UNITED STATES GOVERNMENT
MEMORANDUM

09/17/97

To: Public Information, (MS 5034)

From: Exploration/Development Plans Unit, (MS 5231)

Reference is made to the following plan received September 3, 1997:

Type Plan - Initial Development Operations Coordination Document
Lease - OCS-G 17959
Block - 49
Area - Eugene Island
Activities Proposed - Well and Caisson No. 1
Control Number - N-5911

In accordance with 30 CFR 250.34, this plan is hereby deemed submitted and is now being considered for approval.

Michael Tolbert
for Unit Supervisor

INFORMATION SERVICES
GOM OCS REGION

noted

Basin Exploration, Inc.

1001 Fannin, Suite 4656

Houston, TX 77002

Office 713/767-1700

Fax 713/767-1710

BASIN

September 2, 1997

MINERALS MANAGEMENT SERVICE
SEP 03 1997
GOM OCS OPERATIONS
Region, New Orleans, La.

Mr. Donald C. Howard
Regional Supervisor
Office of Field Operations
U.S. Department of the Interior
Minerals Management Service
1201 Elmwood Park Boulevard
New Orleans, LA 70123-2394

RE: Initial Development Operations Coordination Document
Lease OCS-G 17959, Eugene Island Block 49
OCS Federal Waters, Gulf of Mexico, Offshore, LA

Gentlemen:

In accordance with the provisions of Title 30 CFR 250.34, Basin Exploration, Inc. (Basin) hereby submits for your review and approval nine (9) copies of an Initial Development Operations Coordination Document for Lease OCS-G 17959, Eugene Island Block 49, Offshore, Louisiana. Five (5) copies are "Proprietary Information" and four (4) copies are "Public Information".

Excluded from the Public Information copies are certain geologic discussions, depth of wells and structure map.

Basin anticipates commencing activities under this proposed Initial Development Operations Coordination Document on November 1, 1997.

Should additional information be required please contact the undersigned or Basin Exploration, Inc.'s regulatory agent, J. Connor Consulting, Inc., Attention: Connie J. Goers at (281) 578-3388.

Sincerely,

BASIN EXPLORATION, INC.

Dalton Polasek, Jr./cg

Dalton Polasek, Jr.
Vice President, Engineering

"Public Information"

DP:CJG:ljk

REFER TO CONTROL NO. N-5911

BASIN EXPLORATION, INC.

INITIAL DEVELOPMENT OPERATIONS COORDINATION DOCUMENT

EUGENE ISLAND BLOCK 49
LEASE OCS-G 17959

Basin Exploration, Inc., as designated operator hereby submits this proposed Initial Development Operations Coordination Document in accordance with the regulations contained in Title 30 CFR 250.34 and more specifically defined in the Minerals Management Service Letters to Lessees and Operators dated October 12, 1988 and September 5, 1989.

HISTORY OF LEASE

Lease OCS-G 17959 was acquired by Basin Exploration, Inc. at the Central Gulf of Mexico Lease Sale 166 on March 5, 1997. The lease was issued with an effective date of July 1, 1997 and a primary term ending date of June 30, 2002.

Under the approved Plan of Exploration, Basin will drill, complete and install a 48-Inch free standing caisson with minimal facilities over Lease OCS-G 17959, Well No. 1.

In accordance with Letter to Lessees and Operations (LTL) dated November 5, 1993 which amends Title 30 CFR Part 256 surety bonds requirements applicable to OCS lessees and operators, Basin Exploration, Inc. has a $3,000,000 areawide bond with the Minerals Management Service.

SCHEDULE OF OPERATIONS

Under this proposed Initial Development Operations Coordination Document, Basin Exploration, Inc. proposes to commence production from Lease OCS-G 17959, Well No. 1.

Planned commencement date is approximately November 1, 1997, subject to the approval of this Initial Development Operations Coordination Document.

Hydrocarbon production from proposed Caisson No. 1 will be transported via a proposed right-of-way pipeline to a subsea tie-in point with ANR Pipeline's existing 10-inch gas/condensate pipeline located in Eugene Island Block 46.

No new nearshore or onshore pipelines or facilities will be constructed.

A well location table showing the surface and bottom hole locations, total well depth and water depth of the subject well is included as Attachment A-1 and A-2.

The following schedule details the chronological order of the proposed events leading to the full start up of production.

Activity Schedule

Activity		Approximate Date
1.	Hook-up and Commence Production	November 1, 1997

DESCRIPTION OF PLATFORM

Proposed Caisson No. 1 will be a well protector structure with minimal facilities. A schematic of the proposed structure is included as Attachment B.

All hydrocarbon handling equipment installed for testing and production operations will be designed, installed and operated to prevent pollution from the proposed structure.

Maintenance or repairs which are necessary to prevent pollution of offshore waters shall be undertaken immediately.

There shall be no disposal of equipment, cables, containers, or other materials into offshore waters.

STRUCTURE MAP

A current structure map drawn to the top of each prospective hydrocarbon accumulation showing the surface and bottom hole locations of the subject well is included as Attachment C-1 and C-2.

CROSS SECTION MAP

A cross section map depicting the subject well, other significant wells, and the geologic name and age of the structures was previously included with the Initial Plan of Exploration.

BATHYMETRY MAP

Water depths in Block 49 range from approximately 18 feet to 23 feet. A bathymetry map showing the surface location of Caisson and Well No. 1 is included as Attachment D.

SHALLOW HAZARDS

A geophysical survey was performed for Basin Exploration, Inc. by Kinsella, Cook & Associates, Inc. in 1992. The purpose of the survey was to evaluate any seafloor and subsurface geological and man made features and conditions for the existing surface location in Eugene Island Block 49.

A shallow hazards analysis has been prepared for the subject existing location in Eugene Island Block 49 and was previously included with the Initial Plan of Exploration.

OIL SPILL RESPONSE PLAN

All construction and production operations shall be performed in accordance with industry standards to prevent pollution of the environment. Basin Exploration, Inc.'s Oil Spill Response Plan has been approved by MMS. This plan designates an Oil Spill Response Team consisting of Basin's personnel and contract personnel. This team's duties are to eliminate the source of any spill, remove all sources of possible ignition, deploy the most reliable means of available transportation to monitor the movement of a slick, and contain and remove the slick if possible.

Basin is a member of Clean Gulf Associates (CGA). The CGA stores pollution control equipment at two locations in Texas, at Ingleside and Galveston; three locations in Louisiana, at Fort Jackson, Grand Isle and Lake Charles, and one location in Mississippi, at Pascagoula.

Each base is equipped with fast response skimmers and there is a barge mounted high volume open sea skimmer based at Grand Isle, Louisiana. In addition to providing equipment, the CGA also supplies advisors for clean-up operations. Equipment available from CGA and the base is listed in Basin Exploration, Inc.'s Oil Spill Response Plan.

Basin will make every effort to see that a spill is responded to as quickly as possible. Response equipment and response times will be suitable for anticipated environmental conditions in the area.

In good weather conditions fast response with oil boom, skimmers, pump and storage tanks would require approximately 13 to 15 hours, including preparation time as indicated below. A heavy equipment system response would require approximately 24-36 hours, including 6 hours preparation time.

		Hours
1.	Procurement of vessel capable of transporting oil spill containment equipment and deployment from CGA Base in Lake Charles, LA	2.0
2.	Load out Fast Response Unit	1.5
3.	Trucking Time from Lake Charles, LA to Intracoastal City, LA	2.5

4.	Travel time to lease site (In-Land Travel - 18 miles @ 6 MPH) (Open Water Travel - 30 Miles @ 10 MPH)	 3.0 3.0
5.	Deployment of Equipment	1.0
	Estimated Total Response Time	13.0

Equipment located in Lake Charles, Louisiana would be utilized first with additional equipment transported from the nearest equipment base as required.

In the event a spill occurs from Eugene Island Block 49, our company has projected the probability of a spill impacting a land segment based on data as presented in the Oil Spill Risk Analysis for OCS Lease Sales 157 and 161.

Area/Block	Landfall Segment	%	CGA Map No.
Eugene Island Block 49	Cameron, LA	9%	Map No. 5
	Vermilion, LA	14%	Map No. 5 & 6
	New Iberia, LA	12%	Map No. 6
	St. Mary, LA	5%	Map No. 6
	Terrebonne, LA	19%	Map No. 6

If a spill should occur from Caisson No. 1, Basin would immediately activate its Emergency Response Team, determine from current conditions the probable location and time of land fall by contacting Continental Shelf Associates and/or the National Oceanic Atmospheric Administration's (NOAA) Gulf of Mexico Scientific Support Coordinator (SSC). Then, using the Clean Gulf Operations Manual, Volume II, identify any biologically sensitive areas and determine the appropriate response mode.

Sections and V and VI, Volume II of the CGA Operations Manual depicts the protection response modes that are applicable for oil spill clean-up operations. Each response mode is schematically represented to show optimum deployment and operation of the equipment in areas of environmental concern. Implementation of the suggested procedures assures the most effective use of the equipment and will result in reduced adverse impact of oil spills on the environment. Supervisory personnel have the option to modify the deployment and operation of equipment to more effectively respond to site-specific circumstances.

NEW OR UNUSUAL TECHNOLOGY

No new techniques or unusual technology will be required for these operations.

LEASE STIPULATIONS

Oil and gas exploration/development activities on the OCS are subject to stipulations developed before the lease sale and would be attached to the lease instrument, as necessary, in the form of mitigating measures. The MMS is responsible for ensuring full compliance with stipulations.

Lease OCS-G 17959 was issued without any lease stipulations.

CULTURAL RESOURCES

By Letter to Lessees (LTL) dated September 5, 1995, Minerals Management Service classified those areas which are located within a high probability area for either prehistoric or historic archaeological resources. Eugene Island Block 49 is located within a high probability historic and pre-historic area, therefore, a cultural resources report is required for the subject lease, and was previously submitted with the Initial Plan of Exploration.

DISCHARGES

All discharges associated with the proposed activities will be in accordance with regulations implemented by Minerals Management Service (MMS), U. S. Environmental Protection Agency (EPA), and the U. S. Coast Guard (USCG).

The MMS issued a special advisory notice (NTL 86-11) strongly encouraging the oil and gas industry to take special educational, operational and awareness measures to reduce or eliminate contributions to marine debris in the Gulf of Mexico.

Annex V of the International Convention for the Prevention of Pollution from ships, also known as MARPOL Protocol, prohibits the dumping of all plastic wastes, including plastic packaging materials and fishing gear.

EPA's Western Gulf of Mexico NPDES General Permit GMG290000 addresses the discharge limitations and testing protocol for drilling fluids, cuttings and associated wastes.

Discharges will contain no free oil and will be in compliance with and monitored as required by the permit. Any drilling fluid contaminated with oil will be transported to shore for proper disposal at an authorized disposal site.

Solid domestic wastes will be transported to shore for proper disposal at an authorized disposal site, and sewage will be treated on location by U. S. Coast Guard approved marine sanitation devices.

Mud may be discharged for purposes of dilution or at end of well. Surveillance of the fluid is accomplished through daily inventory of mud and chemicals added to the system; in addition to monthly and end-of-well LC50 toxicity tests required by EPA. Typical mud components used during the drilling of the subject well was previously submitted with the Initial Plan of Exploration.

HYDROGEN SULFIDE

ENVIRONMENTAL REPORT

An Environmental Report for Eugene Island Block 49 is included as Attachment E.

COASTAL ZONE CONSISTENCY CERTIFICATION

Issues identified in the Louisiana Coastal Zone Management Program include the following; general coastal use guidelines, levees, linear facilities (pipelines); dredged soil deposition; shoreline modifications, surface alterations, hydrologic and sediment transport modification; waste disposal; uses that result in the alteration of waters draining into coastal waters; oil, gas or other mineral activities; and air and water quality.

A Certificate of Coastal Zone Management Consistency for the State of Louisiana is included as Attachment F.

A copy of the Public Notice request for publication in the Louisiana Baton Rouge State Times is included as Attachment G, as well as the appropriate Parish Journal being included as Attachment H.

PROJECTED EMISSIONS

Offshore air emissions related to the proposed activities result mainly from the drilling rig operations, helicopters and service vessels. These emissions occur mainly from combustion or burning of fuels and natural gas and from venting or evaporation of hydrocarbons. The combustion of fuels occurs primarily on diesel-powered generators, pumps or motors and from lighter fuel motors. Other air emissions can result from catastrophic events such as oil spills or blowouts.

Primary air pollutants associated with OCS activities are nitrogen oxides, carbon monoxide, sulphur oxides, volatile organic compound, and suspended particulate.

The Projected Air Quality Emissions provides for associated production emissions and is included as Attachment I.

ONSHORE SUPPORT BASE

Eugene Island Block 49 is located approximately 20 miles to the nearest shoreline and 45 miles to the shorebase located in Intracoastal City, Louisiana. A vicinity map showing the location of Eugene Island Block 49 relative to the shoreline and onshore base is included as Attachment J.

Basin will utilize existing onshore facilities located in Intracoastal City, Louisiana. This will serve as port of debarkation for supplies and crews. No onshore expansion or construction is anticipated with respect to the proposed activities.

This base is capable of providing the services necessary for the proposed activities. It has 24-hour service, a radio tower with a phone patch, dock space, equipment and supply storage base, drinking and drill water, etc. Support vessels and travel frequency during production activities are as follows:

	Production
Crew Boat	0 Trips Per Week
Supply Boat	1 Trips Per Week
Helicopter	3 Trips Per Week

AUTHORIZED REPRESENTATIVE

Inquiries may be made to the following authorized representative:

Connie J. Goers
J. Connor Consulting, Inc.
16225 Park Ten Place, Suite 500
Houston, Texas 77084
(281) 578-3388

LIST OF ATTACHMENTS

A Well Location Table and Plat
B Typical Structural Drawing
C Structure Map
D Bathymetry Map
E Environmental Report
F CZM Certification Statement - Louisiana
G Public Notice Request - State Times
H Public Notice Request - Parish
I Projected Air Quality Emissions
J Vicinity Map

BASIN EXPLORATION, INC.

