proposed lease and has determined that the project will not interfere with recreational use of the littoral lands.

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.

The proposed lease was reviewed by the Office of the Attorney General in accordance with P.R.C. Section 6818, who has advised that the proposed lease complies with applicable provisions of law and the rules and regulations of the Commission.

ENVIRONMENTAL IMPACT:

The State Lands Commission's staff in accordance with 2 Cal. Adm. Code 2906(b) has conducted an initial study and has concluded that the project will not have a significant effect on the environment. Therefore, a Negative Declaration was prepared and filed with the State Clearinghouse.

This project is situated beneath the Sacramento River, which has been identified as possessing significant environmental values pursuant to PRC 6370.1 and is classified in use category Class B, which authorizes Limited Use.

Inasmuch as this lease involves subsurface extractive activity from adjacent property, the significant environmental values at this location will not be impacted.

AB 884:

9/28/82.

EXHIBITS:

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

CALENDAR ITEM NO. 25 (CONTD)

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 NO. 288) 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 P.R.C. SECTION 6370.1.
5. FIND THAT, IN ACCORDANCE WITH P.R.C. SECTION 6815, AS TO THE 80 ACRES OF TIDE AND SUBMERGED LANDS, SUTTER 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 80 ACRES OF TIDE AND SUBMERGED LANDS SHOWN IN EXHIBIT "A" AND DESCRIBED IN EXHIBIT "B" ATTACHED, AND BY REFERENCE MADE A PART HEREOF, PURSUANT TO P.R.C. DIVISION 6; TO HILLIARD OIL AND GAS, INC. FOR CONSIDERATION OF AN ANNUAL RENTAL OF \$10 PER ACRE, AND AS ROYALTY ON NATURAL GAS PRODUCTION, A 30 PERCENT SHARE OF ITS VALUE; ON OIL, A PERCENTAGE DETERMINED IN ACCORDANCE WITH THE SCHEDULE ATTACHED TO THE LEASE AND 5 PERCENT 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 \$50,000.

EXHIBIT "A"

STATE LANDS COMMISSION

W 40194

PROJECT LOCATION MAP

OCTOBER 1981

WFY

PROPOSED LEASE AREA

PROPOSED
DRILL
SITE

BOTTOM
HOLE
LOCATION

GRAYS
BEND

36

Pump House

36

Pump

N

J E S U S

M A R I A



UNDER LEASE
TO HILLIARD

CALENDAR PAGE

103E

MAP PAGE

2136

10/81

XC
October 13, 1981

W 40194

EXHIBIT "B"

LAND DESCRIPTION

All those State-owned submerged lands in the bed of the last natural channel of the Sacramento River at Grays Bend, Sutter and Yolo Counties, State of California, lying within T10 & 11N, R3E, MDM, bounded on the north by California Coordinate System Zone 2 coordinates of $X = 2,094,600$ and $Y = 398,250$; thence running downstream southwesterly, southerly, easterly, northerly, and northeasterly and terminating at coordinates $X = 2,096,000$ and $Y = 396,850$.

END OF DESCRIPTION

PREPARED OCTOBER 1, 1981 BY TECHNICAL SERVICES UNIT, ROY MINNICK, SUPERVISOR.

CALENDAR PAGE	103F
MINUTE PAGE	2137

STATE LANDS COMMISSION

1807 13TH STREET

SACRAMENTO, CALIFORNIA 95814

 DraftNEGATIVE DECLARATION

EIR NO 288

 Final

File Ref.: W 40194

SCH#: 31011421

Project Title: Edson #1

Project Location: Sections 31 and 32, T. 11N., R. 3E. and Sections 5 and 6, T. 10N., R. 3E., MDM, on the bed of the Sacramento River at Gray's Bend between river mile 84 and 86 on the Old River Channel.

Project Description: To explore for and, if commercial quantities are found, to develop reserves of natural gas in lands adjacent to the Sacramento River by directional drilling from private lands under lease to the applicant.

