UNITED STATES GOVERNMENT June 5, 2026
MEMORANDUM

To: Public Information (MS 5030)
From: Plan Coordinator, FO, Plans Section (MS 5231)

Subject: Public Information copy of plan
- Control # - S-08215
- Type - Supplemental Development Operations Coordinations Document
- Lease(s) - OCS-G14482 Block - 346 Eugene Island Area
- Operator - GOM Shelf LLC
- Description - Wells A001, A002, A003, A004, A005, and Platform A
- Rig Type - Not Found

Attached is a copy of the subject plan.

It has been deemed submitted as of this date and is under review for approval.

Chiquita Hill
Plan Coordinator

Site Type/Name	Botm Lse/Area/Blk	Surface Location	Surf Lse/Area/Blk
FIXED/A		3298 FNL, 3543 FWL	G14482/EI/346
WELL/A001	G14482/EI/346	3298 FNL, 3543 FWL	G14482/EI/346
WELL/A002	G14482/EI/346	3288 FNL, 3551 FWL	G14482/EI/346
WELL/A003	G14482/EI/346	3300 FNL, 3535 FWL	G14482/EI/346
WELL/A004	G14482/EI/346	3300 FNL, 3536 FWL	G14482/EI/346
WELL/A005	G14482/EI/346	3300 FNL, 3544 FEL	G14482/EI/346
WELL/A005	G14482/EI/346	3286 FNL, 3549 FWL	G14482/EI/346

Record of Changes – PUBLIC COPY
S-8215, SDOCD, GOM Shelf LLC, (OCS-G 14482, Eugene Island Block 345)

Date	Section	Page	Remarks
3/4/26	1	Attachment 1-A	Amend Form 137 to update the WCD volume, surface location of Well No. A005
3/4/26	2.10	4	Amend WCD volume
3/4/26	9.4	16	Amend WCD volume
3/4/26	9	Attachment 9-A	Amend WCD volume
6/4/26	9	16-17	Update OSRP approval date and OSRP volumes

PUBLIC COPY
January 14, 2026

SUPPLEMENTAL DEVELOPMENT OPERATIONS COORDINATION DOCUMENT

Eugene Island Block 346
OCS-G 14482

Estimated Startup Date: April 15, 2026

SUBMITTED BY:
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TABLE OF CONTENTS

SECTION 1 PLAN CONTENTS 1
1.1 PLAN INFORMATION 1
1.2 LOCATION 1
1.3 SAFETY AND POLLUTION PREVENTION FEATURES 1
1.4 STORAGE TANKS AND PRODUCTION VESSELS 2
1.5 POLLUTION PREVENTION MEASURES 2
1.6 ADDITIONAL MEASURES 2
1.7 COST RECOVERY FEE 2
SECTION 2 GENERAL INFORMATION 3
2.1 APPLICATIONS AND PERMITS 3
2.2 DRILLING FLUIDS 3
2.3 PRODUCTION 3
2.4 OIL CHARACTERISTICS 3
2.5 NEW OR UNUSUAL TECHNOLOGY 3
2.6 BONDING STATEMENT 3
2.7 OIL SPILL FINANCIAL RESPONSIBILITY (OSFR) 3
2.8 DEEPWATER WELL CONTROL STATEMENT 4
2.9 SUSPENSION OF PRODUCTION 4
2.10 BLOWOUT SCENARIO AND WORST-CASE DISCHARGE CALCULATIONS 4
SECTION 3 GEOLOGICAL AND GEOPHYSICAL INFORMATION 7
3.1 GEOLOGICAL DESCRIPTION 7
3.2 STRUCTURE CONTOUR MAPS 7
3.3 INTERPRETED SEISMIC LINES 7
3.4 GEOLOGICAL STRUCTURE CROSS-SECTION 7
3.5 SHALLOW HAZARDS REPORT 7
3.6 SHALLOW HAZARDS ASSESSMENT 7
3.7 HIGH-RESOLUTION SEISMIC LINES 7
3.8 STRATIGRAPHIC COLUMN 7
3.9 TIME VS DEPTH TABLES 7
SECTION 4 HYDROGEN SULFIDE INFORMATION 8

4.1 CONCENTRATION 8
4.2 CLASSIFICATION 8
4.3 H_2S CONTINGENCY PLAN 8
4.4 MODELING REPORT 8
SECTION 5 MINERAL RESOURCE CONSERVATION INFORMATION 9
5.1 TECHNOLOGY & RESERVOIR ENGINEERING PRACTICES AND PROCEDURES 9
5.2 TECHNOLOGY AND RECOVERY PRACTICES AND PROCEDURES 9
5.3 RESERVOIR DEVELOPMENT 9
SECTION 6 BIOLOGICAL, PHYSICAL AND SOCIOECONOMIC INFORMATION 10
6.1 DEEPWATER BENTHIC COMMUNITIES 10
6.2 TOPOGRAPHIC FEATURES (BANKS) 10
6.3 TOPOGRAPHIC FEATURES STATEMENT (SHUNTING) 10
6.4 LIVE-BOTTOMS (PINNACLE TREND FEATURES) 10
6.5 LIVE BOTTOMS (LOW RELIEF) 10
6.6 POTENTIALLY SENSITIVE BIOLOGICAL FEATURES 10
6.7 THREATENED AND ENDANGERED SPECIES, CRITICAL HABITAT AND MARINE MAMMAL INFORMATION 10
6.8 ARCHAEOLOGICAL REPORT 13
6.9 AIR AND WATER QUALITY INFORMATION 13
6.10 SOCIOECONOMIC INFORMATION 13
SECTION 7 WASTES AND DISCHARGES INFORMATION 14
7.1 PROJECTED GENERATED WASTES 14
7.2 MODELING REPORT 14
SECTION 8 AIR EMISSIONS INFORMATION 15
8.1 EMISSIONS WORKSHEETS AND SCREENING QUESTIONS 15
8.2 SUMMARY INFORMATION 15
SECTION 9 OIL SPILL INFORMATION 16
9.1 OIL SPILL RESPONSE PLANNING 16
9.2 SPILL RESPONSE SITES 16
9.3 OSRO INFORMATION 16
9.4 WORST-CASE DISCHARGE SCENARIO DETERMINATION 16
9.5 OIL SPILL RESPONSE DISCUSSION 17
9.6 MODELING REPORT 17

SECTION 10 ENVIRONMENTAL MONITORING INFORMATION 18
10.1 MONITORING SYSTEMS 18
10.2 INCIDENTAL TAKES 18
10.3 FLOWER GARDEN BANKS NATIONAL MARINE SANCTUARY 18
SECTION 11 LEASE STIPULATIONS INFORMATION 19
11.1 MARINE PROTECTED SPECIES 19
11.2 ARCHAEOLOGICAL RESOURCES 20
SECTION 12 ENVIRONMENTAL MITIGATION MEASURES INFORMATION 21
12.1 MEASURES TAKEN TO AVOID, MINIMIZE, AND MITIGATE IMPACTS 21
12.2 INCIDENTAL TAKES 21
SECTION 13 RELATED FACILITIES AND OPERATIONS INFORMATION 23
13.1 RELATED OCS FACILITIES AND OPERATIONS 23
13.2 TRANSPORTATION SYSTEM 23
13.3 PRODUCED LIQUID HYDROCARBONS TRANSPORTATION VESSELS 23
SECTION 14 SUPPORT VESSELS AND AIRCRAFT INFORMATION 24
14.1 GENERAL 24
14.2 DIESEL OIL SUPPLY VESSELS 24
14.3 DRILLING FLUID TRANSPORTATION 24
14.4 SOLID AND LIQUID WASTE TRANSPORTATION 24
14.5 VICINITY MAP 24
SECTION 15 ONSHORE SUPPORT FACILITIES INFORMATION 25
15.1 GENERAL 25
15.2 SUPPORT BASE CONSTRUCTION OR EXPANSION 25
15.3 SUPPORT BASE CONSTRUCTION OR EXPANSION TIMETABLE 25
15.4 WASTE DISPOSAL 25
SECTION 16 COASTAL ZONE MANAGEMENT (CZM) INFORMATION 26
SECTION 17 ENVIRONMENTAL IMPACT ANALYSIS (EIA) 27
SECTION 18 ADMINISTRATIVE INFORMATION 28
18.1 EXEMPTED INFORMATION DESCRIPTION 28

SECTION ATTACHMENTS

Section 1	**Plan Contents**
1-A	OCS Plan Information Form
1-B	Well Location Plat
1-C	Bathymetry Map
1-D	Pay.gov Receipt
Section 7	**Wastes and Discharges Information**
7-A	Waste You Will Generate, Treat and Downhole Dispose or Discharge to the GOM
Section 8	**Air Emissions Information**
8-A	Emissions Worksheets
Section 9	**Oil Spill Information**
9-A	Oil Spill Response Discussion
Section 14	**Support Vessels and Aircraft Information**
14-A	Waste You Will Transport and/or Dispose Onshore Table
14-B	Vicinity Map
Section 17	**Environmental Impact Analysis (EIA)**
17-A	Environmental Impact Analysis (EIA)

SECTION 1
PLAN CONTENTS

1.1 PLAN INFORMATION

Lease OCS-G 14482, Eugene Island Block 346 was issued June 1, 1994. Lease OCS-G 21647, Eugene Island Block 345 was issued July 1, 2000. Platform A was installed on September 4, 2000. Lease OCS-G 14482 is held by production. Lease OCS-G 21647 terminated on August 21, 2019.

GOM Shelf LLC (GOM Shelf) was designated operator of Lease OCS-G 14482 effective July 15, 2022, and designated operator/agent of Lease OCS-G 21647 effective January 26, 2024.

Under this Supplemental Development Operations Coordination Document, GOM Shelf proposes to change the operator of Platform A and associated wells, update air emissions, and drill, complete, and produce one well (proposed Well No. A005). These development operations are in approximately 315 feet of water. The well will be drilled with a jackup MODU.

The proposed operations will utilize pile-driving. GOM Shelf will drive one 24”-36” conductor with an impact hammer working dry to a depth of 340’ BML. It is expected to take 29,800 strikes to set the conductor. Hammer operations will be free fall from 0’ to 95’. From 90’ to 200’, penetration will average 30 blows/ft. From 200’ to 230’, penetration will average 150 blows/ft. From 230’ to 340’, penetration will average 200 blows/ft. Pile driving activities are expected to last ½ day (12 hours total) with 1 pile driven. Piles will be driven through layers of primarily sands, silts and clays. Sound attenuation will not be utilized.

GOM Shelf is not proposing any new pipelines expected to make landfall. The OCS Plan Information Form BOEM-137 is included as **Attachment 1-A.**

1.2 LOCATION

A Well Location Plat depicting the surface location of the proposed well and water depth is included as **Attachment 1-B**.

No anchors are associated with the activities proposed in this plan. A Bathymetry Map depicting the surface location and water depths is included as **Attachment 1-C**.

1.3 SAFETY AND POLLUTION PREVENTION FEATURES

A description of the drilling unit which complies with all relevant regulations is included on the OCS Plan Information Form. Rig specifications will be made part of each Application for Permit to Drill.

The rig will be equipped with safety and fire-fighting equipment required to comply with United States Coast Guard (USCG) regulations. Appropriate lifesaving equipment such as life rafts, life jackets, ring buoys, etc. as prescribed by the USCG, will be maintained on the rig at all times.

Safety features on the drilling unit will include well control, pollution prevention, and blowout prevention equipment as described in BSEE regulations 30 CFR 250 C, D, E, O, Q and S; and as further clarified by BSEE Notices to Lessees, and current policy making invoked by the BSEE, Environmental Protection Agency (EPA) and the USCG.

Pollution prevention measures include installation of curbs, gutters, drip pans, and drains on drilling deck areas to collect all contaminants and debris. Compliance will be maintained with the EPA NPDES Permit. The rig will be monitored daily and any waste or fuel resulting in pollution of the Gulf waters will be reported to the representative in charge for immediate isolation and correction of the problem. All spills will be reported to the appropriate governmental agencies.

1.4 STORAGE TANKS AND PRODUCTION VESSELS

The table below provides storage tanks with capacity of 25 barrels or more that will store fuels, oil and lubricants.

Type of Storage Tank	Type of Facility	Tank Capacity (bbl)	Number of Tanks	Total Capacity (bbl)	Fluid Gravity (API)
Production	Platform	672	2	1,344	34°

1.5 POLLUTION PREVENTION MEASURES

These operations do not propose activities for which the State of Florida is an affected state.

1.6 ADDITIONAL MEASURES

GOM Shelf does not propose any additional safety, pollution prevention, or early spill detection measures beyond those required by 30 CFR Part 250.

1.7 COST RECOVERY FEE

Documentation of the $5,565 cost recovery fee payment is included as **Attachment 1-D.**

ATTACHMENT 1-A

U.S. Department of the Interior
Bureau of Ocean Energy Management

OMB Control Number: 1010-0151
OMB Approval Expires: 10/31/2027

OCS PLAN INFORMATION FORM

General Information

Type of OCS Plan:		Exploration Plan (EP)	X	Development Operations Coordination Document (DOCD)							
Company Name: GOM Shelf LLC							BOEM Operator Number: 02451				
Address: 2107 Research Forest Drive							Contact Person: Dena Rodriguez / Rebecca Gomez				
Suite 250							Phone Number: 281-578-3388				
The Woodlands, TX 77380							E-Mail Address: Dena.Rodriguez@jccteam.com / Rebecca.Gomez@jccteam.com				
If a service fee is required under 30 CFR 550.125(a), provide the			Amount paid	$5,565.00		Receipt No.		27UNLPUU			

Project and Worst-Case Discharge (WCD) Information

Lease: OCS-G 14482			Area: Eugene Island				Block: 346			Project Name (If Applicable): N/A	
Objectives	X	Oil	X	Gas		Sulphur		Salt	Onshore Support Bases: Fourchon, LA ; Galliano, LA		
Platform / Well Name: A005			Total Volume of WCD: 24,350,931 bbls				API Gravity: 34°				
Distance to Closest Land (Miles): 66			Volume from uncontrolled blowout: 245,969 BOPD								

Have you previously provided information to verify the calculations and assumptions for your WCD?		Yes	X	No
If so, provide the Control Number of the EP or DOCD with which this information was provided				
Do you propose to use new or unusual technology to conduct your activities?		Yes	X	No
Do you propose to use a vessel with anchors to install or modify a structure?		Yes	X	No
Do you propose any facility that will serve as a host facility for deepwater subsea development?		Yes	X	No

Description of Proposed Activities and Tentative Schedule (Mark all that apply)

Proposed Activity	Start Date	End Date	No. of Days
Drill and complete Well No. A005	04/15/2026	06/28/2026	75
Produce Well No. A005	06/29/2026	06/29/2032	6-year reserve life
Future Well Intervention for Wells A001, A002, A003, A004, A005	04/15/2026	12/31/2037	120 days / year

Description of Drilling Rig

X	Jackup		Drillship		Caisson		Tension leg platform
	Gorilla Jackup		Platform rig	X	Fixed platform		Compliant tower
	Semisubmersible		Submersible		Spar		Guyed tower
	DP Semisubmersible		Other (Attach description)		Floating production system		Other (Attach description)
Drilling Rig Name (If known):							

Description of Structure

Description of Lease Term Pipelines

From (Facility/Area/Block)	To (Facility/Area/Block)	Diameter (Inches)	Length (Feet)
N/A			

OCS PLAN INFORMATION FORM (CONTINUED)
Include one copy of this page for each proposed well/structure

Proposed Well/Structure Location

Well or Structure Name/Number (If renaming well or structure, reference previous name): Platform A					Previously reviewed under an approved EP or DOCD?	X	Yes		No
Is this an existing well or structure?	X	Yes		No	If this is an existing well or structure, list the Complex ID or API No.	687			
Do you plan to use a subsea BOP or a surface BOP on a floating facility to conduct your proposed activities?							Yes	X	No

WCD Info	For wells, volume of uncontrolled blowout (Bbls/Day): 245,969	For structures, volume of all storage and pipelines (Bbls): 12,070	API Gravity of fluid	34°

	Surface Location	**Bottom-Hole Location (For Wells)**	**Completion (For multiple completions, enter separate lines)**
Lease No.	OCS-G 14482		OCS OCS
Area Name	EI		
Block No.	346		
Blockline Departures (in feet)	N/S Departure: 3,298’ FNL	N/S Departure:	N/S Departure F __ L N/S Departure F __ L N/S Departure F __ L
	E/W Departure: 3,543’ FWL	E/W Departure:	E/W Departure F __ L E/W Departure F __ L E/W Departure F __ L
Lambert X-Y coordinates	X: 1,988,520.84	X:	X: X: X:
	Y: -182,861.4	Y:	Y: Y: Y:
Latitude/ Longitude	Latitude: 28° 9’ 49.971” N	Latitude:	Latitude Latitude Latitude
	Longitude: -91° 22’ 8.1912” W	Longitude:	Longitude Longitude Longitude

Water Depth (Feet): 315’	MD (Feet):	TVD (Feet):	MD (Feet): MD (Feet): MD (Feet):	TVD (Feet): TVD (Feet): TVD (Feet):
Anchor Radius (if applicable) in feet: N/A				

Anchor Locations for Drilling Rig or Construction Barge (If anchor radius supplied above, not necessary)

Anchor Name or No.	Area	Block	X Coordinate	Y Coordinate	Length of Anchor Chain on Seafloor
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	

OCS PLAN INFORMATION FORM (CONTINUED)
Include one copy of this page for each proposed well/structure

Proposed Well/Structure Location

Well or Structure Name/Number (If renaming well or structure, reference previous name): A001					Previously reviewed under an approved EP or DOCD?	X	Yes		No
Is this an existing well or structure?	X	Yes		No	If this is an existing well or structure, list the Complex ID or API No.	17-710-41491-01			
Do you plan to use a subsea BOP or a surface BOP on a floating facility to conduct your proposed activities?							Yes	X	No

WCD Info	For wells, volume of uncontrolled blowout (Bbls/Day): 245,969	For structures, volume of all storage and pipelines (Bbls): 12,070	API Gravity of fluid	34°

	Surface Location	**Bottom-Hole Location (For Wells)**	**Completion (For multiple completions, enter separate lines)**
Lease No.	OCS-G 14482	OCS-G 14482	OCS OCS
Area Name	EI	EI	
Block No.	346	346	
Blockline Departures (in feet)	N/S Departure: 3,298’ FNL	N/S Departure:	N/S Departure F __ L N/S Departure F __ L N/S Departure F __ L
	E/W Departure: 3,543’ FWL	E/W Departure:	E/W Departure F __ L E/W Departure F __ L E/W Departure F __ L
Lambert X-Y coordinates	X: 1,988,520.84	X:	X: X: X:
	Y: -182,861.4	Y:	Y: Y: Y:
Latitude/ Longitude	Latitude: 28° 9’ 49.971” N	Latitude:	Latitude Latitude Latitude
	Longitude: -91° 22’ 8.1912” W	Longitude:	Longitude Longitude Longitude

Water Depth (Feet): 314’	MD (Feet):	TVD (Feet):	MD (Feet): MD (Feet): MD (Feet):	TVD (Feet): TVD (Feet): TVD (Feet):
Anchor Radius (if applicable) in feet: N/A				

Anchor Locations for Drilling Rig or Construction Barge (If anchor radius supplied above, not necessary)

Anchor Name or No.	Area	Block	X Coordinate	Y Coordinate	Length of Anchor Chain on Seafloor
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	

OCS PLAN INFORMATION FORM (CONTINUED)
Include one copy of this page for each proposed well/structure

Proposed Well/Structure Location

Well or Structure Name/Number (If renaming well or structure, reference previous name): A002					Previously reviewed under an approved EP or DOCD?		Yes		No
Is this an existing well or structure?		Yes		No	If this is an existing well or structure, list the Complex ID or API No.				
Do you plan to use a subsea BOP or a surface BOP on a floating facility to conduct your proposed activities?							Yes		No

WCD Info	For wells, volume of uncontrolled blowout (Bbls/Day): 245,969	For structures, volume of all storage and pipelines (Bbls): 12,070	API Gravity of fluid	34°

	Surface Location	**Bottom-Hole Location (For Wells)**	**Completion (For multiple completions, enter separate lines)**
Lease No.	OCS-G 14482	OCS-G 14482	OCS OCS
Area Name	EI	EI	
Block No.	346	346	
Blockline Departures (in feet)	N/S Departure: 3,288’ FNL	N/S Departure:	N/S Departure F __ L N/S Departure F __ L N/S Departure F __ L
	E/W Departure: 3,551’ FWL	E/W Departure:	E/W Departure F __ L E/W Departure F __ L E/W Departure F __ L
Lambert X-Y coordinates	X: 1,988,528.84	X:	X: X: X:
	Y: -182,851.4	Y:	Y: Y: Y:
Latitude/ Longitude	Latitude: 28° 9’ 50.0724” N	Latitude:	Latitude Latitude Latitude
	Longitude: -91° 22’ 8.1042” W	Longitude:	Longitude Longitude Longitude

Water Depth (Feet): 314’	MD (Feet):	TVD (Feet):	MD (Feet): MD (Feet): MD (Feet):	TVD (Feet): TVD (Feet): TVD (Feet):
Anchor Radius (if applicable) in feet: N/A				

Anchor Locations for Drilling Rig or Construction Barge (If anchor radius supplied above, not necessary)

Anchor Name or No.	Area	Block	X Coordinate	Y Coordinate	Length of Anchor Chain on Seafloor
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	

OCS PLAN INFORMATION FORM (CONTINUED)
Include one copy of this page for each proposed well/structure

Proposed Well/Structure Location

Well or Structure Name/Number (If renaming well or structure, reference previous name): A003					Previously reviewed under an approved EP or DOCD?	X	Yes		No
Is this an existing well or structure?	X	Yes		No	If this is an existing well or structure, list the Complex ID or API No.	17-710-41551-00			
Do you plan to use a subsea BOP or a surface BOP on a floating facility to conduct your proposed activities?							Yes	X	No

WCD Info	For wells, volume of uncontrolled blowout (Bbls/Day): 245,969	For structures, volume of all storage and pipelines (Bbls): 12,070	API Gravity of fluid	34°

	Surface Location	**Bottom-Hole Location (For Wells)**	**Completion (For multiple completions, enter separate lines)**
Lease No.	OCS-G 14482	OCS-G 14482	OCS OCS
Area Name	EI	EI	
Block No.	346	346	
Blockline Departures (in feet)	N/S Departure: 3,300’ FNL	N/S Departure:	N/S Departure F __ L N/S Departure F __ L N/S Departure F __ L
	E/W Departure: 3,535’ FWL	E/W Departure:	E/W Departure F __ L E/W Departure F __ L E/W Departure F __ L
Lambert X-Y coordinates	X: 1,988,512.84	X:	X: X: X:
	Y: -182,863.4	Y:	Y: Y: Y:
Latitude/ Longitude	Latitude: 28° 9’ 49.953” N	Latitude:	Latitude Latitude Latitude
	Longitude: -91° 22’ 8.2806” W	Longitude:	Longitude Longitude Longitude

Water Depth (Feet): 315’	MD (Feet):	TVD (Feet):	MD (Feet): MD (Feet): MD (Feet):	TVD (Feet): TVD (Feet): TVD (Feet):
Anchor Radius (if applicable) in feet: N/A				

Anchor Locations for Drilling Rig or Construction Barge (If anchor radius supplied above, not necessary)

Anchor Name or No.	Area	Block	X Coordinate	Y Coordinate	Length of Anchor Chain on Seafloor
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	

OCS PLAN INFORMATION FORM (CONTINUED)
Include one copy of this page for each proposed well/structure

Proposed Well/Structure Location

Well or Structure Name/Number (If renaming well or structure, reference previous name): A004					Previously reviewed under an approved EP or DOCD?	X	Yes		No
Is this an existing well or structure?	X	Yes		No	If this is an existing well or structure, list the Complex ID or API No.	17-710-41592-01			
Do you plan to use a subsea BOP or a surface BOP on a floating facility to conduct your proposed activities?							Yes	X	No

WCD Info	For wells, volume of uncontrolled blowout (Bbls/Day): 245,969	For structures, volume of all storage and pipelines (Bbls): 12,070	API Gravity of fluid	34°

	Surface Location	**Bottom-Hole Location (For Wells)**	**Completion (For multiple completions, enter separate lines)**
Lease No.	OCS-G 14482	OCS-G 21647	OCS OCS
Area Name	EI	EI	
Block No.	346	345	
Blockline Departures (in feet)	N/S Departure: 3,300’ FNL	N/S Departure:	N/S Departure F __ L N/S Departure F __ L N/S Departure F __ L
	E/W Departure: 3,536’ FWL	E/W Departure:	E/W Departure F __ L E/W Departure F __ L E/W Departure F __ L
Lambert X-Y coordinates	X: 1,988,513.84	X:	X: X: X:
	Y: -182,863.4	Y:	Y: Y: Y:
Latitude/ Longitude	Latitude: 28° 9’ 49.9566” N	Latitude:	Latitude Latitude Latitude
	Longitude: -91° 22’ 8.274” W	Longitude:	Longitude Longitude Longitude

Water Depth (Feet): 315’	MD (Feet):	TVD (Feet):	MD (Feet): MD (Feet): MD (Feet):	TVD (Feet): TVD (Feet): TVD (Feet):
Anchor Radius (if applicable) in feet: N/A				

Anchor Locations for Drilling Rig or Construction Barge (If anchor radius supplied above, not necessary)

Anchor Name or No.	Area	Block	X Coordinate	Y Coordinate	Length of Anchor Chain on Seafloor
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	

OCS PLAN INFORMATION FORM (CONTINUED)
Include one copy of this page for each proposed well/structure

Proposed Well/Structure Location

Well or Structure Name/Number (If renaming well or structure, reference previous name): A005					Previously reviewed under an approved EP or DOCD?		Yes	X	No
Is this an existing well or structure?		Yes	X	No	If this is an existing well or structure, list the Complex ID or API No.				
Do you plan to use a subsea BOP or a surface BOP on a floating facility to conduct your proposed activities?							Yes	X	No

WCD Info	For wells, volume of uncontrolled blowout (Bbls/Day): 245,969	For structures, volume of all storage and pipelines (Bbls): 12,070	API Gravity of fluid	34°

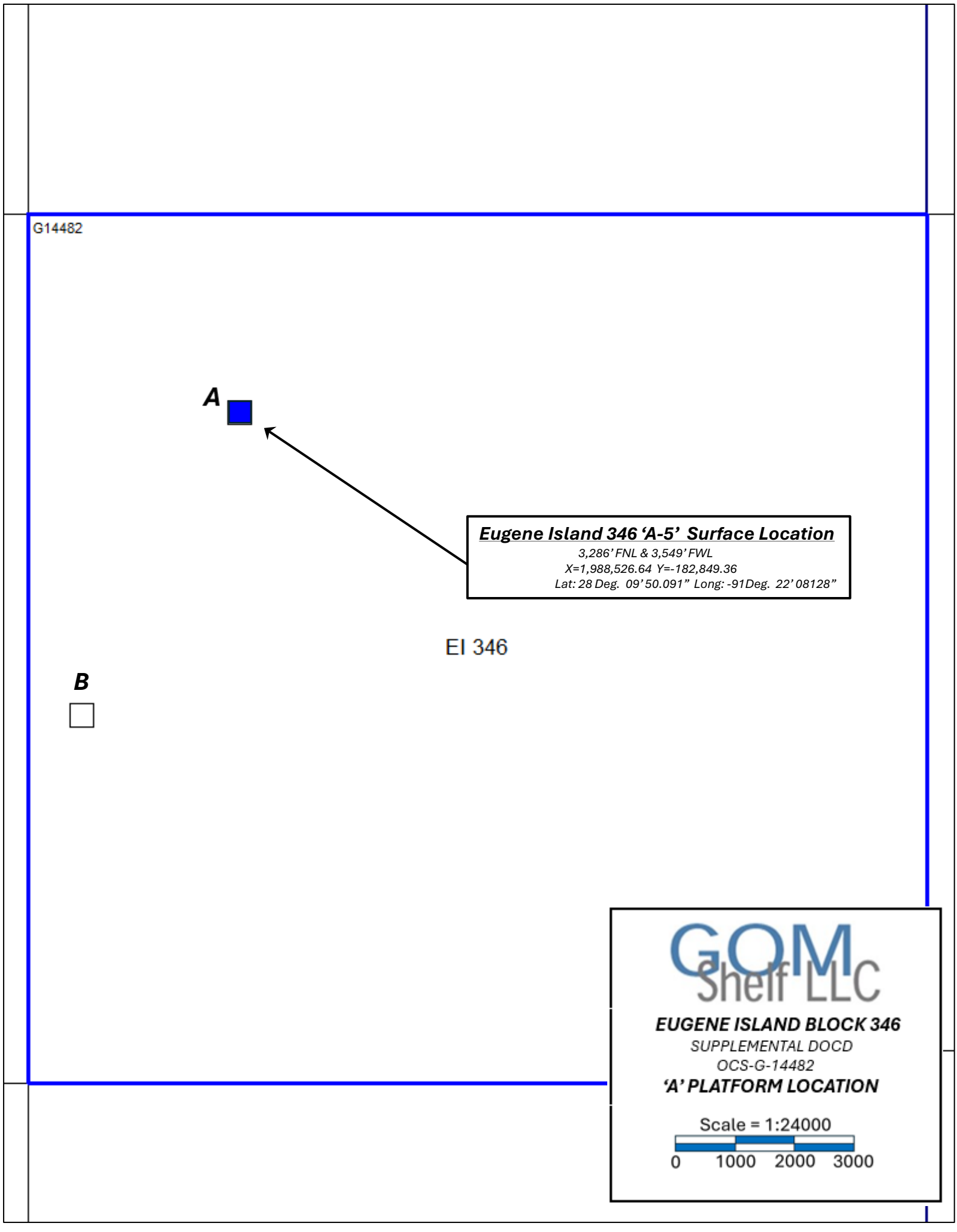
	Surface Location	**Bottom-Hole Location (For Wells)**	**Completion (For multiple completions, enter separate lines)**
Lease No.	OCS-G 14482	OCS-G 14482	OCS OCS
Area Name	EI	EI	
Block No.	346	346	
Blockline Departures (in feet)	N/S Departure: 3,286’ FNL	N/S Departure:	N/S Departure F __ L N/S Departure F __ L N/S Departure F __ L
	E/W Departure: 3,549’ FWL	E/W Departure:	E/W Departure F __ L E/W Departure F __ L E/W Departure F __ L
Lambert X-Y coordinates	X: 1,988,526.64	X:	X: X: X:
	Y: -182,849.36	Y:	Y: Y: Y:
Latitude/ Longitude	Latitude: 28° 09’ 50.091” N	Latitude:	Latitude Latitude Latitude
	Longitude: -91° 22’ 8.128” W	Longitude:	Longitude Longitude Longitude