INITIAL DEVELOPMENT
OPERATIONS COORDINATION DOCUMENT

LEASE OCS-G 17959

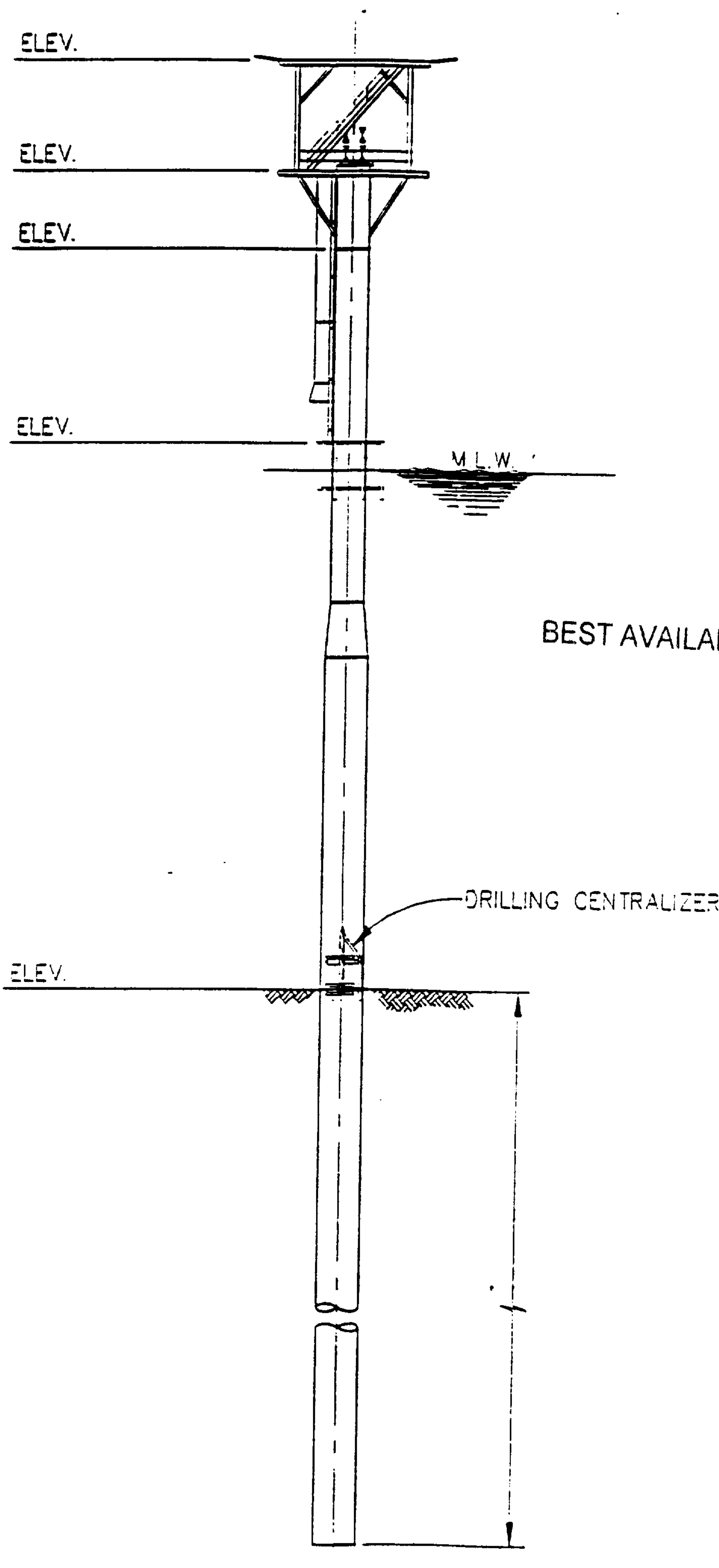
EUGENE ISLAND BLOCK 49

WELL LOCATION TABLE

WELL	LOCATION	TOTAL DEPTH	WATER DEPTH	TOTAL DAYS
1	SL: 535' FNL & 6530' FEL		22'	NA

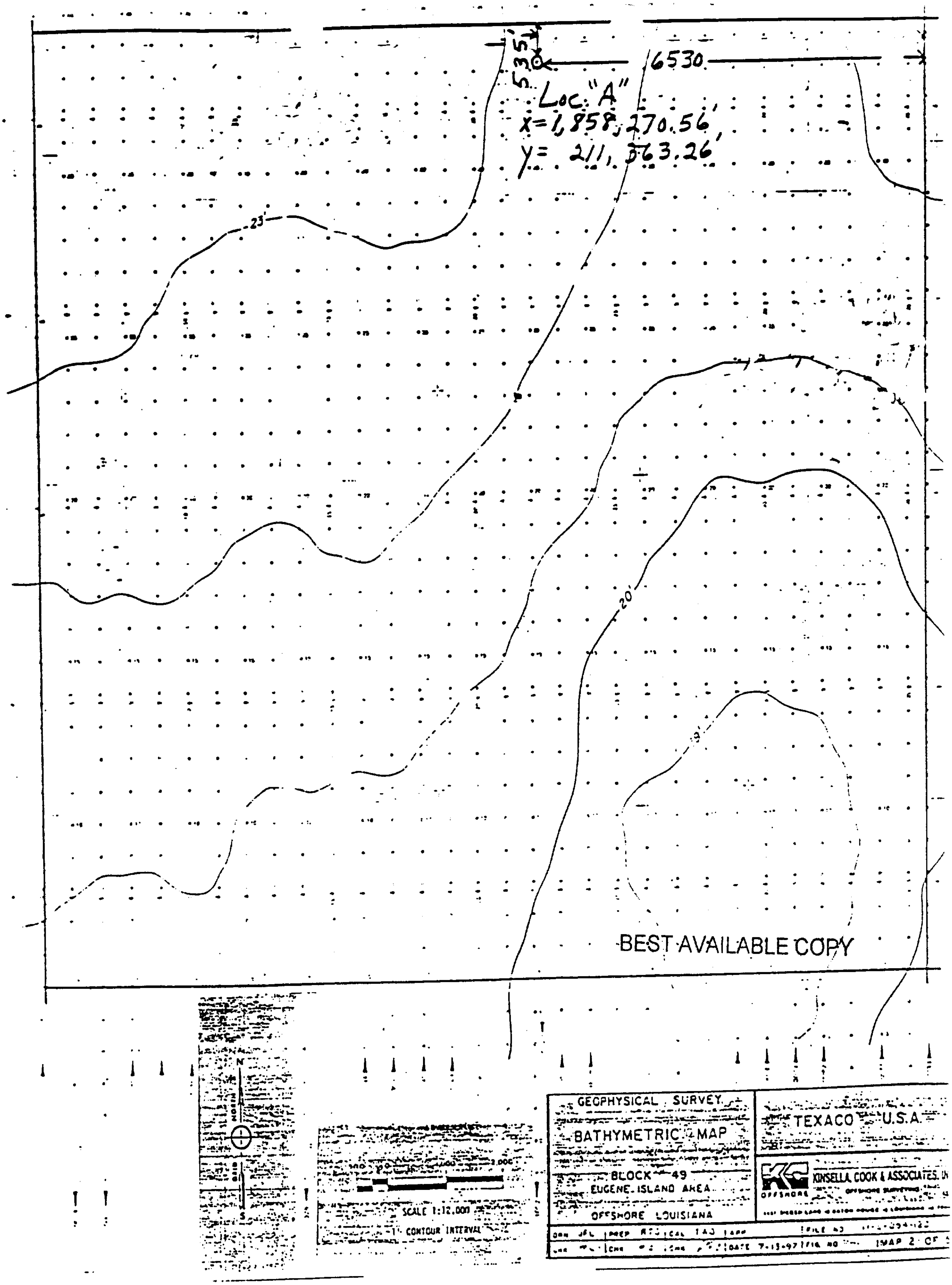
ATTACHMENT A-1

TYPICAL WELL PROTECTOR CAISSON



BEST AVAILABLE COPY

ATTACHMENT B



ATTACHMENT D

INITIAL DEVELOPMENT OPERATIONS COORDINATION DOCUMENT

ENVIRONMENTAL REPORT

EUGENE ISLAND BLOCK 49

LEASE OCS-G 17959

OFFSHORE, LOUISIANA

Prepared by:

J. Connor Consulting, Inc.
16225 Park Ten Place, Suite 500
Houston, TX 77084
281/578-3388

September 2, 1997

ATTACHMENT E

TABLE OF CONTENTS

I. DESCRIPTION OF PROPOSED ACTION

The proposed Initial Development Operations Coordinations Document proposes to commence production from Lease OCS-G 17959, Well No. 1.

At this time, the planned commencement date for proposed activities is November 1, 1997.

A. Description of Proposed Travel Modes, Routes and Frequnecy

Support vessels will be dispatched from a support base located in Intracoastal City, Louisiana. The boats will normally move to the block via the most direct route from Intracoastal City, Louisiana, however, boats operating in the field may travel from other facilities nearby. Following is an estimate of trips to the proposed operation.

	Production
Crew Boats	0Trips/Week
Supply Boats	1Trip/Week
Helicopters	3Trips/Week

B. Onshore Support Base

The proposed activities will utilize a support base located at Intracoastal City, Louisiana. This base provides 24-hour service, a radio tower with phone patch, dock space, office space, parking lot, equipment and supply storage space, drinking and drill water, etc. The proposed exploration activities will help to maintain this base at its present level of activity. No expansion of the physical facilities or the creation of new jobs is expected to result from the work planned in conjunction with this block.

The first socioeconomic data base report will be submitted when the MMS and the States of Alabama, Louisiana, and Mississippi identify the specific parameters to be addressed in these semi-annual reports.

C. New or Unusual Technology

No new or unusual technology will be required for these operations.

D. Vicinity Map

Eugene Island Block 49 is located approximately 20 miles to the nearest shoreline and 45 miles to the shorebase located in Intracoastal City, Louisiana. Water depth within the survey is approximately 18 feet to 23 feet.

E. Proposed Means to Transport Oil or Gas

Hydrocarbon production from Caisson No. 1 will flow full-well stream via a proposed R-O-W pipeline to a subsea tie-in point with ANR's existing 10-inch gas/condensate pipeline located in Eugene Island Block 46.

II. DESCRIPTION OF AFFECTED ENVIRONMENT

A. Commercial Fishing

The Gulf of Mexico provides nearly 20% of the commercial fish landings in the continental United States. During 1993, commercial landings of all fisheries in the Gulf totaled nearly 1.7 billion pounds valued at about $631 million.

Menhaden, with landings of 1.2 billion pounds, valued at $59.2 million, was the most important Gulf species in quantity landed during 1993. Shrimp, with landings of 206.4 million pounds, valued at $335 million, was the most important Gulf species in value landed during 1993. The 1993 Gulf oyster fishery accounted for 41% of the national total with landings of 20 million pounds of meats, valued at about $51.6 million. The Gulf blue crab fishery accounted for 25% of the national total with landings of 63.3 million pounds, valued at $32.3 million.

Alabama ranked last among Central and Western Gulf states in total commercial landings for 1993 with 20.3 million pounds landed, valued at $34.2 million. Shrimp was the most important fishery landed, with 14.4 million pounds, valued at $30.1 million. In addition, during 1993, the following five species each accounted for landings valued at over $125,000: blue crab, shark, black mullet, red mullet roe, flounder, and the American oyster. Alabama had about 3,470 and 2,515 commercial saltwater, licensed fishermen and 942 and 1103 commercial fishing craft during 1992 and 1993, respectively.

Mississippi ranked third among Central and Western Gulf states in total commercial fishery landings for 1993 with an estimated 35.2 pounds landed, valued at about 18.4 million. Shrimp was the highest value shellfish, with 87.6 million pounds landed, valued at $158 million. In addition, during 1993, the following four species each accounted for landings valued at over $125,000: black mullet, red snapper, blue crab, and the America oyster. In 1992 and 1993, Mississippi had about 3,329 and 2,515 commercial saltwater, licensed fishermen and 1906 and 1888 commercial fishing craft, respectively.

Louisiana ranked first among Central and Western Gulf states in total commercial fishery landings for 1993, with nearly 1.4 billion pounds landed, valued at $274.6 million. Menhaden was the highest quantity finfish, with 1.0 billion pounds landed, valued at $49 million. Shrimp was the highest value shellfish, with 87.6 million pounds landed, valued at $158 million. In addition, during 1993, the following 12 species each accounted for landings valued at over $1 million: black drum, flounder, black mullet, red mullet roe, Atlantic sheepshead, red snapper, vermilion snapper, spotted sea trout, swordfish, yellowfin tuna, blue crab, and the American oyster. In 1992 and 1993, Louisiana had about 19,923 and 19,241 commercial saltwater, licensed fishermen and 12,731 and 11,741 commercial fishing craft, respectively.

Texas ranked second among Central and Western Gulf states in total commercial fishery landings for 1993 with nearly 93.1 million pounds landed, valued at $156.7 million. In quantity and value, shrimp ranked first, with about 78 million pounds, valued at $141.9 million. In addition, during 1993, the following seven species each accounted for landings valued at over $500,000: black drum, red snapper, vermilion snapper, swordfish, yellowfin tuna, blue crab, and the American oyster. In 1992 and 1993, respectively, Texas had about 17,483 and 14,519 commercial saltwater, licensed fishermen and 5410 and 5093 commercial fishing craft.

The Gulf of Mexico yielded the nation's second largest regional commercial fishery by weight in 1993. The Gulf fisheries landings were 20% of the national total by weight and 20% by value. Most commercial species harvested from Federal waters of the Gulf of Mexico are considered to be at or near an overfished condition. Continued fishing at the present levels may result in rapid declines in commercial landings and eventual failure of certain fisheries. Commercial landings of traditional fisheries, such as shrimp, red snapper, spiny lobster, and mackerel, have declined over the past decade despite substantial increases in fishing effort. Commercial landings of recent fisheries, such as shark, black drum, and tuna, have increased exponentially over the past five years, and those fisheries are thought to be in need of conservation.

The Gulf of Mexico shrimp fishery is the most valuable in the United States accounting for 71.5% of the total domestic production. Three species of shrimp--brown, white, and pink--dominate the landings. The status of the stocks are as follows: (1) brown shrimp yields are at or near the maximum sustainable levels; (2) white shrimp yields are beyond maximum sustainable levels with signs of overfishing occurring; and (3) pink shrimp yields are at or beyond maximum sustainable levels.