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., Title 2, of the California Administrative Code).

Based upon the attached Initial Studies, 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
State Lands Commission
1807 - 13th Street
Sacramento, California 95814

Telephone: (916) 322-7813

CALENDAR PAGE	1036
ENCLOSURE PAGE	2138

STATE LANDS COMMISSION

KENNETH COSY, *Controller*
MIKE CURR, *Lieutenant Governor*
MARY ANN GRAVES, *Director of Finance*

EXHIBIT C



EXECUTIVE OFFICE
1807 - 17th Street
Sacramento, California 95814

WILLIAM F. NORTHROP
Executive Office

October 1, 1981

File Reference: W 40194

NOTICE OF PREPARATION
OF NEGATIVE DECLARATION

An application for the following project is currently being considered by the staff of the State Lands Commission:

Project Title: Edson #3

Project Location: Between river mile 84 and 86 on the Old River Channel at Gray's Bend, Sutter and Yolo Counties.

Project Description: To explore for and, if commercial quantities are found, develop natural gas reserves by directional drilling under the bed of the Sacramento River.

Contact Person: Ted T. Fukushima Telephone: 916/322-7813

In compliance with the California Environmental Quality Act, a Negative Declaration identified as EIR ND 288, State Clearinghouse Number 81011421, has been prepared.

The above described document prepared for the proposed project will be considered at a regular meeting of the State Lands Commission scheduled for October 30, 1981, at 10:00 a.m., in City Hall, City Council Chambers, 915 I Street, Second Floor, Sacramento, California 95814. Anyone interested in this matter is invited to comment on the document by written response prior to the meeting or by personal appearance at the meeting. Persons wishing to appear at the meeting should call 916/322-4107 so that time can be allotted for such appearance.

WILLIAM F. NORTHROP
Executive Office

CALLER'S PAGE	103H
MINUTE PAGE	2139

INITIAL STUDY CHECKLIST

Form 13.20 (7.60)

File Ref.: W 40194

I. BACKGROUND INFORMATION

A. Applicant: HILLIARD OIL AND GAS.
P.O. Box 2055
SACRAMENTO, CA 95818.

B. Checklist Date: 6 1 9 1 81.

C. Contact Person: Jacques A. Graber
Telephone: 916-323-7209

D. Purpose: To explore for and if commercial quantities are found,
develop reserves of oil or gas.

E. Location: GRAY'S BEND SACRAMENTO RIVER.

F. Description: Oil and Gas Lease

G. Persons Contacted: SEE INITIAL STUDY.

II. ENVIRONMENTAL IMPACTS. (Explain all "yes" and "maybe" answers)

A. Earth. Will the proposal result in:

Yes Maybe No

- 1. Unstable earth conditions or changes in geologic substructures?
- 2. Disruptions, displacements, compaction, or overcovering of the soil?
- 3. Change in topography or ground surface relief features?
- 4. The destruction, covering, or modification of any unique geologic or physical features?
- 5. Any increase in wind or water erosion of soils, either on or off the site?
- 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?
- 7. Exposure of all people or property to geologic hazards such as earthquakes, landslides, mudslides, or similar hazards?

CALENDAR PAGE 403
PAGE 40

8. *Air.* Will the proposal result in:
8. Substantial air emissions or deterioration of ambient air quality?
 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)? *ON DRILLSITE*
 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?
 23. Reduction in acreage of any agricultural crop? *GRASS ON DRILLSITE FORAGE 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? *DRUMS DRILLING*
 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? *LIGHTS ON DRILLING TOWER*

- 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?