Water Depth (Feet): 314’	MD (Feet):	TVD (Feet):	MD (Feet): MD (Feet): MD (Feet):	TVD (Feet): TVD (Feet): TVD (Feet):
Anchor Radius (if applicable) in feet: N/A				

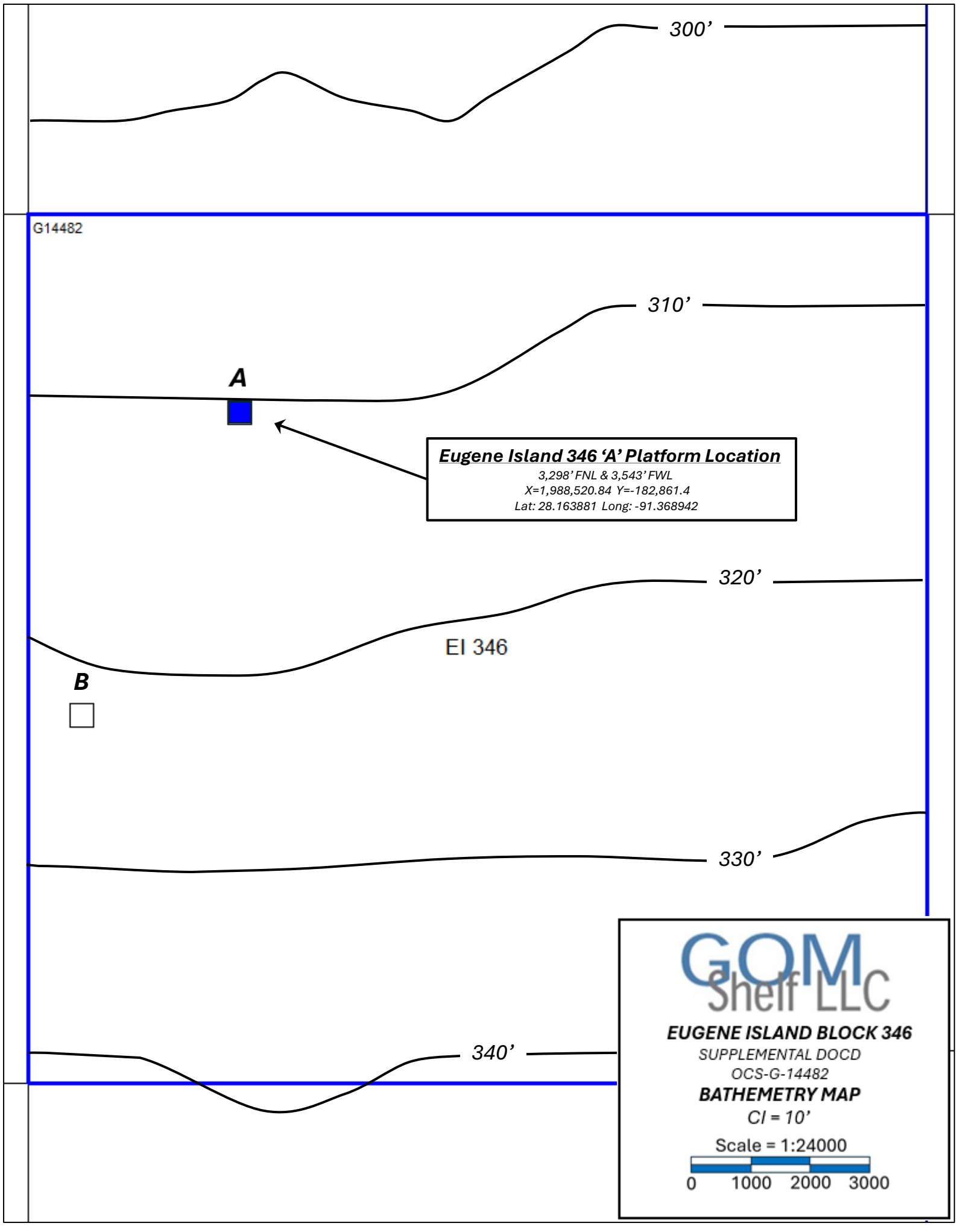
Anchor Locations for Drilling Rig or Construction Barge (If anchor radius supplied above, not necessary)

Anchor Name or No.	Area	Block	X Coordinate	Y Coordinate	Length of Anchor Chain on Seafloor
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	
			X:	Y:	

ATTACHMENT 1-B



ATTACHMENT 1-C



Dena Rodriguez

From: notification@pay.gov
Sent: Wednesday, January 14, 2026 9:36 AM
To: Dena Rodriguez
Subject: Pay.gov Payment Confirmation: BOEM Development/DOCD Plan - BD

An official email of the United States government

Pay.gov

Your payment has been submitted to Pay.gov and the details are below. If you have any questions regarding this payment, please contact Bert Readinger at (703) 787-1863 or bseefinanceaccountsreceivable@bsee.gov.

Application Name: BOEM Development/DOCD Plan - BD
Pay.gov Tracking ID: 27UNLPUU
Agency Tracking ID: 77267279787
Transaction Type: Sale
Transaction Date: 01/14/2026 10:36:04 AM EST
Account Holder Name: John Seeger
Transaction Amount: $5,565.00
Card Type: Visa
Card Number: **********8931

Region: Gulf of America
Contact: Rebecca Gomez (713) 380-0082
Company Name/No: GOM Shelf LLC, 02451
Lease Number(s): 14482
Area-Block: Eugene Island EI, 346
Type-Wells: Supplemental Plan, 1

THIS IS AN AUTOMATED MESSAGE. PLEASE DO NOT REPLY.

Pay.gov is a program of the U.S. Department of the Treasury, Bureau of the Fiscal Service

SECTION 2
GENERAL INFORMATION

2.1 APPLICATIONS AND PERMITS

The table below provides the additional applications to be filed covering operations proposed in this DOCD.

Application/Permit	Issuing Agency	Status
Application For Permit to Drill	BSEE	To Be Submitted
Application For Permit to Sidetrack	BSEE	To Be Submitted
Application For Permit to Modify	BSEE	To Be Submitted

2.2 DRILLING FLUIDS

The table below provides the types and estimated volumes of the drilling fluids GOM Shelf plans to use to drill the proposed wells.

Type of Drilling Fluid	Estimated Volume of Drilling Fluid to be Used per Well (bbl)
Water-based (seawater, freshwater, barite)	3,400
Oil-based (diesel, mineral oil)	N/A
Synthetic-based (internal olefin, ester)	9,550

2.3 PRODUCTION

Proprietary Information

2.4 OIL CHARACTERISTICS

Oil characteristics are not required to be submitted with this plan.

2.5 NEW OR UNUSUAL TECHNOLOGY

No new or unusual technology is proposed in this DOCD as defined by 30 CFR 550.200.

2.6 BONDING STATEMENT

The bond requirements for the activities and facilities proposed in this DOCD are satisfied by an area-wide bond, furnished and maintained according to 30 CFR 556.900 (a) and 30 CFR 556.901 (a) and (b) and NTL No. 2015-BOEM-N04, "General Financial Assurance"; and additional security under 30 CFR 556.901(d) – (f) and NTL No. 2016—BOEM-N01, “Requiring Additional Security” as required by BOEM.

2.7 OIL SPILL FINANCIAL RESPONSIBILITY (OSFR)

GOM Shelf LLC (Company No. 02451) has demonstrated oil spill financial responsibility for the facilities proposed in this DOCD according to 30 CFR Part 553.15 (a); and NTL No. 2008-N05, "Guidelines for Oil Spill Financial Responsibility for Covered Facilities".

2.8 DEEPWATER WELL CONTROL STATEMENT

Operations proposed in this plan are located in water depths less than 300 meters (984 feet); therefore, a deepwater well control statement is not provided.

2.9 SUSPENSION OF PRODUCTION

GOM Shelf does not anticipate filing any requests for Suspension of Production to hold the leases addressed in this DOCD in active status.

2.10 BLOWOUT SCENARIO AND WORST-CASE DISCHARGE CALCULATIONS

In accordance with the requirements outlined in NTL No. 2015-BOEM-N01, "Information Requirements for Exploration Plans, Development and Production Plans, and Development Operations Coordination Documents on the OCS for Worst Case Discharge and Blowout Scenarios," the following information is provided:

Estimated initial flow rate: The calculated Worst Case Discharge estimate for Eugene Island Block 346 Well No. A005 is 245,969 bbl of crude.

Maximum duration/total volume that could occur if the Eugene Island Block 346 Well No. A005 sustained a blowout:

Scenario	Maximum Discharge Rate (bbl/day)	Discharge Duration (days)	Total Volume Crude (bbl)
Relief Well	245,969	99	24,350,931

Potential of wellbore to bridge over during a blowout: Potential well bridging is very high within 2-10 days of a loss control incident. The reasoning is due to the unconsolidated nature of the pay sands. Planned casing shoe fracture gradients are high enough to hold in the event the wellbore has been fully evacuated with gas. We would experience an underground blowout as the path of least resistance preceded by bridging in the wellbore.

Likelihood for surface intervention to stop blowout: We kill most well control incidents from the surface. The well's jackup drilling rig has well control equipment manned by trained and accredited personnel. We have a third party well control sub-contractor to assist in kill operations.

Relief Well

Rig type capable of drilling relief well at water depth and to TD: The Borr Drilling Odin and the Enterprise 351 have the capabilities to work in these water depths. The rigs are independent leg rigs capable of drilling in 350' water depth. The relief well would be a safe distance from the affected well and would directionally drill for the intercept.

Time to acquire rig, move onsite and drill relief well:

Activity	Duration (days)
Assess the situation and obtain the optimum MODU	14
Secure the well at current location of MODU	14
Mobilization time to relief well location	7
Drill the relief well	55
Wellbore intersection (of blown out well)	7
Dynamic kill operations	2
Total anticipated time	99

Statement whether possibility of using nearby platform was considered: No, this can be done open water. Nearest platform wells are all plugged and abandoned.

Other measures to enhance ability to prevent a blowout: Including, but not limited to:

- Mud weights which prevent fluids (hydrocarbon or salt water) from entering the wellbore.
- Maintain enough barite and other chemicals to weight up the mud system 0.5 ppg on rig site.
- BOPs tested to approved working pressure.
- Properly test TIW and BOP on rig floor.
- Monitor trip speeds to minimize surge and swab pressures.
- Flow checks performed regularly.
- Tested gas detectors.
- Well control drills will be conducted with each crew.
- Drilling hazards identified through record reviews.
- Real time drilling information will be transmitted both to the rig site and on shore for pore pressure and drilling parameter monitoring.

Measures to reduce the likelihood of a blowout:

- Perform offset-well analysis.
- Drilling mud technical design determined by anticipated downhole pressures through offset mud weights and geophysical and geological analysis.
- Ensure all surface equipment is maintained and tested. Ensure that drilling contractors design certification is presented in the rig package.
- Ensure mud products for lost circulation, stuck pipe and other events are available, are on the rig/dock or can be shipped in an expedient manner to location.
- Monitor gas during connections, circulating and circulating bottoms up.
- Monitor trip tank volumes and well flow during trips and connections.
- Monitor torque during drilling and tripping operations.
- Follow proper well control procedures when formation fluids invade the wellbore.
- Model all cement jobs for hydraulics and downhole pressures.
- Model all drilling fluid hydraulics and downhole pressures.

Measures to enhance ability to conduct effective and early intervention in event of a blowout:

- Well-site and office supervisory personnel will be trained in well-control procedures.
- Perform hazard and operations situational assessment. Evaluate the results to determine procedures to eliminate the issue
- Shut-in the well to evaluate well conditions at any time.
- A third-party well-control contractor is available.
- A third party well control subcontractor will advise and help coordinate well control response activities.
- Use of boat & rig firefighting equipment.
- Removal of any debris/materials which prevent the killing & capping of the well.

Arrangements for drilling relief wells:

- Commodore Offshore Operating LLC would use internal engineering resources and coordinate with a third party well control subcontractor for relief well planning and execution.
- Relief well drilling rigs identified.
- Tangibles identified.
- Relief well locations identified and directional plans prepared.

Any other measures: N/A

SECTION 3
GEOLOGICAL AND GEOPHYSICAL INFORMATION

3.1 GEOLOGICAL DESCRIPTION
Proprietary Information

3.2 STRUCTURE CONTOUR MAPS
Proprietary Information

3.3 INTERPRETED SEISMIC LINES
Proprietary Information

3.4 GEOLOGICAL STRUCTURE CROSS-SECTION
Proprietary Information

3.5 SHALLOW HAZARDS REPORT
The proposed operations will be conducted from a previously approved surface location; therefore, in accordance with NTL No. 2008-G05, “Shallow Hazards Program,” a shallow hazards report is not provided.

3.6 SHALLOW HAZARDS ASSESSMENT
The proposed operations will be conducted from a previously approved surface location; therefore, in accordance with NTL No. 2008-G05, “Shallow Hazards Program,” a site-specific shallow hazards assessment is not provided.

3.7 HIGH-RESOLUTION SEISMIC LINES
Proprietary Information

3.8 STRATIGRAPHIC COLUMN
Proprietary Information

3.9 TIME VS DEPTH TABLES
Proprietary Information

SECTION 4
HYDROGEN SULFIDE INFORMATION

4.1 CONCENTRATION

GOM Shelf anticipates encountering 0 ppm H_2S during the proposed operations.

4.2 CLASSIFICATION

In accordance with Title 30 CFR 250.490(c), GOM Shelf requests that the area of proposed operations be classified by the BOEM as H_2S absent.

4.3 H_2S CONTINGENCY PLAN

An H_2S Contingency Plan is not required for the activities proposed in this plan.

4.4 MODELING REPORT

Modeling reports are not required for the activities proposed in this plan.

SECTION 5
MINERAL RESOURCE CONSERVATION INFORMATION

5.1 TECHNOLOGY & RESERVOIR ENGINEERING PRACTICES AND PROCEDURES

Proprietary Information

5.2 TECHNOLOGY AND RECOVERY PRACTICES AND PROCEDURES

Proprietary Information

5.3 RESERVOIR DEVELOPMENT

Proprietary Information

SECTION 6
BIOLOGICAL, PHYSICAL AND SOCIOECONOMIC INFORMATION

6.1 DEEPWATER BENTHIC COMMUNITIES

Activities proposed in this DOCD are in water depths less than 300 meters (984 feet); therefore, information as outlined in Attachment A of NTL No. 2009-G40, "Deepwater Benthic Communities," is not provided.

6.2 TOPOGRAPHIC FEATURES (BANKS)

Activities proposed in this DOCD do not fall within 305 meters (1000 feet) of a topographic "No Activity Zone;" therefore, no map is required per NTL No. 2009-G39, "Biologically Sensitive Underwater Features and Areas."

6.3 TOPOGRAPHIC FEATURES STATEMENT (SHUNTING)

Activities proposed under this DOCD will be conducted outside all Topographic Feature Protective Zones; therefore, shunting of drill cuttings and drilling fluids is not required per NTL No. 2009-G39, "Biologically Sensitive Underwater Features and Areas."

6.4 LIVE-BOTTOMS (PINNACLE TREND FEATURES)

Eugene Island Block 346 is not located within 61 meters (200 feet) of any pinnacle trend feature; therefore, a separate bathymetric map is not required per NTL No. 2009-G39, "Biologically Sensitive Underwater Features and Areas."

6.5 LIVE BOTTOMS (LOW RELIEF)

Eugene Island Block 346 is not located within 30 meters (100 feet) of any live bottom (low relief) feature with vertical relief equal to or greater than 8 feet; therefore, live bottom (low relief) maps are not required per NTL No. 2009-G39, "Biologically Sensitive Underwater Features and Areas."

6.6 POTENTIALLY SENSITIVE BIOLOGICAL FEATURES

Eugene Island Block 346 is not located within 30 meters (100 feet) of potentially sensitive biological features. In accordance with NTL No. 2009-G39, "Biologically Sensitive Underwater Features and Areas," biologically sensitive area maps are not required.

6.7 THREATENED AND ENDANGERED SPECIES, CRITICAL HABITAT AND MARINE MAMMAL INFORMATION

The federally listed endangered and threatened species potentially occurring in the lease area and along the Gulf Coast are provided in the table below.

Species	Scientific Name	Status	Potential Presence		Critical Habitat Designated in the Gulf of Mexico
			Lease Area	Coastal	
Marine Mammals					
Manatee, West Indian	*Trichechus manatus latirostris*	T	--	X	Florida (peninsular)
Whale, Blue	*Balaenoptera masculus*	E	X[1]	--	None
Whale, Bryde's[4]	*Balaenoptera brydei/edeni*	E	X	--	None
Whale, Fin	*Balaenoptera physalus*	E	X[1]	--	None
Whale, Humpback	*Megaptera novaeangliae*	E	X[1]	--	None
Whale, North Atlantic Right	*Eubalaena glacialis*	E	X[1]	--	None
Whale, Rice's[4]	*Balaenoptera ricei*	E	X	--	None
Whale, Sei	*Balaenopiera borealis*	E	X[1]	--	None
Whale, Sperm	*Physeter catodon (=macrocephalus)*	E	X	--	None
Terrestrial Mammals					
Mouse, Beach (Alabama, Choctawatchee, Perdido Key, St. Andrew)	*Peromyscus polionotus*	E	-	X	Alabama, Florida (panhandle) beaches
Jaguarundi, Gulf Coast	*Puma yagouaroundi cacomitli*	E	-	X	None
Ocelot	*Leopardus (=Felis) pardalis*	E	-	X	None
Bat, Florida Bonneted	*Eumops floridanus*	E	-	X	None
Panther, Florida	*Puma (=Felis) concolor coryi*	E	-	X	None
Vole, Florida Salt Marsh	*Microtus pennsylvanicus dukecampbelli*	E	-	X	None
Deer, Key	*Odocoileus virginianus clavium*	E	-	X	None
Rabbit, Lower Keys Marsh	*Sylvilagus palustris hefneri*	E	-	X	None
Rat, Silver Rice	*Oryzomys palustris natator*	E	-	X	None
Birds					
Plover, Piping	*Charadrius melodus*	T	-	X	Coastal Texas, Louisiana, Mississippi, Alabama and Florida (panhandle)
Crane, Whooping	*Grus Americana*	E	-	X	Coastal Texas
Crane, Mississippi sandhill	*Grus canadensis pulla*	E	-	X	Coastal Mississippi
Caracara, Audubon's Crested	*Polyborus plancus audubonii*	T	-	X	None
Curlew, Eskimo	*Numenius borealis*	E	-	X	None
Falcon, Northern Aplomado	*Falco femoralis septentrionalis*	E	-	X	None
Prairie-chicken, Attwater's Greater	*Tympanuchus cupido attwateri*	E	-	X	None
Scrub-jay, Florida	*Aphelocoma coerulescens*	T	-	X	None

Species	Scientific Name	Status	Potential Presence		Critical Habitat Designated in the Gulf of Mexico
			Lease Area	Coastal	
Kite, Everglade Snail	*Rostrhamus sociabilis plumbeus*	E	-	X	None
Knot, Red	*Calidris canutus rufa*	T	-	X	None
Rail, Eastern Black	*Laterallus jamaicensis ssp. jamaicensis*	T	-	X	None
Sparrow, Cape Sable Seaside	*Ammodramus maritimus mirabilis*	E	-	X	Everglades
Stork, Wood	*Mycteria americana*	T	-	X	None
Tern, Roseate	*Sterna dougallii dougallii*	T	-	X	None
Warbler, Bachman's	*Vermivora bachmanii*	E	-	X	None
Woodpecker, Red-cockaded	*Picoides borealis*	E	-	X	None
Reptiles					
Sea Turtle, Green	*Chelonia mydas*	T/E[3]	X	X	None
Sea Turtle, Hawksbill	*Eretmochelys imbricata*	E	X	X	None
Sea Turtle, Kemp's Ridley	*Lepidochelys kempli*	E	X	X	None
Sea Turtle, Leatherback	*Dermochelys coriacea*	E	X	X	None
Sea Turtle, Loggerhead	*Caretta caretta*	T	X	X	Texas, Louisiana, Mississippi, Alabama, Florida
Turtle, Alabama Red-bellied	*Pseudemys alabamensis*	E	-	X	None
Crocodile, American	*Crocodylus acutus*	T	-	X	Everglades and Florida Keys
Snake, Eastern Indigo	*Drymarchon couperi*	T	-	X	None
Tortoise, Gopher	*Gopherus polyphemus*	T	-	X	None
Turtle, Ringed Map	*Graptemys oculifera*	T	-	X	None
Turtle, Yellow-blotched Map	*Graptemys flavimaculata*	T	-	X	None
Fish					
Sturgeon, Gulf	*Acipenser oxyrinchus (=oxyrhynchus) desotoi*	T	X	X	Coastal Louisiana, Mississippi, Alabama and Florida (panhandle)
Shark, Oceanic Whitetip	*Carcharhinus longimanus*	E	X	_	None
Sawfish, Smalltooth	*Pristis pectinate*	E	-	X	None
Grouper, Nassau	*Epinephelus striatus*	T	-	X	Florida[5]
Ray, Giant Manta	*Manta birostris*	E	X	--	None
Sturgeon, Pallid	*Scaphirhynchus albus*	E	-	X	None
Corals					

Species	Scientific Name	Status	Potential Presence		Critical Habitat Designated in the Gulf of Mexico
			Lease Area	Coastal	
Coral, Elkhorn	*Acopora palmate*	T	X[2]	X	Florida[5]
Coral, Staghorn	*Acopora cervicornis*	T	X	X	Florida[5]
Coral, Boulder Star	*Orbicella franksi*	T	X	X	Flower Garden Banks and Florida
Coral, Lobed Star	*Orbicella annularis*	T	X	X	Flower Garden Banks and Florida
Coral, Mountainous Star	*Orbicella faveolate*	T	X	X	Flower Garden Banks and Florida
Coral, Rough Cactus	*Mycetophyllia ferox*	T	-	X	Florida[5]
Coral, Pillar	*Dendrogyra cylindrus*	T	-	X	Florida[5]

Abbreviations: E = Endangered; T = Threatened

1 The Blue, Fin, Humpback, North Atlantic Right, and Sei Whales are rare or extralimital in the Gulf of America and are unlikely to be present in the lease area.

2 According to the 2017 EIS, Elkhorn Coral, while uncommon, has been found in the Flower Garden Banks. (BOEM 2017-009)

3 Green Sea Turtles are considered threatened throughout the Gulf of America; however, the breeding population off the coast of Florida is considered endangered.

4 The Bryde's whale, also known as the Bryde's whale complex, is a collection of baleen whales that are still being researched to determine if they are the same species or if they are individual species of whales. In 2021, the Rice's whale, formerly known as the Gulf of Mexico Bryde's whale, was determined to be a separate species. There are less than 100 Rice's whales living in the Gulf of America year-round. These whales retain all the protections of the Gulf of Mexico Bryde's whale under the Endangered Species Act while the regulations are being updated to reflect the name change. Other Bryde's whales are migratory and may enter the Gulf of America; however, the migratory Bryde's whales are rare or extralimital in the Gulf of America and are unlikely to be present in the lease area.

5 Critical habitat is in the Gulf of America, but outside of planning area. Species may still occur in the Gulf of America.

6.8 ARCHAEOLOGICAL REPORT

The proposed operations will be conducted from a previously approved surface location; therefore, in accordance with NTL No. 2005-G07, "Archaeological Resource Surveys and Reports," and NTL No. 2011-JOINT-G01, "Revisions to the List of OCS Lease Blocks Requiring Archaeological Resource Surveys and Reports," an archaeological resource survey report is not provided.

6.9 AIR AND WATER QUALITY INFORMATION

Air and water quality information is not required to be included in this plan per NTL No. 2008-G04, "Information Requirements for Exploration Plans and Development Operations Coordination Documents."

6.10 SOCIOECONOMIC INFORMATION

Socioeconomic information is not required to be included in this plan per NTL No. 2008-G04, "Information Requirements for Exploration Plans and Development Operations Coordination Documents."

SECTION 7
WASTES AND DISCHARGES INFORMATION

7.1 PROJECTED GENERATED WASTES

"Wastes You Will Generate, Treat and Downhole Dispose or Discharge to the Gulf of Mexico" is included as **Attachment 7-A.**

7.2 MODELING REPORT

Modeling reports are not required for the activities proposed in this plan.

ATTACHMENT 7-A - WASTE ESTIMATED TO BE GENERATED, TREATED AND/OR DOWNHOLE DISPOSED OR DISCHARGED TO THE GOM

Please specify if the amount reported is a total or per well amount and be sure to include appropriate units.