B. Shipping

The Ports and Waterways Safety Act (Section 33 USC 1223) authorizes the Coast Guard (USCG) to designate safety fairways, fairway anchorages, and traffic separation schemes (TSS's) to provide unobstructed approaches through oilfields for vessels using Gulf of Mexico ports. The USCG provides listings of designated fairways, anchorages, and TSS's in 33 CFR 166 and 167, along with special conditions related to oil and gas production in the Gulf of Mexico. In general, no fixed structures, such as platforms, are allowed in fairways. Temporary underwater obstacles, such as anchors and attendant cables or chains attached to floating or semisubmersible drilling rigs may be placed in a fairway under certain conditions. Fixed structures may be placed in anchorages, but the number of structures is limited.

A traffic separation scheme is a designated routing measure that is aimed at the separation of opposing streams of traffic by appropriate means and by the establishment of traffic lanes (33 CFR 167.5). The Galveston Bay approach traffic separation scheme and precautionary areas is the only TSS established in the Gulf of Mexico.

Fairways play an important role in the avoidance of collisions on the OCS, particularly in the case of the larger oceangoing vessels, but not all vessels stay within the fairways. Many others, such as fishing boats and OCS support vessels, travel through areas with high concentration of fixed structures. In such cases the most important mitigation factor is the requirement for adequate marking and lighting of structures. After a structure has been in place for a while, it often becomes a landmark and an aid to navigation for vessels that operate in the area on a regular basis. Most ocean going vessels are equipped with radar capable of aiding navigation in all weather conditions. This has contributed to safe navigation on the OCS.

The platforms and each marine vessels servicing these operations will be equipped with all U.S. Coast Guard required navigational safety aids to alert ships of its presence in all weather conditions.

The proposed operations in Eugene Island Block 49 are clear of any designated shipping fairways and/or anchorage areas.

C. Pleasure Boating, Sport Fishing and Recreation

The northern Gulf of Mexico coastal zone is one of the major recreational regions of the United States, particularly for marine fishing and beach activities. Gulf Coast shorelines offer a diversity of natural and developed landscapes and seascapes. Major recreational resources include coastal beaches, barrier islands, estuarine bays and sounds, river deltas, and tidal marshes. Other resources include publicly owned and administered areas, such as national seashores, parks, beaches, and wildlife lands, as well as designated preservation areas, such as historic and national sites and landmarks, wilderness , wildlife sanctuaries, and scenic rivers. Gulf Coast residents and tourists from throughout the nation, as well as from foreign countries, use these resources extensively and intensively for recreational activity. Commercial and private recreational facilities and establishments, such as resorts, marinas, amusement parks, and ornamental gardens, also serve as primary-interest areas.

The Gulf States from Texas to Alabama account for about 1.3 million registered motorboats and over 3.5 million paid fishing license holders. The two major recreational areas most directly associated with the offshore leasing and potentially affected by it are the offshore marine environment and the coastal shorefront of the adjoining states. The major recreational activity occurring on the OCS is offshore marine recreational fishing and diving. Studies, reports, and conference proceedings published by MMS and others have documented a substantial recreational fishery, including scuba diving, directly associated with oil and gas production platforms. A special report by Schmied and Burgess (1987) indicates there are about 4 million resident participants in marine recreational fishing and over 2 million tourists who angle for Gulf marine species. According to NMFS, over 40 percent of the nation's marine recreational fishing catch comes from the Gulf of Mexico, and marine anglers in the Gulf made over 15 million fishing trips in 1991, exclusive of Texas. Texas marine anglers using private boats expended over 4.5 million man-hours to land about 1.5 million saltwater fish during the 1990-1991 fishing years.

Marine recreational fishing trips and catch along the Gulf coast had been declining for several years but began to rebound in 1991. Speckled trout are the most sought sport fish in coastal marine waters, whereas snapper and mackerel are some of the more popular offshore sport fish. Marine recreational fishing in the Gulf Region from Texas to Alabama is a major industry important to these States' economics. The marine recreational fishing industry accounts for an estimated $769 million in sales (equipment, transportation, food, lodging, insurance, and services) and employment for over 15,000 people, earning more than $158 million annually in the CPA and WPA.

The coastal shorelines of the CPA and WPA contain extensive public park and recreation areas, private resorts, and commercial lodging. Most of the outdoor recreational activity focused on the Gulf shorefront is associated with accessible beach areas. Beaches are a major inducement for coastal tourism, as well as a primary resource for resident recreational activity. Recreational resources, activities, and expenditures are not constant along the Gulf of Mexico shorefront, but are focused where public beaches are close to major urban centers. Beach use is a major economic factor for many Gulf coastal communities, especially during peak-use seasons in the spring and summer. Tourism in the central zone of the five Gulf Coast States has been valued at an estimated $20 billion/year.

Bird watching, or public enjoyment of locating and observing coastal and marine birds, is a recreational activity of growing interest and importance all along the Gulf Coast. Of major national and international concern is the documented decline in populations of neotropical migratory birds, some of which are known transmigrants of the Gulf of Mexico. These birds make annual trips between breeding and wintering grounds in North, Central, and South America. Dedicated bird watchers plan annual meetings and trip excursions to coincide with the arrival of Gulf migrants on the forested shorefront ridges along the coast of Louisiana and Texas. Production platforms are known to attract several species of neotropical migrants, which often expire while resting on offshore structures.

D. Potential or Known Cultural Resources

Archaeological resources are any prehistoric or historic site, building, structure, object, or feature that is manmade or modified by human activity. Significant archaeological resources are defined in 36 CFR 800, Section 60.6. The MMS has previously contacted the State Historic Preservation Officers for all Gulf Coast States and requested them to provide a list of those National Register of Historic Places that are in their State's coastal zones and that could potentially be affected by OCS leasing activities.

With the exception of the Ship Shoal Lighthouse, historic archaeological resources on the OCS consist of shipwrecks. A 1977 MMS archaeological resource baseline study for the northern Gulf of Mexico indicated that 2% of the pre-20th century shipwrecks and 10% of all wrecks reported lost between 1500 and 1945 have known and/or verified locations. Management of this resource was accomplished by establishing a high-probability zone for the occurrence of historic shipwrecks. This zone was delineated by using geographic and cultural factors as indicators of high shipwreck potential. An MMS-funded study by Texas A&M University (Garrison et al, 1989) updated the shipwreck database. Statistical analysis of over 4,000 potential shipwrecks in the northern Gulf indicated that many of the OCS shipwrecks occur in clustered patterns related mainly to navigation hazards and port entrances.

In November, 1990, the MMS Gulf of Mexico OCS Region issued a Letter to Lessees (LTL) that redefined those blocks in the Gulf of Mexico that are considered to have a high probability for the occurrence of historic period shipwrecks. The LTL reduced the total number of blocks with a high probability for historic shipwrecks from 3,410 to 2,263. The redefined high-probability zone consists of three subzones--a zone defined as occurring from the shoreline to 10 km from shore; 21 0.5-degree square high probability quadrants associated with cultural and geographic features (such as historic ports, barrier islands, reefs, etc.); and specific high-probability search polygons associated with shipwrecks located outside of the two aforementioned zones.

A Notice to Lessees (NTL No. 91-02) concerning archaeological resources in the Gulf of Mexico Region became effective on February 17, 1992. The NTL changed survey parameters for historic shipwreck surveys in the Gulf from a survey linespacing of 150 m to 50 m. Other methodological changes that were made include the use of a dual trace magnetometer recording device and the redefinition of the total area required for site-specific archaeological surveys.

Remote sensing surveys required by MMS have recorded evidence of approximately 69 potential shipwrecks. Most have been identified on side-scan sonar. In addition, defined areas of clustered magnetic anomalies (reminiscent of magnetic patterns associated with buried historic shipwrecks) have been noted and recommended for avoidance.

Geomorphic features that have a high probability for associated prehistoric sites in the Central and Western Gulf include barrier islands and back-barrier embayments, river channels and associated floodplains and terraces, and salt dome features. Recent investigations in Louisiana and Florida indicate that mound building activity by prehistoric inhabitants may have occurred as early as 6200 B.P. Therefore, man-made features, such as mounds, may also exist in the shallow inundated portions of the OCS.

There is no evidence for early mound building in the Western Gulf. The western portion of the WPA contains Holocene deltaic deposits of the Colorado and Brazos Rivers. Lease-block surveys have recorded geomorphic features with a high probability for the occurrence of preservation of prehistoric archaeological sites.

Regional geological mapping studies by MMS allow interpretations of specific geomorphic features and assessments of archaeological potential in terms of age, the type of system the geomorphic features also be considered as an integral part of the predictive model. In general, sites protected by sediment overburden have a high probability for preservation from the destructive effects of marine transgression. The same holds true for sites submerged in areas subjected to low wave energy and for sites on relatively steep shelves during periods of rapid rise in sea level. Though lease-block surveys have identified many specific areas in the Gulf as having a high potential for prehistoric sites, oil and gas development has generally avoided rather than investigated these high-probability areas for archaeological content.

Bernard (1970) and McClelland Engineers, Inc. (1979) determined that the upper 75 feet of sediment in borings from this Eugene Island Area are Holocene deltaic deposits capping the Pleistocene unconformity. The bulk of these post-transgressive deposits reflect the progradation and aggradation of the Maringouin Delta between 10,000 years BP (initial transgression of sea level) and 6,500 years BP. The deltaic plain of the Maringouin Delta Complex covered the drowned Pleistocene horizon with prodelta facies for several hundreds of years following initial inundation. As sea level stabilized about 9,500 years BP, vertical growth of the deltaic platform occurred as fluvial discharge exceeded shoreline advance. The gas-saturated sediments at average depths of 10 to 40 feet below the seafloor reflect former peat deposits of the upper deltaic facies. The uppermost parallel strata reflect the accumulation of fine-grained sediments discharged in unconfined plumes from the Sale'-Cypremont distributaries of the ancestral Teche Delta (4,800 years to 3,900 years BP).

The near-surface gaseous organic horizon and associated distributary network caused important geophysical responses on the seismic data and magnetometer records across Block 49. The subbottom profiles defined a virtually continuous zone of biogenic gas underlying the present seafloor. The gaseous sediments extend from 10 to 40 feet below the seafloor and comprise decaying organic material from ancestral delta lobes. Whelan, et al. (1977) have demonstrated that methane and carbon dioxide concentrations above 30 ml/liter are sufficient to attenuated the high frequency signals of subbottom profilers at 3.5 kHz frequency. This phenomenon is obvious on the profiler records from Block 49 (see Figure 9). The gas-saturated sediments are thick enough to degrade even the lower frequency, higher energy sleeve gun data (Figure 10).

The methane and carbon dioxide accumulations which result from organic decomposition mask geomorphic features within portions of the channel system. The channels and associated gas-saturated deposits caused magnetic anomalies across the entire lease. Machel and Burton (1991) have discussed the causes of anomalous magnetization in hydrocarbon seepage environments, and their studies support the results encountered in Block 49, Eugene Island. In general, hydrocarbon seepage and migration result in magnetic contrasts relative to the total magnetization prior to hydrocarbon formation and intrusion. In diagenetic environments containing hydrocarbons, magnetite and pyrrhotite are the predominant minerals formed, while hematite is the most important magnetic mineral dissolved or replaced. Magnetic contrasts may be positive, absent, or negative relative to the background magnetization of the host strata.

Even the subtle differential between the channel fill soil types is sufficient to cause anomalies which can be detected when the sensor is close to the buried river beds. The archaeological significance of these anomalies has not been demonstrated through field testing, but the anomaly patterns reinforce the interpretation of the near-surface buried riverine trends. The near-surface channels are buried only 10 feet below the existing seafloor, and instabilities may occur when placing jack-up rigs along these relict channels.

During the survey of Block 49, Eugene Island Area, shrimpers were trawling the region continuously. Numerous studies conducted for the U.S. Army Corps of Engineers, Mobile District, have documented the changing pattern of magnetic anomaly distributions in areas of intense shrimping activity, such as Mobile Bay and its adjacent offshore zone. Block 49 is directly offshore of East Cote Blanche and Atchafalaya Bays, and shrimpers work this area daily. Shrimp nets transport ferrous debris back and forth throughout this study area, and at the same time displace a myriad of crab traps and fishing lines marked by surface buoys. The standard procedure for shrimpers clearing their nets is to throw all debris overboard after they pick up their nets. Seafloor debris, specifically ferrous objects, are perpetually snagged, sorted, collected and discarded by shrimpers. Specific areas surveyed through time exhibit a different magnetic anomaly pattern each time a survey is conducted.

There were no reported wrecks for this lease in available files, and the bulk of anomalies probably represent modern debris within this high traffic zone just offshore of Atchafalaya Bay. Sonar contact or Target No. 1 was verified on Line 26 (N-S) and Line 101 (E-W), and a cluster of magnetic anomalies surrounding this feature indicate that ferrous material is present. Figures 3 and 4 depict the sonar images of the bottom target, and definitive identification as to the exact nature of the obstruction is difficult. The target should be noted and avoided during lease development until specific identification can be made by divers. Target No. 2 line 18 appears to be cable or chain associated with another cluster of anomalies (Figure 5). Avoidance or inspection of this bottom feature is suggested during lease activities. While the possibility of shipwreck remains in this lease exists, only the sonar contacts offer specific evidence of seafloor debris. Avoidance of the circled anomalies is suggested, or specific drill sites near magnetic anomaly clusters could be ground-truthed for clearance or confirmation of modern debris.

Eugene Island Block 49 is located within a high probability pre-historic area, therefore, a cultural resources report is required for the subject lease, and was previously submitted with the Initial Plan of Exploration.

E. Ecologically Sensitive Features

Coastal barriers of the Western and Central Gulf Coast consist of relatively low land masses that can be divided into several interrelated environments. The beach consists of the foreshore and backshore. The nonvegetated foreshore slopes up from the ocean to the beach berm-crest. The backshore may occasionally be absent due to storm activity. If present, the backshore is found between the beach berm-crest and the dunes and may be sparsely vegetated. The dune zone of the barrier landform can consist of a single dune ridge, several parallel dunes ridges, or a number of curving dune lines that are stabilized by vegetation. These elongated, narrow landforms are composed of sand and other unconsolidated, predominantly coarse sediments that have been transported and deposited by waves, currents, storm surges, and winds.

When Gulf water levels are elevated by storms, water will overwash a coastal barrier. This action will create overwash fans or terraces behind and between the dunes. With time, these terraces will be vegetated by opportunistic species. Along more stable barriers, the area behind the dunes consists of broad flats that support scrubby woody vegetation. Saline or freshwater ponds may be found among the dunes or on the landward flats. Landward, these flats may grade into wetlands and intertidal mud flats that fringe the shore of lagoons, islands, and embayments. In areas where no bay or lagoon separates barrier landforms from the mainland, the barrier vegetation grades into scrub or forest habitat of the mainland.