CALENDAR PAGE 1035
 MINUTE PAGE 2141

- | | Yes | Maybe | No |
|---|--------------------------|-------------------------------------|-------------------------------------|
| 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? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| K. Population. Will the proposal result in: | | | |
| 35. The alteration, distribution, density, or growth rate of the human population of the area? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| L. Housing. Will the proposal result in: | | | |
| 36. Affecting existing housing, or create a demand for additional housing? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| M. Transportation/Circulation. Will the proposal result in: | | | |
| 37. Generation of substantial additional vehicular movement? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 38. Affecting existing parking facilities, or create a demand for new parking? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 39. Substantial impact upon existing transportation systems? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 40. Alterations to present patterns of circulation or movement of people and/or goods? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 41. Alterations to waterborne, rail, or air traffic? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 42. Increase in traffic hazards to motor vehicles, bicyclists, or pedestrians? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 44. Police protection? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 45. Schools? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 46. Parks and other recreational facilities? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 47. Maintenance of public facilities, including roads? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 48. Other governmental services? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| O. Energy. Will the proposal result in: | | | |
| 49. Use of substantial amounts of fuel or energy? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 50. Substantial increase in demand upon existing sources of energy, or require the development of new sources? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| P. Utilities. Will the proposal result in a need for new systems, or substantial alterations to the following utilities: | | | |
| 51. Power or natural gas? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 52. Communication systems? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 53. Water? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 54. Sewer or septic tanks? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 55. Storm water drainage? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 56. Solid waste and disposal? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Q. Human Health. Will the proposal result in: | | | |
| 57. Creation of any health hazard or potential health hazard (excluding mental health)? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 58. Exposure of people to potential health hazards? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| S. Recreation. Will the proposal result in: | | | |
| 60. An impact upon the quality or quantity of existing recreational opportunities? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

- 61. Will the proposal result in the alteration or the destruction of a prehistoric or historic archeological site?
- 62. Will the proposal result in adverse physical or aesthetic effects to a prehistoric or historic building, structure, or object?
- 63. Does the proposal have the potential to cause a physical change which would affect unique ethnic cultural uses?
- 64. Will the proposal restrict existing religious or sacred uses within the potential impact area?

Mandatory Findings of Significance.

- 1. 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?
- 2. Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?
- 3. Does the project have impacts which are individually limited, but cumulatively considerable?
- 4. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

DISCUSSION OF ENVIRONMENTAL EVALUATION (See Comments Attached)