Projected generated waste			Projected ocean discharges		Projected Downhole Disposal
Type of Waste	**Composition**	**Projected Amount**	**Discharge rate**	**Discharge Method**	**Answer *yes* or *no***
Will drilling occur ? If yes, you should list muds and cuttings					
Water-based drilling fluid	N/A	N/A	N/A	N/A	N/A
Cuttings wetted with water-based fluid	Water Base Mud	5,300	143 bbl/day/well	Discharge Overboard	NO
Cuttings wetted with synthetic-based fluid	Synthetic Base Mud	1,200	55 bbl/day/well	Discharge Overboard	NO
Will humans be there? If yes, expect conventional waste					
Domestic waste	Gray Water	~30 gal/person/day	N/A	Remove floating solids and discharge	NO
Sanitary waste	Treated Sanitary Waste	~20 gal/person/day	N/A	Chlorinate and discharge overboard	NO
Is there a deck? If yes, there will be Deck Drainage					
Deck Drainage	Wash Water and Rainwater	Varies depending on season and precipitation rates	~15 bbl/hr	Discharge overboard	NO
Will you conduct well treatment, completion, or workover?					
Well treatment fluids	N/A	N/A	N/A	N/A	N/A
Well completion fluids	CaCl2/Br	2000 bbl/well	N/A	N/A	NO
Workover fluids	N/A	N/A	N/A	N/A	N/A
Miscellaneous discharges. If yes, only fill in those associated with your activity.					
Desalinization unit discharge	Seawater	N/A	N/A	N/A	N/A
Blowout prevent fluid	N/A	N/A	N/A	N/A	N/A
Ballast water	N/A	N/A	N/A	N/A	N/A
Bilge water	N/A	N/A	N/A	N/A	N/A
Excess cement at seafloor	N/A	N/A	N/A	N/A	N/A
Fire water	Seawater	N/A	N/A	N/A	N/A
Cooling water	Seawater	N/A	N/A	N/A	N/A
Will you produce hydrocarbons? If yes fill in for produced water.					
Produced water	Formation Water	~100 bbls	N/A	Discharge overboard	N/A
Please enter *individual* or *general* to indicate which type of NPDES permit you will be covered by?			General Permit GMG290235		

SECTION 8
AIR EMISSIONS INFORMATION

8.1 EMISSIONS WORKSHEETS AND SCREENING QUESTIONS

Screen Questions for DOCD's	Yes	No
Is any calculated Complex Total (CT) Emission amount (tons) associated with your proposed development activities more than 90% of the amounts calculated using the following formulas: CT = $3400D^{2/3}$ for CO, and CT = 33.3D for the other air pollutants (where D = distance to shore in miles)?		X
Do your emission calculations include any emission reduction measures or modified emission factors?		X
Does or will the facility complex associated with your proposed development and production activities process production from eight or more wells?		X
Do you expect to encounter H_2S at concentrations greater than 20 parts per million (ppm)?		X
Do you propose to flare or vent natural gas for more than 48 continuous hours from any proposed well?		X
Do you propose to burn produced hydrocarbon liquids?		X
Are your proposed development and production activities located within 25 miles (40 kilometers) from shore?		X
Are your proposed development and production activities located within 124 miles (200 kilometers) of the Breton Wilderness Area?		X

8.2 SUMMARY INFORMATION

There are no existing facilities or activities co-located with the currently proposed activities; therefore, the Complex Total Emissions are the same as the Plan Emissions and are provided in **Attachment 8-A.**

This information was calculated by: Dena Rodriguez
281-578-3388
dena.rodriguez@jccteam.com

ATTACHMENT 8-A

DOCD/DPP - AIR QUALITY

OMB Control No. 1010-0151
OMB Approval Expires: 10/31/2027

COMPANY	GOM Shelf LLC
AREA	Eugene Island
BLOCK	346
LEASE	OCS-G 14482
FACILITY	A
WELLS	A001, A002, A003, A004, A005
COMPANY CONTACT	Rebecca Gomez
TELEPHONE NO.	281-578-3388
REMARKS	Drill and complete Well No. A005; Emissions for 2026 include the A005 new drill and contingency drilling days for Well Nos. A001-A005 Emissions for 2027-2037 provide for future operations including contingency drilling days each year for maintenance, workovers, recompletions, sidetracks, interventions and abandonment activities for Well Nos. A001-A005; Utilizing WFD 450 or equivalent jackup MODU

LEASE TERM PIPELINE CONSTRUCTION INFORMATION:

YEAR	NUMBER OF PIPELINES	TOTAL NUMBER OF CONSTRUCTION DAYS
2026	N/A	N/A
2027-2037	N/A	N/A

AIR EMISSIONS COMPUTATION FACTORS

Fuel Usage Conversion Factors	Natural Gas Turbines				Natural Gas Engines		Diesel Recip. Engine		Diesel Turbines			
	SCF/hp-hr	9.524			SCF/hp-hr	7.143	GAL/hp-hr	0.0514	GAL/hp-hr	0.0514		

Equipment/Emission Factors	units	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3	REF.	DATE	Reference Links
Natural Gas Turbine	g/hp-hr		0.0086	0.0086	0.0026	1.4515	0.0095	N/A	0.3719	N/A	AP42 3.1-1& 3.1-2a	4/00	https://www3.epa.gov/ttnchie1/ap42/ch03/final/c03s01.pdf
RECIP. 2 Cycle Lean Natural Gas	g/hp-hr		0.1293	0.1293	0.0020	6.5998	0.4082	N/A	1.2009	N/A	AP42 3.2-1	7/00	https://www3.epa.gov/ttn/chief/ap42/ch03/final/c03s02.pdf
RECIP. 4 Cycle Lean Natural Gas	g/hp-hr		0.0002	0.0002	0.0020	2.8814	0.4014	N/A	1.8949	N/A	AP42 3.2-2	7/00	https://www3.epa.gov/ttn/chief/ap42/ch03/final/c03s02.pdf
RECIP. 4 Cycle Rich Natural Gas	g/hp-hr		0.0323	0.0323	0.0020	7.7224	0.1021	N/A	11.9408	N/A	AP42 3.2-3	7/00	https://www3.epa.gov/ttn/chief/ap42/ch03/final/c03s02.pdf
Diesel Recip. < 600 hp	g/hp-hr	1	1	1	0.0279	14.1	1.04	N/A	3.03	N/A	AP42 3.3-1	10/96	https://www3.epa.gov/ttnchie1/ap42/ch03/final/c03s03.pdf
Diesel Recip. > 600 hp	g/hp-hr	0.32	0.182	0.178	0.0055	10.9	0.29	N/A	2.5	N/A	AP42 3.4-1 & 3.4-2	10/96	https://www3.epa.gov/ttn/chief/ap42/ch03/final/c03s04.pdf
Diesel Boiler	lbs/bbl	0.0840	0.0420	0.0105	0.0089	1.0080	0.0084	5.14E-05	0.2100	0.0336	AP42 1.3-6; Pb and NH3: WebFIRE (08/2018)	9/98 and 5/10	https://www3.epa.gov/ttnchie1/ap42/ch01/final/c01s03.pdf https://cfpub.epa.gov/webfire/
Diesel Turbine	g/hp-hr	0.0381	0.0137	0.0137	0.0048	2.7941	0.0013	4.45E-05	0.0105	N/A	AP42 3.1-1 & 3.1-2a	4/00	https://www3.epa.gov/ttnchie1/ap42/ch03/final/c03s01.pdf
Dual Fuel Turbine	g/hp-hr	0.0381	0.0137	0.0137	0.0048	2.7941	0.0095	4.45E-05	0.3719	0.0000	AP42 3.1-1& 3.1-2a; AP42 3.1-1 & 3.1-2a	4/00	https://cfpub.epa.gov/webfire/
Vessels – Propulsion	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI;TSP refer to Diesel Recip. > 600 hp reference	3/19	
Vessels – Drilling Prime Engine, Auxiliary	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI;TSP refer to Diesel Recip. > 600 hp reference	3/19	https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data
Vessels – Diesel Boiler	g/hp-hr	0.0466	0.1491	0.1417	0.4400	1.4914	0.0820	3.73E-05	0.1491	0.0003	USEPA 2017 NEI;TSP (units converted) refer to Diesel Boiler Reference	3/19	
Vessels – Well Stimulation	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI;TSP refer to Diesel Recip. > 600 hp reference	3/19	
Natural Gas Heater/Boiler/Burner	lbs/MMscf	7.60	1.90	1.90	0.60	190.00	5.50	5.00E-04	84.00	3.2	AP42 1.4-1 & 1.4-2; Pb and NH3: WebFIRE (08/2018)	7/98 and 8/18	https://www3.epa.gov/ttnchie1/ap42/ch01/final/c01s04.pdf https://cfpub.epa.gov/webfire/
Combustion Flare (no smoke)	lbs/MMscf	0.00	0.00	0.00	0.57	71.40	35.93	N/A	325.5	N/A	AP42 13.5-1, 13.5-2	2/18	https://www3.epa.gov/ttn/chief/ap42/ch13/final/C13S05_02-05-18.pdf
Combustion Flare (light smoke)	lbs/MMscf	2.10	2.10	2.10	0.57	71.40	35.93	N/A	325.5	N/A	AP42 13.5-1, 13.5-2	2/18	
Combustion Flare (medium smoke)	lbs/MMscf	10.50	10.50	10.50	0.57	71.40	35.93	N/A	325.5	N/A	AP42 13.5-1, 13.5-2	2/18	
Combustion Flare (heavy smoke)	lbs/MMscf	21.00	21.00	21.00	0.57	71.40	35.93	N/A	325.5	N/A	AP42 13.5-1, 13.5-2	2/18	
Liquid Flaring	lbs/bbl	0.42	0.0966	0.0651	5.964	0.84	0.01428	5.14E-05	0.21	0.0336	AP42 1.3-1 through 1.3-3 and 1.3-5	5/10	https://www3.epa.gov/ttnchie1/ap42/ch01/final/c01s03.pdf
Storage Tank	tons/yr/tank						4.300				2014 Gulfwide Inventory; Avg emiss (upper bound of 95% CI)	2017	https://www.boem.gov/environment/environmental-studies/2014-gulfwide-emission-inventory
Fugitives	lbs/hr/component						0.0005				API Study	12/93	https://www.apiwebstore.org/publications/item.cgi?9879d38a-8bc0-4abe-bb5c-9b6238701250
Glycol Dehydrator	tons/yr/dehydrator						19.240				2011 Gulfwide Inventory; Avg emiss (upper bound of 95% CI)	2014	https://www.boem.gov/environment/environmental-studies/2011-gulfwide-emission-inventory
Cold Vent	tons/yr/vent						44.747				2014 Gulfwide Inventory; Avg emiss (upper bound of 95% CI)	2017	https://www.boem.gov/environment/environmental-studies/2014-gulfwide-emission-inventory
Waste Incinerator	lb/ton		15.0	15.0	2.5	2.0	N/A	N/A	20.0	N/A	AP 42 2.1-12	10/96	https://www3.epa.gov/ttnchie1/ap42/ch02/final/c02s01.pdf
On-Ice – Loader	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009	https://www.epa.gov/moves/nonroad2008a-installation-and-updates
On-Ice – Other Construction Equipment	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009	
On-Ice – Other Survey Equipment	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009	
On-Ice – Tractor	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009	
On-Ice – Truck (for gravel island)	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009	
On-Ice – Truck (for surveys)	lbs/gal	0.043	0.043	0.043	0.040	0.604	0.049	N/A	0.130	0.003	USEPA NONROAD2008 model; TSP (units converted) refer to Diesel Recip. <600 reference	2009	
Man Camp - Operation (max people/day)	tons/person/day		0.0004	0.0004	0.0004	0.006	0.001	N/A	0.001	N/A	BOEM 2014-1001	2014	https://www.boem.gov/sites/default/files/uploadedFiles/BOEM/BOEM_Newsroom/Library/Publications/2014-1001.pdf
Vessels - Ice Management Diesel	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI;TSP refer to Diesel Recip. > 600 hp reference	3/19	https://www.epa.gov/air-emissions-inventories/2017-national-emissions-inventory-nei-data
Vessels - Hovercraft Diesel	g/hp-hr	0.320	0.1931	0.1873	0.0047	7.6669	0.2204	2.24E-05	1.2025	0.0022	USEPA 2017 NEI;TSP refer to Diesel Recip. > 600 hp reference	3/19	

Sulfur Content Source	Value	Units
Fuel Gas	3.38	ppm
Diesel Fuel	0.0015	% weight
Produced Gas (Flare)	3.38	ppm
Produced Oil (Liquid Flaring)	1	% weight

Natural Gas Flare Parameters	Value	Units
VOC Content of Flare Gas	0.6816	lb VOC/lb-mol gas
Natural Gas Flare Efficiency	98	%

Density and Heat Value of Diesel Fuel		
Density	7.05	lbs/gal
Heat Value	19,300	Btu/lb

Heat Value of Natural Gas		
Heat Value	1,050	MMBtu/MMscf

AIR EMISSIONS CALCULATIONS - 1ST YEAR

COMPANY	AREA		BLOCK	LEASE	FACILITY	WELL					CONTACT	PHONE	REMARKS
GOM Shelf LLC	Eugene Island		346	OCS-G 14482	A	A001, A002, A003, A004, A005					Rebecca Gomez	281-578-3388	Drill and complete Well No. A005; Emissions for 2026 include the A005 new drill and contingency drilling days for Well Nos. A001-A005Emissions for 2027-2037 provide for future operations

OPERATIONS	EQUIPMENT	EQUIPMENT ID	RATING	MAX. FUEL	ACT. FUEL	RUN TIME		MAXIMUM POUNDS PER HOUR									ESTIMATED TONS								
	Diesel Engines		HP	GAL/HR	GAL/D																				
	Nat. Gas Engines		HP	SCF/HR	SCF/D																				
	Burners		MMBTU/HR	SCF/HR	SCF/D	HR/D	D/YR	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3
DRILLING - A005	VESSELS- Drilling - Propulsion Engine - Diesel		9000	463.014001	11112.34	24	75	6.35	3.83	3.72	0.09	152.12	4.37	0.00	23.86	0.04	5.71	3.45	3.34	0.08	136.91	3.94	0.00	21.47	0.04
Contingency - A001-A005	VESSELS- Drilling - Propulsion Engine - Diesel		9000	463.014001	11112.34	24	120	6.35	3.83	3.72	0.09	152.12	4.37	0.00	23.86	0.04	9.14	5.52	5.35	0.13	219.06	6.30	0.00	34.36	0.06
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels - Diesel Boiler		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels – Drilling Prime Engine, Auxiliary		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPELINE	VESSELS - Pipeline Laying Vessel - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INSTALLATION	VESSELS - Pipeline Burying - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	VESSELS - Heavy Lift Vessel/Derrick Barge Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	RECIP.<600hp Diesel	Crane	280	14.40488	345.72	2	365	0.62	0.62	0.62	0.02	8.70	0.64	--	1.87	--	0.23	0.23	0.23	0.01	3.18	0.23	--	0.68	--
	RECIP.<600hp Diesel	FW Pump	630	32.41098	777.86	1	52	1.39	1.39	1.39	0.04	19.58	1.44	--	4.21	--	0.04	0.04	0.04	0.00	0.51	0.04	--	0.11	--
	RECIP.>600hp Diesel	Die Gen	950	48.8737001	1172.97	24	150	0.67	0.38	0.37	0.01	22.83	0.61	--	5.24	--	1.21	0.69	0.67	0.02	41.09	1.09	--	9.42	--
	VESSELS - Shuttle Tankers		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Well Stimulation		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Natural Gas Turbine	Turbine 1	4000	38095.2381	914285.71	24	200	--	0.08	0.08	0.02	12.80	0.08	--	3.28	--	--	0.18	0.18	0.05	30.72	0.20	--	7.87	--
	Natural Gas Turbine	Turbine 2	4000	38095.2381	914285.71	24	200	--	0.08	0.08	0.02	12.80	0.08	--	3.28	--	--	0.18	0.18	0.05	30.72	0.20	--	7.87	--
	Dual Fuel Turbine		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	RECIP. 2 Cycle Lean Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	RECIP. 4 Cycle Lean Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	RECIP. 4 Cycle Rich Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	Diesel Boiler					0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Natural Gas Heater/Boiler/Burner	Heater	5	4762	114285.71	24	365	0.04	0.01	0.01	0.00	0.90	0.03	0.00	0.40	0.02	0.16	0.04	0.04	0.01	3.96	0.11	0.00	1.75	0.07
	MISC.		BPD	SCF/HR	COUNT																				
	STORAGE TANK	OST-WG			1	24	365	--	--	--	--	--	0.98	--	--	--	--	--	--	--	--	4.30	--	--	--
	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COLD VENT	ATMVent / FLR			2	24	365	--	--	--	--	--	20.43	--	--	--	--	--	--	--	--	89.49	--	--	--
	FUGITIVES				2894	24	365	--	--	--	--	--	1.45	--	--	--	--	--	--	--	--	6.34	--	--	--
	GLYCOL DEHYDRATOR				0	0	0	--	--	--	--	--	#DIV/0!	--	--	--	--	--	--	--	--	0.00	--	--	--
	WASTE INCINERATOR		0			0	0	--	0.00	0.00	0.00	0.00	--	--	0.00	--	--	0.00	0.00	0.00	0.00	--	--	0.00	--
DRILLING	Liquid Flaring		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
WELL TEST	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
ALASKA-SPECIFIC SOURCES	VESSELS		kW			HR/D	D/YR																		
	VESSELS - Ice Management Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
2026	**Facility Total Emissions**							**15.41**	**10.21**	**9.97**	**0.30**	**381.87**	**#DIV/0!**	**0.00**	**66.00**	**0.10**	**16.48**	**10.32**	**10.03**	**0.37**	**466.15**	**112.25**	**0.00**	**83.55**	**0.17**
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES																**2,197.80**			**2,197.80**	**2,197.80**	**2,197.80**		**55,527.51**	
	66.0																								
DRILLING	VESSELS - Crew Diesel	2x 2265hp	4530	233.05038	5593.21	12	195	3.20	1.93	1.87	0.05	76.57	2.20	0.00	12.01	0.02	3.74	2.26	2.19	0.05	89.59	2.58	0.00	14.05	0.03
	VESSELS - Supply Diesel	2x 2265hp	4530	233.05038	5593.21	12	28	3.20	1.93	1.87	0.05	76.57	2.20	0.00	12.01	0.02	0.54	0.32	0.31	0.01	12.86	0.37	0.00	2.02	0.00
	VESSELS - Service Diesel		2265	116.52519	2796.60	12	195	1.60	0.96	0.94	0.02	38.28	1.10	0.00	6.00	0.01	1.87	1.13	1.09	0.03	44.79	1.29	0.00	7.03	0.01
	VESSELS - Tugs Diesel	2x 4200hp	8400	432.146401	10371.51	24	5	5.93	3.58	3.47	0.09	141.98	4.08	0.00	22.27	0.04	0.36	0.21	0.21	0.01	8.52	0.24	0.00	1.34	0.00
PIPELINE	VESSELS - Support Diesel, Laying		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INSTALLATION	VESSELS - Support Diesel, Burying		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY	VESSELS - Material Tug Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INSTALLATION	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	VESSELS - Crew Diesel		2265	116.52519	2796.60	12	170	1.60	0.96	0.94	0.02	38.28	1.10	0.00	6.00	0.01	1.63	0.98	0.95	0.02	39.05	1.12	0.00	6.12	0.01
ALASKA-SPECIFIC SOURCES	On-Ice Equipment			GAL/HR	GAL/D																				
	Man Camp - Operation (maximum people per day)		PEOPLE/DAY																						
	VESSELS		kW			HR/D	D/YR																		
	On-Ice – Loader			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Construction Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Survey Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Tractor			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for gravel island)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for surveys)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	Man Camp - Operation		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	
	VESSELS - Hovercraft Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2026	**Non-Facility Total Emissions**							**15.51**	**9.36**	**9.08**	**0.23**	**371.69**	**10.69**	**0.00**	**58.30**	**0.11**	**8.13**	**4.91**	**4.76**	**0.12**	**194.81**	**5.60**	**0.00**	**30.56**	**0.06**

AIR EMISSIONS CALCULATIONS - 2ND YEAR

COMPANY	AREA		BLOCK	LEASE	FACILITY	WELL				CONTACT	PHONE	REMARKS												
GOM Shelf LLC	Eugene Island		346	OCS-G 14482	A	A001, A002, A003, A004, A005				Rebecca Gomez	281-578-3388	Drill and complete Well No. A005; Emissions for 2026 include the A005 new drill and contingency drilling days for Well Nos. A001-A005Emissions for 2027-2037 provide for future operatio													
OPERATIONS	EQUIPMENT	EQUIPMENT ID	RATING	MAX. FUEL	ACT. FUEL	RUN TIME		MAXIMUM POUNDS PER HOUR									ESTIMATED TONS								
	Diesel Engines		HP	GAL/HR	GAL/D																				
	Nat. Gas Engines		HP	SCF/HR	SCF/D																				
	Burners		MMBTU/HR	SCF/HR	SCF/D	HR/D	D/YR	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3
DRILLING	VESSELS- Drilling - Propulsion Engine - Diesel		9000	463.014001	11112.34	24	120	6.35	3.83	3.72	0.09	152.12	4.37	0.00	23.86	0.04	9.14	5.52	5.35	0.13	219.06	6.30	0.00	34.36	0.06
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS- Drilling - Propulsion Engine - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels - Diesel Boiler		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Vessels – Drilling Prime Engine, Auxiliary		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PIPELINE INSTALLATION	VESSELS - Pipeline Laying Vessel - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Pipeline Burying - Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	VESSELS - Heavy Lift Vessel/Derrick Barge Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	RECIP.<600hp Diesel	Crane	280	14.40488	345.72	2	365	0.62	0.62	0.62	0.02	8.70	0.64	--	1.87	--	0.23	0.23	0.23	0.01	3.18	0.23	--	0.68	--
	RECIP.<600hp Diesel	FW Pump	630	32.41098	777.86	1	52	1.39	1.39	1.39	0.04	19.58	1.44	--	4.21	--	0.04	0.04	0.04	0.00	0.51	0.04	--	0.11	--
	RECIP.>600hp Diesel	Die Gen	950	48.8737001	1172.97	24	150	0.67	0.38	0.37	0.01	22.83	0.61	--	5.24	--	1.21	0.69	0.67	0.02	41.09	1.09	--	9.42	--
	VESSELS - Shuttle Tankers		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Well Stimulation		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Natural Gas Turbine	Turbine 1	4000	38095.2381	914285.71	24	200	--	0.08	0.08	0.02	12.80	0.08	--	3.28	--	--	0.18	0.18	0.05	30.72	0.20	--	7.87	--
	Natural Gas Turbine	Turbine 2	4000	38095.2381	914285.71	24	200	--	0.08	0.08	0.02	12.80	0.08	--	3.28	--	--	0.18	0.18	0.05	30.72	0.20	--	7.87	--
	Dual Fuel Turbine		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	RECIP. 2 Cycle Lean Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	RECIP. 4 Cycle Lean Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	RECIP. 4 Cycle Rich Natural Gas		0	0	0.00	0	0	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--	--	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	Diesel Boiler		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Natural Gas Heater/Boiler/Burner	Heater	5	4762	114285.71	24	365	0.04	0.01	0.01	0.00	0.90	0.03	0.00	0.40	0.02	0.16	0.04	0.04	0.01	3.96	0.11	0.00	1.75	0.07
	MISC.		BPD	SCF/HR	COUNT																				
	STORAGE TANK	OST-WG			1	24	365	--	--	--	--	--	0.98	--	--	--	--	--	--	--	--	4.30	--	--	--
	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COLD VENT	ATMVent / FLR			2	24	365	--	--	--	--	--	20.43	--	--	--	--	--	--	--	--	89.49	--	--	--
	FUGITIVES				2894	24	365	--	--	--	--	--	1.45	--	--	--	--	--	--	--	--	6.34	--	--	--
	GLYCOL DEHYDRATOR				0	0	0	--	--	--	--	--	#DIV/0!	--	--	--	--	--	--	--	--	0.00	--	--	--
	WASTE INCINERATOR		0			0	0	--	0.00	0.00	0.00	0.00	--	--	0.00	--	--	0.00	0.00	0.00	0.00			0.00	
DRILLING WELL TEST	Liquid Flaring		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	COMBUSTION FLARE - no smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - light smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - medium smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
	COMBUSTION FLARE - heavy smoke			0		0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--
ALASKA-SPECIFIC SOURCES	VESSELS		kW			HR/D	D/YR																		
	VESSELS - Ice Management Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
2027-2037 Facility Total Emissions								9.06	6.38	6.26	0.21	229.75	#DIV/0!	0.00	42.14	0.06	10.77	6.87	6.69	0.28	329.24	108.31	0.00	62.07	0.13
EXEMPTION CALCULATION	DISTANCE FROM LAND IN MILES																2,197.80			2,197.80	2,197.80	2,197.80		55,527.51	
	66.0																								
DRILLING	VESSELS - Crew Diesel	2x 2265hp	4530	233.05038	5593.21	12	120	3.20	1.93	1.87	0.05	76.57	2.20	0.00	12.01	0.02	2.30	1.39	1.35	0.03	55.13	1.59	0.00	8.65	0.02
	VESSELS - Supply Diesel	2x 2265hp	4530	233.05038	5593.21	12	18	3.20	1.93	1.87	0.05	76.57	2.20	0.00	12.01	0.02	0.35	0.21	0.20	0.01	8.27	0.24	0.00	1.30	0.00
	VESSELS - Service Diesel		2265	116.52519	2796.60	12	120	1.60	0.96	0.94	0.02	38.28	1.10	0.00	6.00	0.01	1.15	0.69	0.67	0.02	27.56	0.79	0.00	4.32	0.01
	VESSELS - Tugs Diesel	2x 4200hp	8400	432.146401	10371.51	24	5	5.93	3.58	3.47	0.09	141.98	4.08	0.00	22.27	0.04	0.36	0.21	0.21	0.01	8.52	0.24	0.00	1.34	0.00
PIPELINE INSTALLATION	VESSELS - Support Diesel, Laying		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Support Diesel, Burying		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FACILITY INSTALLATION	VESSELS - Material Tug Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Crew Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	VESSELS - Supply Diesel		0	0	0.00	0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PRODUCTION	VESSELS - Support Diesel		2265	116.52519	2796.60	12	245	1.60	0.96	0.94	0.02	38.28	1.10	0.00	6.00	0.01	2.35	1.42	1.37	0.03	56.28	1.62	0.00	8.83	0.02
ALASKA-SPECIFIC SOURCES	On-Ice Equipment			GAL/HR	GAL/D																				
	Man Camp - Operation (maximum people per day)		PEOPLE/DAY																						
	VESSELS		kW			HR/D	D/YR																		
	On-Ice – Loader			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Construction Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Other Survey Equipment			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Tractor			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for gravel island)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	On-Ice – Truck (for surveys)			0	0.0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	0.00
	Man Camp - Operation		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	--	0.00	0.00	0.00	0.00	0.00	0.00	--	0.00	
	VESSELS - Hovercraft Diesel		0			0	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2027-2037 Non-Facility Total Emissions								15.51	9.36	9.08	0.23	371.69	10.69	0.00	58.30	0.11	6.50	3.92	3.80	0.09	155.76	4.48	0.00	24.43	0.05

AIR EMISSIONS CALCULATIONS

COMPANY	AREA	BLOCK	LEASE	FACILITY	WELL	
GOM Shelf LLC	Eugene Island	346	OCS-G 14482	A	A001, A002, A003, A004, A005	

Year	Facility Emitted Substance								
	TSP	PM10	PM2.5	SOx	NOx	VOC	Pb	CO	NH3
2026	16.48	10.32	10.03	0.37	466.15	112.25	0.00	83.55	0.17
2027-2037	10.77	6.87	6.69	0.28	329.24	108.31	0.00	62.07	0.13
Allowable	2197.80			2197.80	2197.80	2197.80		55527.51	

SECTION 9
OIL SPILL INFORMATION

9.1 OIL SPILL RESPONSE PLANNING

All the proposed activities and facilities in this DOCD will be covered by the Oil Spill Response Plan (OSRP) filed by GOM Shelf LLC (Company No. 02451) dated December 2022 and last approved on April 23, 2026 (OSRP Control No. O-1071).

9.2 SPILL RESPONSE SITES

Primary Response Equipment Locations	Preplanned Staging Locations
Houma, LA	Houma, LA
Harvey, LA	Leeville, LA
Leeville, LA	Fourchon, LA
	Venice, LA

9.3 OSRO INFORMATION

GOM Shelf's primary equipment provider is Clean Gulf Associates (CGA). Clean Gulf Associates Services, LLC (CGAS) will provide closest available personnel, as well as a CGAS supervisor to operate the equipment.

9.4 WORST-CASE DISCHARGE SCENARIO DETERMINATION

Category	Drilling		Production	
	Regional OSRP WCD	DOCD WCD	Regional OSRP WCD	DOCD WCD
Type of Activity	Drilling	Drilling	>10 Miles Production	>10 Miles Production
Facility location (Area/Block)	EI 346	EI 346	ST 295	EI 346
Facility designation	Well A005	Well A005	Well No. B003 ST01	Well A005
Distance to nearest shoreline (miles)	66	66	59	66
Storage tanks & flowlines (bbl)	0	0	1,452	3,820
Lease term pipelines (bbl)	0	0	1,286	0
Uncontrolled blowout (bbl)	245,969	245,969	9,384	8,250
Total Volume (bbl)	**245,969**	**245,969**	**12,122**	**12,070**
Type of oil(s) (crude, condensate, diesel)	Crude	Crude	Crude	Crude
API gravity	34°	34°	32°	34°

GOM Shelf has determined that the worst-case scenario from the activities proposed in this DOCD does not supersede the worst-case scenario from our approved Regional OSRP.

Since GOM Shelf LLC has the capability to respond to the worst-case spill scenario included in our Regional OSRP approved on April 23, 2026, and since the worst-case scenario determined for our DOCD does not replace the worst-case scenario in our Regional OSRP, GOM Shelf LLC hereby certifies that GOM Shelf LLC has the capability to respond, to the maximum extent practicable, to a worst-case discharge, or a substantial threat of such a discharge, resulting from the activities proposed in this DOCD.

9.5 OIL SPILL RESPONSE DISCUSSION

The Oil Spill Response Discussion is included as **Attachment 9-A.**

9.6 MODELING REPORT

Modeling reports are not required for the activities proposed in this plan.

SPILL RESPONSE DISCUSSION

For the purpose of NEPA and Coastal Zone Management Act analysis, the largest spill volume originating from the proposed activity would be a well blowout during drilling operations, estimated to be 245,969 barrels of crude oil with an API gravity of 34°.

Land Segment and Resource Identification

Trajectories of a spill and the probability of it impacting a land segment have been projected utilizing information in the BOEM Oil Spill Risk Analysis Model (OSRAM) for the Central and Western Gulf available on the BOEM website. The results are shown in **Figure 1.** The BOEM OSRAM identifies the highest probability of impact to the shorelines of Cameron Parish, Louisiana within 30 days. Cameron Parish includes the east side of Sabine Lake, Sabine National Wildlife Refuge, Calcasieu Lake, Lacassine National Wildlife Refuge (inland) and Grand Lake. Cameron Parish also includes the area along the coastline from Sabine Pass to Big Constance Lake in Rockefeller Wildlife Refuge. This region is composed of open public beaches, marshlands and swamps. It serves as a habitat for numerous birds, finfish and other animals, including several rare, threatened and endangered species.

Response

GOM Shelf will make every effort to respond to the Worst Case Discharge as effectively as practicable. A description of the response equipment under contract to contain and recover the Worst Case Discharge is shown in **Figure 2.**

Using the estimated chemical and physical characteristics of crude oil, an ADIOS weathering model was run on a similar product from the ADIOS oil database.

Natural Weathering Data: EI 346, Well A005	**Barrels of Oil**
WCD Volume	245,969
Less 16% natural evaporation/dispersion	39,355
Remaining volume	206,614

Figure 2 outlines equipment, personnel, materials and support vessels as well as temporary storage equipment available to respond to the worst case discharge. The volume accounts for the amount remaining after evaporation/dispersion at 24 hours. The list estimates individual times needed for procurement, load out, travel time to the site and deployment. **Figure 2** also indicates how operations will be supported.