Habitats found among the coastal barrier landforms provide a variety of niches that support many avian, terrestrial, aquatic and amphibian species, some of which are endangered or threatened.

Habitat stability is primarily dependent upon rates of geodynamic change in each coastal vicinity. The major sources of pressure causing barrier landforms to change along the Gulf coast are storms, subsidence, delta abandonment, deltaic sedimentation, and human activity. Configurations of barrier landforms continually adjust in response to prevailing or changing environmental conditions. Landform changes can be seasonal and cyclical, such as seen with the transitional movement of sand onshore during the summer and offshore during the winter, due to seasonal wave energy differences.

Accumulations and movements of the sediments that make up barrier landforms are often described in terms of transgressive and regressive sequences. Transgressions and regressions are related to local relative sea-level change and rates of sedimentation and erosion. A transgressive sequence is one in which the shore moves landward and marine deposits form on terrestrial sediments. In contrast, a regressive sequence is one in which terrestrial sediments is deposited over marine deposits as the land builds out into the sea. Both transgressive and regressive barriers occur in the Central and Western Gulf of Mexico. Transgressive coastal landforms have a predominantly low-profile morphology. These barriers are characterized by narrow widths; low, sparsely vegetated and discontinuous dunes; and numerous, closely spaced, active washover channels. Transgressive barriers are usually being actively eroded. Landward retreat of a shoreline may be caused by subsidence, sea-level rise, storm erosion, or removal of sediment from the longshore drift by channels, groin, or jetties. The passage and intensity of cold fronts and tropical storms do not occur at a steady rate. Hence, coastal retreat is not a steady process.

Regressive barriers, in contrast, have high and broad dune morphologies. Such sand dunes are continuous and well vegetated with few, if any, washover channels. These thick accumulations of sand form parallel accretion ridges. Seaward advance of a shoreline may be caused by geologic uplift of deltaic land-building processes, which transport sediments into coastal waters where they are deposited.

Interruptions of longshore sediment transport will cause a localized accumulation of sediments on the up-drift side of the obstruction, causing an accretion and seaward building of the shoreline. Because sediments down-drift of the interruption do not stop moving and new sediment is prevented from adequately replacing this departing sediment, interruptions of sediment drift cause or accelerate shoreline retreat downdrift of the obstruction. Man-made obstructions include jetties, groins, breakwaters, and bulkheads.

From east to west, headlands found on the barrier coasts of the Western and Central Gulf include Baldwin County Headland in Alabama, the barrier islands of Mississippi Sound, the Chandeleur Islands, the Modern Mississippi River Delta and its developing barrier islands, the Bayou Lafourche Headland and accompanying barrier islands, Isles Dernieres, the Chenier Plain of Louisiana and Texas, Trinity River Delta, Brazos-Colorado River Delta and its accompanying barrier islands, barrier islands of Espiritu Santo Bay and Laguna Madre, and the Rio Grande Delta.

The Mississippi Sound barrier islands are relatively young, having formed some three to four thousand years ago as a result of shoal-bar agradation. The islands are well vegetated by a southern maritime climax forest of pine and palmetto. The islands generally are regressive with high beach ridges and prominent sand dunes. These islands are generally stable, with no trend toward erosion or thinning, although they do migrate westwardly in response to predominantly westward-moving longshore currents. An exception to this general rule in Dauphin Island, Alabama, which is essentially a low-profile transgressive barrier island, except for a small Pleistocene core at its eastern end. The western end is a Holocene spit that is characterized by small dunes and washover fans with marsh deposits and tree stumps exposed in the surf zone. The Mississippi Sound Islands are separated from each other by tidal inlets with deep, wide channels. These channels have associated ebb and flood tidal deltas. Shoals are adjacent to all the barriers. The barriers are separated from the mainland by the Mississippi Sound.

Louisiana has the most rapidly retreating beaches in the nation. The statewide average for 1956-1978 was 8.29 m/yr (van Beek and Meyer-Arendt, 1982). More recent analyses reveal that Louisiana shorelines are retreating at an average rate of 4.2 m/yr, ranging from a gain of 3.4 m/yr to a loss of 15.3 m/yr (U.S. Geological Survey, 1988). In comparison, the average shoreline retreat rates for the Gulf of Mexico, Atlantic seaboard, and Pacific seaboard were reported at 1.8, 0.8 and 0.0 m/yr, respectively.

In Louisiana, the highest reported rates of coastal retreat occurred along the coastal plain of the Mississippi River. The sand beach formed between the Gulf and Bay Marchand retreated landward at rates of 18-23 m/yr between 1887 and 1978 (Penland and Suter, 1988). The average retreat rate for Fourchon Beach between the 1880's and 1980's has ranged from 10 to 20 m/yr (Boyd and Penland, 1988). The Isles Dernieres retreated landward at an average rate of 16.8 m/yr during the period of 1890 through 1988 (Williams et al., 1992). Whiskey Island, part of the Isle Dernieres, retreated at an average rate of 26.3 m/yr during the same period.

Barrier beaches along the deltaic plain in Louisiana fit into one of three categories, depending on the stage of the deltaic cycle that the nearby landmass is experiencing. When a major distributary of the Mississippi River is abandoned, submergence due to subsidence and sea-level rise transforms the abandoned delta into an erosional headland with flanking arcs of barrier sand spits that generates barrier islands as washover channels occur. The Bayou Lafourche Headland is an example of a transgressive headland. Isles Dernieres is a more advanced example of a transgressive headland where subsidence has caused the barrier arc of islands to separate from the headland (Penland and Suter, 1988). With continued subsidence and no source of sediment, Isles Dernieres will eventually submerge and form a submarine inner-shelf shoal (Penland and Boyd, 1985).

The coast of the Chenier Plain is fronted by sand beaches and coastal mudflats. The source of the mud is discharge of the Mississippi and Atchafalaya Rivers. Their fine sediments drift westward with prevailing nearshore currents. Fluid mud extends from the seaward edge of the marsh grasses to a few hundred meters offshore. The mud is an extremely effective wave-energy absorber. Consequently, the mainland shore is rarely exposed to effective wave action except during storms. Although only this sand beaches occur along the Chenier Plain, resting against the marsh, much of the Chenier coast is fairly stable.

The Texas coast between Louisiana and Rollover Pass is a physiographic continuation of the Chenier Plain. Here, thin accumulations of sand, shell, and caliche nodules make up beaches that are migrating poorly developed sand dunes. The barrier islands and spits of the rest of the Texas Coast were formed and are maintained by sediments supplied from the three deltaic headlands listed above.

Wetland habitat types occurring along the Gulf Coast include fresh, brackish, and saline marshes; forested wetlands; and small areas of mangroves. Wetland habitats occur as narrow bands or broad expanses. They can support sharply delineated botanical zones of monotonous stands of single species or mixed communities of plants.

The importance of coastal wetlands to the coastal environment has been well documented. Coastal wetlands are characterized by high organic productivity, high detritus production, and efficient nutrient recycling. They provide habitat for a great number and wide diversity of invertebrates, fish, reptiles, birds, and mammals. Wetlands are particularly important as nursery grounds for juvenile forms of many important fish species. The Louisiana coastal wetlands support over two-thirds of the Mississippi Flyway wintering waterfowl population, including 20-25% of North America's puddle duck population. The region supports the largest fur harvest in North America, producing 40 to 65% of the nations's total each year (Olds, 1984).

Louisiana contains most of the Gulf coastal wetlands. These wetlands occur in two physiographic settings--the Mississippi River Deltaic Plain and the Chenier Plain. Wetlands on the deltaic plain are situated on a series of overlapping riverain deltas that have extended on the continental shelf over the past 6000 years. The alluvial and organically-rich sediments found on these areas are subject to high, natural-subsidence rates. The effects of subsidence are compounded by sea-level rise, both of which have been occurring during the past several millennia.

The deterioration of coastal wetlands, particularly in Louisiana, is an issue of concern. In Louisiana, the annual rate of wetlands loss has been measured at 130 km^2 for the period 1955-1978. A recent study has shown that the current rate of landloss on the Deltaic Plain area of the Louisiana coast has decreased to about 90 km^2 per year for the period of 1972 to 1988 (Britsch and Kemp, 1990).

Several factors contribute to wetlands loss in coastal Louisiana. The suspended-sediment load of the Mississippi River has been reduced by 50% since the 1950's, due to channelization and farmland soil conservation efforts. However, the primary cause of reduced sedimentation rates is levee construction. Levees exclude river-borne sediment from the flanking deltaic wetlands. Subsidence and sea-level rise have caused submergence of lower wetland areas. Construction of rig levees have allowed drainage and development of extensive wetlands. Development activities in low areas, outside levee areas, have caused the filling of wetlands. Construction of canals converts wetlands to open water and upland spoilbanks. Canals and subsidence have also contributed to increased tidal influence and salinities in freshwater and low-salinity wetlands, which in turn increase erosion and sediment export.

In Mississippi and Alabama, the mainland marshes behind Mississippi Sound occur as discontinuous wetlands associated with estuarine environments. The most extensive wetland areas in Mississippi occur east of the Pearl River delta near the western border of the State and in the Pascagoula River delta area near the eastern border of the State. The wetlands of Mississippi seem to be more stable than those in Louisiana, reflecting the more stable substrate and more active sedimentation per unit of wetland area. Also, there have been only minor amounts of canal dredging in the Mississippi wetlands.

Most of the wetlands in Alabama occur on the Mobile River delta or along northern Mississippi Sound. Between 1955 and 1979, fresh marshes and estuarine marshes declined in these areas by 69% and 29%, respectively. Major causes of non-fresh wetland losses were industrial development and navigation, residential and commercial development, natural succession, erosion and subsidence. The loss of fresh marsh was mainly attributable to commercial and residential development and silviculture (Roach et al., 1987).

In Texas, coastal marshes occur along bays, on rivers and their deltas, and on the inshore side of barrier islands. Salt marshes consisting primarily of smooth cordgrass occur at lower elevations and at higher salinities. Brackish marshes occur in less saline areas inward of salt marshes. Broad expanses of emergent wetland vegetation do not commonly occur south of Baffin Bay, at the northern edge of Kenedy County, because of the arid climate and hypersaline waters. Dominant salt-marsh plants there include more salt-tolerant species such as *Batis Maritime* and *Salicornia sp.* (White et al., 1986).

Wetland changes observed in Texas during the past several decades appear to be driven by subsidence and sea-level rise. Open-water areas are appearing in wetlands along their seaward margins, while new wetlands are encroaching onto previously non-wetland habitat along the landward margin of wetland areas on the mainland, on the back side of barrier islands, and onto spoil banks. In addition, wetlands are being affected by human activities including canal dredging, impoundments, and accelerated subsidence caused by fluid withdrawals. The magnitude of these wetland acreage changes in most of Texas have not been determined at the present time. In the Freeport, Texas area, along the Louisiana border, wetlands loss is occurring at rates similar to those occurring in adjacent parts of the Louisiana Chenier Plain. In the Sabine Basin area of coastal Texas, for example, 20548 ha of wetlands were lost between 1952 and 1974 (Gosselink et al., 1979).

A recent study funded by MMS entitled "Causes of Wetland Loss in the Coastal Central Gulf of Mexico", examined coastal ecosystems of the Northern Gulf of Mexico region and how wetland habitats have changed as a result of natural processes and man's activities thereon. The study's primary focus was on assessing and quantifying the direct and indirect impacts of OCS-related activities on wetland areas. Canal construction for pipelines and navigation has been the major OCS-related impacting factor.

Direct impacts were defined as those physical alterations that are the direct result of canal construction. Direct impacts include wetlands resulting from the actual dredging of the canal, the disposal of dredged spoil and any subsequent widening of the canal as a result of channel-bank erosion. Based on the study's findings, OCS-related direct impacts have accounted for 16% of all the direct impacts that have occurred in Louisiana's wetlands. Direct OCS impacts account for only 4%-5% of the total wetlands loss during the period 1955/1956 to 1978. In recent years, more stringent construction regulations have required that pipelines installed across wetlands be backfilled with spoil material immediately after the pipeline is emplaced in its ditch. Direct impacts per unit length of OCS- related navigation canals are about 20 times greater than OCS pipeline canals. Indirect impacts are those that occur as a result of hydrologic changes (salinity and drainage regimes) brought on by canal construction. Indirect impacts from canals associated with the OCS program have been estimated as accounting for 4%-13% of the total amount of wetland loss that occurred in coastal Louisiana between 1955/56 to 1978.

Three million hectares of submerged seagrass beds are estimated to exist in exposed, shallow coastal waters of the northern Gulf of Mexico. An additional 166,000 ha are found in protected, natural embayments and are not considered exposed to OCS impacts. The area of Florida contains approximately 98.5% of all coastal seagrasses in the northern Gulf of Mexico. Texas and Louisiana contain approximately 0.5%. Mississippi and Alabama have the remaining 1% of seagrass beds.

Seagrass beds grow in shallow, relatively clear and protected waters with predominantly sand bottoms. Their distribution depends on an interrelationship among a number of environmental factors that include temperature, water depth, turbidity, salinity, turbulence, and substrate suitability. Primarily because of low salinity and high turbidity, robust seagrass beds and the accompanying high diversity of marine species are found only within a few scattered, protected locations in the Central and Western Gulf of Mexico. Inshore seagrasses provide important habitat for immature shrimp, black drum, spotted seatrout, juvenile southern flounder, and several other fish species; and they provide a food source for several species of wintering waterfowl.

Seagrasses dominate the aquatic floral habitat of low-salinity, inshore estuarine communities along the Texas coast. Dominant species include shoalgrass and widgeongrass. Laguna Madre and Copano-Aransas estuaries account for the major portion of seagrass populations in Texas. Seagrasses are less common in Corpus Christi Bay due to greater water depth. These species occur in abundance due to their tolerance of salinity variations.

Turbid waters and soft highly organic sediments of Louisiana's estuaries and offshore areas limit widespread distribution of higher salinity seagrass beds. Consequently, only a few areas in offshore Louisiana support seagrass beds. The most extensive beds occur in Chandeleur Sound. In Mississippi and Alabama, seagrasses occur within Mississippi Sound.