DETERMINATION

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: 6/9/81

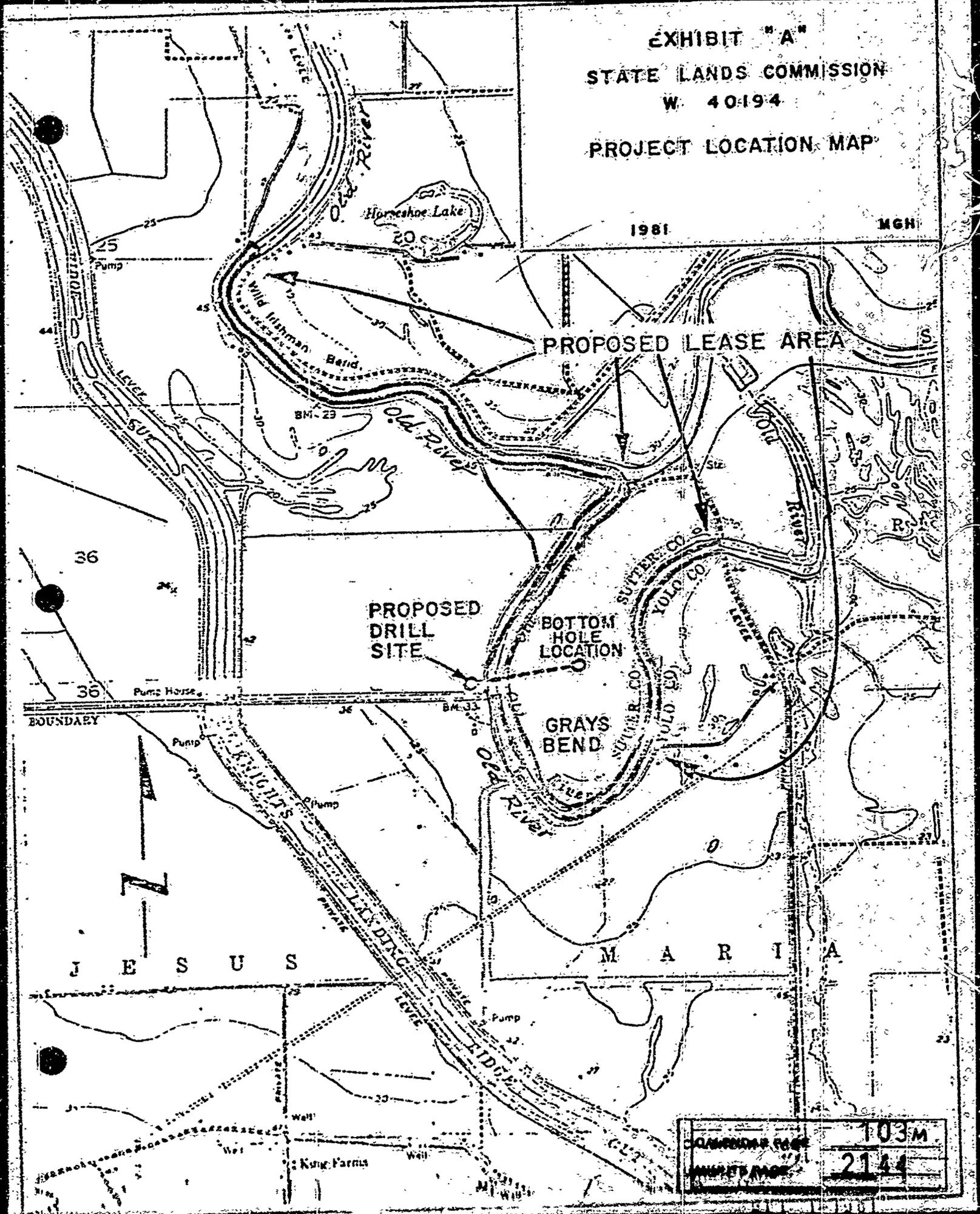
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CALENDAR PAGE	1034
MINUTE PAGE	2143
FORM 11 2017/CO	

EXHIBIT "A"
 STATE LANDS COMMISSION
 W. 40194
 PROJECT LOCATION MAP

1981

MGH



CANDIDATE PAGE	103M
NUMBER PAGE	2144

EXHIBIT "B"
LAND DESCRIPTION

A parcel of tide and submerged lands in the Sacramento River in Sutter and Yolo Counties, California lying within portions of sections 31 and 32, T11N, R3E and Sections 5 and 6, T10N R3E MDBM, described as follows:

All those tide and submerged lands between the ordinary high water marks on the right and left banks of the Sacramento River extending from south of River Mile 84 on the Old River Channel to South, North and N-Westerly to River Mile 86 for a distance of approximately three miles, including the Old River Bend.

DESCRIPTION OF PROJECT

The project, described as Edson #1 is an effort by Hillard Oil and Gas Company to explore for, discover and develop new natural gas reserves. These reserves are in the vicinity of the Sacramento River near Gray's Bend, approximately 20 miles northwest of Sacramento in the southeast quarter of T11N R3E and the northeast quarter of T10N R3E MDB&M.

An oil and gas lease which would cover the portion of the Sacramento River bottom as shown in Exhibit "A" is being requested by Hillard Oil and Gas Inc.

The request for issuance of the afore mentioned oil and gas lease would allow exploration by the applicant. The exploration plan proposes the directional drilling of one exploratory well. The wellsite is approximately fifty feet west of County Road 116 near Bench Mark 33. The well will pass to about 1700 feet E.N.E. of the wellsite bottoming approximately 5000' total depth. The lands to be drilled from and into on the east and west sides of the river are already under lease to the applicant.