GOM Shelf's Oil Spill Response Plan includes alternative response technologies such as dispersants and in-situ burn. Strategies will be decided by Unified Command based on an operations safety analysis, the size of the spill, weather and potential impacts. If aerial dispersants are utilized, 4 sorties (4,800 gallons) from the DC-3 aircraft and 4 sorties (8,000 gallons) from the Basler aircraft would provide a daily dispersant capability of 7,540 barrels. If the conditions are

favorable for in-situ burning, the proper approvals have been obtained and the proper planning is in place, in-situ burning of oil may be attempted. Slick containment boom would be immediately called out and on-scene as soon as possible. Offshore response strategies may include attempting to skim utilizing CGA spill response equipment, with a total derated skimming capacity of 714,777 barrels. Temporary storage associated with skimming equipment equals 164,996 barrels. If additional storage is needed, various storage barges with a total capacity 608,000 bbls may be mobilized and centrally located to provide temporary storage and minimize off-loading time. CGA works with the member company's Incident Management Team (IMT), specifically the marine logistics group within the logistics section, to identify and procure Offshore Supply Vessels capable of providing temporary offshore storage to the initial mechanical recovery assets within 12-24 hours, ensuring that devices for the storage of recovered oil are sufficient to allow containment and recovery operations to continue without interruption. If needed, CGA can leverage an internal CGA membership vessel sharing agreement to help locate available vessels. All OSVs can put 20% of their deadweight in recovered oil into their liquid mud storage tanks and dual certificated OSVs can utilize 100% of liquid mud tank capacity for recovered oil storage **Safety is first priority. Air monitoring will be accomplished and operations deemed safe prior to any containment/skimming attempts.**

If the spill went unabated, shoreline impact in Cameron Parish, Louisiana would depend upon existing environmental conditions. Shoreline protection would include the use of CGA's near shore and shallow water skimmers with a totaled derated skimming capacity of 231,680 barrels. Temporary storage associated with skimming equipment equals 2,641 barrels. If additional storage is needed, various storage barges with a total capacity 239,820 bbls may be mobilized and centrally located to provide temporary storage and minimize off-loading time. Onshore response may include the deployment of shoreline boom on beach areas, or protection and sorbent boom on vegetated areas. A Letter of Intent from E3 OMI will ensure access to 41,700 feet of 18" shoreline protection boom. **Figure 2** outlines individual times needed for procurement, load out, travel time to the site and deployment. Strategies would be based upon surveillance and real time trajectories that depict areas of potential impact given actual sea and weather conditions. Applicable Area Contingency Plans (ACPs), Geographic Response Plans (GRPs), and Unified Command (UC) will be consulted to ensure that environmental and special economic resources are correctly identified and prioritized to ensure optimal protection. Shoreline protection strategies depict the protection response modes applicable for oil spill clean-up operations. The UC should take into consideration all appropriate items detailed in Tactics discussion of this Appendix. The UC and their personnel have the option to modify the deployment and operation of equipment to allow for a more effective response to site-specific circumstances. GOM Shelf's contract Incident Management Team has access to the applicable ACP(s) and GRP(s).

Based on the anticipated worst case discharge scenario, GOM Shelf can be onsite with contracted oil spill recovery equipment with adequate response capacity to contain and recover surface hydrocarbons, and prevent land impact, to the maximum extent practicable, within an estimated 58 hours (based on the equipment's Effective Daily Recovery Capacity (EDRC)).

Initial Response Considerations
Actual actions taken during an oil spill response will be based on many factors to include but not be limited to:

- Safety
- Weather
- Equipment and materials availability
- Ocean currents and tides
- Location of the spill
- Product spilled
- Amount spilled
- Environmental risk assessments
- Trajectory and product analysis
- Well status, i.e., shut in or continual release

GOM Shelf will take action to provide a safe, aggressive response to contain and recover as much of the spilled oil as quickly as it is safe to do so. In an effort to protect the environment, response actions will be designed to provide an "in-depth" protection strategy meant to recover as much oil as possible as far from environmentally sensitive areas as possible. Safety will take precedence over all other considerations during these operations.

Coordination of response assets will be supervised by the designation of a SIMOPS group as necessary for close quarter vessel response activities. Most often, this group will be used during source control events that require a significant number of large vessels operating independently to complete a common objective, in close coordination and support of each other. This group must also monitor the subsurface activities of each vessel (ROV, dispersant application, well control support, etc.). The SIMOPS group leader reports to the Source Control Section Chief.

In addition, these activities will be monitored by the Incident Management Team (IMT) and Unified Command via a structured Common Operating Picture (COP) established to track resource and slick movement in real time.

Upon notification of a spill, the following actions will be taken:

- Information will be confirmed
- An assessment will be made and initial objectives set
- OSROs and appropriate agencies will be notified
- ICS 201, Initial Report Form completed
- Initial Safety plan will be written and published
- Unified Command will be established
    - Overall safety plan developed to reflect the operational situation and coordinated objectives
    - Areas of responsibility established for Source Control and each surface operational site
    - On-site command and control established

Offshore Response Actions

Equipment Deployment

Surveillance

- Surveillance Aircraft: within two hours of QI notification, or at first light
- Provide trained observer to provide on site status reports
- Provide command and control platform at the site if needed
- Continual surveillance of oil movement by remote sensing systems, aerial photography and visual confirmation
- Continual monitoring of vessel assets using vessel monitoring systems

Dispersant application assets

- Put ASI on standby
- With the FOSC, conduct analysis to determine appropriateness of dispersant application (refer to Section 18)
- Gain FOSC approval for use of dispersants on the surface
- Deploy aircraft in accordance with a plan developed for the actual situation
- Coordinate movement of dispersants, aircraft, and support equipment and personnel
- Confirm dispersant availability for current and long range operations
- Start ordering dispersant stocks required for expected operations

Containment boom

- Call out early and expedite deployment to be on scene ASAP
- Ensure boom handling and mooring equipment is deployed with boom
- Provide continuing reports to vessels to expedite their arrival at sites that will provide for their most effective containment
- Use Vessels of Opportunity (VOO) to deploy and maintain boom

Oceangoing Boom Barge

- Containment at the source
- Increased/enhanced skimmer encounter rate
- Protection booming

In-situ Burn assets

- Determine appropriateness of in-situ burn operation in coordination with the FOSC and affected SOSC
- Determine availability of fire boom and selected ignition systems
- Start ordering fire boom stocks required for expected operations
- Contact boom manufacturer to provide training & tech support for operations, if required
- Determine assets to perform on water operation
- Build operations into safety plan
- Conduct operations in accordance with an approved plan
- Initial test burn to ensure effectiveness

Dedicated off-shore skimming systems
General

- Deployed to the highest concentration of oil
- Assets deployed at safe distance from aerial dispersant and in-situ burn operations

CGA HOSS Barge

- Use in areas with heaviest oil concentrations
- Consider for use in areas of known debris (seaweed, and other floating materials)

CGA 95' Fast Response Vessels (FRVs)

- Designed to be a first vessel on scene
- Capable of maintaining the initial Command and Control function for on water recovery operations
- 24 hour oil spill detection capability
- Highly mobile and efficient skimming capability
- Use as far off-shore as safely possible

CGA FRUs

- To the area of the thickest oil
- Use as far off-shore as allowed

T&T Koseq Skimming Systems

- To the area of the thickest oil
- Use as far off-shore as allowed
- VOOs with a minimum of 2,000 bbls storage capacity
- VOOs at least 200' in length
- VOOs with deck space of 100' x 40' to provide space for arms, tanks, and crane
- VOOs for shallow water should be deck barges with a draft of <10 feet when fully loaded

Storage Vessels

- Establish availability of CGA contracted assets (See Appendix E)
- Early call out (to allow for tug boat acquisition and deployment speeds)
- Phase mobilization to allow storage vessels to arrive at the same time as skimming systems
- Position as closely as possible to skimming assets to minimize offloading time

Vessels of Opportunity (VOO)

- Use GOM Shelf's contracted resources as applicable
- Industry vessels are ideal for deployment of Vessel of Opportunity Skimming Systems (VOSS)
- Acquire additional resources as needed

- Consider use of local assets, i.e. fishing and pleasure craft for ISB operations or boom tending
- Expect mission specific and safety training to be required
- Plan with the US Coast Guard for vessel inspections
- Place VOOs in Division or Groups as needed
- Use organic on-board storage if appropriate
- Maximize non-organic storage appropriate to vessel limitations
- Decant as appropriate after approval to do so has been granted
- Assign bulk storage barges to each Division/Group
- Position bulk storage barges as close to skimming units as possible
- Utilize large skimming vessel (e.g. barges) storage for smaller vessel offloading
- Maximize skimming area (swath) to the optimum width given sea conditions and available equipment
- Maximize use of oleophilic skimmers in all operations, but especially offshore
- Nearshore, use shallow water barges and shuttle to skimming units to minimize offloading time
- Plan and equip to use all offloading capabilities of the storage vessel to minimize offloading time

Adverse Weather Operations:

In adverse weather, when seas are $\geq$ 3 feet, the use of larger recovery and storage vessels, oleophilic skimmers, and large offshore boom will be maximized. KOSEQ Arm systems are built for rough conditions, and they should be used until their operational limit (9.8' seas) is met. Safety will be the overriding factor in all operations and will cease at the order of the Unified Command, vessel captain, or in an emergency, "stop work" may be directed by any crew member.

Surface Oil Recovery Considerations and Tactics
(Offshore and Near-shore Operations)

Maximization of skimmer-oil encounter rate

- Place barges in skimming task forces, groups, etc., to reduce recovered oil offloading time
- Place barges alongside skimming systems for immediate offloading of recovered oil when practicable
- Use two vessels, each with heavy sea boom, in an open-ended "V" configuration to funnel surface oil into a trailing skimming unit's organic, V-shaped boom and skimmer (see page 7, *CGA Equipment Guide Book and Tactic Manual* (CGATM)
- Use secondary vessels and heavy sea boom to widen boom swath beyond normal skimming system limits (see page 15, CGATM)
- Consider night-time operations, first considering safety issues
- Utilize all available advanced technology systems (IR, X-Band Radar, etc.) to determine the location of, and move to, recoverable oil
- Confirm the presence of recoverable oil prior to moving to a new location

Maximize skimmer system efficiency

- Place weir skimming systems in areas of calm seas and thick oil
- Maximize the use of oleophilic skimming systems in heavier seas
- Place less mobile, high EDRC skimming systems (e.g. HOSS Barge) in the largest pockets of the heaviest oil
- Maximize onboard recovered oil storage for vessels.
- Obtain authorization for decanting of recovered water as soon as possible
- Use smaller, more agile skimming systems to recover streamers of oil normally found farther from the source. Place recovered oil barges nearby

Recovered Oil Storage

- Smaller barges in larger quantities will increase flexibility for multi-location skimming operations
- Place barges in skimming task forces, groups, etc., to reduce recovered oil offloading time
- Procure and deploy the maximum number of portable tanks to support Vessel of Opportunity Skimming Systems if onboard storage is not available
- Maximize use of the organic recovered oil storage capacity of the skimming vessel

Command, Control, and Communications (C^3)

- Publish, implement, and fully test an appropriate communications plan
- Design an operational scheme, maintaining a manageable span of control
- Designate and mark C^3 vessels for easy aerial identification
- Designate and employ C^3 aircraft for task forces, groups, etc.
- Use reconnaissance air craft and Rapid Response Teams (RAT) to confirm the presence of recoverable oil

CGA Minimum Acceptable Capabilities for Vessels of Opportunity (VOO)
Minimum acceptable capabilities of Petroleum Industry Designed Vessels (PIDV) for conducting Vessel of Opportunity (VOO) skimming operations are shown in the table below. PIDVs are "purpose-built" to provide normal support to offshore oil and gas operators. They include but are not limited to utility boats, offshore supply vessels, etc. They become VOOs when tasked with oil spill response duties.

Capability	FRU	KOSEQ	AquaGuard
Type of Vessel	Utility Boat/ Offshore Supply Vessel	Offshore Supply Vessel	Utility Boat
Operating parameters			
Sea State	2-4 ft max	9.8 ft max	3-5 ft max
Skimming speed	≤1 kt	≤3 kts	≤1 kt
Vessel size			
Minimum Length	100-165 ft	200 ft	100 ft
Deck space for: • Tank(s) • Crane(s) • Boom Reels • Hydraulic Power Units • Equipment Boxes	18x32 ft	100x40 ft	18x32 ft
Communication Assets	Marine Band Radio	Marine Band Radio	Marine Band Radio

Tactical use of Vessels of Opportunity (VOO): GOM Shelf will take all possible measures to maximize the oil-to-skimmer encounter rate of all skimming systems, to include VOOs, as discussed in this section. VOOs will normally be placed within an On-water recovery unit as shown in figures below.

Skimming Operations: PIDVs are the preferred VOO skimming platform. OSROs are more versed in operating on these platforms and the vessels are generally large enough with crews more likely versed in spill response operations. They also have a greater possibility of having on-board storage capacity and the most likely vessels to be under contract, and therefore more readily available to the operator. These vessels would normally be assigned to an on-water recovery group/division (see figure below) and outfitted with a VOSS suited for their size and capabilities. Specific tactics used for skimming operations would be dependent upon many parameters which include, but are not limited to, safety concerns, weather, type VOSS on board, product being recovered, and area of oil coverage. Planners would deploy these assets with the objective of safely maximizing oil- to-skimmer encounter rate by taking actions to minimize non-skimming time and maximizing boom swath. Specific tactical configurations are shown in figures below.

The Fast Response Unit (FRU): The 502 FRU is designed to provide an advancing fast response skimming capability in the offshore and nearshore environment. To tow the FRU alongside the vessel, the rigid sweeping arm is connected to the ship by a tow line to a bow bollard or forward bit. The range and sustainability offshore are determined by the PIDV the unit is placed on, but generally can stay offshore for extended periods. The FRU works well independently or assigned

in a task force with other skimming assets and is more efficient when UAS or aircraft are assigned to direct into recoverable oil

Maximum Sea Conditions – Under most circumstances the FRU can maintain standard oil spill recovery operations in 2' to 4' seas. Ultimately, the Coast Guard licensed Captain in charge of the VOO (with input from the CGAS Supervisor assigned) will be responsible to determine when the sea conditions have surpassed the vessel's safe operating capabilities.

The Koseq Rigid Sweeping Arm: A skimming system deployed on a vessel of opportunity. It requires a large Offshore or Platform Supply Vessel (OSV/PSV), greater than 200' with at least 100' x 50' of free deck space. On each side of the vessel, a 50' long rigid framed Arm is deployed that consists of pontoon chambers to provide buoyancy, a smooth nylon face, and a hydraulically adjustable mounted weir skimmer. The Arm floats independently of the vessel and is attached by a tow bridle and a lead line. The movement of the vessel forward draws the rubber end seal of the arm against the hull to create a collection point for free oil directed to the weir by the Arm face. The collection weir is adjusted to keep the lip as close to the oil water interface as possible to maximize oil recovery while attempting to minimize excess water collection. A transfer pump (combination of positive displacement, screw type and centrifuge suited for highly viscous oils) pump the recovered liquid to portable tanks and/or dedicated fixed storage tanks onboard the vessel. After being allowed to sit and separate, with approval from the Coast Guard, the water can be decanted (pumped off) in front of the collection arm to be reprocessed through the system. Once full with as much pure recovered oil as possible, the oil is transferred to a temporary storage barge where it can be disposed of in accordance with an approved disposal plan.

Tactical Overview

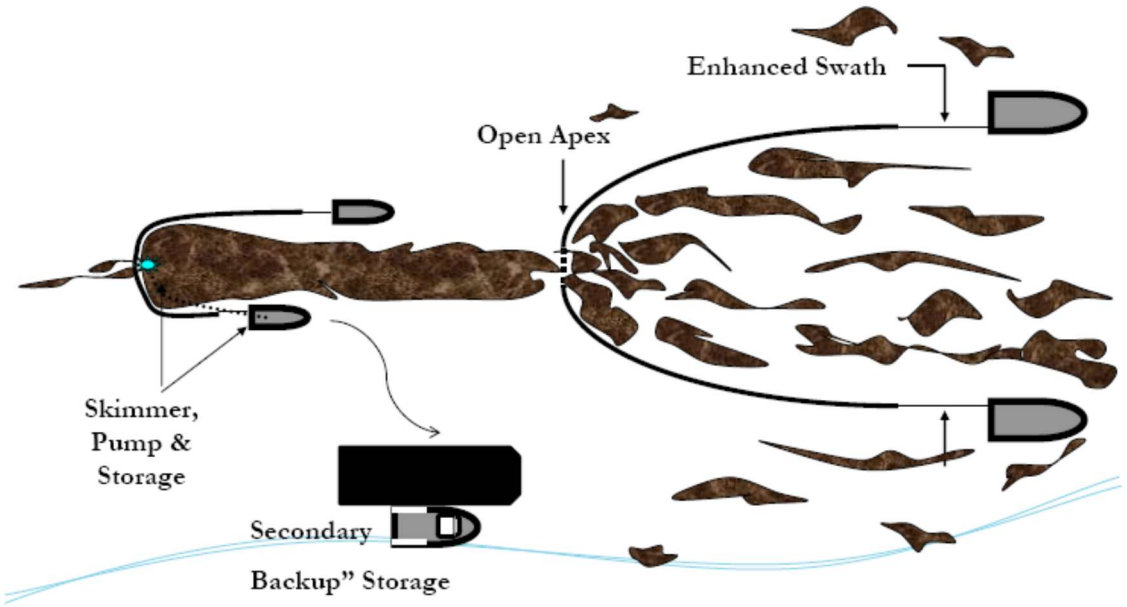
Mechanical Recovery – Deployed on large vessels of opportunity (VOO) the Koseq Rigid Sweeping Arms are high volume surge capacity deployed to increase recovery capacity at the source of a large oil spill in the offshore and outer nearshore environment of the Gulf. They are highly mobile and sustainable in rougher sea conditions than normal skimming vessels (9.8' seas). The large Offshore Supply Vessels (OSV) required to deploy the Arms are able to remain on scene for extended periods, even when sea conditions pick up. Temporary storage on deck in portable tanks usually provides between 1,000 and 3,000 bbls. In most cases, the OSV will be able to pump 20% of its deadweight into the liquid mud tanks in accordance with the vessels Certificate of Inspection (COI). All storage can be offloaded utilizing the vessels liquid transfer system.

Maximum Sea Conditions - Under most circumstances the larger OSVs are capable of remaining on scene well past the Skimming Arms maximum sea state of 9.8'. Ultimately it will be the decision of the VOO Captain, with input from the T&T Supervisor onboard, to determine when the sea conditions have exceeded the safe operating conditions of the vessel.

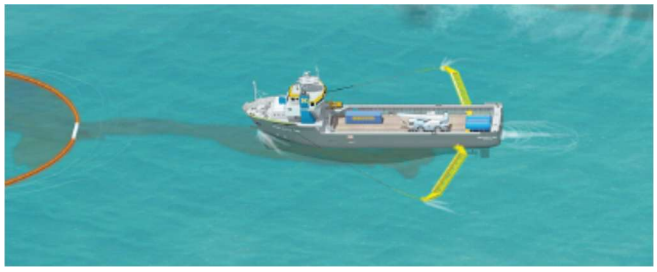
Command and Control – The large OSVs in many cases have state of the art communication and electronic systems, as well as the accommodations to support the function of directing all skimming operations offshore and reporting back to the command post.

Possible Task Force Configuration (Multiple Koseq VOOs can be deployed in a task force)

1 – ≥ 200’ Offshore Supply Vessels (OSV) with set of Koseq Arms
2 to 4 portable storage tanks (500 bbl)
1 – Modular Crane Pedestal System set (MCPS) or 30 cherry picker (crane) for deployment
1 – Tank barge (offshore) for temporary storage
1 – Utility/Crewboat (supply)
1 – Designated spotter aircraft
4 – Personnel (4 T&T OSRO)



Scattered oil is “caught” by two VOO and collected at the apex of the towed sea boom. The oil moves thought a “gate” at that apex, forming a larger stream of oil which moves into the boom of the skimming vessel. Operations are paced at >1. A recovered oil barge stationed nearby to minimize time taken to offload recovered oil.





This is a depiction of the same operation as above but using KOSEQ Arms. In this configuration, the collecting boom speed dictates the operational pace at ≥ 1 knot to minimize entrainment of the oil.

Clean Gulf Associates (CGA) Procedure for Accessing Member-Contracted and other Vessels of Opportunity (VOOs) for Spill Response

- CGA has procedures in place for CGA member companies to acquire vessels of opportunity (VOOs) from an existing CGA member's contracted fleet or other sources for the deployment of CGA portable skimming equipment including Koseq Arms, Fast Response Units (FRUs) and any other portable skimming system(s) deemed appropriate for the response for a potential or actual oil spill, WCD oil spill or a Spill of National Significance (SONS).

- CGA uses Port Vision, a web-based vessel and terminal interface that empowers CGA to track vessels through Automatic Identification System (AIS) and terminal activities using a Geographic Information System (GIS). It provides live AIS/GIS views of waterways showing current vessel positions, terminals, created vessel fleets, and points-of-interest. Through this system, CGA has the ability to get instant snapshots of the location and status of all vessels contracted to CGA members, day or night, from any web-enabled PC.

Near Shore Response Actions

Timing

- Put near shore assets on standby and deployment in accordance with planning based on the actual situation, actual trajectories and oil budgets
- VOO identification and training in advance of spill nearing shoreline if possible
- Outfitting of VOOs for specific missions
- Deployment of assets based on actual movement of oil

Considerations

- Water depth, vessel draft
- Shoreline gradient
- State of the oil
- Use of VOOs
- Distance of surf zone from shoreline

Surveillance

- Provide trained observer to direct skimming operations
- Continual surveillance of oil movement by remote sensing systems, aerial photography and visual confirmation
- Continual monitoring of vessel assets

Dispersant Use

- Generally will not be approved within 3 miles of shore or with less than 10 meters of water depth
- Approval would be at Regional Response Team level (Region 6)

Dedicated Near Shore skimming systems

- FRVs
- Egmopol and Marco SWS
- Operate with aerial spotter directing systems to observed oil slicks

VOO

- Use GOM Shelf's contracted resources as applicable
- Industry vessel are usually best for deployment of Vessel of Opportunity Skimming Systems (VOSS)
- Acquire additional resources as needed
- Consider use of local assets, i.e. fishing and pleasure craft
- Expect mission specific and safety training to be required
- Plan with the US Coast Guard for vessel inspections
- Operate with aerial spotter directing systems to oil patches

Shoreline Protection Operations

Response Planning Considerations

- Review appropriate Area Contingency Plan(s)
- Locate and review appropriate Geographic Response and Site Specific Plans
- Refer to appropriate Environmentally Sensitive Area Maps
- Capability for continual analysis of trajectories run periodically during the response
- Environmental risk assessments (ERA) to determine priorities for area protection
- Time to acquire personnel and equipment and their availability
- Aerial surveillance of oil movement
- Pre-impact beach cleaning and debris removal
- Shoreline Cleanup Assessment Team (SCAT) operations and reporting procedures
- Boom type, size and length requirements and availability
- Possibility of need for In-situ burning in near shore areas
- Current wildlife situation, especially status of migratory birds and endangered species in the area
- Check for Archeological sites and arrange assistance for the appropriate state agency when planning operations the may impact these areas

Placement of boom

- Position boom in accordance with the information gained from references listed above and based on the actual situation
- Determine areas of natural collection and develop booming strategies to move oil into those areas
- Assess timing of boom placement based on the most current trajectory analysis and the availability of each type of boom needed. Determine an overall booming priority and conduct booming operations accordingly. Consider:
    - Trajectories
    - Weather forecast
    - Oil Impact forecast
    - Verified spill movement
    - Boom, manpower and vessel (shallow draft) availability
    - Near shore boom and support material, (stakes, anchors, line)

Beach Preparation - Considerations and Actions

- Use of a 10 mile go/no go line to determine timing of beach cleaning
- SCAT reports and recommendations
- Determination of archeological sites and gaining authority to enter
- Monitoring of tide tables and weather to determine extent of high tides
- Pre cleaning of beaches by moving waste above high tide lines to minimize waste
- Determination of logistical requirements and arranging of waste removal and disposal
- Staging of equipment and housing of response personnel as close to the job site as possible to maximize on-site work time

- Boom tending, repair, replacement and security (use of local assets may be advantageous)
- Constant awareness of weather and oil movement for resource re-deployment as necessary
- Earthen berms and shoreline protection boom may be considered to protect sensitive inland areas
- Requisitioning of earth moving equipment
- Plan for efficient and safe use of personnel, ensuring:
    - A continual supply of the proper Personal Protective Equipment
    - Heating or cooling areas when needed
    - Medical coverage
    - Command and control systems (i.e. communications)
    - Personnel accountability measures
- Remediation requirements, i.e., replacement of sands, rip rap, etc.
- Availability of surface washing agents and associated protocol requirements for their use (see National Contingency Plan Product Schedule for list of possible agents)
- Discussions with all stakeholders, i.e., land owners, refuge/park managers, and others as appropriate, covering the following:
    - Access to areas
    - Possible response measures and impact of property and ongoing operations
    - Determination of any specific safety concerns
    - Any special requirements or prohibitions
    - Area security requirements
    - Handling of waste
    - Remediation expectations
    - Vehicle traffic control
    - Domestic animal safety concerns
    - Wildlife or exotic game concerns/issues

Inland and Coastal Marsh Protection and Response Considerations and Actions

- All considered response methods will be weighed against the possible damage they may do to the marsh. Methods will be approved by the Unified Command only after discussions with local Stakeholder, as identified above.
    - In-situ burn may be considered when marshes have been impacted
- Passive clean up of marshes should considered and appropriate stocks of sorbent boom and/or sweep obtained.
- Response personnel must be briefed on methods to traverse the marsh, i.e.,
    - use of appropriate vessel
    - use of temporary walkways or road ways
- Discuss and gain approval prior cutting or moving vessels through vegetation
- Discuss use of vessels that may disturb wildlife, i.e, airboats
- Safe movement of vessels through narrow cuts and blind curves
- Consider the possibility that no response in a marsh may be best

- In the deployment of any response asset, actions will be taken to ensure the safest, most efficient operations possible. This includes, but is not limited to:
    - Placement of recovered oil or waste storage as near to vessels or beach cleanup crews as possible.
    - Planning for stockage of high use items for expeditious replacement
    - Housing of personnel as close to the work site as possible to minimize travel time
    - Use of shallow water craft
    - Use of communication systems appropriate ensure command and control of assets
    - Use of appropriate boom in areas that I can offer effective protection
    - Planning of waste collection and removal to maximize cleanup efficiency
- Consideration or on-site remediation of contaminated soils to minimize replacement operations and impact on the area

Decanting Strategy
Recovered oil and water mixtures will typically separate into distinct phases when left in a quiescent state. When separation occurs, the relatively clean water phase can be siphoned or decanted back to the recovery point with minimal, if any, impact. Decanting therefore increases the effective on-site oil storage capacity and equipment operating time. FOSC/SOSC approval will be requested prior to decanting operations. This practice is routinely used for oil spill recovery.

CGA Equipment Limitations
The capability for any spill response equipment, whether a dedicated or portable system, to operate in differing weather conditions will be directly in relation to the capabilities of the vessel the system in placed on. Most importantly, however, the decision to operate will be based on the judgment of the Unified Command and/or the Captain of the vessel, who will ultimately have the final say in terminating operations. Skimming equipment listed below may have operational limits which exceed those safety thresholds. As was seen in the Deepwater Horizon (DWH) oil spill response, vessel skimming operations ceased when seas reached 5-6 feet and vessels were often recalled to port when those conditions were exceeded. Systems below are some of the most up-to-date systems available and were employed during the DWH spill.

Boom	3 foot seas, 20 knot winds
Dispersants	Winds more than 25 knots Visibility less than 3 nautical miles Ceiling less than 1,000 feet.
FRU	2-4 foot seas
HOSS Barge/OSRB	7 foot seas
Koseq Arms	8 foot seas
OSRV	3-5 foot seas

Environmental Conditions in the Gulf

Louisiana is situated between the easterly and westerly wind belts, and therefore, experiences westerly winds during the winter and easterly winds in the summer. Average wind speed is generally 14-15 mph along the coast. Wave heights average 4 and 5 feet. However, during hurricane season, Louisiana has recorded wave heights ranging from 40 to 50 feet high and winds reaching speeds of 100 mph. Because much of southern Louisiana lies below sea level, flooding is prominent.

Surface water temperature ranges between 70 and 80 ˚F during the summer months. During the winter, the average temperature will range from 50 and 60 ˚F.

The Atlantic and Gulf hurricane season is officially from 1 June to 30 November. 97% of all tropical activity occurs within this window. The Atlantic basin shows a very peaked season from August through October, with 78% of the tropical storm days, 87% of the minor (Saffir-Simpson Scale categories 1 and 2) hurricane days, and 96% of the major (Saffir-Simpson categories 3, 4 and 5) hurricane days occurring then. Maximum activity is in early to mid September. Once in a few years there may be a hurricane occurring "out of season" - primarily in May or December. Globally, September is the most active month and May is the least active month.