The distribution of seagrass beds in the Central and Western Gulf have diminished during recent decades. Primary factors believed to be responsible include hurricanes, dredging, dredged material disposal, trawling, water quality degradation, a combination of flood protection levees that have directed freshwater away from wetlands, saltwater intrusion that moved beds closer inland, and freshwater diversions from the Mississippi River into coastal areas during flood stage.

The term sensitive offshore resources refers both to the water column and the seafloor. Seafloor (benthic) habitats are the most likely to be adversely affected by offshore oil and gas operations, especially live-bottom areas, deep-water benthic communities, and topographic features.

The benthos has both floral and faunal components; the floral representatives being bacteria, algaes, and seagrasses. The abundance of benthic algaes is limited by the scarcity of suitable substrates and light penetration. In exceptionally clear waters, benthic algae, especially coralline red algaes, are known to grow in water depths to at least 180 m. Offshore seagrasses are not conspicuous in the Central and Western Gulf; however, fairly extensive beds may be found in estuarine areas behind the barrier islands throughout the Gulf. Seagrasses would be continuous around the entire periphery of the Gulf if it were not for the adverse effects of turbidity and low salinity of the Mississippi River effluent from the delta to Galveston (Humm, 1973).

The vast majority of bottom substrate available to benthic communities in the Central and Western Gulf consists of soft, muddy bottoms; the benthos here is dominated by polycheates. Benthic habitats on the continental shelf at most risk to potential impacts from oil and gas operations are topographic features and the pinnacle trend live bottom.

The northeastern portion of the Central Gulf of Mexico exhibits a region of topographic relief, the "pinnacle trend," found at the outer edge of the Mississippi-Alabama shelf between the Mississippi River and DeSoto Canyon. The pinnacles appear to be carbonate reefal structures in an intermediate stage between growth and fossilization. The region contains a variety of features from low to major pinnacles, as well as ridges, scarps, and relict patch reefs. It has been postulated that these features were built during lower stands of the sea during the rise in sea level following the most recent ice age. The heavily indurated pinnacles provide a surprising amount of surface area for the growth of sessile invertebrates and attract large numbers of fish.

Additional hard bottom features, which are located outside the actual pinnacle trend, have been described nearby on the continental shelf. Several hard-bottom areas on the Alabama-Northwest Florida inner-shelf; these areas are located in water depths ranging from 20 to 35 m.

Continental Shelf Associates, Inc. (CSA, 1992a) investigated another portion of the Mississippi-Alabama continental shelf. They found three types of hard bottom features that were identified for biological characterization. These were (1) pinnacle features present in approximately 80 to 90 m water depths; (2) deepwater pinnacles and associated hard bottom located in approximately 110-130 m water depths; and (3) suspected low-relief, hard-bottom features in the central and eastern portions of the upper Mississippi-Alabama shelf in water depths shallow than 75 m.

The pinnacles are found at the outer edge of the Mississippi-Alabama shelf between the Mississippi River and DeSoto Canyon. The bases of the pinnacles rise from the seafloor between 50 and 100 m with vertical relief occasionally in excess of 20 m. These features exist in turbid water and contain limited biotal coverage. Pinnacles photographed in 11185 showed biota similar to the transitional antipatharian-zone assemblage described by Rezak (CSA, 1985). These pinnacles may provide structural habitat for pelagic fish.

With the exception of the region defined as the pinnacle-trend areas, the substrate in waters shallower than 67 m of the Central Gulf is a mixture of mud and/or sand. The live-bottom survey required by MMS and conducted in the eastern portions of the area have also revealed sand or mud substrate. These areas are not conducive to "live-bottom" community growth since a hard substrate is needed for epifaunal attachment. As the substrate grades to carbonate sand in the Eastern Gulf, the potential for "live bottoms" increases.

Chemosynthetic clams, mussels, and tube worms, similar to the hydrothermal vent communities of the eastern Pacific have been discovered in association with hydrocarbon seeps in the northern Gulf of Mexico. Initial discoveries of cold-water seep communities indicated that they are primarily associated with seismic wipe-out zones and hydrocarbon and H_2S seep areas (Kennicutt and Gallaway, 1985; Brooks et al., 1986a). The occurrence of chemosynthetic organism dependent on hydrocarbon seepage has been documented in water depths as shallow as 290 m (Robert et al., 1990), but the most dense aggregations of these organisms have been found at water depths of around 500 m and beyond.

Among various community types, chemosynthetic communities are distributed across a wide range of environmental conditions, but in all cases, their presence strongly indicates active localized seepage (MacDonald, 1992). Submersible data analyzed by researchers from Texas A&M University indicates a characteristic aggregation size of about 100 m for vestimentiferan and mytitlid communities and 100-300 m for clam communities. This has led them to speculate that communities separated by less than 300 m probably share a common hydrocarbon reservoir. Analysis of multi-channel seismic data indicates that communities separated by greater than 1 m are not supported by seepage from a common reservoir.

To date, there are 43 sites across the northern Gulf of Mexico continental slope where the presence of chemosynthetic metazoans (dependent on hydrocarbon seepage) has been definitively documented. The envelope of occurrence suggests that the potential number of communities is much larger than those found to date. Preliminary results indicate extensive natural oil seepage in the Gulf, especially in water depths greater than 1000 m. This preliminary evidence considerably increases the area where chemosynthetic communities dependent on hydrocarbon seepage may be expected, and suggests a useful approach for studying natural oil seepage in the future.

The shelf and shelf edge of the Central and Western Gulf are characterized by topographic features which are inhabited by benthic communities. The habitat created by the topographic features is important because they support hard-bottom communities of high benthia, high diversity, and high numbers of plant and animal species; they support, either as shelter, food, or both, large numbers of commercially and recreationally important fishes; they are unique to the extent that they are small isolated areas of communities in the vast Gulf of Mexico; they provide a relatively pristine area suitable for scientific research; and they have an aesthetically attractive intrinsic value.

Seven distinct biotic zones on the banks of the Gulf have been identified. None of the banks contain all of the seven zones. The zones are divided into four categories dependent upon the degree of reef-building activity in each zone.

The Central Gulf of Mexico lists 16 topographic features and the western Gulf of Mexico lists 23 topographic features. None of those listed are in or near the vicinity of the proposed operations in Eugene Island Block 49.

F. Pipelines and Cables

As a prudent operator, Basin Exploration, Inc. will conduct its operations in accordance with the provisions specified in Minerals Management Service Notice to Lessees 83-03 in order to avoid all pipelines and/or cables in the vicinity of the proposed operations.

G. Other Mineral Uses

The activities proposed for Eugene Island Block 49 will have no direct or indirect impact on other mineral uses.

H. Ocean Dumping

The Marine Pollution Research and Control Act of 1987 implements Annex V of the International Convention for the Prevention of Pollution from Ships (MARPOL). Most of the law's regulatory provisions became effective on December 31, 1988. Under provisions of the law, all ships and watercraft, including all commercial and recreational fishing vessels, are prohibited from dumping plastics at sea. The law also severely restricts the legality of dumping other vessel-generated garbage and solid waste items both at sea and in U.S. navigable waters. The USCG is responsible for enforcing the provisions of this law and has developed final rules for its implementation, calling for adequate trash reception facilities at all ports, docks, marinas, and boat launching facilities.

Final rules published under MPPRCA explicitly state that fixed and floating platforms, drilling rigs, manned production platforms, and support vessels operating under a Federal oil and gas lease are required to develop Waste Management Plans and to post placards reflecting MARPOL, Annex V dumping restrictions. Waste Management Plans will require oil and gas operators to describe procedures for collecting, processing, storing, and discharging garbage and to designate the person who is in charge of carrying out the plan. These rules also apply to all oceangoing ships of 40 ft or more in length that are documented under the laws of the U.S. or numbered by a State and that are equipped with a galley and berthing. Placards noting discharge limitations and restrictions, as well as penalties for noncompliance, apply to all boats and ships 26 ft or more in length. Furthermore, the Shore Protection Act of 11188 requires ships transporting garbage and refuse to assure that the garbage and refuse is properly contained on board so that it will not be lost in the water from inclement wind or water conditions.

The disposal of oil and gas operational wastes is managed by USEPA through regulations established under three Federal Acts. The Resource Conservation and Recovery Act (RCRA) provides a framework for the safe disposal of discarded materials, regulating the management of solid and hazardous wastes. The USEPA has exempted many oil and gas wastes from coverage under hazardous wastes regulations under Subtitle C of RCRA. If covered, such wastes would be more stringently regulated under hazardous waste rules, i.e., industry would be responsible for the wastes from their generation to their final disposal. Exempt wastes include those generally coming from an activity directly associated with the drilling, production, or processing of a hydrocarbon product. Nonexempt oil and gas wastes include those not unique to the oil and gas industry and used in the maintenance of equipment.

The direct disposal of operational wastes into offshore waters is limited by USEPA under the authority of the Clean Water Act. And, when injected underground, oil and gas operational wastes are regulated by USEPA's third program, the Underground Injection Control program.

A general NPDES, based on effluent limitation guidelines, is required for direct disposal of operational wastes into offshore waters. The major discharges from offshore oil and gas exploration and production activities include produced water, drilling fluids and cuttings, ballast water, and storage displacement water. Minor discharges from the offshore oil and gas industry include drilling-waste chemicals, fracturing and acidifying fluids, and well completion and workover fluids; and from production operations, deck drainage, and miscellaneous well fluids (cement, BOP fluid); and other sanitary and domestic wastes, gas and oil processing wastes, and miscellaneous discharges.

I. Endangered and Threatened Species and Critical Habitat

Twenty-eight species of cetaceans, one sirenian, and one exotic pinniped (California sea lion) have been sighted in the Northern Gulf of Mexico. Seven species of baleen whales have been reported in the Gulf of Mexico. These include the northern right whale and six species of balaenopterid whales (bule, fin, sei, Bryde's, minke and humpback).

Twenty-one species of toothed whales have been reported in the Gulf of Mexico. These include the sperm whale, pygmy and dwarf sperm whales; four species of beaked whales (Cuvier's, Gervais', Blainville's and Sowerby's); killer whale; false and pygmy killer whale; short-finned pilot whale, Risso's dolphin; melon-headed whale; and eight other species of dolphins (bottlenose, Atlantic spotted, Pantropical spotted, spinner, Clymene, striped, Fraser's and rough-toothed). Many of these species are distributed in warm temperate to tropical waters throughout the world.

Five species of baleen whales (northern right, blue, fin, sei and humpback) and one species of toothed whale (sperm whale)found within the Gulf of Mexico are currently listed as endangered under the provisions of the Endangered Species Act of 1973. All are uncommon to rare in the Gulf except for the sperm whale. The endangered manatee also occurs in the Gulf of Mexico.

The Alabama, Choctawhatchee, and Perdido Key beach mice, subspecies of the old field mouse, occupy restricted habitats in the mature coastal dunes of Florida and Alabama. Their population has declined as a result of habitat from coastal development, competition, loss of genetic diversity, disease, and predation. Beach mice feed nocturnally on the lee side of the dunes and remain in burrows during the day. Their diet consist mainly of beach grass and sea oats, and sometimes sea rocket and invertebrates.

The green turtle population in the Gulf once supported a commercial harvest in Texas and Florida, but the population has not completely recovered since the collapse of the fishery around the turn of the century. Green turtles prefer depths of less than 20 m, where seagrasses and algae are plentiful. In coastal Texas, green turtles demonstrated site fidelity, remaining in one location for several months (NMFS Newsbreaker, 1993). Leatherbacks, the largest and most oceanic of the marine turtles, seasonally enter coastal and estuarine habitats where jellyfish are plentiful. Leatherbacks have unique deep diving abilities, a specialized jellyfish diet, and unique physiological properties that distinguish them from other sea turtles. Their nesting is concentrated on coarse-grain beaches in the tropical latitudes.

The hawksbill is the least commonly reported marine turtle in the Gulf. Stranded turtles are regularly reported in Texas and recently in Louisiana; these tend to be either hatchlings or yearlings. Hawksbill turtles prefer reefs and shallow coastal waters where marine invertebrates are abundant.

The Kemp's ridley sea turtle is the most imperiled of the world's marine turtles. Nesting in the United States occurs infrequently on Padre and Mustang Islands in south Texas from May to August. Natural nesting is supplemented by a NMFS hatchling and rearing program on Padre Island National Seashore.

In the Gulf, Kemp's ridleys inhabit nearshore areas, and have also been recorded off the mouth of the Mississippi River. Although adult Kemp's ridleys primarily inhabit the Gulf of Mexico, subadults range on the Atlantic coast to Massachusetts.

The loggerhead sea turtle occurs worldwide in habitats ranging from estuaries to the continental shelf. Aerial surveys indicate that loggerheads are common in less than 50 m depths, but they are also found in deep water. In the Gulf of Mexico, recent surveys indicate that the Florida Panhandle accounts for approximately one-third of the nesting on the Florida Gulf Coast. In the Central Gulf, loggerhead nesting has been reported on Gulf Shores and Dauphin Island, Alabama; Ship Island, Mississippi; and the Chandeleur Islands, Louisiana. Nesting in Texas occurs primarily on North and South Padre Islands, although occurrences are recorded throughout coastal Texas.

The recently designated Archie Carr National Wildlife Refuge in Brevard and Indian River Counties, Florida, hosts the largest concentration of nesting loggerhead and green sea turtles in the United States. It is believed to be the second largest nesting beach for loggerheads in the world.

The offshore waters, coastal beaches, and contiguous wetlands of the northern Gulf of Mexico are populated by both resident and migratory species of coastal and marine birds separated into five major groups: seabirds, shorebirds, wading birds, marsh birds and waterfowl. The remaining species, which are most susceptible to potential deleterious effects resulting from OCS-related activities, are found within coastal and inshore habitats. Recent surveys indicate that Louisiana and Texas are among the most important states in the south and southeastern U.S. in terms of nesting colony sites and total number of nesting coastal and marine birds. Fidelity to these nesting sites varies from year to year along the Gulf Coast, with site abandonment along the northern Gulf Coast often attributed to habitat alteration and excessive human disturbance.

The following coastal and marine birds species which inhabit or frequent the north-central and western Gulf of Mexico coastal areas and recognized by the FWS as either endangered or threatened are: piping plover, whooping crane, eskimo curlew, bald eagle, peregrine falcon, eastern brown pelican, and interior least tern.