The exploratory well will be directionally drilled from a selected drillsite on agricultural lands due west of the Old River Channel, a bypassed Oxbow Lake at Gray's Bend. This site will occupy approximately one acre (150' x 300') and can be used for both exploratory and development drilling, should the later be required. The proposed location as approved by the landowner is so situated as to minimize land use on acreage intended for agricultural purposes (see Exhibit "A" for proposed drillsite). The well will be directionally drilled using a conventional drilling

7
rig. Seven to eight days will be required to drill and complete the well. If commercially producible gas is discovered, the well will be free flowing, requiring no lifting equipment and only limited amount of production equipment. The pad area will be reduced to 100' by 100'. Pipelines will carry extracted gas away from the drillsite, joining into an established system nearby.

Following completion of the development drilling the drilling equipment will be removed, the sumps vacuumed out and cleaned up and all traces of the drilling phase removed. If a gas discovery is made the reservoir should be depleted approximately five to six years at which time the well would be abandoned in accordance with State regulations. Production equipment will be removed and sites will be restored to the original condition.

PERSONS OR AGENCIES CONTACTED

MEMOS

Office of Historic Preservation
California State Department Fish & Game-Nimbus
California State Department of Conservation
Division of Oil & Gas
State Water Resources Control Board
Solid Waste Management Board
California Department of Health
Department Transportation District 3
Air Resources Board
OPR Clearinghouse - Attn: Anna Polvos
California Department of Parks and Recreation

LETTERS

Hillard Oil & Gas
Yolo County Planning Department
Yolo Solano APCD
US Army Corps of Engineers
Hershey Land Company
L. F. Edson
Dow Chemical Company
Anne and Gus Inglin
Sutter County Resources Conservation District
Sutter County Planning Department
Sutter APCD
Sutter County Library
Soil Conservation Service

CALENDAR PAGE	1030
MINUTE PAGE	2146

DIVISION OF ENVIRONMENTAL EVALUATION

II. A. Environmental Impacts

A.2. For the drilling operations, construction of an initial drilling pad and access road will disrupt an area of slightly more than one acre (150' x 300'). If a producing gas well is the result of this operation, a pad about 100' x 100' will be established for the well and the surrounding area will be restored to its former appearance. Access to the site is via a 2 lane asphalt county road (#116), very close to the proposed site. Proposed gas would be transported from the site via gas pipeline linking to a nearby existing system.

3. Changes in topography would result from the construction of the drill pad. The possibility that subsidence could occur is discussed in Exhibit "D". Also enclosed is a subsidence monitoring and control plan as required by Public Resources Code Section 6873.2 attached as Exhibit "E".

II. B.

8. A small amount of air pollution would be generated during operation of diesel engines used in powering drilling operations. Exhibit "C" provides data on operational emissions for the diesel engines in a 750 H.P. rating. Duration of use of the drilling rig would be 7 to 8 days for the Edison well.

II. D.

20. During the initial exploration phase, approximately one acre of land would be utilized as a drill pad, thereby prohibiting agricultural development. If commercial quantities of gas are discovered at this site, the area utilized for production equipment would be reduced to $\frac{1}{2}$ acre. There will be some changes in the diversity of plant species during drilling but this will not be significant as the proposed location is on farm land.

23. Initially, one acre of crop or land would be disturbed, if commercial reserves are discovered, this will revert to around $\frac{1}{2}$ acre, the rest returned to agricultural use. (refer to #II. D-20 above)

II. E.

24. Construction of the drillsite would cause a temporary and minor disturbance to the area. Due to this repeated use of the area for agriculture, animal use of the habitat will fluctuate with the season and the state of the crops.

II. F.

28. There will be an increase in noise level in the immediate vicinity of the drilling operation site due to the construction equipment and drilling machinery. Noise levels may be around 70 decibels at 1000 feet distance from the site. The noise would be further reduced at greater distances due to levees along the west river bank. Trees along the south side of the drillsite might help attenuate the noise impact upon a neighboring farm near the site. The increased noise level would last through the initial drilling operation or 7-8 days. If production equipment is installed afterward, there would be no noise generated during the operation life of the reservoir.