FIGURE 1
TRAJECTORY BY LAND SEGMENT

Trajectory of a spill and the probability of it impacting a land segment have been projected utilizing GOM Shelf's WCD and information in the BOEM Oil Spill Risk Analysis Model (OSRAM) for the Central and Western Gulf available on the BOEM website using 30 day impact. The results are tabulated below.

Area/Block	OCS-G	Launch Area	Land Segment and/or Resource	Conditional Probability (%)
EI 346, Well A005 *66 miles from shore*	G14482	C40	Calhoun, TX Matagorda, TX Brazoria, TX Galveston, TX Jefferson, TX **Cameron, LA** Vermilion, LA Iberia, LA St. Mary, LA Terrebonne, LA Lafourche, LA Plaquemines, LA	1 3 1 5 5 **11** 4 2 1 4 1 2

WCD Scenario– <u>BASED ON WELL BLOWOUT DURING DRILLING OPERATIONS</u> (66 miles from shore)
206,614 bbls of crude oil (Volume considering natural weathering)
API Gravity 34°

FIGURE 2 – Equipment Response Time to EI 346, Well A005

Dispersants/Surveillance

Dispersant/Surveillance	Dispersant Capacity (gal)	Persons Req.	From	Hrs to Procure	Hrs to Loadout	Travel to site	Total Hrs
ASI							
Basler 67T	2000	2	Houma	2	2	0.5	4.5
DC 3	1200	2	Houma	2	2	0.7	4.7
Aero Commander	NA	2	Houma	2	2	0.5	4.5

Offshore Response

Offshore Equipment Pre-Determined Staging	EDRC	Storage Capacity	VOO	Persons Required	From	Hrs to Procure	Hrs to Loadout	Hrs to Gulf	Travel to Spill Site	Hrs to Deploy	Total Hrs
CGA											
HOSS Barge	76285	4000	3 Tugs	12	Harvey	6	0	12	12	2	32
95' FRV	22885	249	NA	6	Galveston	2	0	2	9	1	14
95' FRV	22885	249	NA	6	Leeville	2	0	2	4	1	9
95' FRV	22885	249	NA	6	Venice	2	0	3	5	1	11
95' FRV	22885	249	NA	6	Vermilion	2	0	3	4	1	10
Boom Barge (CGA-300) 42" Auto Boom (25000')	NA	NA	1 Tug 50 Crew	4 (Barge) 2 (Per Crew)	Leeville	8	0	4	12	2	26
Genesis Marine (Available through contract with CGA)											
GM 11103	NA	111000	1 Tug	6	Port Arthur	24	12	0	22	0	58
GM 11104	NA	111000	1 Tug	6	Port Arthur	24	12	0	22	0	58
GM 11105	NA	111000	1 Tug	6	Port Arthur	24	12	0	22	0	58
GM 6506	NA	65000	1 Tug	6	Port Arthur	24	12	0	22	0	58
GM 6507	NA	65000	1 Tug	6	Port Arthur	24	12	0	22	0	58
GM 6508	NA	65000	1 Tug	6	Port Arthur	24	12	0	22	0	58
GM 8001	NA	80000	1 Tug	6	Port Arthur	24	12	0	22	0	58

Staging Area: Fourchon

Offshore Equipment With Staging	EDRC	Storage Capacity	VOO	Persons Req.	From	Hrs to Procure	Hrs to Loadout	Travel to Staging	Travel to Site	Hrs to Deploy	Total Hrs
T&T Marine (available through direct contract with CGA)											
Aqua Guard Triton RBS (2)	44646	4000	2 Utility	12	Galveston	4	12	12	8	2	38
Koseq Skimming Arms (10) Lamor brush	228850	60000	10 OSV	60	Galveston, TX	24	24	12	8	2	70
Koseq Skimming Arms (6) Lamor brush	137310	36000	6 OSV	36	Harvey, LA	24	24	3	8	2	61
Koseq Skimming Arms (6) MariFlex 150 HF	108978	36000	6 OSV	36	Harvey, LA	24	24	3	8	2	61
CGA											
FRU Koseq 502 (1)	4528	4000	1 OSV	2	Galveston	0	12	12	8	0	32
FRU Koseq 502 (5)	22640	20000	5 OSVs	10	Harvey	0	12	12	8	0	32
Hydro-Fire Boom	NA	NA	8 Utility	40	Harvey	0	24	3	8	6	41

Nearshore Response

Nearshore Equipment Pre-determined Staging	EDRC	Storage Capacity	VOO	Persons Required	From	Hrs to Procure	Hrs to Loadout	Hrs to Gulf	Travel to Spill Site	Hrs to Deploy	Total Hrs
CGA											
Mid-Ship SWS	22885	249	NA	4	Leeville	2	0	N/A	48	1	51
Mid-Ship SWS	22885	249	NA	4	Venice	2	0	N/A	48	1	51
Mid-Ship SWS	22885	249	NA	4	Galveston	2	0	N/A	48	1	51
Trinity SWS	21500	249	NA	4	Leeville	2	0	N/A	48	1	51
Trinity SWS	21500	249	NA	4	Venice	2	0	N/A	48	1	51
Trinity SWS	21500	249	NA	4	Vermilion	2	0	N/A	48	1	51
Trinity SWS	21500	249	NA	4	Aransas Pass	2	0	N/A	48	1	51
46’ FRV	15257	65	NA	4	Aransas Pass	2	0	2	16	1	21
46’ FRV	15257	65	NA	4	Leeville	2	0	2	9	1	14
46’ FRV	15257	65	NA	4	Vermilion	2	0	2	2	1	7
46’ FRV	15257	65	NA	4	Venice	2	0	2	11	1	16
Kirby Offshore (Available through contract with CGA)											
Chesapeake	NA	35000	1 Tug	6	Port Arthur	24	12	0	6	0	42
Penn No 80	NA	82482	1 Tug	6	Port Arthur	24	12	0	6	0	42
Penn No 81	NA	82482	1 Tug	6	Port Arthur	24	12	0	6	0	42
Randy King	NA	39856	1 Tug	6	Port Arthur	24	12	0	6	0	42

Staging Area: Cameron

Nearshore Equipment With Staging	EDRC	Storage Capacity	VOO	Persons Req.	From	Hrs to Procure	Hrs to Load Out	Travel to Staging	Travel to Deployment	Hrs to Deploy	Total Hrs
					CGA						
SWS Marco	3588	20	NA	3	Vermilion	2	2	2	2	1	9
SWS Marco	3588	34	NA	3	Leeville	2	2	7	2	1	14
SWS Marco	3588	34	NA	3	Venice	2	2	9.5	2	1	16.5
Foilex Skim Package (TDS 150)	1131	50	1 Utility	3	Vermilion	4	12	2	2	2	22
Foilex Skim Package (TDS 150)	1131	50	1 Utility	3	Galveston	4	12	5	2	2	25
Foilex Skim Package (TDS 150)	1131	50	1 Utility	3	Harvey	4	12	7	2	2	27
4 Drum Skimmer (Magnum 100)	680	100	1 Crew	3	Vermilion	2	2	2	2	1	9
4 Drum Skimmer (Magnum 100)	680	100	1 Crew	3	Harvey	2	2	7	2	1	14
2 Drum Skimmer (TDS 118)	240	100	1 Crew	3	Vermilion	2	2	2	2	1	9
2 Drum Skimmer (TDS 118)	240	100	1 Crew	3	Harvey	2	2	7	2	1	14

Staging Area: Cameron

Shoreline Protection Boom	VOO	Persons Req.	Storage/Warehouse Location	Hrs to Procure	Hrs to Loadout	Travel to Staging	Travel to Deployment Site	Hrs to Deploy	Total Hrs
E3 OMI (available through LOI)									
10,000' 18" Boom	5 Crew	10	Lake Charles, LA	1	1	2	2	3	9
9,700' 18" Boom	5 Crew	10	New Iberia, LA	1	1	4	2	3	11
10,000' 18" Boom	5 Crew	10	La Marque, TX	1	1	4	2	3	11
12,000' 18" Boom	6 Crew	12	Port Arthur, TX	1	1	2	2	3	9

Wildlife Response	EDRC	Storage Capacity	VOO	Persons Req.	From	Hrs to Procure	Hrs to Loadout	Travel to Staging	Travel to Deployment	Hrs to Deploy	Total Hrs
CGA											
Wildlife Support Trailer	NA	NA	NA	2	Harvey	2	2	7	1	2	14
Bird Scare Guns (24)	NA	NA	NA	2	Harvey	2	2	7	1	2	14
Bird Scare Guns (12)	NA	NA	NA	2	Galveston	2	2	5	1	2	12
Bird Scare Guns (12)	NA	NA	NA	2	Aransas Pass	2	2	9.5	1	2	16.5
Bird Scare Guns (24)	NA	NA	NA	2	Vermilion	2	2	2	1	2	9
Bird Scare Guns (24)	NA	NA	NA	2	Leeville	2	2	7	1	2	14

Response Asset	Total
Offshore EDRC	714,777
Offshore Recovered Oil Capacity	772,996
Nearshore / Shallow Water EDRC	231,680
Nearshore / Shallow Water Recovered Oil Capacity	242,461

SECTION 10
ENVIRONMENTAL MONITORING INFORMATION

10.1 MONITORING SYSTEMS

There are no environmental monitoring systems currently in place or planned for the proposed activities.

10.2 INCIDENTAL TAKES

There is no reason to believe that any of the endangered species or marine mammals as listed in the Endangered Species Act (ESA) will be “taken” as a result of the operations proposed under this plan.

It has been documented that the use of explosives and/or seismic devices can affect marine life. Operations proposed in this plan will not be utilizing either of these devices.

GOM Shelf will adhere to the requirements as set forth in the following documents, as applicable, to avoid or minimize impacts to any of the species listed in the ESA as a result of the operations conducted herein:

- Appendices to the Biological Opinion on the Federally Regulated Oil and Gas Program in the Gulf of Mexico issued on March 13, 2020, and the amendments issued in 2021, 2022, and 2025
  - Appendix A: “Seismic Survey Mitigation and Protected Species Observer Protocols”
  - Appendix B: “Marine Trash and Debris Awareness and Elimination Survey Protocols”
  - Appendix C: “Vessel Strike Avoidance and Injured/Dead Aquatic Protected Species Reporting Protocols”
  - Appendix J: “Sea Turtle Handling and Resuscitation Guidelines”

10.3 FLOWER GARDEN BANKS NATIONAL MARINE SANCTUARY

Eugene Island Block 346 is not located in the Flower Garden Banks National Marine Sanctuary; therefore, relevant information is not required in this DOCD.

SECTION 11
LEASE STIPULATIONS INFORMATION

Development activities are subject to the following stipulations attached to Lease OCS-G 14482, Eugene Island Block 146.

11.1 MARINE PROTECTED SPECIES

In accordance with the Federal Endangered Species Act and the Marine Mammal Protection Act, GOM Shelf will:

(a) Collect and remove flotsam resulting from activities related to exploration, development, and production of this lease;

(b) Post signs in prominent places on all vessels and platforms used as a result of activities related to exploration, development, and production of this lease detailing the reasons (legal and ecological) why release of debris must be eliminated;

(c) Observe for marine mammals and sea turtles while on vessels, reduce vessel speed to 10 knots or less when assemblages of cetaceans are observed, and maintain a distance of 90 meters or greater from whales, and a distance of 45 meters or greater from small cetaceans and sea turtles;

(d) Employ mitigation measures prescribed by BOEM/BSEE or the National Marine Fisheries Service (NMFS) for all seismic surveys, including the use of an “exclusion zone” based upon the appropriate water depth, ramp-up and shutdown procedures, visual monitoring, and reporting;

(e) Identify important habitats, including designated critical habitat, used by listed species (e.g., sea turtle nesting beaches, piping plover critical habitat), in oil spill contingency planning and require the strategic placement of spill cleanup equipment to be used only by personnel trained in less-intrusive cleanup techniques on beaches and bay shores; and

(f) Immediately report all sightings and locations of injured or dead protected species (e.g., marine mammals and sea turtles) to the appropriate stranding network. If oil and gas industry activity is responsible for the injured or dead animal (e.g., because of a vessel strike), the responsible parties should remain available to assist the stranding network. If the injury or death was caused by a collision with the lessee’s vessel, the lessee must notify BOEM within 24 hours of the strike.

BOEM and BSEE issue Notices to Lessees (NTLs), which more fully describe measures implemented in support of the above-mentioned implementing statutes and regulations, as well as measures identified by the U.S. Fish and Wildlife Service and NMFS arising from, among others, conservation recommendations, rulemakings pursuant to the MMPA, or consultation. The lessee and its operators, personnel, and subcontractors, while undertaking activities authorized under this lease, must implement and comply with the specific mitigation measures outlined in NTL No. 2016-BOEM-G01, “Vessel Strike Avoidance and Injured/Dead Protected

Species Reporting;" NTL No. 2016-BOEM-G02, "Implementation of Seismic Survey Mitigation Measures and Protected Species Observer Program;" and NTL No. 2015-BSEE-G03, "Marine Trash and Debris Awareness and Elimination." At the lessee's option, the lessee, its operators, personnel, and contractors may comply with the most current measures to protect species in place at the time an activity is undertaken under this lease, including but not limited to new or updated versions of the NTLs identified in this paragraph. The lessee and its operators, personnel, and subcontractors will be required to comply with the mitigation measures, identified in the above referenced NTLs, and additional measures in the conditions of approvals for their plans or permits.

11.2 ARCHAEOLOGICAL RESOURCES

Eugene Island Block 346 has been determined as potentially containing archaeological properties. In accordance with NTL No. 2005-G07 "Archaeological Resource Surveys and Reports," and NTL No. 2011-JOINT-G01, "Revisions to the List of OCS Lease Blocks Requiring Archaeological Resource Surveys and Reports," GOM Shelf LLC will report discovery of any archaeological or cultural resource to BOEM and make every reasonable effort to preserve the resource.

SECTION 12
ENVIRONMENTAL MITIGATION MEASURES INFORMATION

12.1 MEASURES TAKEN TO AVOID, MINIMIZE, AND MITIGATE IMPACTS

GOM Shelf will adhere to the requirements set forth in the following documents, as applicable, to avoid or minimize impacts to any marine and coastal environments and habitats, biota, and threatened and endangered species:

- Appendices to the Biological Opinion on the Federally Regulated Oil and Gas Program in the Gulf of Mexico issued on March 13, 2020, and the amendments issued in 2021, 2022, and 2025
  - Appendix A: “Seismic Survey Mitigation and Protected Species Observer Protocols”
  - Appendix B: “Marine Trash and Debris Awareness and Elimination Survey Protocols”
  - Appendix C: “Vessel Strike Avoidance and Injured/Dead Aquatic Protected Species Reporting Protocols”
  - Appendix J: “Sea Turtle Handling and Resuscitation Guidelines”

Proposed operations will be conducted with a typical jack-up rig which does not utilize equipment with potential for entanglement or entrapment of marine life. As a precaution, lines extending into the water will be minimized. Any hoses extending to the water’s surface will be configured to minimize the chances of entanglement by marine life. As part of daily pollutions observations, our HSE representative will be trained to look for entangled marine life and take appropriate action.

Mitigation measures for sea turtles will be in place with dedicated observers continuously monitoring a 157-meter visual radius around the rig during pile driving operations and will implement soft starts and shutdowns confirming no presence of sea turtles prior to continuing pile driving at recommended low energy and continue to monitor for presence of sea turtles during operations.

12.2 INCIDENTAL TAKES

GOM Shelf will adhere to the requirements set forth in the following documents, as applicable, to avoid or minimize impacts to any of the species listed in the Endangered Species Act (ESA) as a result of the operations conducted herein:

- Appendices to the Biological Opinion on the Federally Regulated Oil and Gas Program in the Gulf of Mexico issued on March 13, 2020, and the amendments issued in 2021, 2022, and 2025
  - Appendix A: “Seismic Survey Mitigation and Protected Species Observer Protocols”
  - Appendix B: “Marine Trash and Debris Awareness and Elimination Survey Protocols”
  - Appendix C: “Vessel Strike Avoidance and Injured/Dead Aquatic Protected Species Reporting Protocols”
  - Appendix J: “Sea Turtle Handling and Resuscitation Guidelines”

See **Section 6.7** for a list of Threatened and Endangered Species, Critical Habitat and Marine Mammal Information.

SECTION 13
RELATED FACILITIES AND OPERATIONS INFORMATION

13.1 RELATED OCS FACILITIES AND OPERATIONS

The subject well will be produced from existing Platform A. An 8-5/8” oil right-of-way pipeline (PSN 12508) approximately 33,783 feet in length is installed to transport produced oil from Platform A in Block 346, through blocks 347 and 366, to a subsea tie-in with Poseidon Oil Pipeline Company LLC's 20-inch pipeline (ROW OCS-G 15024, PSN 10597), in Block 369, all in the Eugene Island Area.

13.2 TRANSPORTATION SYSTEM

Hydrocarbon production will be transported as described above.

13.3 PRODUCED LIQUID HYDROCARBONS TRANSPORTATION VESSELS

There will not be any transfers of liquid hydrocarbons other than via pipeline.

SECTION 14
SUPPORT VESSELS AND AIRCRAFT INFORMATION

14.1 GENERAL

The most practical, direct route from the shorebase as permitted by weather and traffic conditions will be utilized. The drilling unit, vessels, crew boats and supply boats associated with the operations proposed in this plan will not transit the Bryde's whale area. Information regarding the vessels and aircraft to be used to support the proposed activities is provided in the table below.

Type	Maximum Fuel Tank Capacity	Maximum Number in Area at Any Time (drlg / prod)	Trip Frequency or Duration (drlg / prod)
Tugboat	40,000 gal	2 / 0	5 Total / 0
Supply boat	200,000 gal	2 / 0	1x week / 0
Crew boat	60,000 gal	2 / 1	1x day / 1x day
Service boat	40,000 gal	1 / 0	1x day / 0
Helicopter	130 gal (Bell 407)	1 / 1	1x day / 1x day

14.2 DIESEL OIL SUPPLY VESSELS

Information regarding vessels to be used to supply diesel oil for fuel and other purposes is provided in the table below.

Size of Fuel Supply Vessel (ft)	Capacity of Fuel Supply Vessel	Frequency of Fuel Transfers	Route Fuel Supply Vessel Will Take
220'	200,000	1x/week	Shortest route from Shorebase to block

14.3 DRILLING FLUID TRANSPORTATION

Drilling fluid transportation information is not required to be submitted with this plan.

14.4 SOLID AND LIQUID WASTE TRANSPORTATION

A table, "Wastes You Will Transport and/or Dispose of Onshore," is included as **Attachment 14-A.**

14.5 VICINITY MAP

A vicinity map showing the location of the activities proposed herein relative to the shoreline with the distance of the proposed activities from the shoreline and the primary routes of the support vessels and aircraft that will be used when traveling between the onshore support facilities and the platform is included as **Attachment 14-B.**

ATTACHMENT 14-A - WASTE AND SURPLUS ESTIMATED TO BE TRANSPORTED AND/OR DISPOSED OF ONSHORE

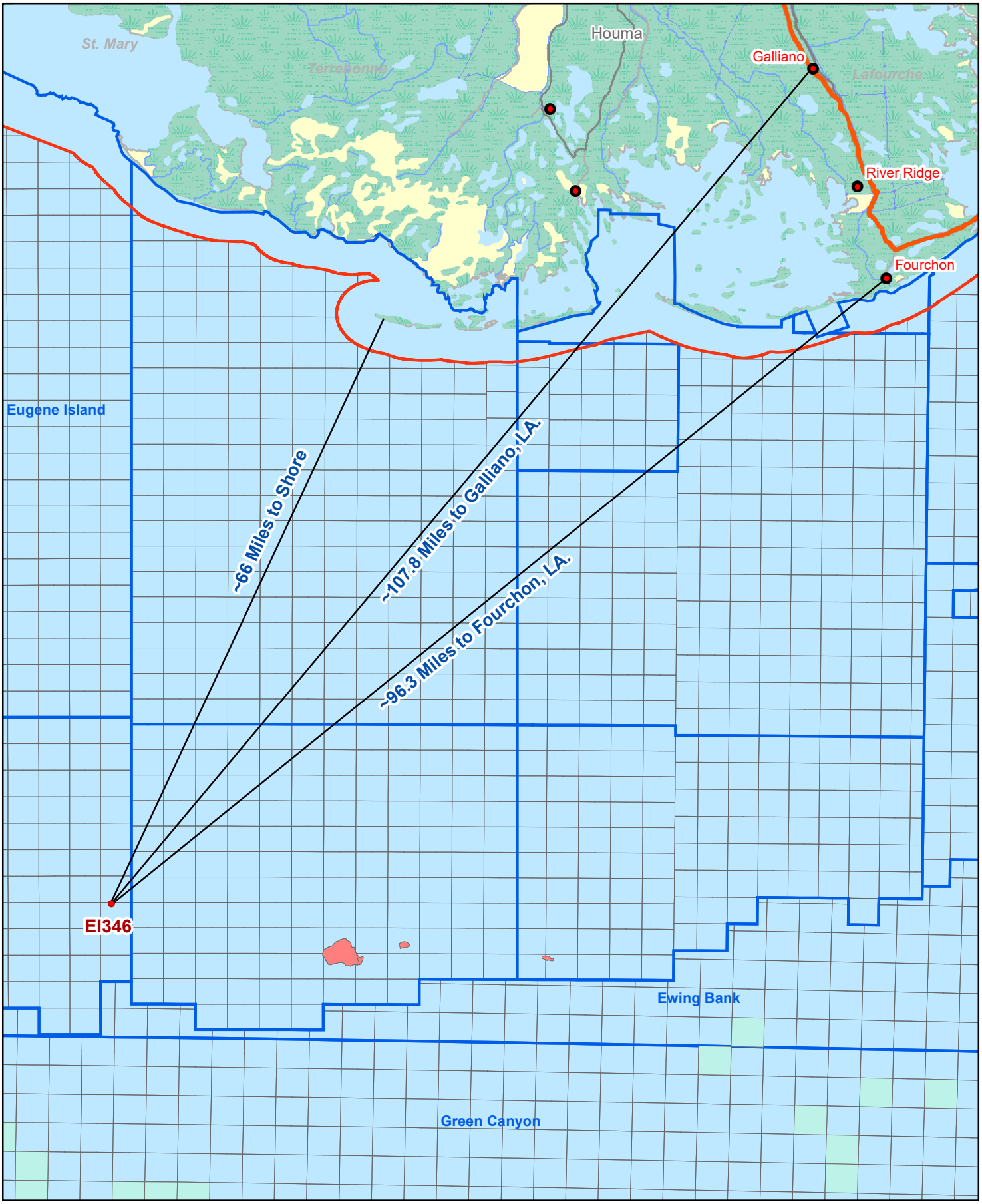
please specify whether the amount reported is a total or per well

	Projected Generated Waste		Solid and Liquid Wastes Transportation	Waste Disposal		
	Type of Waste	**Composition**	**Transport Method**	**Name/Location of Facility**	**Amount**	**Disposal Method**
Will drilling occur ? If yes, fill in the muds and cuttings.						
	Oil-based drilling fluid or mud	N/A	N/A	N/A	N/A	N/A
	Synthetic-based drilling fluid or mud	Internal olefin	Tanks/cutting boxes via OSV	Newpark Resources	1,200 bbls/well	Recycled
	Cuttings wetted with Water-based fluid	Cuttings generated using WBM	Tanks/cutting boxes via OSV	Sabine Environmental	5,300 bbls/well	Injection Underground
	Cuttings wetted with Synthetic-based fluid	Cuttings generated using SBM	Tanks/cutting boxes via OSV	Sabine Environmental	1,200 bbls/well	Injection Underground
	Cuttings wetted with oil-based fluids	N/A	N/A	N/A	N/A	N/A
Will you produce hydrocarbons? If yes fill in for produced sand.						
	Produced sand	N/A	N/A	N/A	N/A	N/A
Will you have additional wastes that are not permitted for discharge? If yes, fill in the appropriate rows.						
	Trash and debris	Trash & debris	Super sacks on supply vessel	Transferred at EPS Fourchon	~500 cu ft total	Permitted landfill
	Used oil	Used oil / glycol	55 gallon drums/totes	Transferred at EPS Fourchon	varies	Recycled via Aaron Oil or American Recovery
	Wash water	N/A	N/A	N/A	N/A	N/A
	Chemical product wastes	N/A	N/A	N/A	N/A	N/A
	NOTE: If you will not have a type of waste, enter NA in the row.					

ATTACHMENT 14-B

GOM Shelf, LLC

Vicinity Map
Eugene Island 346



SECTION 15
ONSHORE SUPPORT FACILITIES INFORMATION

15.1 GENERAL

The onshore facilities to be used to provide supply and service support for the proposed activities are provided in the table below.

Name	Location	Existing/New/Modified
EPS Dock	Fourchon, Louisiana	Existing
RLC (Roto Craft Leasing)	Galliano, Louisiana	Existing

15.2 SUPPORT BASE CONSTRUCTION OR EXPANSION

There will be no new construction of an onshore support base, nor will GOM Shelf expand the existing shorebase as a result of the operations proposed in this DOCD.

15.3 SUPPORT BASE CONSTRUCTION OR EXPANSION TIMETABLE

A support base construction or expansion timetable is not required for the activities proposed in this plan.

15.4 WASTE DISPOSAL

A table, “Wastes You Will Transport and/or Dispose of Onshore,” is included as **Attachment 14-A.**

SECTION 16
COASTAL ZONE MANAGEMENT (CZM) INFORMATION

Activities proposed in this plan are being conducted from an existing facility; therefore, Coastal Zone Management Certification is not required for this Plan.

SECTION 17
ENVIRONMENTAL IMPACT ANALYSIS (EIA)

The Environmental Impact Analysis is included as **Attachment 17-A.**

GOM Shelf, LLC (GOM Shelf)

Supplemental Development Operations Coordination Document
Eugene Island Block 346
OCS-G 14482

(A) Impact Producing Factors

ENVIRONMENTAL IMPACT ANALYSIS WORKSHEET

Environment Resources	Impact Producing Factors (IPFs) Categories and Examples Refer to recent GOM OCS Lease Sale EIS for a more complete list of IPFs					
	Emissions (air, noise, light, etc.)	**Effluents (muds, cutting, other discharges to the water column or seafloor)**	**Physical disturbances to the seafloor (rig or anchor emplacements, etc.)**	**Wastes sent to shore for treatment or disposal**	**Accidents (e.g., oil spills, chemical spills, H_2S releases)**	**Discarded Trash & Debris**
Site-specific at Offshore Location						
Designated topographic features		(1)	(1)		(1)	
Pinnacle Trend area live bottoms		(2)	(2)		(2)	
Eastern Gulf live bottoms		(3)	(3)		(3)	
Benthic communities			(4)			
Water quality		X	X		X	
Fisheries		X	X		X	
Marine Mammals	X(8)	X			X(8)	X
Sea Turtles	X(8)	X			X(8)	X
Air quality	X(9)					
Shipwreck sites (known or potential)			(7)			
Prehistoric archaeological sites			(7)			
Vicinity of Offshore Location						
Essential fish habitat		X	X		X(6)	
Marine and pelagic birds	X				X	X
Public health and safety					(5)	
Coastal and Onshore						
Beaches					X(6)	X
Wetlands					X(6)	
Shore birds and coastal nesting birds					X(6)	X
Coastal wildlife refuges					X	
Wilderness areas					X	

Footnotes for Environmental Impact Analysis Matrix

1) Activities that may affect a marine sanctuary or topographic feature. Specifically, if the well or platform site or any anchors will be on the seafloor within the:
   - 4-mile zone of the Flower Garden Banks, or the 3-mile zone of Stetson Bank;
   - 1000-meter, 1-mile or 3-mile zone of any topographic feature (submarine bank) protected by the Topographic Features Stipulation attached to an Outer Continental Shelf (OCS) lease;
   - Essential Fish Habitat (EFH) criteria of 500 feet. from any no-activity zone; or
   - Proximity of any submarine bank (500-foot buffer zone) with relief greater than two meters that is not protected by the Topographic Features Stipulation attached to an OCS lease.
2) Activities with any bottom disturbance within an OCS lease block protected through the Live Bottom (Pinnacle Trend) Stipulation attached to an OCS lease.
3) Activities within any Eastern Gulf OCS block where seafloor habitats are protected by the Live Bottom (Low-Relief) Stipulation attached to an OCS lease.
4) Activities on blocks designated by the BOEM as being in water depths 300 meters or greater.
5) Exploration or production activities where H_2S concentrations greater than 500 ppm might be encountered.
6) All activities that could result in an accidental spill of produced liquid hydrocarbons or diesel fuel that you determine would impact these environmental resources. If the proposed activity is located a sufficient distance from a resource that no impact would occur, the EIA can note that in a sentence or two.
7) All activities that involve seafloor disturbances, including anchor emplacements, in any OCS block designated by the BOEM as having high probability for the occurrence of shipwrecks or prehistoric sites, including such blocks that will be affected that are adjacent to the lease block in which your planned activity will occur. If the proposed operations are located a sufficient distance from a shipwreck or a prehistoric site that no impact would occur, the EIA can note that in a sentence or two.
8) All activities that you determine might have an adverse effect on endangered or threatened marine mammals or sea turtles or their critical habitats.
9) Production activities that involve transportation of produced fluids to shore using shuttle tankers or barges.