The piping plover is a distinctive ringed plover of central and eastern North America and is currently declining in numbers. It nests on sandy beaches along coasts or inland lakeshores, preferring areas with scant vegetation and cover. Preliminary information indicates that Texas is the most important wintering area. In Louisiana, barrier islands appear to provide the most favorable habitat for this species. There, the plover prefers intertidal flats and beaches for its habitat. Piping plovers are susceptible to contact with spilled oil because of their preference for feeding in intertidal areas.

The whooping crane breeding population winters along the Texas coast from November to April, occupying the coastal marshes of Aransas, Calhoun, and Matagorda Counties. Portions of these counties and the Aransas National Wildlife Refuge have been designated as critical habitat for the whooping crane.

The Arctic peregrine falcon is a subspecies of the peregrine falcon, which breeds in North American tundra. A portion of the population migrates along the Mississippi, Central and Eastern flyways to winter on the U.S. and Mexican gulf coasts. The birds concentrate along beaches and barrier islands.

The bald eagle is the only species of sea eagle regularly occurring on the North American continent. The bulk of the bald eagle's diet is fish, combined with opportunistic capture of a variety of vertebrate species. The historical nesting range of the bald eagle within the southeast U.S. included the entire coastal plain and along major river and lakes. There were 90 active nests in Louisiana during 1994 with 131 fledged.

The eastern brown pelican is one of two species of pelicans in North America. It is a colonial nesting species that feeds entirely upon fishes captured by plunge diving in coastal waters. During the 1993 nesting season, there were more than 5,000 brown pelican nests in Louisiana, with more than 8,500 pelicans fledged. Nesting in Louisiana is currently limited to North Grand Gosier Island and North Island (Chandeleur Islands), Queen Bess Island, and Isles Dernieres. A survey conducted in April 1994 recorded 80 active pelican nests on North Island and 4,600 active nests on North Grand Gosier Island.

Results from the Annual Christmas Bird Count for 1990 showed quantities of individual brown pelican sightings on the coasts of Alabama (925), Louisiana (212), and Texas (553), but only 23 sightings in Mississippi.

Populations of the lest tern occurring within the Mississippi basin have been eliminated as a result of destruction and alteration of nesting habitat along the Mississippi River and its tributaries. In Alabama, the least tern nests sporadically along the coast in colonies of less than 25 individuals. Least terns are the only nesting tern species in Louisiana to use mainland beaches, and they will use human-made and managed spoil sites as well.

J. Socioeconomic

The Gulf of Mexico impact area for population, labor, and employment is defined as that portion of the Gulf of Mexico coastal zone whose social and economic well-being (population, labor, and employment) is directly or indirectly affected by the OCS oil and gas industry.

Currently, about one-half the United Stated population resides in coastal areas. The Gulf of Mexico region accounted for 13% of that coastal population in 1988 (USDOC, NOAA, 1990). The Central and Western zones of the Gulf Region vary substantially in socioeconomic patterns, ranging form low density, undeveloped rural areas to high-density developed urban centers.

The Gulf area in 1990 reflects a modest to significant recovery from the high unemployment levels experienced after the 1986 downturn of the oil and gas industry. Ironically, the Gulf Coast is experiencing a shortage of skilled labor in the oil and gas industry due to "the restructuring of the oil industry to centralize management, finance, and business services, and the use of computer technology. The Central Gulf of Mexico's unemployment rate of 6.3% is still somewhat over the national average.

The production of oil and gas has been a major source of revenue in the study area since 1954. Data from the 1990 Census show that the average annual payroll associated with oil and gas activities amounts to approximately $3.3 billion for the Gulf of Mexico Region. Average annual tax dollars generated per employee in the offshore oil and gas program are estimated at 8% of payroll revenues. Thus, State and local taxes generated annually by the development of oil and gas in the Gulf of Mexico coastal region are estimated at approximately $267.9 million.

Job estimates as of August 1994 show that 30,900 jobs are directly or indirectly dependent on the offshore program. Approximately 81% of these jobs are associated with activity in the Central Gulf and 19% are related to the Western Gulf. Nearly all offshore-related employment in the Central Gulf is due to activity offshore Louisiana; In addition, offshore activity in other areas of the Gulf also generates employment in Louisiana. Estimates of direct employment offshore are 25,000 workers in the Central Gulf, and 5,900 workers in the Western Gulf.

The offshore oil exploration industry including oil companies, drilling contractors, and oilfield suppliers provide a major input to Louisiana's economy. A number of ports in the Central and Western Gulf have developed into important centers for offshore support. The most active of these in Louisiana are (from east to west) Intracoastal City, Morgan City, Intracoastal City, and Cameron, Louisiana. The onshore support base for operations in Eugene Island Block 49 is Intracoastal City, Louisiana.

The MMS sponsored a socioeconomic workshop in September, 1992 designed to provide a recommended social and economic studies agenda for the region. A total of 18 proposed studies were designed by participants in hopes of defining gaps in the understanding of social and economic impacts of the OCS oil and gas industry in the Region and to provide a mechanism to provide this information to decision makers.

III. UNAVOIDABLE ADVERSE ENVIRONMENTAL IMPACTS

A. Water Quality

Water quality in coastal waters along the Gulf may be altered by a number of OCS-related activities. Discharges, runoff, and spills from onshore support facility construction, routine operations, and support vessel traffic; turbidity and saltwater intrusion from channel dredging, bank erosion, pipeline emplacement, and canal widening; and surface and groundwater contamination from the improper disposal on OCS-related oil-field wastes and trash may occur. Also, spills from offshore operations may reach coastal waters. Changes to the physical surroundings because of these activities may have secondary effects on water quality.

B. Effects on Marine Organisms

A number of OCS-related factors may cause adverse impacts to the pinnacle trend communities and features. Damage caused by oil spills, blowouts, anchoring, structure emplacement and removal, drilling discharges, and pipeline emplacement cans cause immediate death of numerous organisms or the alteration of sediments to the point that recolonization of the affected areas may be delayed or impossible.

The most serious impact-producing factor threatening the chemosythetic communites is physical disturbance of the bottom, which would destroy the organisms comprising these communities. Seafloor disturbance is considered to be a threat only to the high-density (Bush-Hill-type) communities; the widely distributed low-density communities would not be at risk. The provisions of NTL 88-11 (currently in effect), requiring surveys and avoidance proir to drilling, greatly reduces the risk.

Drilling discharges and resuspended sediments have a potential to cause minor, mostly sublethal, impacts to chemosynthetic communites. Because of low productivity and widespread distribution of low-density communities, these impacts would result in minor disruption of ecological function of these communites, with no impacts to the ecological relationships with the surrounding benthos. High-density communites would experience minor disruption of ecological function with recovery occurring within 2 years. Minor impacts to the ecological relationships with the surrounding benthos would also be likely.

C. Threatened and Endangered Species

The major impact-producing factors related to the proposed action that may affect Alabama, Choctawhatchee, and Perdido Key beach mice include oil spills, oil-spill response activities, beach trash and debris, and coastal habitat degradation. Because the preferred habitat of Alabama, Choctawhatchee, and Perdido Key beach mice is behind the barrier dunes, an oil spill would have to breach the dunes to reach either the mice or their preferred habitat. This could occur only if an oil spill coincided with a storm surge.

Therefore, the proposed action is not expected to harm the Alabama, Choctawhatchee, and Perdido Key beach mice or their habitats unless an oil spill would occur in conjunction with a strong storm surge. Since the probability of such a spill is estimated to be less than 0.5%, no contact of beach mice or their habitats with oil is expected.

The major impact-producing factors related to the proposed action that may affect Gulf marine turtles include structure installation, dredging, operational discharges, vessel traffic, explosive platform removals, OCS-related trash and debris, oil-spill response activities, oil spills, blowouts, and water quality and coastal environmental degradation.

Major impact-producing factors that impact marine birds in the offshore environment include air emissions, oil and fuel spills, spill-response activities, and discarded trash and debris form service vessels, coastal infrastructure, and offshore structures, disturbances from OCS inshore and coastal service and transport operations; habitat loss, modification, and degradation from onshore infrastructure and degradation of water quality.

Activities resulting from the proposed action are expected to affect coastal and marine birds of the CPA. It is expected that the majority of effects from the major impact-producing factors on coastal and marine birds are sublethal, causing temporary disturbances and displacement of localized groups inshore. Chronic sublethal stress, however, is often undetectable in birds. Lethal effects result primarily from uncontained inshore oil spills and associated spill-response activities. Spills occurring in biologically sensitive areas are expected to kill a number of individuals from any and all groups. The net effect will be the alteration of the species composition of the affected area(s) and possibly the reduction of the overall carrying capacity of these area(s) in general. Recovery of affected area is expected to take up to several years.

Endangered and threatened birds, include the brown pelican, Arctic peregrine falcon, bald eagle, piping plover, and least tern. Air emissions, oil spills, oil spill-response activities, degradation of water quality resulting form OCS discharges, OCS helicopter and service-vessel traffic and noise, habitat loss or modification resulting from pipeline landfalls and coastal facility construction, and discarded trash and debris from service-vessels and OCS structures are sources of potential adverse impacts. Any effects are especially critical for intensively managed populations such as endangered and threatened species that need to maintain a viable reproductive population size or that depend upon a few key habitat factors. Species of special concern are often populations at the edge of their range. These populations may be more vulnerable to impacts than populations of the same species living near the center of their range.

Endangered and threatened birds may encounter periodic displacement of individuals and/or localized groups from proposed activities. Decreases in numbers of adults and/or nests could occur as a result of OCS-related oil spills and spill-related coastal habitat loss. The major impact-producing factors associated with OCS activities that could affect barrier beaches include oil spills, pipeline emplacements, navigation canal dredging and maintenance dredging, and support infrastructure construction. The loss of individuals represents a serious loss to the regional population(s); restoration of numbers to a pre-disturbance state would require up to several years, depending on the species and existing conditions.

D. Wetlands and Beach

Wetlands include forested wetlands (bottomland and swamps), tidal marshes, and seagrasses. Swamps and marshes occur throughout the coastal zone. Seagrasses are restricted in distribution to small areas behind barrier islands in Mississippi and Chandeleur Sounds.

The OCS oil and gas activities, facilities, and events that cold adversely affect wetlands and seagrass beds include oil spills, pipeline construction, pipeline canals, dredging of new navigation channels, maintenance dredging and vessel usage of navigation channels, and construction and maintenance of onshore facilities. Offshore oil spills associated with the proposed action can result form platform accidents, pipeline breaks, or navigational accidents. Just as the probability of an oil spill impacting coastal beaches is extremely low, an offshore oil spill is unlikely to contact wetlands or seagrasses in the CPA.

E. Air Quality

The potential degrading effects on air quality from onshore and offshore operational activities are platform emissions; drilling activities during exploration, delineation, and development; service vessel operation; evaporation of volatile hydrocarbons from surface oil slicks; and fugitive emissions during hydrocarbon venting and offloading.

Emissions of pollutants into the atmosphere for these activities are likely to have minimum impact on offshore air quality because of prevailing atmospheric conditions, emission heights, and pollutant concentrations. Onshore impact on air quality from emission from OCS activities is estimated to be negligible because of the atmospheric regime, the emission rates, and distance of these emissions from the coastline. The above discussion is based on average conditions; however, there will be days of low mixing heights and wind speeds that could increase impact levels. These conditions are characterized by formation, which in the Gulf occurs about 35 days a year, mostly during winter. Impact from these conditions is reduced in winter because the onshore winds have the smallest frequency (37%) and rain removal is greatest. Summer is the worst time, with onshore winds having a frequency of 61%. Emissions of pollutants into the atmosphere are expected to have concentrations that would not change the onshore air quality classifications.

F. Commercial Fishing

Effects on commercial fisheries from activities associated with OCS oil and gas activities could come from coastal environmental degradation, emplacement of production platforms, underwater OCS obstructions, production platform removals, seismic surveys, oil spills, subsurface blowouts, pipeline trenching, and offshore discharges of drilling muds, produced waters, and naturally occurring radioactive material (NORM).

Since approximately 92% of the commercially harvested species are estuary dependent, coastal environmental degradation resulting from the proposed action, although indirect, has the potential to adversely affect commercial fisheries. The environmental deterioration and effects on commercial fisheries result from the loss of Gulf wetlands as nursery habitat and from functional impairment of existing habitat through decreased water quality. The

conversion of wetlands into open water may initially cause an appreciable increase called the "edge effect" in the population of a commercially harvested shellfish, such as shrimp (Keithly and Baron-Mounce, 1993; Louisiana Department of Wildlife and Fisheries, 1992).

Operations resulting from OCS oil and gas activities would have the potential to cause detrimental effects on CPA commercial fisheries. Activities such as seismic surveys, subsurface blowouts, pipeline trenching, and OCS discharge of drilling muds, produced water, and NORM will cause negligible impacts and will not deleteriously affect CPA commercial fisheries. Operations such as production platform emplacement, underwater

OCS impediments, explosive platform removal, oil spills, and activities that result in coastal environmental degradation will cause greater impacts on CPA commercial fisheries. However, the effects on CPA commercial fisheries from these major impact-producing factors will be inconsequential and rare. At the expected level of effect, the resultant influence on CPA commercial fisheries will be undistinguishable from natural population variations. As a result, there will be little discernible disturbance to CPA commercial fisheries.

G. Ship Navigation

Very little interference can be expected between the drilling unit, structures and marine vessels utilized during associated development operations and ships that use established fairways. However, at night and during rough weather, fog, and heavy seas, ships not using established fairways could collide with the structures.

Approved aids to navigation will be installed on the structure and all marine vessels servicing these operations in accordance with USCG regulations.

H. Cultural Resources

Several OCS-related, impact producing factors may cause adverse impacts to archaeological resources. Offshore development could result in a drilling rig, platform, pipeline, dredging activity or anchors having an impact on an historic shipwreck. This direct physical contact with a wreck site could destroy fragile ship remains, such as hull and wooden or ceramic artifacts, and could disturb the site context. The result would be the loss of archaeological data on ship construction, cargo, and the social organization of the vessel's crew, and the concomitant of loss of information on maritime culture for the time period for which the ship dates.

Oil spills have the potential to affect both prehistoric and historic archaeological resources. Impacts to historic resources would be limited to visual impacts and, possibly, physical impacts associated with spill cleanup operations. Impacts to prehistoric archaeological sites would be the result of hydrocarbon contamination of organic materials, which have the potential to date site occupation through radiocarbon dating techniques, as well as possible physical disturbance associated with spill cleanup operations.