II. G

30. The drilling would be visible at night due to high intensity lighting needed for the round-the-clock operations of drilling. The effect would be temporary, occurring only during the drilling phase of 7 to 8 days.

II. I

32. If, following drilling operations, the well proves to be a commercial venture, there will be the necessary testing to establish rate of flow, pressures, etc.

33. If a commercially producible amount is discovered, natural gas is the only non-renewable resource that will be removed.

II. J.

34. In conducting drilling of a well there is always a chance of blowout, fire, or spills. The operator will be required to conduct drilling operations in accordance with stringent regulations for critical well procedures as set forth by the State Lands Commission.

All applicable standards and regulations will be followed in the design and construction of the surface facilities and gathering line. Routine inspections will be conducted and in the event of a leak, field personnel will be dispatched to locate and repair it.

II. T.

61. Alteration of Significant Archaeologic Sites

Recently an archaeological site review was carried out as a safeguard against possible damage to archaeological sites.

Two sites have been located, but well away from the proposed
drill site. Should any archaeological traces be discovered
at the site, the applicant is to contact a qualified archaeo-
logist who will evaluate the situation in order to provide
recommendations for the protection of cultural resources.
The Regional Office to contact is:

Marianne L. Russo
California Archaeological Site Survey Regional Office
Department of Anthropology
California State University, Sacramento
6000 "J" Street
Sacramento, California 95819
Phone (916) 454-6217

EXHIBIT "C"

DIESEL POWERED INDUSTRIAL ENGINE
EMISSION FACTORS AND RATES750 H.P.¹

	<u>g/hp. hr.</u> ²	<u>at 75%</u> ³ <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	---	---	6.32
Nitrogen Oxides (NO _x)	14.000	10.50	2.18	6.32
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 EPS, 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 operations will require 525 hp. 18 hours/day.

$$\text{load factor 1} = 675/750 = 90\%$$

$$\text{load factor 2} = 525/750 = 70\%$$

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

EXHIBIT "D"

Comment on Land Level Variations

Considering subject II. A-3, land subsidence could occur. A discussion and analysis of subsidence in this area of the Sacramento River reads as follows:

Variations in land level in this region can be affected by these causes:

- (1) Ground water withdrawal.
- (2) Oxidation and compaction of peat and related organic sediments.
- (3) Tidal Fluctuations.

Extraction of natural gas in this area is not considered a significant cause of subsidence 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.

Site Specific Observations

With respect to the location of the proposed project, compaction of peat, etc. can be discounted because these soil types do not extend north along the river to Courtland (Department of Water Resources Bulletin #76, Preliminary Edition, December 1960, p. 19). Tidal fluctuations (Item 3) result in very small elevation changes which measure in tenths of a foot or less and are cyclical in nature. Ground water withdrawal (Item 1) is the probable cause of the small elevation changes cited below. However, tectonic and isostatic crustal adjustments should not be ruled out.

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. Their records have been reviewed and a brief summation follows:

In many areas of the Central Valley, subsidence history can be sketchy. South of this site at Oak Hall Bend to Clarksburg including areas 2 miles on either side of the river the maximum subsidence over a 28 year period (1939-1962) has been 1.191 feet at Riverview, a junction of the Sacramento Northern Railroad and South Gregory Avenue.

The minimum subsidence at this same time was at Freeport Bend, on the west side of the river, recorded at .368 feet. A maximum subsidence for a 16 year period (1951-1967) was recorded at Riverview Junction, again, with subsidence of .868 feet. The minimum for the same time period was .338 feet at Arcade, near the crossing of the Sacramento Northern Railroad and Jefferson Blvd.