TABLE 1: THREATENED AND ENDANGERED SPECIES, CRITICAL HABITAT, AND MARINE MAMMAL INFORMATION

The federally listed endangered and threatened species potentially occurring in the lease area and along the Gulf Coast are provided in the table below

Species	Scientific Name	Status	Potential Presence		Critical Habitat Designated in the Gulf of America	Gulf of America Range
			Lease Area	Coastal		
Marine Mammals						
Manatee, West Indian	*Trichechus manatus latirostris*	T	--	X	Florida (peninsular)	Coastal Louisiana, Mississippi, Alabama, and Florida
Whale, Blue	*Balaenoptera masculus*	E	X[1]	--	None	GOM
Whale, Bryde's[4]	*Balaenoptera brydei/edeni*	E	X	--	None	Eastern GOM
Whale, Fin	*Balaenoptera physalus*	E	X[1]	--	None	GOM
Whale, Humpback	*Megaptera novaeangliae*	E	X[1]	--	None	GOM
Whale, North Atlantic Right	*Eubalaena glacialis*	E	X[1]	--	None	GOM
Whale, Rice's[4]	*Balaenoptera ricei*	E	X	--	None	GOM
Whale, Sei	*Balaenopiera borealis*	E	X[1]	--	None	GOM
Whale, Sperm	*Physeter catodon (=macrocephalus)*	E	X	--	None	GOM
Terrestrial Mammals						
Mouse, Alabama Beach	*Peromyscus polionotus ammobates*	E	-	X	Alabama beaches	Alabama beaches
Mouse, Choctawatchee Beach	*Peromyscus polionotus allophrys*	E	-	X	Florida panhandle beaches	Florida panhandle beaches
Mouse, Perdido Key Beach	*Peromyscus polionotus trissyllepsis*	E	-	X	Alabama, Florida (panhandle) beaches	Alabama, Florida (panhandle) beaches
Mouse, St. Andrew Beach	*Peromyscus polionotus peninsularis*	E	-	X	Florida panhandle beaches	Florida panhandle beaches
Jaguarundi, Gulf Coast	*Puma yagouaroundi cacomitli*	E	-	X	None	Texas
Ocelot	*Leopardus (=Felis) pardalis*	E	-	X	None	Texas

Species	Scientific Name	Status	Potential Presence		Critical Habitat Designated in the Gulf of America	Gulf of America Range
			Lease Area	Coastal		
Bat, Florida Bonneted	*Eumops floridanus*	E	-	X	None	Florida
Panther, Florida	*Puma (=Felis) concolor coryi*	E	-	X	None	Florida
Vole, Florida Salt Marsh	*Microtus pennsylvanicus dukecampbelli*	E	-	X	None	Florida
Deer, Key	*Odocoileus virginianus clavium*	E	-	X	None	Florida Keys
Rabbit, Lower Keys Marsh	*Sylvilagus palustris hefneri*	E	-	X	None	Florida Keys
Rat, Silver Rice	*Oryzomys palustris natator*	E	-	X	None	Florida Keys
Birds						
Plover, Piping	*Charadrius melodus*	T	-	X	Coastal Texas, Louisiana, Mississippi, Alabama, and Florida (panhandle)	Coastal GOM
Crane, Whooping	*Grus Americana*	E	-	X	Coastal Texas	Coastal Texas and Louisiana
Crane, Mississippi sandhill	*Grus canadensis pulla*	E	-	X	Coastal Mississippi	Coastal Mississippi
Caracara, Audubon's Crested	*Polyborus plancus audubonii*	T	-	X	None	Coastal Florida Peninsula
Curlew, Eskimo	*Numenius borealis*	E	-	X	None	Coastal Texas
Falcon, Northern Aplomado	*Falco femoralis septentrionalis*	E	-	X	None	Coastal Texas
Prairie-chicken, Attwater's Greater	*Tympanuchus cupido attwateri*	E	-	X	None	Coastal Texas
Scrub-jay, Florida	*Aphelocoma coerulescens*	T	-	X	None	Coastal Florida
Kite, Everglade Snail	*Rostrhamus sociabilis plumbeus*	E	-	X	None	Coastal Southern Florida
Knot, Red	*Calidris canutus rufa*	T	-	X	None	Coastal GOM
Rail, Eastern Black	*Laterallus jamaicensis ssp. jamaicensis*	T	-	X	None	Coastal GOM
Sparrow, Cape Sable Seaside	*Ammodramus maritimus mirabilis*	E	-	X	Everglades	Coastal Florida

Species	Scientific Name	Status	Potential Presence		Critical Habitat Designated in the Gulf of America	Gulf of America Range
			Lease Area	Coastal		
Stork, Wood	*Mycteria americana*	T	-	X	None	Coastal Alabama and Florida
Tern, Roseate	*Sterna dougallii dougallii*	T	-	X	None	Coastal Southern Florida
Warbler, Bachman's	*Vermivora bachmanii*	E	-	X	None	Coastal Southern Florida
Woodpecker, Red-cockaded	*Picoides borealis*	E	-	X	None	Coastal Louisiana and Florida
Marine Reptiles						
Sea Turtle, Green	*Chelonia mydas*	T/E[3]	X	X	None	GOM
Sea Turtle, Hawksbill	*Eretmochelys imbricata*	E	X	X	None	GOM
Sea Turtle, Kemp's Ridley	*Lepidochelys kempli*	E	X	X	None	GOM
Sea Turtle, Leatherback	*Dermochelys coriacea*	E	X	X	None	GOM
Sea Turtle, Loggerhead	*Caretta caretta*	T	X	X	Texas, Louisiana, Mississippi, Alabama, Florida	GOM
Terrestrial Reptiles						
Turtle, Alabama Red-bellied	*Pseudemys alabamensis*	E	-	X	None	Coastal Mississippi and Alabama
Crocodile, American	*Crocodylus acutus*	T	-	X	Everglades and Florida Keys	Coastal Florida
Snake, Eastern Indigo	*Drymarchon couperi*	T	-	X	None	Coastal Mississippi, Alabama, and Florida
Tortoise, Gopher	*Gopherus polyphemus*	T	-	X	None	Coastal Louisiana, Mississippi, and Alabama
Turtle, Ringed Map	*Graptemys oculifera*	T	-	X	None	Coastal Louisiana and Mississippi
Turtle, Yellow-blotched Map	*Graptemys flavimaculata*	T	-	X	None	Coastal Mississippi
Fish						
Sturgeon, Gulf	*Acipenser oxyrinchus (=oxyrhynchus) desotoi*	T	X	X	Coastal Louisiana, Mississippi, Alabama, and Florida (panhandle)	Coastal Louisiana, Mississippi, Alabama, and Florida (panhandle)
Shark, Oceanic Whitetip	Carcharhinus longimanus	T	X	_	None	GOM
Sawfish, Smalltooth	Pristis pectinate	E	-	X	None	Florida
Grouper, Nassau	Epinephelus striatus	T	-	X	Florida[5]	Florida
Ray, Giant Manta	Manta birostris	T	X	--	None	GOM
Sturgeon, Pallid	Scaphirhynchus albus	E	-	X	None	Louisiana Coastal Rivers

Species	Scientific Name	Status	Potential Presence		Critical Habitat Designated in the Gulf of America	Gulf of America Range
			Lease Area	Coastal		
Corals						
Coral, Elkhorn	*Acopora palmate*	T	X[2]	X	Florida[5]	Flower Garden Banks and Florida
Coral, Staghorn	*Acopora cervicornis*	T	X	X	Florida[5]	Florida
Coral, Boulder Star	*Orbicella franksi*	T	X	X	Flower Garden Banks and Florida	Flower Garden Banks and Florida
Coral, Lobed Star	*Orbicella annularis*	T	X	X	Flower Garden Banks and Florida	Flower Garden Banks and Florida
Coral, Mountainous Star	*Orbicella faveolate*	T	X	X	Flower Garden Banks and Florida	Flower Garden Banks and Florida
Coral, Rough Cactus	*Mycetophyllia ferox*	T	-	X	Florida[5]	Florida and Southern Gulf of America
Coral, Pillar	*Dendrogyra cylindrus*	T	-	X	Florida[5]	Florida

Abbreviations: E = Endangered; T = Threatened

1 The Blue, Fin, Humpback, North Atlantic Right, and Sei Whales are rare or extralimital in the Gulf of America and are unlikely to be present in the lease area.

2 According to the 2017 EIS, Elkhorn Coral, while uncommon, has been found in the Flower Garden Banks. (BOEM 2017-009)

3 Green Sea Turtles are considered threatened throughout the Gulf of America; however, the breeding population off the coast of Florida is considered endangered.

4 The Bryde's whale, also known as the Bryde's whale complex, is a collection of baleen whales that are still being researched to determine if they are the same species or if they are individual species of whales. In 2021, the Rice's whale, formerly known as the Gulf of America Bryde's whale, was determined to be a separate species. There are less than 100 Rice's whales living in the Gulf of America year-round. These whales retain all the protections of the Gulf of America Bryde's whale under the Endangered Species Act while the regulations are being updated to reflect the name change. Other Bryde's whales are migratory and may enter the Gulf of America; however, the migratory Bryde's whales are rare or extralimital in the Gulf of America and are unlikely to be present in the lease area.

5 Critical habitat is in the Gulf of America, but outside of planning area. Species may still occur in the Gulf of America.

(B) Analysis

Site-Specific at Eugene Island Block 346

Proposed operations consist of the drilling, completion, and placing into production of proposed Well No. A005, as well as updating the air emissions. Operations will be conducted with a Jack-up Rig.

There are no seismic surveys or pipelines making landfall associated with the operations covered by this Plan.

The proposed operations will utilize pile-driving. GOM Shelf will drive one 24"-36" conductor with an impact hammer working dry to a depth of 340' BML. It is expected to take 29,800 strikes to set the conductor. Hammer operations will be free fall from 0' to 95'. From 90' to 200', penetration will average 30 blows/ft. From 200' to 230', penetration will average 150 blows/ft. From 230' to 340', penetration will average 200 blows/ft. Pile driving activities are expected to last ½ day (12 hours total) with 1 pile driven. Piles will be driven through layers of primarily sands, silts and clays. Sound attenuation will not be utilized.

1. Designated Topographic Features

Potential IPFs on topographic features include physical disturbances to the seafloor, effluents, and accidents.

Physical disturbances to the seafloor: Eugene Island Block 346 is 19.4 miles from the closest designated Topographic Features Stipulation Block (Ewing Bank); therefore, no adverse impacts are expected.

Effluents: Eugene Island Block 346 is 19.4 miles from the closest designated Topographic Features Stipulation Block (Ewing Bank); therefore, no adverse impacts are expected.

Accidents: It is unlikely that an accidental surface or subsurface spill would occur from the proposed operations (refer to statistics in **Item 5**, Water Quality). Oil spills cause damage to benthic organisms only if the oil contacts the organisms. Oil from a surface spill can be driven into the water column; measurable amounts have been documented down to a 10-meter depth. At this depth, the oil is found only at concentrations several orders of magnitude lower than the amount shown to have an effect on corals. Because the crests of topographic features in the Northern Gulf of America are found below 10 meters, oil from a surface spill is not expected to reach their sessile biota. Oil from a subsurface spill is not applicable due to the distance of these blocks from a topographic area. The activities proposed in this plan will be covered by GOM Shelf's Regional OSRP (refer to information submitted in **Section 9**).

If dispersants were utilized as a response method, the fate and effects of spilled oil would be impacted. Dispersants have been utilized in previous spill response efforts and were used extensively in the response to the Deepwater Horizon oil spill, with both surface and sub-surface applications. Reports on dispersant usage on surface oil indicate that a majority of the dispersed oil remains in the top 10 meters of the water column, with 60 percent of the oil in the top two meters of water (McAuliffe et al, 1981; Lewis and Aurand, 1997; OCS Report BOEM 2017-007). Lubchenco et al. (2010) report that most chemically dispersed surface oil from the Deepwater Horizon explosion and oil spill remained in the top six meters of the water column where it mixed with surrounding waters and biodegraded (BOEM 2017-007). None of the topographic features or potentially sensitive biological features in the GOM are shallower than 10 meters (33 feet), and only the Flower Garden Banks are shallower than 20 meters (66 feet).

In one extraordinary circumstance with an unusual combination of meteorological and oceanographic conditions, a tropical storm forced a large volume of Deepwater Horizon oil spill-linked surface oil/dispersant mixture to as deep as 75 meters (246 feet), causing temporary exposure to mesophotic corals in the Pinnacle Trend area and leading to some coral mortality and sublethal impacts (Silva et al., 2015; BOEM 2017-007).

Additionally, concentrations of dispersed and dissolved oil in the Deepwater Horizon oil-spill subsea plume were reported to be in the parts per million range or less and were generally lower away from the water's surface and away from the well head (Adcroft et al., 2010; Haddad and Murawski, 2010; Joint Analysis Group, 2010; Lubchenco et al, 2010; BOEM 2017-007).

In the case of subsurface spills like a blowout or pipeline leak, dispersants may be injected at the seafloor. This will increase oil concentrations near the source but tend to decrease them further afield, especially at the surface. Marine organisms in the lower water column will be exposed to an initial increase of water-soluble oil compounds that will dilute in the water column over time (Lee et al., 2013a; NAS 2020).

Dispersant application involves a trade-off between decreasing the risk to the surface and shoreline habitat and increasing the risk beneath the surface. The optimal trade-off must account for various factors, including the type of oil spilled, the spill volume, the weather and sea state, the water depth, the degree of turbulence, and the relative abundance and life stages of organisms (NRC, 2005; NAS 2020).

Chemical dispersants may increase the risk of toxicity to subsurface organisms by increasing bioavailability of the oil. However, it is important to note that at the 1:20 dispersant-to-oil ratio - recommended for use during response operations, the dispersants currently approved for use are far less acutely toxic than oil is. Toxicity of chemically dispersed oil is primarily due to the oil itself and its enhanced bioavailability (Lee et al., 2015; NAS 2020).

With the exception of special Federal management areas or designated exclusion areas, dispersants have been preapproved for surface use, which provides the USCG On-Scene Coordinator with the authority to approve the use of dispersants. However, that approval would only be granted upon completion of the protocols defined in the appropriate Area Contingency Plan (ACP) and the Regional Response Team (RRT) Dispersant Plan. The protocols include conducting an environmental benefit analysis to determine if the dispersant use will prevent a substantial threat to the public health or welfare or minimize serious environmental damage. The Regional Response Team would be notified immediately to provide technical support and guidance in determining if the dispersant use meets the established criteria and provide an environmental benefit. Additionally, there is currently no preapproval for subsea dispersant injection and the USCG On-Scene Coordinator must approve use of this technology before any subsea application. Due to the unprecedented volume of dispersants applied for an extended period of time, the U.S. National Response Team has developed guidance for atypical dispersant operations to ensure that planning and response activities will be consistent with national policy (BOEM 2017-007).

Dispersants were used extensively in the response to the Deepwater Horizon oil spill, both surface and sub-surface applications. However, during a May 2016 significant oil spill (approximately 1,926 barrels) in the Gulf of America dispersants were not utilized as part of the response. The Regional Response Team was consulted and recommended that dispersants not be used, despite acknowledging the appropriate protocols were correctly followed and that there was a net environmental benefit in utilizing dispersants. This demonstrates that the federal authorities (USCG and RRT) will be extremely prudent in their decision-making regarding dispersant use authorizations.

Due to the distance of these blocks from a topographic area and the coverage of the activities proposed in this plan by GOM Shelf's Regional OSRP (refer to information submitted in **Section 9**), impacts to topographic features from surface or sub-surface oil spills are not expected.

There are no other IPFs (including emissions and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact topographic features.

2. Pinnacle Trend Area Live Bottoms

Potential IPFs on pinnacle trend area live bottoms from the proposed operations include physical disturbances to the seafloor, emissions (noise / sound), effluents, and accidents.

Physical disturbances to the seafloor: Eugene Island Block 346 is 189.5 miles from the closest live bottom (pinnacle trend) area; therefore, no adverse impacts are expected.

Emissions (noise / sound): All routine OCS oil-and gas-related activities have some element of sound generation. Common sound sources include propeller cavitation, rotating machinery, and reciprocating machinery, which are associated with routine OCS oil-and gas-related activities such as vessel traffic, drilling, construction, and oil and gas production, processing, and transport. Sound

introduced into the marine environment as a result of human activities has the potential to affect marine organisms. Although there is little information available on sound detection and sound-mediated behaviors for marine invertebrates, the overall impacts on pinnacle and low-relief feature communities from anthropogenic noise are expected to be negligible (BOEM 2017-009). Additionally, Eugene Island Block 346 is 189.5 miles from the closest live bottom (pinnacle trend) area; therefore, no adverse impacts are expected.

Effluents: Eugene Island Block 346 is 189.5 miles from the closest live bottom (pinnacle trend) area; therefore, no adverse impacts are expected.

Accidents: It is unlikely that an accidental surface or subsurface spill would occur from the proposed operations (refer to statistics in **Item 5**, Water Quality). Oil spills have the potential to foul benthic communities and cause lethal and sublethal effects on live bottom organisms. Oil from a surface spill can be driven into the water column; measurable amounts have been documented down to a 10-meter depth. At this depth, the oil is found only at concentrations several orders of magnitude lower than the amount shown to have an effect on marine organisms. Oil from a subsurface spill is not expected to impact pinnacle trend area live bottoms due to the distance of these blocks from a live bottom (pinnacle trend) area and the coverage of the. activities proposed in this plan by GOM Shelf's Regional OSRP (refer to information submitted in **Section 9**).

If dispersants were utilized as a response method, the fate and effects of spilled oil would be impacted. A detailed discussion on dispersants, their usage during the Deepwater Horizon oil spill, and their impacts on different levels of benthic communities can be found in **Item 1**.

There are no other IPFs (including wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact a live bottom (pinnacle trend) area.

3. Eastern Gulf Live Bottoms

Potential IPFs on Eastern Gulf live bottoms from the proposed operations include physical disturbances to the seafloor, emissions (noise / sound), effluents, and accidents.

Physical disturbances to the seafloor: Eugene Island Block 346 is not located in an area characterized by the existence of live bottoms, and this lease does not contain a Live-Bottom Stipulation requiring a photo documentation survey and survey report.

Emissions (noise / sound): All routine OCS oil-and gas-related activities have some element of sound generation. Common sound sources include propeller cavitation, rotating machinery, and reciprocating machinery, which are associated with routine OCS oil-and gas-related activities such as vessel traffic, drilling, construction, and oil and gas production, processing, and transport. Sound introduced into the marine environment as a result of human activities has the potential to affect marine organisms. Although there is little information available on sound detection and sound-

mediated behaviors for marine invertebrates, the overall impacts on pinnacle and low-relief feature communities from anthropogenic noise are expected to be negligible (BOEM 2017-009). Additionally, Eugene Island Block 346 is not located in an area characterized by the existence of live bottoms; therefore, no adverse impacts are expected.

Effluents: Eugene Island Block 346 is not located in an area characterized by the existence of live bottoms; therefore, no adverse impacts are expected.

Accidents: It is unlikely that an accidental surface or subsurface spill would occur from the proposed operations (refer to statistics in **Item 5**, Water Quality). Oil spills cause damage to live bottom organisms only if the oil contacts the organisms. Oil from a surface spill can be driven into the water column; measurable amounts have been documented down to a 10-meter depth. At this depth, the oil is found only at concentrations several orders of magnitude lower than the amount shown to have an effect on marine invertebrates. Oil from a subsurface spill is not expected to impact Eastern Gulf live bottoms due to the distance of these blocks from a live bottom area and coverage of the activities proposed in this plan by GOM Shelf's Regional OSRP (refer to information submitted in **Section 9**).

If dispersants were utilized as a response method, the fate and effects of spilled oil would be impacted. A detailed discussion on dispersants, their usage during the Deepwater Horizon oil spill, and their impacts on different levels of benthic communities can be found in **Item 1**.

There are no other IPFs (including wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact an Eastern Gulf live bottom area.

4. Deepwater Benthic Communities

There are no IPFs (including emissions (noise / sound), effluents, physical disturbances to the seafloor, wastes sent to shore for treatment or disposal, and accidents) from the proposed operations that are likely to impact deepwater benthic communities.

Operations proposed in this plan are in water depths of 315 feet. High-density deepwater benthic communities are found only in water depths greater than 984 feet (300 meters); therefore, GOM Shelf's proposed operations in Eugene Island Block 346 are not likely to impact deepwater benthic communities.

5. Water Quality

Potential IPFs that could result in water quality degradation from the proposed operations in Eugene Island Block 346 include disturbances to the seafloor, effluents, and accidents.

Physical disturbances to the seafloor: Bottom area disturbances resulting from the emplacement of drill rigs, the drilling of wells, and the installation of platforms and pipelines would increase water-column turbidity and re-suspension of any accumulated pollutants, such as trace metals and excess nutrients. This would cause short-lived impacts on water quality conditions in the immediate vicinity of the emplacement operations.

Effluents: Levels of contaminants in drilling muds and cuttings and produced water discharges, discharge-rate restrictions and monitoring and toxicity testing are regulated by the EPA NPDES permit, thereby eliminating many significant biological or ecological effects. Operational discharges are not expected to cause significant adverse impacts to water quality. Additionally, an analysis of the best available information from the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 *Biological Opinion on the Federally Regulated Oil and Gas Program Activities in the Gulf of Mexico* (NMFS, 2020) concludes that exposures to toxicants in discharges from oil and gas activities are not likely to adversely affect ESA-listed species.

Accidents: Impact-producing factors related to OCS oil- and gas-related accidental events primarily involve drilling fluid spills, chemical spills, and oil spills.

Drilling Fluid Spills

Water-based fluid (WBF) and Synthetic-based fluid (SBF) spills may result in elevated turbidity, which would be short term, localized, and reversible. The WBF is normally discharged to the seafloor during riserless drilling, which is allowable due to its low toxicity. For the same reasons, a spill of WBF would have negligible impacts. The SBF has low toxicity, and the discharge of SBF is allowed to the extent that it adheres onto drill cuttings. Both USEPA Regions 4 and 6 permit the discharge of cuttings wetted with SBF as long as the retained SBF amount is below a prescribed percent, meets biodegradation and toxicity requirements, and is not contaminated with the formation oil or PAH. A spill of SBF may cause a temporary increase in biological oxygen demand and locally result in lowered dissolved oxygen in the water column. Also, a spill of SBF may release an oil sheen if formation oil is present in the fluid. Therefore, impacts from a release of SBF are considered to be minor. Spills of SBF typically do not require mitigation because SBF sinks in water and naturally biodegrades, seafloor cleanup is technically difficult, and SBF has low toxicity. (BOEM 2017-009)

Chemical Spills

Accidental chemical spills could result in temporary localized impacts on water quality, primarily due to changing pH. Chemicals spills are generally small volume compared with spills of oil and drilling fluids. During the period of 2007 to 2014, small chemical spills occurred at an average annual volume of 28 barrels, while large chemical spills occurred at an average annual volume of 758 barrels. These chemical spills normally dissolve in water and dissipate quickly through dilution with no observable effects. Also, many of these chemicals are approved to be commingled in produced water for discharge to the ocean, which is a permitted activity. Therefore, impacts from chemical spills are considered to be minor and do not typically require mitigation because of technical feasibility and low toxicity after dilution (BOEM 2017-009).

Oil Spills

Oil spills have the greatest potential of all OCS oil-and gas-related activities to affect water quality. Small spills (<1,000 barrels) are not expected to substantially impact water quality in coastal or offshore waters because the oil dissipates quickly through dispersion and weathering while still at sea. Reasonably foreseeable larger spills (≥1,000 barrels), however, could impact water quality in coastal and offshore waters (BOEM 2017-007). However, based on data provided in the BOEM 2016 Update of Occurrence Rates for Offshore Oil Spills, it is unlikely that an accidental surface or subsurface spill of a significant volume would occur from the proposed operations. Between 2001 and 2015 OCS operations produced eight billion barrels of oil and spilled 0.062 percent of this oil, or one barrel for every 1,624 barrels produced. (The overall spill volume was almost entirely accounted for by the 2010 Deepwater Horizon blowout and subsequent discharge of 4.9 million barrels of oil. Additional information on unlikely scenarios and impacts from very large oil spills are discussed in the Catastrophic Spill Event Analysis white paper (BOEM 2017-007).

If a spill were to occur, the water quality of marine waters would be temporarily affected by the dissolved components and small oil droplets. Dispersion by currents and microbial degradation would remove the oil from the water column and dilute the constituents to background levels. Historically, changes in offshore water quality from oil spills have only been detected during the life of the spill and up to several months afterwards. Most of the components of oil are insoluble in water and therefore float. Dispersants will only be used if approved by the Regional Response Team in coordination with the RRT Dispersant Plan and RRT Biological Assessment for Dispersants.

Oil spills, regardless of size, may allow hydrocarbons to partition into the water column in a dissolved, emulsion, and/or particulate phase. Therefore, impacts from reasonably foreseeable oil spills are considered moderate. Mitigation efforts for oil spills may include booming, burning, and the use of dispersants (BOEM 2017-009).

These methods may cause short-term secondary impacts to water quality, such as the introduction of additional hydrocarbon into the dissolved phase through the use of dispersants and the sinking of hydrocarbon residuals from burning. Since burning and the use of dispersants put additional hydrocarbons into the dissolved phase, impacts to water quality after mitigation efforts are still considered to be moderate, because dissolved hydrocarbons extend down into the water column. This results in additional exposure pathways via ingestion and gill respiration and may result in acute or chronic effects to marine life (BOEM 2017-009).

Most oil-spill response strategies and equipment are based upon the simple principle that oil floats. However, as evident during the Deepwater Horizon explosion, oil spill, and response, this is not always true. Sometimes it floats and sometimes it suspends within the water column or sinks to the seafloor (BOEM 2017-009).

Oil that is chemically dispersed at the surface move into the top six meters (20 feet) of the water column where it mixes with surrounding waters and begins to biodegrade (U.S. Congress, Office of Technology Assessment, 1990). Dispersant use, in combination with natural processes, breaks up oil into smaller components that allows them to dissipate into the water and degrade more rapidly (Nalco, 2010). Dispersant use must be in accordance with an RRT Preapproved Dispersant Use Manual and with any conditions outlined within a RRT's site-specific, dispersant approval given after a spill event. Consequently, dispersant use must be in accordance with the restrictions for specific water depths, distances from shore, and monitoring requirements. At this time, neither the Region IV nor the Region VI RRT dispersant use manuals, which cover the GOM region, give preapproval for the application of dispersant use subsea (BOEM 2017-009).

The activities proposed in this plan will be covered by GOM Shelf's Regional Oil Spill Response Plan, which discusses potential response actions in more detail (refer to information submitted in **Section 9**).

There are no other IPFs (including emissions, physical disturbances to the seafloor, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact water quality.

6. Fisheries

There are multiple species of fish in the Gulf of America, including the endangered and threatened species listed in **Table 1** at the beginning of this Environmental Impact Assessment. More information regarding the endangered Gulf sturgeon (**Item 20.2**), oceanic whitetip shark (**Item 20.3**), and giant manta ray (**Item 20.4**) can be found below. Potential IPFs that could impact fisheries as a result of the proposed operations in Eugene Island Block 346 include physical disturbances to the seafloor, emissions (noise / sound), effluents, and accidents.

Physical disturbances to the seafloor: The emplacement of a structure or drilling rig results in minimal loss of bottom trawling area to commercial fishermen. Pipelines cause gear conflicts which result in losses of trawls and shrimp catch, business downtime and vessel damage. Most financial losses from gear conflicts are covered by the Fishermen's Contingency Fund (FCF). The emplacement and removal of facilities are not expected to cause significant adverse impacts to fisheries.

Emissions (noise / sound): All routine OCS oil-and gas-related activities have some element of sound generation. Common sound sources include propeller cavitation, rotating machinery, and reciprocating machinery, which are associated with routine OCS oil-and gas-related activities such as vessel traffic, drilling, construction, and oil and gas production, processing, and transport. Sound introduced into the marine environment as a result of human activities has the potential to affect marine organisms by stimulating behavioral response, masking biologically important signals, causing temporary or permanent hearing loss (Popper et al., 2005; Popper et al., 2014), or causing physiological injury (e.g., barotrauma) resulting in mortality (Popper and Hastings, 2009). The potential for anthropogenic sound to affect any individual organism is dependent on the proximity

to the source, signal characteristics, received peak pressures relative to the static pressure, cumulative sound exposure, species, motivation, and the receiver's prior experience. In addition, environmental conditions (e.g., temperature, water depth, and substrate) affect sound speed, propagation paths, and attenuation, resulting in temporal and spatial variations in the received signal for organisms throughout the ensonified area (Hildebrand, 2009).

Sound detection capabilities among fishes vary. For most fish species, it is reasonable to assume hearing sensitivity to frequencies below 500 Hertz (Hz) (Popper et al., 2003 and 2014; Popper and Hastings, 2009; Slabbekoorn et al., 2010; Radford et al., 2014). The band of greatest interest to this analysis, low-frequency sound (30-500 Hz), has come to be dominated by anthropogenic sources and includes the frequencies most likely to be detected by most fish species. For example, the noise generated by large vessel traffic typically results from propeller cavitation and falls within 40-150 Hz (Hildebrand, 2009; McKenna et al., 2012). This range is similar to that of fish vocalizations and hearing and could result in a masking effect.