Basin Exploration, Inc., as a prudent operator, agrees that should any site, structure, or object of historical or archaeological significance be discovered during drilling and exploration activities within the lease, such findings would immediately be reported to the Director, Gulf of Mexico OCS Region, and every reasonable effort would be made to preserve and protect the cultural resources from damage until said Director has given directions as to its preservation.

I. Recreation and Aesthetic Values

Major recreational beaches are defined as those frequently visited sandy areas along the shoreline that are exposed to the Gulf of Mexico and that support a multiplicity of recreational activity, most of which is focused at the land and water interface. Included are Gulf Islands National Seashore, State parks and recreational areas, county and local parks, urban beaches, private resort areas, and State and private environmental preservation and conservation areas.

The primary impact-producing factors associated with offshore oil and gas exploration and development, and most widely recognized as major threats to the enjoyment and use of recreational beaches, are oil spills and trash and debris. Additional factors such a the physical presence of platforms and drilling rigs can affect the aesthetics of beach appreciation, and noise from aircraft can disturb the ambience of beach-related recreation experiences. All these factors, either individually or collectively, may adversely affect the number and value of recreational beach visits.

IV. SUMMARY

The proposed activity will be carried out and completed with the guarantee of the following items.

A. The best available and safest technologies will be utilized throughout the project. This includes meeting all applicable requirements for equipment types, general project layout, safety systems, and equipment and monitoring systems.

B. All operations are covered by a Minerals Management Service approved Oil Spill Response Plan.

C. All applicable Federal, State, and Local requirements regarding air emission and water quality and discharge for the proposed activities, as well as any other permit conditions, will be complied with.

D. The proposed activities described in detail in the Initial Development Operations Coordination Document will comply with Louisiana's Coastal Management Program and will be conducted in a manner consistent with such Program.

REFERENCES

1. Final Environmental Impact Statement, Proposed Oil and Gas Lease Sales 110 and 112, Gulf of Mexico OCS Region, OCS EIS, MMS 86-0087.

2. Final Environmental Impact Statement, Proposed Oil and Gas Lease Sales 110 and 112, Gulf of Mexico OCS Region, OCS EIS, MMS 86-0087, visuals.

3. Final Environmental Impact Statement, Proposed Oil and Gas Lease Sales 113, 115, and 116, Gulf of Mexico OCS Region, OCS EIS, MMS 87-0077.

4. Final Environmental Impact Statement, Proposed Oil and Gas Lease Sales 118 and 122, Gulf of Mexico OCS Region, OCS EIS, MMS 88-0044.

5. Final Environmental Impact Statement, Proposed Oil and Gas Lease Sales 123 and 125, Gulf of Mexico OCS Region, OCS EIS, MMS 89-0053.

6. Final Environmental Impact Statement, Proposed Oil and Gas Lease Sales 131, 135 and 137, Gulf of Mexico OCS Region, OCS EIS, MMS 90-0042.

7. Final Environmental Impact Statement, Proposed Oil and Gas Lease Sales 139 and 141, Gulf of Mexico OCS Region, OCS EIS, MMS-91-0054.

8. Final Environmental Impact Statement, Proposed Oil and Gas Lease Sales 142 and 143, Gulf of Mexico OCS Region, OCS EIS, MMS-92-0054.

9. Final Environmental Impact Statement, Proposed Oil and Gas Lease Sales 147 and 150, Gulf of Mexico OCS Region, OCS EIS, MMS 93-0065.

10. Final Environmental Impact Statement, Proposed Oil and Gas Lease Sales 152 and 155, Gulf of Mexico OCS Region, OCS EIS, MMS 94-0058.

11. Final Environmental Impact Statement, Proposed Oil and Gas Lease Sales 157 and 161, Gulf of Mexico OCS Region, OCS EIS, MMS 95-0058.

COASTAL ZONE MANAGEMENT

CONSISTENCY CERTIFICATION

INITIAL DEVELOPMENT OPERATIONS COORDINATION DOCUMENT

EUGENE ISLAND BLOCK 49

OCS-G 17959

The proposed activities described in this Plan comply with Louisiana's approved Coastal Zone Management Program and will be conducted in a manner consistent with such Program.

Arrangements have been made with the Morning Advocate - State Times in Baton Rouge, Louisiana to publish a legal notice no later than September 17, 1997.

Additionally, arrangements have been made with the Franklin Banner in St. Mary Parish to publish a public notice of the proposed activities no later than September 17, 1997.

BASIN EXPLORATION, INC.
Lessee or Operator

BEST AVAILABLE COPY

Certifying Official

September 2, 1997
Date

Basin Exploration, Inc.
1001 Fannin, Suite 4656
Houston, TX 77002
Office 713/767-1700
Fax 713/767-1710

BASIN

September 2, 1997

Morning Advocate State Times
Legal Ad Department - Public Notice
525 Lafayette Street
Baton Rouge, Louisiana 70804

Attention: Vicky Thompson

Gentlemen:

Please publish the following as a legal ad no later than September 17, 1997.

Public Notice of Federal Consistency review of a Proposed Initial Development Operations Coordination Document by the Coastal Management Section/Louisiana Department of Natural Resources for the plan's consistency with the Louisiana Coastal Resources Program.

Applicant: Basin Exploration, Inc.
1001 Fannin, Suite 4656
Houston, Texas 77002

Location: Eugene Island Block 49
Lease OCS-G 17959
Offshore, Louisiana

Description: Basin proposes to commence production from Well No. 1. Support operations will be from an onshore base located in Intracoastal City, Louisiana. No ecologically sensitive species or habitats are expected to be affected by these activities.

A copy of the plan described above is available for inspection at the Coastal Management Division Office located on the 10th floor of the State Lands and Natural Resources Building, 625 North 4th Street, Baton Rouge, Louisiana. Office hours: 8:00 AM to 5:00 PM, Monday thru Friday.

ATTACHMENT G

State Times Newspaper
Legal Ad Publication
September 2, 1997

The public is requested to submit comments to the Louisiana Department of Natural Resources Coastal Management Division, Attention: OCS Plans, P. O. Box 44487, Baton Rouge, Louisiana 70804-4487. Comments must be received within 15 days of this notice or 15 days after the Coastal Management Section obtains a copy of the plan and it is available for public inspection. This public notice is provided to meet the requirements of the NOAA Regulations on Federal Consistency with approved Coastal Management Programs.

A copy of the published notice and bill should be submitted to the attention of the undersigned:

Dalton Polasek, Jr.
Basin Exploration, Inc.
1001 Fannin, Suite 4656
Houston, Texas 77002

Please direct any questions concerning this request to the attention of the undersigned, or Basin Exploration, Inc.'s regulatory agent, J. Connor Consulting, Inc., Attention: Connie J. Goers at (281) 578-3388.

Sincerely,

BASIN EXPLORATION, INC.

Dalton Polasek, Jr. /cjg

Dalton Polasek, Jr.
Vice President, Engineering

DP:CJG:ljk

Basin Exploration, Inc.
1001 Fannin, Suite 4656
Houston, TX 77002
Office 713/767-1700
Fax 713/767-1710

September 2, 1997

Franklin Banner
115 Wilson
Franklin, Louisiana 70538

Attention: Geri Williams

Gentlemen:

Please publish the following as a legal ad no later than September 17, 1997.

Public Notice of Federal Consistency review of a Proposed Initial Development Operations Coordination Document by the Coastal Management Section/Louisiana Department of Natural Resources for the plan's consistency with the Louisiana Coastal Resources Program.

Applicant: Basin Exploration, Inc.
1001 Fannin, Suite 4656
Houston, Texas 77002

Location: Eugene Island Block 49
Lease OCS-G 17959
Offshore, Louisiana

Description: Basin proposes to commence production from Well No. 1. Support operations will be from an onshore base located in Intracoastal City, Louisiana. No ecologically sensitive species or habitats are expected to be affected by these activities

A copy of the plan described above is available for inspection at the Coastal Management Division Office located on the 10th floor of the State Lands and Natural Resources Building, 625 North 4th Street, Baton Rouge, Louisiana. Office hours: 8:00 AM to 5:00 PM, Monday thru Friday.

ATTACHMENT H

Franklin Banner
Legal Ad Publication
September 2, 1997

Page Two

The public is requested to submit comments to the Louisiana Department of Natural Resources Coastal Management Division, Attention: OCS Plans, P. O. Box 44487, Baton Rouge, Louisiana 70804-4487. Comments must be received within 15 days of this notice or 15 days after the Coastal Management Section obtains a copy of the plan and it is available for public inspection. This public notice is provided to meet the requirements of the NOAA Regulations on Federal Consistency with approved Coastal Management Programs.

A copy of the published notice and bill should be submitted to the attention of the undersigned:

Dalton Polasek, Jr.
Basin Exploration, Inc.
1001 Fannin, Suite 4656
Houston, Texas 77002

Please direct any questions concerning this request to the attention of the undersigned, or Basin Exploration, Inc.'s regulatory agent, J. Connor Consulting, Inc., Attention: Connie J. Goers at (281) 578-3388.

Sincerely,

BASIN EXPLORATION, INC.

Dalton Polasek, Jr. /cjg

Dalton Polasek, Jr.
Vice President, Engineering

DP:CJG:ljk

J. Connor Consulting, Inc.

AIR QUALITY REVIEW

COMPANY:	**BASIN EXPLORATION, INC.**
AREA:	**EUGENE ISLAND**
BLOCK:	**49**
LEASE:	**OCS-G 17959**
PLATFORM:	**CAISSON NO. 1**
WELLS:	**1**
LATITUDE:	**X = 1,858,270.56**
LONGITUDE:	**Y = 211,363.26**
COMPANY CONTACT:	**CONNIE J. GOERS**
TELEPHONE NO.:	**(281) 578-3388**

REMARKS:

THE INITIAL DEVELOPMENT OPERATIONS COORDINATION DOCUMENT PROVIDES FOR THE PRODUCTION OF CAISSON NO. 1 IN EUGENE ISLAND 49. PLANNED COMMENCEMENT DATE IS APPROXIMATELY NOVEMBER 1, 1997

EUGENE ISLAND BLOCK 49 IS LOCATED APPROXIMATELY 45 MILES FROM THE ONSHORE BASE LOCATED IN INTRACOASTAL CITY, LOUISIANA.

ATTACHMENT I

16225 Park Ten Place Suite 500 Houston, Texas 77084 (281) 578-3388 Fax (281) 578- 8895

GULF OF MEXICO AIR EMISSION CALCULATIONS

General

This document (MMS.WK3) was prepared through the cooperative efforts of those professionals in the oil industry including the API/OOC Gulf of Mexico Air Quality Task Force, who deal with air emission issues. This document is intended to standardize the way we estimate an air emission inventory for Plans of Exploration (POE) and Development, Operations, Coordination Documents (DOCD) approved by the Minerals Management Service (MMS). It is intended to be thorough but flexible to meet the needs of different operators. This first sheet gives the basis for the emission factors used in the emission spreadsheet as well as some general instructions. This file contains 8 sheets: A,B,C,D,E,F,G,& H. A is th Instruction Sheet, B is the Title Sheet, C is the Factors Sheet, D,E,F, & G are the Emission Spreadsheets and H is the Summary Sheet. These sheets will describe and calculate emissions from an activity.

Title Sheet

The Title Sheet requires input of the company's name, area, block, OCS-G number, platform and/or well(s) in the necessary lines. This data will automatically be transferred to the spreadsheet and summary sheet.

Factor Sheet

The emission factors were compiled from the latest AP-42 references or from industry studies if no AP-42 reference was available. Factors can be revised as more data becomes available. A change to this Factor Sheet will be automatically changed in Emission Spreadsheet.

The basis for the factors is as follows:

1. NG Turbines — Fuel usage scf/hr = HP X 9.524 (10,000 btu/HP-hr / 1050 btu/scf)
2. NG Engines — Fuel usage scf/hr = HP X 7.143 (7,500 btu/HP-hr / 1050 btu/scf)
3. Diesel — Fuel usage gals/hr = HP X 0.0483 (7,000 btu/HP-hr / 145,000 btu/gal)

Emission Factors

Natural Gas Prime Movers

1. TNMOC refers to total non-methane organic carbon emissions and these can be assumed equivalent to VOC emissions.

2. The sulfur content assumed is 2000 grains/mmscf (3.33 ppm). If your concentration is different then ratio your emission factor up or down.

Diesel-Fired Prime Movers

1. Diesel sulfur level 0.4% by wt

2. For boats use > 600 HP factors based on AP-42 Vol. II, Table II-3-3. Those figures closely match the above values. Include only the emissions from the boats within 25 mile radius of the well/platform.

3. For diesel engines <600 HP VOC emissions equal total HC emissions; for diesel engines>600 HP VOC emissions equal non-methane HC emissions.

Heaters/Boilers/Firetubes/NG-Fired

1. NG Sulfur content is 2000 grains per million cu ft

2. VOCs emissions based on total non-methane HCs

Gas Flares

1. Flare is non-smoking

2. 1050 btu/cu. ft. for NG heating value

3. The sulfur content assumed is 2000 grains/mmscf (3.33 ppm). If your concentration is different then ratio your emission factor up or down or you may use the following formula

   H2S flared (lbs/hr) = Gas flared (cu ft/hr) X ppm H2S X 10E-06 X 34/379

   SOx emis (lbs/hr) = H2S flared (lbs/hr) X 64/34

Liquid Flares

1. Assume 1% by wt Sulfur maximum in the crude oil.

2. VOC equals non-methane HCs

3. Particulate emissions assumes Grade 5 oil.

Tanks

1. Tank emissions assumes uncontrolled fixed roof tank.

Fugitives

1. Fugitives are based on the 1993 Star Environmental Report. It requires that you count or estimate your components.

Glycol Dehydrator Vent

1. The dehydrated gas rate in SCF/HR must be entered in the spreadsheet. The emission factor is from the compilation of the Louisiana Survey and an average emissions per gas rate.