Below is an analysis of data (in addition to the above) recorded by the National Geodetic Survey:

1. Max Average Subsidence 1939-1967 .048 FT/YR
2. Max Average Subsidence 1939-1967 .013 FT/YR
3. Max Average Subsidence 1951-1967 .051 FT/YR
4. Max Average Subsidence 1951-1967 .021 FT/YR

This data leads to the conclusion that while the quality of various bench mark data ranges rather widely throughout the area, the subsidence tends to be uniform and moderate to small. Geologically, the region along the Sacramento River is quite similar. This would allow interpretation of subsidence in one area of the river to be similar to subsidence in other areas along the river such as Gray's Bend. This data supports the observation that this area is one of moderate subsidence. The largest long-term subsidence averages about .5 inch per year and the smallest about .16 inches per year. A recent check with the vertical control section of the United States Geological Survey in Menlo Park, shows no record of update on bench marks at Gray's Bend since 1951.

MITIGATING MEASURES PROPOSED

Drilling and completion operations will be conducted to conform to regulations of the State Lands Commission and the Division of Oil and Gas. Surface casing will be set

as prescribed by regulations to provide anchorage for blowout prevention equipment and to protect ground water. Approved blowout prevention equipment will be used during drilling operations.

Freshwater aquifers that may extend to 2,000 feet will be cased and/or protected with cement at the time of completion or abandonment. If toxic materials are used in the drilling fluids, the sump will be lined with impervious material and the spent mud will be disposed of at a site approved by the Regional Water Quality Control Board. The applicant will also contact the Board to determine if adherence to waste discharge requirements will be necessary. Subsequently, the site will be cleaned up and restored as nearly as practicable to its original condition.

If a producible gas accumulation is discovered, the gas will be moved from the drillsite by pipeline and there will be no venting or release of gas into the atmosphere during the production phase.

The Sacramento River is well protected from the drilling site area by a levee which stands 10 to 15 feet above ground level between the river and the proposed drilling area. However, the lessee will be required to suspend all drilling and production operations, except those that are corrective, protective or mitigative, immediately in the event of any disaster or contamination or pollution resulting from operations under its lease. Such drilling or production operations shall not be resumed until adequate measures have been taken and authorization for resumption of operations has been made by the Commission. Corrective measures shall be taken immediately whenever pollution has occurred.

Residuary products of oil, drilling fluid, sanitary wastes and other refuse shall be disposed of in approved dumping areas. None of these products will be permitted to enter the Sacramento River, or any slough or marsh lands connected therewith. The lessee will be required to comply with the Commissions' Rules and Regulations for drilling and production operations on tidal and submerged lands. The drilling procedures contain detailed engineering requirements for well programming, blowout prevention equipment, drilling procedures and supervision and well control training as related to the safety aspects of drilling. The production procedures cover well completion, remedial and well-maintenance work, subsurface injection projects, waste disposal, safety equipment procedures related to production facility operation and the operation and maintenance of pipelines. It is the responsibility of the Division of Oil and Gas and the State

Lands Commission to see that the procedures are followed, and a system of inspections and reports are required to insure that this is being done.

Though the chance of discovering oil is slight, the Lessee will be required to maintain a current oil spill contingency plan for initiating corrective action to control and recover oil spilled on any waters or land. The plan will cover both minor and major oil spills associated with drilling operations. Clean Bay Inc., a non-profit oil spill cleanup and preventive organization, will form an integral part of the contingency plan having cleanup equipment readily available in Concord and Martinez.

EXHIBIT "E"

Subsidence Monitoring and 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 (USGS, USCE 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 will be surveyed each year and the control network surveyed every two years.

Since it has been established that during subsidence (due to 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.

After discovery 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 this technique and comparisons with later surveys or "runs" may indicate casing deformation, a sign of possible subsidence. 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 waterdrive, then a withdrawal rate could be determined which would allow the formation pressures to remain stable and constant. This condition could negate any subsidence attributed to gas production.