Masking occurs when background noise increases the threshold for a sound to be detected; masking can be partial or complete. If detection thresholds are raised for biologically relevant signals, there is a potential for increased predation, reduced foraging success, reduced reproductive success, or other effects. However, fish hearing and sound production may be adapted to a noisy environment (Wysocki and Ladich, 2005). There is evidence that fishes are able to efficiently discriminate between signals, extracting important sounds from background noise (Popper et al., 2003; Wysocki and Ladich, 2005). Sophisticated sound processing capabilities and filtering by the sound sensing organs essentially narrows the band of masking frequencies, potentially decreasing masking effects. In addition, the low-frequency sounds of interest propagate over very long distances in deep water, but these frequencies are quickly lost in water depths between ½ and ¼ the wavelength (Ladich, 2013). This would suggest that the potential for a masking effect from low-frequency noise on behaviors occurring in shallow coastal waters may be reduced by the receiver's distance from sound sources, such as busy ports or construction activities.

Pulsed sounds generated by OCS oil-and gas-related activities (e.g., impact-driven piles and airguns) can potentially cause behavioral response, reduce hearing sensitivity, or result in physiological injury to fishes and invertebrate resources.

Impact pile-driving during OCS construction and on-lease seismic activity are both temporally and spatially limited activities. The effects of these sound-producing activities would extend only to communities of fishes and invertebrates within a relatively small area. Benthic fishes and invertebrates could receive sound waves propagated through the water and sound waves propagated through the substrate. However, Wardle et al. (2001) found that, although fishes and invertebrates associated with a reef exhibited a brief startle response when exposed to pulsed low-frequency signals, disruption of diurnal patterns was not observed. Fishes disturbed by the noise were observed to resume their previous activity within 1-2 seconds and only exhibited flight response if the airguns were visible when discharged (Wardle et al., 2001). Other studies of fishes exposed to pulsed anthropogenic sound signals in natural environments have produced a wide range of results suggesting that species, experience, and motivation are very important factors, and

indicating that habituation may occur (Engås et al., 1996; Løkkeborg et al., 2012; Popper et al., 2014). Organisms in close proximity to a pulsed sound source are at increased risk of barotrauma. A signal with a very rapid rise and peak pressures that vary substantially from the static pressure at the receiver's location can cause physiological injury or mortality (Popper et al., 2014). However, the range at which physiological injury may occur is short (<10 meters; <33 feet) and, given fish avoidance behavior, the potential for widespread impacts to populations as a result of physiological injury is negligible.

Support vessel traffic, drilling, production facilities, and other sources of continuous sounds contribute to a chronic increase in background noise, with varying areas of effect that may be influenced by the sound level, frequencies, and environmental factors (Hildebrand, 2009; Slabbekoorn et al., 2010; McKenna et al., 2012). These sources have a low potential for causing physiological injury or injuring hearing in fishes and invertebrates (Popper et al., 2014). However, continuous sounds have an increased potential for masking biologically relevant sounds than do pulsed signals. The potential effects of masking on fishes and invertebrates are difficult to assess in the natural setting for communities and populations of species, but evidence indicates that the increase to background noise as a result of OCS oil and gas operations would be relatively minor. Therefore, it is expected that the cumulative impact to fishes and invertebrate resources would be minor and would not extend beyond localized disturbances or behavioral modification.

Despite the importance of many sound-mediated behaviors and the potential biological costs associated with behavioral response to anthropogenic sounds, many environmental and biological factors limit potential exposure and the effects that OCS oil-and gas-related sounds have on fishes and invertebrate resources. The overall impact to fishes and invertebrate resources due to anthropogenic sound introduced into the marine environment by OCS oil-and gas-related routine activities is expected to be minor.

Pile-Driving

GOM Shelf will drive one 24"-36" conductor with an impact hammer working dry to a depth of 340' BML. It is expected to take 29,800 strikes to set the conductor. Hammer operations will be free fall from 0' to 95'. From 90' to 200', penetration will average 30 blows/ft. From 200' to 230', penetration will average 150 blows/ft. From 230' to 340', penetration will average 200 blows/ft. Pile driving activities are expected to last ½ day (12 hours total) with 1 pile driven. Piles will be driven through layers of primarily sands, silts and clays. Sound attenuation will not be utilized.

GOM Shelf will monitor for marine life both before and during the proposed pile driving operations from a vantage point which will allow GOM Shelf to monitor according to the 157-meter range noted in the National Marine Fisheries Service *Biological Opinion on the Federally Regulated Oil and Gas Program Activities in the Gulf of Mexico* (NMFS 2020), "Table 94 Additional distance over which the daily cumulative exposure to pile-driving sound can affect the hearing of sea turtles and sperm whales" (refer to information submitted in **Section A**).

GOM Shelf will also adhere to requirements as set forth in Notices to Lessees and guidelines listed in **Section F**, **Section I**, and **Section L** of this plan, as applicable, to avoid or minimize impacts to any of the species listed in the ESA as a result of these operations.

Effluents: Effluents such as drilling fluids and cuttings discharges contain components and properties which are detrimental to fishery resources. Moderate petroleum and metal contamination of sediments and the water column can occur out to several hundred meters down current from the discharge point. Offshore discharges are expected to disperse and dilute to very near background levels in the water column or on the seafloor within 3,000 meters of the discharge point and are expected to have negligible effect on fisheries. Additionally, an analysis of the best available information from the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 *Biological Opinion on the Federally Regulated Oil and Gas Program Activities in the Gulf of Mexico* (NMFS, 2020) concludes that exposures to toxicants in discharges from oil and gas activities are not likely to adversely affect ESA-listed species.

Accidents: Collisions between support vessels and ESA-listed fish, would be unusual events; however, should one occur, death or injury to ESA-listed fish is possible. Contract vessel operators can avoid protected aquatic species and reduce potential deaths by maintaining a vigilant watch and a distance of 50 meters or greater, with the exception of animals that approach the vessel. Vessel personnel should use a Gulf of America reference guide that includes identifying information on marine mammals, sea turtles, and other marine protected species (i.e., Endangered Species Act listed species such as Gulf sturgeon, giant manta ray, or oceanic whitetip shark) that may be encountered in the Gulf of America OCS.

Contract vessel operators will comply with the measures included in Appendix C of the NMFS Biological Opinion and requirements of the Protected Species Lease Stipulation, except under extraordinary circumstances when the safety of the vessel or crew is in doubt or the safety of life at sea is in question.

Should an ESA-listed fish (e.g., giant manta ray, oceanic whitetip shark, or Gulf sturgeon) be entrapped, entangled, or injured, personnel should contact the ESA Section 7 biologist at (301) 427-8413 (nmfs.psoreview@noaa.gov) and report all incidents to takereport.nmfsser@noaa.gov. After making the appropriate notifications, GOM Shelf may call BSEE at (985) 722-7902 for questions or additional guidance on recovery assistance needs, continued monitoring requirements, and incidental report information which at minimum is detailed below. Additional information may be found at the following website: https://www.fisheries.noaa.gov/report. Any injured or dead protected species should also be reported to takereport.nmfsser@noaa.gov. In addition, if the injury or death was caused by a collision with the operator's vessel, an entrapment within the operator's equipment or vessel (e.g. moon pool), or an entanglement within the operator's equipment, the operator must further notify BOEM and BSEE within 24 hours of the strike or entrapment/entanglement by email to protectedspecies@boem.gov and protectedspecies@bsee.gov. If the vessel is the responsible party, it is required to remain available to assist the respective salvage and stranding network as needed.

An accidental oil spill has the potential to cause some detrimental effects on fisheries; however, it is unlikely that such an event would occur from the proposed operations (refer to **Item 5**, Water Quality). The effects of oil on mobile adult finfish or shellfish would likely be sublethal and the extent of damage would be reduced to the capacity of adult fish and shellfish to avoid the spill, to metabolize hydrocarbons, and to excrete both metabolites and parent compounds. The activities proposed in this plan will be covered by GOM Shelf's Regional OSRP (refer to information submitted in **Section 9**).

There are no other IPFs (including wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact fisheries.

7. Marine Mammals

The latest population estimates for the Gulf of America revealed that cetaceans of the continental shelf and shelf-edge were almost exclusively bottlenose dolphin and Atlantic spotted dolphin. Squid eaters, including dwarf and pygmy killer whale, Risso's dolphin, rough-toothed dolphin, and Cuvier's beaked whale, occurred most frequently along the upper slope in areas outside of anticyclones. The Rice's whale (née Gulf of America Bryde's whale) is the only commonly occurring baleen whale in the northern Gulf of America and has been sighted off western Florida and in the De Soto Canyon region. Florida manatees have been sighted along the entire northern GOM but are mainly found in the shallow coastal waters of Florida, which are unassociated with the proposed operations. A complete list of all endangered and threatened marine mammals in the GOM may be found in **Table 1** at the beginning of this Environmental Impact Assessment. More information regarding the endangered Rice's whale can be found in **Item 20.1** below. Potential IPFs to marine mammals as a result of the proposed operations in Eugene Island Block 346 include emissions (noise / sound), effluents, discarded trash and debris, and accidents.

Emissions (noise / sound): Noises from drilling activities, support vessels and helicopters (i.e., non-impulsive anthropogenic sound) may elicit a startle reaction from marine mammals. This reaction may lead to disruption of marine mammals' normal activities. Stress may make them more vulnerable to parasites, disease, environmental contaminants, and/or predation (Majors and Myrick, 1990). Responses to sound exposure may include lethal or nonlethal injury, temporary hearing impairment, behavioral harassment and stress, or no apparent response. Noise-induced stress is possible, but it is little studied in marine mammals. Tyack (2008) suggests that a more significant risk to marine mammals from sound are these less visible impacts of chronic exposure. There is little conclusive evidence for long-term displacements and population trends for marine mammals relative to noise.

Vessels are the greatest contributors to increases in low-frequency ambient sound in the sea (Andrew et al. 2011). Sound levels and tones produced are generally related to vessel size and speed. Larger vessels generally emit more sound than smaller vessels, and vessels underway with a full load, or those pushing or towing a load, are noisier than unladen vessels. Cetacean responses to aircraft depend on the animals' behavioral state at the time of exposure (e.g., resting, socializing,

foraging, or traveling) as well as the altitude and lateral distance of the aircraft to the animals (Luksenburg and Parsons 2009). The underwater sound intensity from aircraft is less than produced by vessels, and visually, aircraft are more difficult for whales to locate since they are not in the water and move rapidly (Richter et al. 2006). Perhaps not surprisingly then, when aircraft are at higher altitudes, whales often exhibit no response, but lower flying aircraft (e.g., approximately 500 meters or less) have been observed to elicit short-term behavioral responses (Luksenburg and Parsons 2009; NMFS 2017b; NMFS 2017f; Patenaude et al. 2002; Smultea et al. 2008a; Wursig et al. 1998). Thus, aircraft flying at low altitude, at close lateral distances and above shallow water elicit stronger responses than aircraft flying higher, at greater lateral distances and over deep water (Patenaude et al. 2002; Smultea et al. 2008a). Routine OCS helicopter traffic would not be expected to disturb animals for extended periods, provided pilots do not alter their flight patterns to more closely observe or photograph marine mammals. Helicopters, while flying offshore, generally maintain altitudes above 700 feet during transit to and from a working area, and at an altitude of about 500 feet between platforms. The duration of the effects resulting from a startle response is expected to be short-term during routine flights, and the potential effects will be insignificant to sperm whales and Rice's whales. Therefore, we find that any disturbance that may result from aircraft associated with the proposed operations is not likely to adversely affect ESA-listed whales.

Drilling and production noise would contribute to increases in the ambient noise environment of the GOM, but they are not expected in amplitudes sufficient to cause either hearing or behavioral impacts (BOEM 2017-009). There is the possibility of short-term disruption of movement patterns and/or behavior caused by vessel noise and disturbance; however, these are not expected to impact survival and growth of any marine mammal populations in the GOM. Additionally, the National Marine Fisheries Service published a final recovery plan for the sperm whale, which identified anthropogenic noise as either a low or unknown threat to sperm whales in the GOM (USDOC, NMFS, 2010b). Sirenians (i.e., manatees) are not located within the area of operations. Additionally, there were no specific noise impact factors identified in the latest BOEM environmental impact statement for sirenians related to GOM OCS operations (BOEM 2017-009). See **Item 20.1** for details on the Rice's whale.

The National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion Appendix C explains how operators must implement measures to minimize the risk of vessel strikes to protected species and report observations of injured or dead protected species. This guidance should also minimize the chance of marine mammals being subject to the increased noise level of a service vessel in very close proximity.

Pile-Driving

GOM Shelf will drive one 24"-36" conductor with an impact hammer working dry to a depth of 340' BML. It is expected to take 29,800 strikes to set the conductor. Hammer operations will be free fall from 0' to 95'. From 90' to 200', penetration will average 30 blows/ft. From 200' to 230', penetration will average 150 blows/ft. From 230' to 340', penetration will average 200 blows/ft.

Pile driving activities are expected to last ½ day (12 hours total) with 1 pile driven. Piles will be driven through layers of primarily sands, silts and clays. Sound attenuation will not be utilized.

Exposure to sound from pile driving activities may result in temporary hearing loss or other behavioral responses in sperm whales, including some local displacement from the area for as long as the pile driving activity is occurring. An analysis of the best available information from the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion concludes that the potential impacts of this exposure are not anticipated to have adverse effects because sperm whales are expected to be moving and less likely to remain stationary during pile driving activities.

GOM Shelf will monitor for marine life both before and during the proposed pile driving operations from a vantage point which will allow GOM Shelf to monitor according to the 157-meter range noted in the National Marine Fisheries Service *Biological Opinion on the Federally Regulated Oil and Gas Program Activities in the Gulf of Mexico* (NMFS 2020), "Table 94 Additional distance over which the daily cumulative exposure to pile-driving sound can affect the hearing of sea turtles and sperm whales" (refer to information submitted in **Section A**).

Mid-frequency cetaceans (i.e., sperm whales) sound exposure thresholds in the *Biological Opinion on the Federally Regulated Oil and Gas Program Activities in the Gulf of Mexico* (NMFS 2020), "Table 61 Impulsive acoustic permanent threshold shift and temporary threshold shift onset criteria [to] the species groups considered in this consultation", show permanent hearing loss at 230 dB and temporary hearing loss at 224 dB. According to "Table 92 Sound source levels for different steel pile sizes used for offshore construction", the peak sound level when driving 24-inch piles (the nearest available size comparison for these operations) is approximately 213 dB, which is below the limit for permanent hearing loss and temporary hearing loss.

GOM Shelf will also adhere to requirements as set forth in Notices to Lessees and guidelines listed in **Section F**, **Section I**, and **Section L** of this plan, as applicable, to avoid or minimize impacts to any of the species listed in the ESA as a result of these operations.

Effluents: Drilling fluids and cuttings discharges contain components which may be detrimental to marine mammals. Most operational discharges are diluted and dispersed upon release. Any potential impact from drilling fluids would be indirect, either as a result of impacts on prey items or possibly through ingestion in the food chain (API, 1989).

Discarded trash and debris: Both entanglement in, and ingestion of debris have caused the death or serious injury of marine mammals (Laist, 1997; MMC, 1999). The limited amount of marine debris, if any, resulting from the proposed operations is not expected to substantially harm marine mammals. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V, the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies, including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

GOM Shelf will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable, environmentally persistent materials such as plastic or glass. GOM Shelf will also collect and remove flotsam resulting from activities related to proposed operations.

Informational placards will be posted on all vessels and facilities having sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g., helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures, and will view the video (or Microsoft PowerPoint presentation), *Think About It* (*previously All Washed Up: The Beach Litter Problem*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from GOM Shelf management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

Accidents: Collisions between support vessels and marine mammals, including cetaceans, would be unusual events, however, should one occur, death or injury to marine mammals is possible. Contract vessel operators can avoid marine mammals and reduce potential deaths by maintaining a vigilant watch for marine mammals and maintaining a safe distance of 500 meters or greater from baleen whales, 100 meters or greater from sperm whales, and a distance of 50 meters or greater from all other aquatic protected species, with the exception of animals that approach the vessel. If unable to identify the marine mammal, the vessel will act as if it were a baleen whale and maintain a distance of 500 meters or greater. If a manatee is sighted, all vessels in the area will operate at "no wake/idle" speeds in the area, while maintaining proper distance. When assemblages of cetaceans are observed, including mother/calf pairs, vessel speeds will be reduced to 10 knots or less. Vessel personnel should use a Gulf of America reference guide that includes identifying information on marine mammals, sea turtles, and other marine protected species (i.e., Endangered Species Act listed species such as Gulf sturgeon, giant manta ray, or oceanic whitetip shark) that may be encountered in the Gulf of America OCS.

Contract vessel operators will comply with the measures included in Appendix C of the NMFS Biological Opinion and requirements of the Protected Species Lease Stipulation, except under extraordinary circumstances when the safety of the vessel or crew is in doubt or the safety of life at sea is in question.

Vessel personnel must report sightings of any injured or dead protected marine mammal species immediately, regardless of whether the injury or death is caused by their vessel, to the NMFS Southeast Marine Mammal Stranding Hotline at (877) WHALE-HELP (877-942-5343). Additional information may be found at the following website: https://www.fisheries.noaa.gov/report. Any injured or dead protected species should also be

reported to takereport.nmfsser@noaa.gov. In addition, if the injury or death was caused by a collision with the operator's vessel, an entrapment within the operator's equipment or vessel (e.g. moon pool), or an entanglement within the operator's equipment, the operator must further notify BOEM and BSEE within 24 hours of the strike or entrapment/entanglement by email to protectedspecies@boem.gov and protectedspecies@bsee.gov. If the vessel is the responsible party, it is required to remain available to assist the respective salvage and stranding network as needed.

These proposed operations will not utilize moon pools to conduct activities.

Oil spills have the potential to cause sublethal oil-related injuries and spill-related deaths to marine mammals. However, it is unlikely that an accidental oil spill would occur from the proposed operations (refer to **Item 5**, Water Quality). Oil spill response activities may increase vessel traffic in the area, which could impact cetacean behavior and/or distribution, thereby causing additional stress to the animals. The effect of oil dispersants on cetaceans is not known. Removing oil from the surface would reduce the likelihood of oil adhering to marine mammals. Laboratory experiments have shown that the dispersants used during the Deepwater Horizon response are cytotoxic to sperm whale cells; however, it is difficult to determine actual exposure levels in the GOM. Therefore, dispersants will only be used if approved by the Regional Response Team in coordination with the RRT Dispersant Plan and RRT Biological Assessment for Dispersants. The acute toxicity of oil dispersant chemicals included in GOM Shelf's OSRP is considered to be low when compared with the constituents and fractions of crude oils and diesel products. The activities proposed in this plan will be covered by GOM Shelf's OSRP (refer to information submitted in accordance with **Section 9**).

The NMFS Office of Protected Resources coordinates agency assessment of the need for response and leads response efforts for spills that may impact cetaceans. If a spill may impact cetaceans, NMFS Protected Resources Contacts should be notified (see contact details below), and they will initiate notification of other relevant parties.

NMFS Protected Resources Contacts for the Gulf of America:

- Marine mammals – Southeast emergency stranding hotline 1-877-433-8299
- Other endangered or threatened species – ESA section 7 consulting biologist: nmfs.ser.emergency.consult@noaa.gov

There are no other IPFs (including physical disturbances to the seafloor) from the proposed operations that are likely to impact marine mammals.

8. Sea Turtles

GulfCet II studies sighted most loggerhead, Kemp's ridley and leatherback sea turtles over shelf waters. Historically these species have been sighted up to the shelf's edge. They appear to be more

abundant east of the Mississippi River than they are west of the river (Fritts et al., 1983b; Lohoefener et al., 1990). Deep waters may be used by all species as a transitory habitat. A complete list of endangered and threatened sea turtles in the GOM may be found in **Table 1** at the beginning of this Environmental Impact Assessment. Additional details regarding the loggerhead sea turtle's critical habitat in the GOM are located in **Item 20.5**. Potential IPFs that could impact sea turtles as a result of the proposed operations include emissions (noise / sound), effluents, discarded trash and debris, and accidents.

Emissions (noise / sound): Noise from drilling activities, support vessels, and helicopters (i.e., non-impulsive anthropogenic sound) may elicit a startle reaction from sea turtles, but this is a temporary disturbance. Responses to sound exposure may include lethal or nonlethal injury, temporary hearing impairment, behavioral harassment and stress, or no apparent response. Vessels are the greatest contributors to increases in low-frequency ambient sound in the sea (Andrew et al. 2011). Sound levels and tones produced are generally related to vessel size and speed. Larger vessels generally emit more sound than smaller vessels, and vessels underway with a full load, or those pushing or towing a load, are noisier than unladen vessels. Routine OCS helicopter traffic would not be expected to disturb animals for extended periods, provided pilots do not alter their flight patterns to more closely observe or photograph marine mammals. Helicopters, while flying offshore, generally maintain altitudes above 700 feet during transit to and from a working area, and at an altitude of about 500 feet between platforms. The duration of the effects resulting from a startle response is expected to be short-term during routine flights and the potential effects will be insignificant to sea turtles. Therefore, we find that any disturbance that may result from aircraft associated with the proposed operations is not likely to adversely affect sea turtles. Construction and operational sounds other than pile driving should have insignificant effects on sea turtles; effects would be limited to short-term avoidance of construction activity itself rather than the sound produced. As a result, sound sources associated with support vessel movement as part of the proposed operations are insignificant and therefore are not likely to adversely affect sea turtles.

Overall noise impacts on sea turtles from the proposed operations are expected to be negligible to minor depending on the location of the animal(s) relative to the sound source and the frequency, intensity, and duration of the source. The National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion Appendix C explains how operators must implement measures to minimize the risk of vessel strikes to protected species and report observations of injured or dead protected species. This guidance should also minimize the chance of sea turtles being subject to the increased noise level of a service vessel in very close proximity.

Pile-Driving

GOM Shelf will drive one 24"-36" conductor with an impact hammer working dry to a depth of 340' BML. It is expected to take 29,800 strikes to set the conductor. Hammer operations will be free fall from 0' to 95'. From 90' to 200', penetration will average 30 blows/ft. From 200' to 230', penetration will average 150 blows/ft. From 230' to 340', penetration will average 200 blows/ft. Pile driving activities are expected to last ½ day (12 hours total) with 1 pile driven. Piles will be driven through layers of primarily sands, silts and clays. Sound attenuation will not be utilized.

GOM Shelf will monitor for marine life both before and during the proposed pile driving operations from a vantage point which will allow GOM Shelf to monitor according to the 157-meter range noted in the National Marine Fisheries Service *Biological Opinion on the Federally Regulated Oil and Gas Program Activities in the Gulf of Mexico* (NMFS 2020), "Table 94 Additional distance over which the daily cumulative exposure to pile-driving sound can affect the hearing of sea turtles and sperm whales" (refer to information submitted in **Section A**).

Sea turtle sound exposure thresholds in the *Biological Opinion on the Federally Regulated Oil and Gas Program Activities in the Gulf of Mexico* (NMFS 2020), "Table 72. Sea turtle sound exposure thresholds", show permanent hearing loss at 232 dB and temporary hearing loss at 226 dB. According to "Table 92 Sound source levels for different steel pile sizes used for offshore construction", the peak sound level when driving 24-inch piles (the nearest available size comparison for these operations) is approximately 213 dB, which is below the limit for permanent hearing loss and temporary hearing loss.

GOM Shelf will also adhere to requirements as set forth in Notices to Lessees and guidelines listed in **Section F**, **Section I**, and **Section L** of this plan, as applicable, to avoid or minimize impacts to any of the species listed in the ESA as a result of these operations.

Exposure to sound from pile driving activities may result in hearing loss and temporary loss of available habitat for sea turtles, including some local displacement from the area for as long as the pile driving activity is occurring. An analysis of the best available information from the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion concludes that the impact of this exposure is not anticipated to be significant for adult sea turtles because the continuous "banging" of a pile should provide ample warning to avoid the immediate pile-driving area. Juvenile sea turtles may be motivated to remain in *Sargassum* habitat and may not leave the area, which could cause hearing loss; the juveniles that do leave the area may be adversely affected by being displaced from *Sargassum* habitat. The annual number of predicted disturbances of oceanic juveniles is relatively low.

Effluents: Drilling fluids and cuttings discharges are not known to be lethal to sea turtles. Most operational discharges are diluted and dispersed upon release. Any potential impact from drilling fluids would be indirect, either as a result of impacts on prey items or possibly through ingestion in the food chain (API, 1989).

Discarded trash and debris: Both entanglement in, and ingestion of, debris have caused the death or serious injury of sea turtles (Balazs, 1985). The limited amount of marine debris, if any, resulting from the proposed operations is not expected to substantially harm sea turtles. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V, the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies, including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

GOM Shelf will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable, environmentally persistent materials such as plastic or glass. GOM Shelf will also collect and remove flotsam resulting from activities related to proposed operations.

Informational placards will be posted on all vessels and facilities having sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g., helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures, and will view the video (or Microsoft PowerPoint presentation), *Think About It* (*previously All Washed Up: The Beach Litter Problem*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from GOM Shelf management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

Accidents: Collisions between support vessels and sea turtles would be unusual events, however, should one occur, death or injury to sea turtles is possible. Contract vessel operators can avoid sea turtles and reduce potential deaths by maintaining a vigilant watch for sea turtles and maintaining a safe distance of 50 meters or greater when they are sighted, with the exception of sea turtles that approach the vessel. Vessel crews should use a reference guide to help identify the five species of sea turtles that may be encountered in the Gulf of America OCS as well as other marine protected species (i.e., Endangered Species Act listed species). Contract vessel operators will comply with the measures included in Appendix C of the NMFS Biological Opinion and requirements of the Protected Species Lease Stipulation, except under extraordinary circumstances when the safety of the vessel or crew is in doubt or the safety of life at sea is in question.

Vessel crews must report sightings of any injured or dead protected sea turtle species immediately, regardless of whether the injury or death is caused by their vessel, to the State Coordinators for the Sea Turtle Stranding and Salvage Network (STSSN) at http://www.sefsc.noaa.gov/species/turtles/stranding_coordinators.htm (phone numbers vary by state). Additional information may be found at the following website: https://www.fisheries.noaa.gov/report. Any injured or dead protected species should also be reported to takereport.nmfsser@noaa.gov. In addition, if the injury or death was caused by a collision with the operator's vessel, an entrapment within the operator's equipment or vessel (e.g. moon pool), or an entanglement within the operator's equipment, the operator must further notify BOEM and BSEE within 24 hours of the strike or entrapment/entanglement by email to protectedspecies@boem.gov and protectedspecies@bsee.gov. If the vessel is the responsible party, it is required to remain available to assist the respective salvage and stranding network as needed.

These proposed operations will not utilize moon pools to conduct activities.

All sea turtle species and their life stages are vulnerable to the harmful effects of oil through direct contact or by fouling of their food. Exposure to oil can be fatal, particularly to juveniles and hatchlings. However, it is unlikely that an accidental oil spill would occur from the proposed operations (refer to **Item 5**, Water Quality). Oil spill response activities may increase vessel traffic in the area, which could add to the possibility of collisions with sea turtles. The activities proposed in this plan will be covered by GOM Shelf's Regional Oil Spill Response Plan (refer to information submitted in accordance with **Section 9**).

The NMFS Office of Protected Resources coordinates agency assessment of the need for response and leads response efforts for spills that may impact sea turtles. If a spill may impact sea turtles, the following NMFS Protected Resources Contacts should be notified, and they will initiate notification of other relevant parties.

- Dr. Brian Stacy at brian.stacy@noaa.gov and 352-283-3370 (cell); or
- Stacy Hargrove at stacy.hargrove@noaa.gov and 305-781-7453 (cell)

There are no other IPFs (including physical disturbances to the seafloor) from the proposed operations that are likely to impact sea turtles.

9. Air Quality

Potential IPFs that could impact air quality as a result of the proposed operations include accidents.

The projected air emissions identified in **Section 8** are not expected to affect the OCS air quality primarily due to distance to the shore or to any Prevention of Significant Deterioration Class I air quality area such as the Breton Wilderness Area. Eugene Island Block 346 is beyond the 200-kilometer (124 mile) buffer for the Breton Wilderness Area and is 66 miles from the coastline. Therefore, no special mitigation, monitoring, or reporting requirements apply with respect to air emissions.

Accidents and blowouts can release hydrocarbons or chemicals, which could cause the emission of air pollutants. However, these releases should not impact onshore air quality because of the prevailing atmospheric conditions, emission height, emission rates, and the distance of Eugene Island Block 346 from the coastline. There are no other IPFs (including effluents, physical disturbances to the seafloor, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact air quality.

10. Shipwreck Sites (known or potential)

In accordance with BOEM NTL 2005-G07, GOM Shelf will submit an archaeological resource report per 30 CFR 550.194 if directed to do so by the Regional Director.