Gas Venting

1. The emission factor is based on venting unburned natural gas of average weight.

Emissions Spreadsheet

The emissions from an operation should be presented for a calendar year (1994, 1995, etc.). The operation may include drilling only or drilling in conjunction with other activities such as pipeline installation or production operations. For the first year use sheet D, for the second year use sheet E, third use F, fourth use G and if you need more you will have to insert a sheet and copy the spreadsheet to the new sheet. The year (CELL D:A38) should be changed and the different operating parameters entered to calculate revised emissions for that subsequent year. The spreadsheet will calculate maximum fuel usage (UNIT/HR) using the known horsepower. It will assume maximum fuel usage is equal to actual fuel

(UNIT/DAY) usage unless the actual fuel usage is known. If so, insert actual fuel usage in appropriate column. The emissions will be calculated as follows:

Emission rate (lb/hr) = (HP or fuel rate) X Emission Factor (Potential to emit)

Emissions (tpy)=Emission rate (lb/hr) X load factor(Act Fuel/Max Fuel) X hrsX daysX ton/2000 lbs (Actual emissions)

To customize the spreadsheet for your application you may want to delete lines for non-applicable equipment/activities or you can input "0" for the HP of equipment that does not apply. You may also need to copy/insert an entire line if more than one similiar type of equipment is present.

Also, the production equipment can be customized further by adding the use of the equipment behind each type of engine, i.e.,

Turbine
Turbine - Gas Compressor

Burner
Burner - Line Heater

Summary Sheet

The Summary Sheet is designed to show a proposed estimate of emissions from an activity over a future period of time. In this example ten years was chosen. Each row links to the corresponding emission calculation spreadsheet for that year. For example, Row 7 of the summary corresponds to the annual totals from Sheet D. Row 8 links to the second emission calculation spreadsheet, Row 9 to the third and Row 10 to the fourth. Row 11 - 16 will carry down the emissions from the last spreadsheet with an emission rate greater than zero. The Summary Sheet will always carry down the last non-zero emission total. For example, if emission calculations are done for the years 1994 and 1995, then the the 1995 total will be carried down through the year 2003. Row 17 of the summary sheet reflects the allowable for the air quality review exemption determination. If more or less years are needed you will will have to modify the spreadsheet.

Print Instructions

The table below lists macros that were written to print sheets A, C, D, E, F, G, & H.

\A - This macro prints 3 pages of instructions (sheet A).
\C - This macro prints the emissions factors sheet (sheet C).
\D - This macro prints the emissions calculations sheet (sheet D).
\E - This macro prints the emissions calculations sheet (sheet E).
\F - This macro prints the emissions calculations sheet (sheet F).
\G - This macro prints the emissions calculations sheet (sheet G).
\H - This macro prints the emissions calculations sheet (sheet H).
\X - This macro prints all sheets - A, C, D, E, F, G, & H.

To run one of these macros, hold down ALT and press the letter in the macro range name. For example, to run the macro \A, press ALT-a.

Fuel Usage Conversion Factors	Natural Gas Turbines		Natural Gas Engines		Diesel Recip. Engine		REF.	DATE
	SCF/hp-hr	9.524	SCF/hp-hr	7.143	GAL/hp-hr	0.0483	AP42 3.2-1	4/76 & 8/84

Equipment/Emission Factors	units	TSP	SOx	NOx	VOC	CO	REF.	DATE
NG Turbines	gms/hp-hr		0.00247	1.3	0.01	0.83	AP42 3.2-2	4/93
NG 2-cycle lean	gms/hp-hr		0.00185	11	0.43	1.5	AP42 3.2-2	4/93
NG 4-cycle lean	gms/hp-hr		0.00185	12	0.72	1.6	AP42 3.2-2	4/93
NG 4-cycle rich	gms/hp-hr		0.00185	10	0.14	8.6	AP42 3.2-2	4/93
Diesel Recip. < 600 hp.	gms/hp-hr	1	0.931	14	1.12	3.03	AP42 3.3-1	4/93
Diesel Recip. > 600 hp.	gms/hp-hr	0.24	1.49	11	0.33	2.4	AP42 3.4-1	4/93
NG Heaters/Boilers/Burners	lbs/mmscf	5	0.6	140	2.8	35	AP42 1.4-1	4/93
NG Flares	lbs/mmscf		0.57	71.4	60.3	388.5	AP42 11.5-1	9/91
Liquid Flaring	lbs/bbls	0.42	6.6	2.3	0.01	0.21	AP421.3-1	4/93
Tank Vapors	lbs/bbl				0.03		E&P Forum	1/93
Fugitives	lbs/hr/comp.				0.000025		API Study	12/93
Glycol Dehydrator Vent	lbs/mmscf				6.6		La. DEQ	1991
Gas Venting	lbs/scf				0.0034			

BEST AVAILABLE COPY

AIR EMISSION CALCULATIONS

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL	LATITUDE	LONGITUDE	CONTACT	PHONE	REMARKS
BASIN EXPLORATION, INC.	EUGENE ISLAND	49	OCS-G 17959	CAISSON NO	1	X = 1,858,270	Y = 211,363.2	CONNIE J. GOERS	(281) 578-338	THE INITIAL DEVELOPMENT OPERATIONS COORDINATION DOCUMENT PROVID

OPERATIONS	EQUIPMENT		MAX. FUEL	ACT. FUEL	RUN TIME		POUNDS PER HOUR					TONS PER YEAR				
	Diesel Engines	HP	GAL/HR	GAL/D												
	Nat. Gas Engines	HP	SCF/HR	SCF/D												
	Burners	MMBTU/HR	SCF/HR	SCF/D	HR/D	DAYS	TSP	SOx	NOx	VOC	CO	TSP	SOx	NOx	VOC	CO
DRILLING	PRIME MOVER>600hp diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PRIME MOVER>600hp diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PRIME MOVER>600hp diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PRIME MOVER>600hp diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PRIME MOVER>600hp diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	AUXILIARY EQUIP<600hp diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS>600 hp diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS>600 hp diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPELINE	PIPELINE LAY BARGE diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INSTALLATION	SUPPORT VESSEL diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PIPELINE BURY BARGE diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY	DERRICK BARGE diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INSTALLATION	DERRICK BARGE diesel TUG	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MATERIAL TUG diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	CREW BOAT	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	RECIP.<600hp diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	RECIP.>600hp diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel - SUPPLY	2065	99.74	2393.75	10	9	1.09	6.78	50.03	1.50	10.92	0.05	0.30	2.25	0.07	0.49
	TURBINE nat gas	0	0.00	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.2 cycle lean nat gas	0	0.00	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.4 cycle lean nat gas	0	0.00	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.4 cycle rich nat gas	0	0.00	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	BURNER nat gas	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MISC.	BPD	SCF/HR	COUNT												
	TANK-	0			0	0				0.00					0.00	
	FLARE-		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	PROCESS VENT-		0		0	0				0.00					0.00	
	FUGITIVES-			1000.0		61				0.03					0.02	
	GLYCOL STILL VENT-		0		0	0				0.00					0.00	
DRILLING	OIL BURN	0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WELL TEST	GAS FLARE		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
1997	YEAR TOTAL						1.09	6.78	50.03	1.53	10.92	0.05	0.30	2.25	0.09	0.49
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES											666.00	666.00	666.00	666.00	25302.83
	20.0															

BEST AVAILABLE COPY

08/29/97 [MMS.WK3]

AIR EMISSION CALCULATIONS

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL	LATITUDE	LONGITUDE	CONTACT	PHONE	REMARKS
BASIN EXPLORATION, INC.	EUGENE ISLAND	49	OCS-G 17959	CAISSON NO	1	X = 1,858,270	Y = 211,363.2	CONNIE J. GOERS	(281) 578-338	THE INITIAL DEVELOPMENT OPERATIONS COORDINATION DOCUMENT PROVID

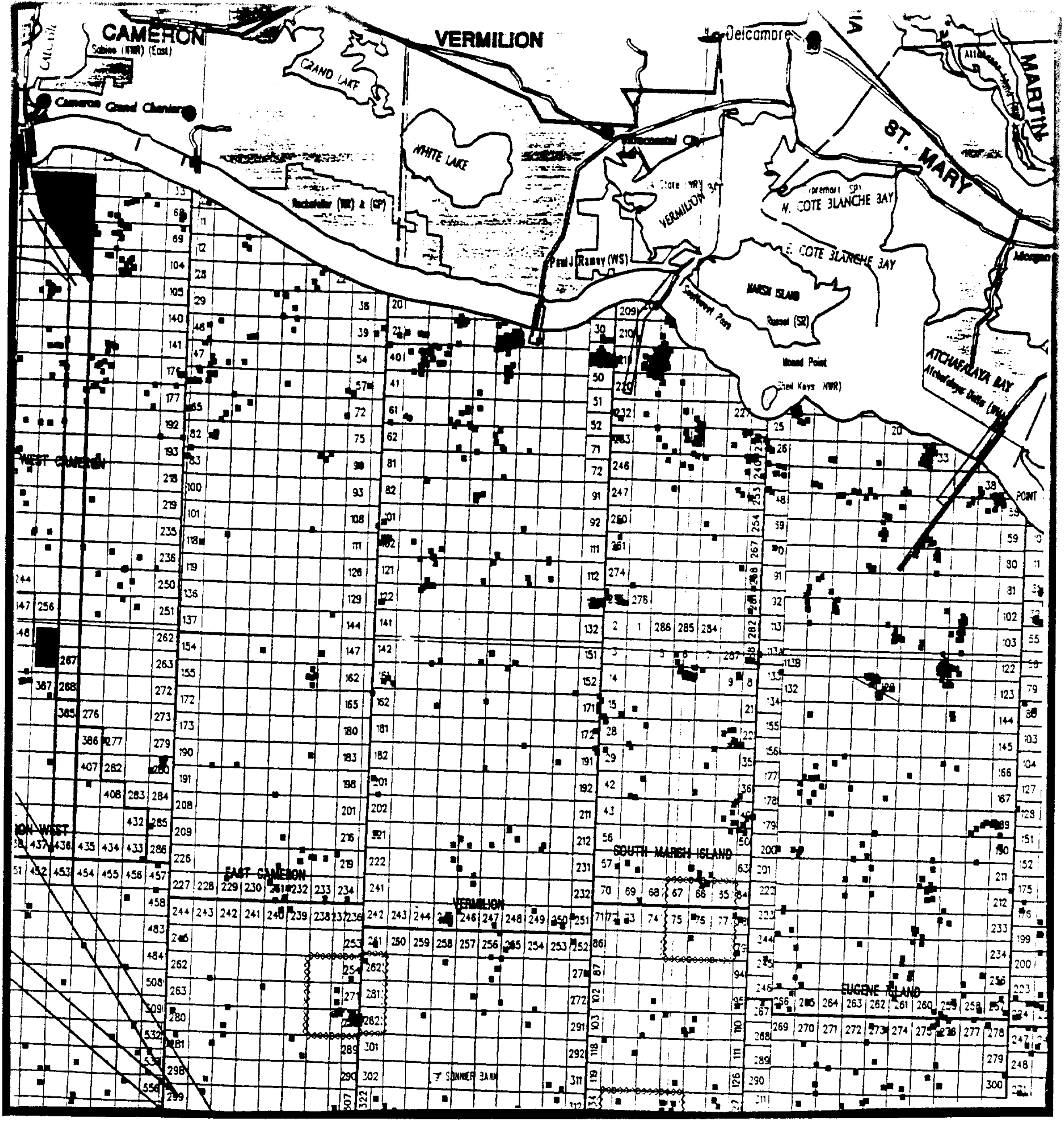
OPERATIONS	EQUIPMENT				RUN TIME		POUNDS PER HOUR					TONS PER YEAR				
	Diesel Engines	HP	MAX. FUEL GAL/HR	ACT. FUEL GAL/D												
	Nat. Gas Engines	HP	SCF/HR	SCF/D												
	Burners	MMBTU/HR	SCF/HR	SCF/D	HR/D	DAYS	TSP	SOx	NOx	VOC	CO	TSP	SOx	NOx	VOC	CO
DRILLING	PRIME MOVER>600hp diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PRIME MOVER>600hp diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PRIME MOVER>600hp diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	AUXILIARY EQUIP<600hp diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS>600hp diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPELINE	PIPELINE LAY BARGE diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INSTALLATION	SUPPORT VESSEL diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	PIPELINE BURY BARGE diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY	DERRICK BARGE diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INSTALLATION	MATERIAL TUG diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	RECIP.<600hp diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	RECIP.>600hp diesel	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	SUPPORT VESSEL diesel - SUPPLY	2065	99.74	2393.75	10	52	1.09	6.78	50.03	1.50	10.92	0.28	1.76	13.01	0.39	2.84
	TURBINE nat gas	0	0.00	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.2 cycle lean nat gas	0	0.00	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.4 cycle lean nat gas	0	0.00	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	RECIP.4 cycle rich nat gas	0	0.00	0.00	0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	BURNER nat gas	0	0.00	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	MISC.	BPD	SCF/HR	COUNT												
	TANK-	0			0	0				0.00					0.00	
	FLARE-		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
	PROCESS VENT-		0		0	0				0.00					0.00	
	FUGITIVES-			1000.0		365				0.03					0.11	
	GLYCOL STILL VENT-		0		0	0				0.00					0.00	
DRILLING	OIL BURN	0				0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WELL TEST	GAS FLARE		0		0	0		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00
1998 YEAR TOTAL							1.09	6.78	50.03	1.53	10.92	0.28	1.76	13.01	0.50	2.84
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES											666.00	666.00	666.00	666.00	25302.83
	20.0															

BEST AVAILABLE COPY

AIR EMISSION CALCULATIONS

COMPANY	AREA	BLOCK	LEASE	PLATFORM	WELL
BASIN EXPLORATION, INC.	EUGENE ISLAND	49	OCS-G 17959	CAISSON NO. 1	1

Year	Emitted Substance				
	TSP	SOx	NOx	HC	CO
1997	0.05	0.30	2.25	0.09	0.49
1998	0.28	1.76	13.01	0.50	2.84
1999	0.28	1.76	13.01	0.50	2.84
2000	0.28	1.76	13.01	0.50	2.84
2001	0.28	1.76	13.01	0.50	2.84
2002	0.28	1.76	13.01	0.50	2.84
2003	0.28	1.76	13.01	0.50	2.84
2004	0.28	1.76	13.01	0.50	2.84
Allowable	666.00	666.00	666.00	666.00	25302.83



20 MILES TO THE NEAREST SHORELINE. THE ONSHORE SHOREBASE IS LOCATED IN INTRACOASTAL CITY, LOUISIANA.

BEST AVAILABLE COPY

ATTACHMENT J

BASIN EXPLORATION, INC.
EUGENE ISLAND BLOCK 49 VICINITY MAP