Potential IPFs that could impact known or unknown shipwreck sites as a result of the proposed operations in Eugene Island Block 346 include disturbances to the seafloor and accidents. Should GOM Shelf discover any evidence of a shipwreck, they will immediately halt operations within a 1000-foot radius, report to BOEM within 48 hours, and make every reasonable effort to preserve and protect that cultural resource.

Physical Disturbances to the seafloor: Eugene Island Block 346 is not located in or adjacent to an OCS block designated by BOEM as having a high probability for occurrence of shipwrecks; therefore, no adverse impacts are expected.

Accidents: An accidental oil spill has the potential to cause some detrimental effects to shipwreck sites if the release were to occur subsea. However, it is unlikely that an accidental oil spill would occur from the proposed operations (refer to **Item 5**, Water Quality). The activities proposed in this plan will be covered by GOM Shelf's Regional Oil Spill Response Plan (refer to information submitted in accordance with **Section 9**).

There are no other IPFs (including emissions, effluents, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact shipwreck sites.

11. Prehistoric Archaeological Sites

In accordance with BOEM NTL 2005-G07, GOM Shelf will submit an archaeological resource report per 30 CFR 550.194 if directed to do so by the Regional Director.

Potential IPFs that could impact prehistoric archaeological sites as a result of the proposed operations in Eugene Island Block 346 are physical disturbances to the seafloor and accidents (oil spills). Should GOM Shelf discover any object of prehistoric archaeological significance, they will immediately halt operations within a 1000-foot radius, report to BOEM within 48 hours, and make every reasonable effort to preserve and protect that cultural resource.

Physical disturbances to the seafloor: Eugene Island Block 346 is located inside the Archaeological Prehistoric high probability lines. GOM Shelf will report to BOEM the discovery of any object of prehistoric archaeological significance and make every reasonable effort to preserve and protect that cultural resource.

Accidents: An accidental oil spill has the potential to cause some detrimental effects to prehistoric archaeological sites if the release were to occur subsea. However, it is unlikely that an accidental oil spill would occur from the proposed operations (refer to **Item 5**, Water Quality). The activities proposed in this plan will be covered by GOM Shelf's Regional Oil Spill Response Plan (refer to information submitted in accordance with **Section 9**).

There are no other IPFs (including emissions, effluents, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact prehistoric archaeological sites.

Vicinity of Offshore Location

12. Essential Fish Habitat (EFH)

Potential IPFs that could impact EFH as a result of the proposed operations in Eugene Island Block 346 include physical disturbances to the seafloor, effluents, and accidents. EFH includes all estuarine and marine waters and substrates in the Gulf of America.

Physical disturbances to the seafloor: Turbidity and sedimentation resulting from the bottom disturbing activities included in the proposed operations would be short term and localized. Fish are mobile and would avoid these temporarily suspended sediments. Additionally, the Live Bottom Low Relief Stipulation, the Live Bottom (Pinnacle Trend) Stipulation, and the Eastern Gulf Pinnacle Trend Stipulation have been put in place to minimize the impacts of bottom disturbing activities. Therefore, the bottom disturbing activities from the proposed operations would have a negligible impact on EFH.

Effluents: The Live Bottom Low Relief Stipulation, the Live Bottom (Pinnacle Trend) Stipulation, and the Eastern Gulf Pinnacle Trend Stipulation would prevent most of the potential impacts on live-bottom communities and EFH from operational waste discharges. Levels of contaminants in drilling muds and cuttings and produced-water discharges, discharge-rate restrictions, and monitoring and toxicity testing are regulated by the EPA NPDES permit, thereby eliminating many significant biological or ecological effects. Operational discharges are not expected to cause significant adverse impacts to EFH.

Accidents: An accidental oil spill has the potential to cause some detrimental effects on EFH. Oil spills that contact coastal bays and estuaries, as well as OCS waters when pelagic eggs and larvae are present, have the greatest potential to affect fisheries. However, it is unlikely that an oil spill would occur from the proposed operations (refer to **Item 5**, Water Quality). The activities proposed in this plan will be covered by GOM Shelf's Regional OSRP (refer to information submitted in **Section 9**).

There are no other IPFs (including emissions and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact essential fish habitat.

13. Marine and Pelagic Birds

Potential IPFs that could impact marine birds as a result of the proposed operations include emissions (air, noise / sound), accidental oil spills, and discarded trash and debris from vessels and the facilities.

Emissions:

Air Emissions

Emissions of pollutants into the atmosphere from these activities are far below concentrations which could harm coastal and marine birds.

Noise / Sound Emissions

The OCS oil-and gas-related helicopters and vessels have the potential to cause noise and disturbance. However, flight altitude restrictions over sensitive habitat, including that of birds, may make serious disturbance unlikely. Birds are also known to habituate to noises, including airport noise. It is an assumption that the OCS oil-and gas-related vessel traffic would follow regular routes; if so, seabirds would find the noise to be familiar. Therefore, the impact of OCS oil-and gas-related noise from helicopters and vessels to birds would be expected to be negligible.

The use of explosives for decommissioning activities may potentially kill one or more birds from barotrauma if a bird (or several birds because birds may occur in a flock) is present at the location of the severance. For the impact of underwater sound, a threshold of 202 dB sound exposure level (SEL) for injury and 208 dB SEL for barotrauma was recommended for the Brahyramphus marmoratus, a diving seabird (USDOI, FWS, 2011). However, the use of explosive severance of facilities for decommissioning are not included in these proposed operations, therefore these impacts are not expected.

Accidents: An oil spill would cause localized, low-level petroleum hydrocarbon contamination. However, it is unlikely that an oil spill would occur from the proposed operations (refer to **Item 5**, Water Quality). Marine and pelagic birds feeding at the spill location may experience chronic, nonfatal, physiological stress. It is expected that few, if any, coastal and marine birds would actually be affected to that extent. The activities proposed in this plan will be covered by GOM Shelf's Regional OSRP (refer to information submitted in **Section 9**).

Discarded trash and debris: Marine and pelagic birds could become entangled and snared in discarded trash and debris, or ingest small plastic debris, which can cause permanent injuries and death. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V, the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies, including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

GOM Shelf will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable,

environmentally persistent materials such as plastic or glass. GOM Shelf will also collect and remove flotsam resulting from activities related to proposed operations.

Informational placards will be posted on all vessels and facilities having sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g., helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures, and will view the video (or Microsoft PowerPoint presentation), *Think About It* (*previously All Washed Up: The Beach Litter Problem*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from GOM Shelf management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE. Debris, if any, from these proposed operations will seldom interact with marine and pelagic birds; therefore, the effects will be negligible.

ESA bird species: Seven species found in the GOM are listed under the ESA. BOEM consults on these species and requires mitigations that would decrease the potential for greater impacts due to small population size.

There are no other IPFs (including effluents, physical disturbances to the seafloor, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact marine and pelagic birds.

14. Public Health and Safety Due to Accidents.

There are no IPFs (including emissions, effluents, physical disturbances to the seafloor, wastes sent to shore for treatment or disposal, and accidents, including an accidental H_2S releases) from the proposed operations which could impact public health and safety. In accordance with NTL No.'s 2008-G04, 2009-G27, and 2009-G31, sufficient information is included in **Section 4** to justify our request that our proposed operations be classified by BSEE as H_2S absent.

Coastal and Onshore

15. Beaches

Potential IPFs from the proposed operations that could impact beaches include accidents and discarded trash and debris.

Accidents: Oil spills contacting beaches would have impacts on the use of recreational beaches and associated resources. Due to the distance from shore (66 miles) and the response capabilities that would be implemented, no significant adverse impacts are expected. The activities proposed in this plan will be covered by GOM Shelf's Regional OSRP (refer to information submitted in **Section 9**).

Discarded trash and debris: Trash on the beach is recognized as a major threat to the enjoyment and use of beaches. There will only be a limited amount of marine debris, if any, resulting from the proposed operations. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V, the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies, including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

GOM Shelf will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable, environmentally persistent materials such as plastic or glass. GOM Shelf will also collect and remove flotsam resulting from activities related to proposed operations.

Informational placards will be posted on all vessels and facilities having sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g., helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures, and will view the video (or Microsoft PowerPoint presentation), *Think About It* (*previously All Washed Up: The Beach Litter Problem*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from GOM Shelf management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

There are no other IPFs (including emissions, effluents, physical disturbances to the seafloor, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact beaches.

16. Wetlands

Potential IPFs from the proposed operations that could impact wetlands include accidents and discarded trash and debris.

Accidents: It is unlikely that an oil spill would occur from the proposed operations (refer to **Item 5**, Water Quality). Due to the distance from shore (66 miles) and the response capabilities that would be implemented, no impacts are expected. The activities proposed in this plan will be covered by GOM Shelf's Regional OSRP (refer to information submitted in **Section 9**).

Discarded trash and debris: There will only be a limited amount of marine debris, if any, resulting from the proposed operations. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V, the Marine Plastic Pollution Research and Control

Act, and regulations imposed by various agencies, including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

GOM Shelf will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable, environmentally persistent materials such as plastic or glass. GOM Shelf will also collect and remove flotsam resulting from activities related to proposed operations.

Informational placards will be posted on all vessels and facilities having sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g., helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures, and will view the video (or Microsoft PowerPoint presentation), *Think About It* (*previously All Washed Up: The Beach Litter Problem*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from GOM Shelf management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

There are no other IPFs (including emissions, effluents, physical disturbances to the seafloor, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact wetlands.

17. Shore Birds and Coastal Nesting Birds

Potential IPFs that could impact shore birds and coastal nesting birds as a result of the proposed operations include accidents and discarded trash and debris.

Accidents: Oil spills could impact shore birds and coastal nesting birds. However, it is unlikely that an oil spill would occur from the proposed operations (refer to **Item 5**, Water Quality). Given the distance from shore (66 miles) and the response capabilities that would be implemented, no impacts are expected. The activities proposed in this plan will be covered by GOM Shelf's Regional OSRP (refer to information submitted in **Section 9**).

Discarded trash and debris: Coastal and marine birds are highly susceptible to entanglement in floating, submerged, and beached marine debris: specifically, plastics. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V, the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies, including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

GOM Shelf will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, and also avoid accidental loss of solid waste items by maintaining waste management plans manifesting trash sent to shore and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable, environmentally persistent materials such as plastic or glass. GOM Shelf will also collect and remove flotsam resulting from activities related to proposed operations.

Informational placards will be posted on vessels and every facility that has sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g., helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures, and will view the video (or Microsoft PowerPoint presentation), *Think About It* (*previously All Washed Up: The Beach Litter Problem*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from GOM Shelf management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

There are no other IPFs (including emissions, effluents, physical disturbances to the seafloor, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact shore birds and coastal nesting birds.

18. Coastal Wildlife Refuges

Potential IPFs that could impact coastal wildlife refuges as a result of the proposed operations include accidents and discarded trash and debris.

Accidents: An accidental oil spill from the proposed operations could impact coastal wildlife refuges. However, it is unlikely that an oil spill would occur from the proposed operations (refer to **Item 5**, Water Quality). Due to the distance from shore (66 miles) and the response capabilities that would be implemented, no impacts are expected. The activities proposed in this plan will be covered by GOM Shelf's Regional OSRP (refer to information submitted in **Section 9**).

Discarded trash and debris: Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V, the Marine Plastic Pollution Research and Control Act and regulations imposed by various agencies including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

GOM Shelf will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash

bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable, environmentally persistent materials such as plastic or glass. GOM Shelf will also collect and remove flotsam resulting from activities related to proposed operations.

Informational placards will be posted on vessels and every facility that has sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g., helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures, and will view the video (or Microsoft PowerPoint presentation), *Think About It* (*previously All Washed Up: The Beach Litter Problem*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from GOM Shelf management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

There are no other IPFs (including emissions, effluents, physical disturbances to the seafloor, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact coastal wildlife refuges.

19. Wilderness Areas

Potential IPFs that could impact wilderness areas as a result of the proposed operations include accidents and discarded trash and debris.

Accidents: An accidental oil spill from the proposed operations could impact wilderness areas. However, it is unlikely that an oil spill would occur from the proposed operations (refer to **Item 5**, Water Quality). Due to the distance from the nearest designated Wilderness Area (157.4 miles) and the response capabilities that would be implemented, no significant adverse impacts are expected. The activities proposed in this plan will be covered by GOM Shelf's Regional OSRP (refer to information submitted in **Section 9).**

Discarded trash and debris: Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V, the Marine Plastic Pollution Research and Control Act and regulations imposed by various agencies including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

GOM Shelf will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable,

environmentally persistent materials such as plastic or glass. GOM Shelf will also collect and remove flotsam resulting from activities related to proposed operations.

Informational placards will be posted on vessels and every facility that has sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g., helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures, and will view the video (or Microsoft PowerPoint presentation), *Think About It* (*previously All Washed Up: The Beach Litter Problem*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from GOM Shelf management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

There are no other IPFs (including emissions, effluents, physical disturbances to the seafloor, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact wilderness areas.

20. Other Environmental Resources Identified

20.1 – Rice's Whale (née Gulf of America Bryde's Whale)

The Bryde's whale, also known as the Bryde's whale complex, is a collection of baleen whales that are still being researched to determine if they are the same species or if they are individual species of whales. In 2021, the Rice's whale, formerly known as the Gulf of America Bryde's whale, was determined to be a separate species from other Bryde's whales. There are less than 100 Rice's whales living in the Gulf of America year-round. These whales retain all the protections of the Gulf of America Bryde's whale under the Endangered Species Act while the regulations are being updated to reflect the name change.

The Rice's whale (née Gulf of America Bryde's whale) is the only commonly occurring baleen whale in the northern Gulf of America and has been sighted off western Florida and in the De Soto Canyon region. The Rice's whale area is over 202.1 miles from the proposed operations. Additionally, vessel traffic associated with the proposed operations will not flow through the Rice's whale area. Therefore, there are no IPFs from the proposed operations that are likely to impact the Rice's whale. Additional information on marine mammals may be found in **Item 7**.

20.2 – Gulf Sturgeon

The Gulf sturgeon resides primarily in inland estuaries and rivers from Louisiana to Florida and a small population of the species enters the Gulf of America seasonally in western Florida. Potential IPFs from the proposed operations that could impact the Gulf sturgeon include accidents, emissions (noise / sound), and discarded trash and debris. Additional information on ESA-listed fish may be found in **Item 6**.

Accidents: Collisions between support vessels and the Gulf sturgeon would be unusual events: however, should one occur, death or injury to the Gulf sturgeon is possible. Contract vessel operators can avoid protected aquatic species and reduce potential deaths by maintaining a vigilant watch and a distance of 50 meters or greater, with the exception of animals that approach the vessel. Vessel personnel should use a Gulf of America reference guide that includes identifying information on marine mammals, sea turtles, and other marine protected species (i.e., Endangered Species Act listed species such as Gulf sturgeon, giant manta ray, or oceanic whitetip shark) that may be encountered in the Gulf of America OCS.

Contract vessel operators will comply with the measures included in Appendix C of the NMFS Biological Opinion and requirements of the Protected Species Lease Stipulation, except under extraordinary circumstances when the safety of the vessel or crew is in doubt or the safety of life at sea is in question.

Should an ESA-listed fish (e.g., giant manta ray, oceanic whitetip shark, or Gulf sturgeon) be entrapped, entangled, or injured, personnel should contact the ESA Section 7 biologist at (301) 427-8413 (nmfs.psoreview@noaa.gov) and report all incidents to takereport.nmfsser@noaa.gov. After making the appropriate notifications, GOM Shelf may call BSEE at (985) 722-7902 for questions or additional guidance on recovery assistance needs, continued monitoring requirements, and incidental report information which at minimum is detailed below. Additional information may be found at the following website: https://www.fisheries.noaa.gov/report. Any injured or dead protected species should also be reported to takereport.nmfsser@noaa.gov. In addition, if the injury or death was caused by a collision with the operator's vessel, an entrapment within the operator's equipment or vessel (e.g. moon pool), or an entanglement within the operator's equipment, the operator must further notify BOEM and BSEE within 24 hours of the strike or entrapment/entanglement by email to protectedspecies@boem.gov and protectedspecies@bsee.gov. If the vessel is the responsible party, it is required to remain available to assist the respective salvage and stranding network as needed.

Due to the distance from the nearest identified Gulf sturgeon critical habitat (147.7 miles) and the response capabilities that would be implemented during a spill, no significant adverse impacts are expected to the Gulf sturgeon. Considering the information from the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, the location of this critical habitat in relation to proposed operations, the likely dilution of oil reaching nearshore areas, and the on-going weathering and dispersal of oil over time, we do not anticipate the effects from oil spills will appreciably diminish the value of Gulf sturgeon designated critical habitat for the conservation of the species. The activities proposed in this plan will be covered by GOM Shelf's Regional OSRP (refer to information submitted in **Section 9)**.

Emissions (noise / sound): All routine OCS oil-and gas-related activities have some element of sound generation. Common sound sources include propeller cavitation, rotating machinery, and reciprocating machinery, which are associated with routine OCS oil-and gas-related activities such as vessel traffic, drilling, construction, and oil and gas production, processing, and transport. Sound introduced into the marine environment as a result of human activities has the potential to affect

marine organisms**.** The National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion found that construction and operational sounds other than pile driving will have insignificant effects on Gulf sturgeon (NMFS, 2020). Although pile driving operations will be conducted as previously noted, due to the distance from the nearest identified Gulf sturgeon critical habitat (147.7 miles, using the closest area / block location as a measuring point; Eugene Island Block 346) sound emissions from pile driving are not expected to impact Gulf sturgeons.

Discarded trash and debris: Trash and debris are not expected to impact the Gulf sturgeon. There will only be a limited amount of marine debris, if any, resulting from the proposed operations. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V, the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies, including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

GOM Shelf will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable, environmentally persistent materials such as plastic or glass. GOM Shelf will also collect and remove flotsam resulting from activities related to proposed operations.

Informational placards will be posted on all vessels and facilities having sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g., helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures, and will view the video (or Microsoft PowerPoint presentation), *Think About It* (*previously All Washed Up: The Beach Litter Problem*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from GOM Shelf management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

There are no other IPFs (including effluents, physical disturbances to the seafloor, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact the Gulf sturgeon.

20.3 – Oceanic Whitetip Shark

Oceanic whitetip sharks may be found in tropical and subtropical waters around the world, including the Gulf of America (Young 2016). According to the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, Essential Fish Habitat (EFH) for the oceanic whitetip shark includes localized areas in the central Gulf of America and Florida Keys. Oceanic whitetip sharks were listed as threatened under the Endangered Species Act in 2018 due

to worldwide overfishing. Oceanic whitetip sharks had an abundant worldwide population, which has been threatened in recent years by inadequate regulatory measures governing fisheries; therefore, there is little research regarding the impact of oil and gas operations on oceanic whitetip sharks (NMFS, 2020). IPFs that have been determined by NMFS to be discountable to oceanic whitetip sharks include vessel strike, emissions (noise / sound), discharges, entanglement and entrapment, and marine debris. IPFs that could impact oceanic whitetip sharks as a result of the proposed operations in Eugene Island Block 346 include accidents. Additional information on ESA-listed fish may be found in **Item 6**.

Accidents: Collisions between support vessels and the oceanic whitetip shark would be unusual events, however, should one occur, death or injury to the oceanic whitetip shark is possible. Contract vessel operators can avoid protected aquatic species and reduce potential deaths by maintaining a vigilant watch and a distance of 50 meters or greater, with the exception of animals that approach the vessel. Vessel personnel should use a Gulf of America reference guide that includes identifying information on marine mammals, sea turtles, and other marine protected species (i.e., Endangered Species Act listed species such as Gulf sturgeon, giant manta ray, or oceanic whitetip shark) that may be encountered in the Gulf of America OCS.

Contract vessel operators will comply with the measures included in Appendix C of the NMFS Biological Opinion and requirements of the Protected Species Lease Stipulation, except under extraordinary circumstances when the safety of the vessel or crew is in doubt or the safety of life at sea is in question.

Should an ESA-listed fish (e.g., giant manta ray, oceanic whitetip shark, or Gulf sturgeon) be entrapped, entangled, or injured, personnel should contact the ESA Section 7 biologist at (301) 427-8413 (nmfs.psoreview@noaa.gov) and report all incidents to takereport.nmfsser@noaa.gov. After making the appropriate notifications, GOM Shelf may call BSEE at (985) 722-7902 for questions or additional guidance on recovery assistance needs, continued monitoring requirements, and incidental report information which at minimum is detailed below. Additional information may be found at the following website: https://www.fisheries.noaa.gov/report. Any injured or dead protected species should also be reported to takereport.nmfsser@noaa.gov. In addition, if the injury or death was caused by a collision with the operator's vessel, an entrapment within the operator's equipment or vessel (e.g. moon pool), or an entanglement within the operator's equipment, the operator must further notify BOEM and BSEE within 24 hours of the strike or entrapment/entanglement by email to protectedspecies@boem.gov and protectedspecies@bsee.gov. If the vessel is the responsible party, it is required to remain available to assist the respective salvage and stranding network as needed.

There is little information available on the impacts of oil spills or dispersants on oceanic whitetip sharks. It is expected that exposure of oil or dispersants to oceanic whitetip sharks would likely result in effects similar to other marine species, including fitness reduction and the possibility of mortality (NMFS, 2020). Due to the sparse population in the Gulf of America, it is possible that a small number of oceanic whitetip sharks could be impacted by an oil spill. However, it is unlikely that such an event would occur from the proposed operations (refer to **Item 5**, Water Quality). The

activities proposed in this plan will be covered by GOM Shelf's Regional OSRP (refer to information submitted in **Section 9**).

Discarded trash and debris: There is little available information on the effects of marine debris on oceanic whitetip sharks. Since these sharks are normally associated with surface waters, they may be susceptible to entanglement. However, due to the small, widely dispersed, and highly mobile population in the Gulf of America, and the localized and patchy distribution of marine debris, it is extremely unlikely that oceanic whitetip sharks would be impacted by marine debris.

There will only be a limited amount of marine debris, if any, resulting from the proposed operations. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V, the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies, including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

GOM Shelf will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable, environmentally persistent materials such as plastic or glass. GOM Shelf will also collect and remove flotsam resulting from activities related to proposed operations.

Informational placards will be posted on all vessels and facilities having sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g., helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures, and will view the video (or Microsoft PowerPoint presentation), *Think About It* (*previously All Washed Up: The Beach Litter Problem*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from GOM Shelf management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

There are no other IPFs (including effluents, physical disturbances to the seafloor, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact oceanic whitetip sharks.

20.4 – Giant Manta Ray

According to the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, the giant manta ray lives in tropical, subtropical, and temperate oceanic waters and productive coastlines throughout the Gulf of America. While uncommon in the Gulf of

America, there is a population of approximately 70 giant manta rays in the Flower Garden Banks National Marine Sanctuary (Miller and Klimovich 2017). Giant manta rays were listed as threatened under the Endangered Species Act in 2018 due to worldwide overfishing. Giant manta rays had an abundant worldwide population, which has been threatened in recent years by inadequate regulatory measures governing fisheries; therefore, there is little research regarding the impact of oil and gas operations on giant manta rays (NMFS, 2020). IPFs that have been determined by NMFS to be discountable to giant manta rays include vessel strike, emissions (noise / sound), discharges, entanglement and entrapment, and marine debris. IPFs that could impact giant manta rays as a result of the proposed operations in Eugene Island Block 346 include accidents. Additional information on ESA-listed fish may be found in **Item 6**.

Accidents: Collisions between support vessels and the giant manta ray would be unusual events, however, should one occur, death or injury to the giant manta ray is possible. Contract vessel operators can avoid protected aquatic species and reduce potential deaths by maintaining a vigilant watch and a distance of 50 meters or greater, with the exception of animals that approach the vessel. Vessel personnel should use a Gulf of America reference guide that includes identifying information on marine mammals, sea turtles, and other marine protected species (i.e., Endangered Species Act listed species such as Gulf sturgeon, giant manta ray, or oceanic whitetip shark) that may be encountered in the Gulf of America OCS.

Contract vessel operators will comply with the measures included in Appendix C of the NMFS Biological Opinion and requirements of the Protected Species Lease Stipulation, except under extraordinary circumstances when the safety of the vessel or crew is in doubt or the safety of life at sea is in question.

Should an ESA-listed fish (e.g., giant manta ray, oceanic whitetip shark, or Gulf sturgeon) be entrapped, entangled, or injured, personnel should contact the ESA Section 7 biologist at (301) 427-8413 (nmfs.psoreview@noaa.gov) and report all incidents to takereport.nmfsser@noaa.gov. After making the appropriate notifications, GOM Shelf may call BSEE at (985) 722-7902 for questions or additional guidance on recovery assistance needs, continued monitoring requirements, and incidental report information which at minimum is detailed below. Additional information may be found at the following website: https://www.fisheries.noaa.gov/report. Any injured or dead protected species should also be reported to takereport.nmfsser@noaa.gov. In addition, if the injury or death was caused by a collision with the operator's vessel, an entrapment within the operator's equipment or vessel (e.g. moon pool), or an entanglement within the operator's equipment, the operator must further notify BOEM and BSEE within 24 hours of the strike or entrapment/entanglement by email to protectedspecies@boem.gov and protectedspecies@bsee.gov. If the vessel is the responsible party, it is required to remain available to assist the respective salvage and stranding network as needed.

There is little information available on the impacts of oil spills or dispersants on giant manta rays. It is expected that exposure of oil or dispersants to giant manta rays would likely result in effects similar to other marine species, including fitness reduction and the possibility of mortality (NMFS, 2020). It is possible that a small number of giant manta rays could be impacted by an oil spill in

the Gulf of America. However, due to the distance to the Flower Garden Banks (37.9 miles), the low population dispersed throughout the Gulf of America, and the response capabilities that would be implemented during a spill, no significant adverse impacts are expected to impact giant manta rays. Additionally, it is unlikely that such an event would occur from the proposed operations (refer to **Item 5**, Water Quality). The activities proposed in this plan will be covered by GOM Shelf's Regional OSRP (refer to information submitted in **Section 9**).

Discarded trash and debris: There is little available information on the effects of marine debris on giant manta rays. Since these sharks are normally associated with surface waters, they may be susceptible to entanglement. However, due to the small, widely dispersed, and highly mobile population in the Gulf of America, and the localized and patchy distribution of marine debris, it is extremely unlikely that oceanic whitetip sharks would be impacted by marine debris.

There will only be a limited amount of marine debris, if any, resulting from the proposed operations. Operators are prohibited from deliberately discharging debris as mandated by MARPOL-Annex V, the Marine Plastic Pollution Research and Control Act, and regulations imposed by various agencies, including the United States Coast Guard (USCG) and the Environmental Protection Agency (EPA).

GOM Shelf will operate in accordance with the regulations, agency guidance, and Appendix B of the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion and also avoid accidental loss of solid waste items by maintaining waste management plans, manifesting trash sent to shore, and using special precautions such as covering outside trash bins to prevent accidental loss of solid waste. Special caution will be exercised when handling and disposing of small items and packaging materials, particularly those made of non-biodegradable, environmentally persistent materials such as plastic or glass. GOM Shelf will also collect and remove flotsam resulting from activities related to proposed operations.

Informational placards will be posted on all vessels and facilities having sleeping or food preparation capabilities. All offshore personnel, including contractors and other support services-related personnel (e.g., helicopter pilots, vessel captains and boat crews) will be indoctrinated on waste procedures, and will view the video (or Microsoft PowerPoint presentation), *Think About It* (*previously All Washed Up: The Beach Litter Problem*). Thereafter, all personnel will view the marine trash and debris training video annually. Offshore personnel will also receive an explanation from GOM Shelf management or the designated lease operator management that emphasizes their commitment to waste management in accordance with NTL No. 2015-G03-BSEE.

There are no other IPFs (including effluents, physical disturbances to the seafloor, and wastes sent to shore for treatment or disposal) from the proposed operations that are likely to impact giant manta rays.

20.5 – Loggerhead Sea Turtle

The loggerhead sea turtles are large sea turtles that inhabit continental shelf and estuarine environments throughout the temperate and tropical regions of the Atlantic Ocean, with nesting beaches along the northern and western Gulf of America. NMFS issued a Final Rule in 2014 (79 FR 39855) designating a critical habitat including 38 marine areas within the Northwest Atlantic Ocean, with seven of those areas residing within the Gulf of America. These areas contain one or a combination of habitat types: nearshore reproductive habitats, winter areas, breeding areas, constricted migratory corridors, and/or *Sargassum* habitats.

There are multiple IPFs that may impact loggerhead sea turtles (see **Item 8**). However, the closest loggerhead critical habitat is located 212.3 miles from Eugene Island Block 346; therefore, no adverse impacts are expected to the critical habitat. Additionally, considering the information from the National Marine Fisheries Service Endangered Species Act (ESA) Section 7 Biological Opinion, we do not expect proposed operations to affect the ability of *Sargassum* to support adequate prey abundance and cover for loggerhead turtles.

20.6 - Protected Corals

Protected coral habitats, including designated critical habitats, are noncontiguous and occur in the Flower Garden Banks National Marine Sanctuary and Florida. Five banks in the Flower Garden Banks National Marine Sanctuary have been designated as critical habitats for boulder star (Orbicella franksi), lobed star (Orbicella annularis), and mountainous star (Orbicella faveolate) corals. Elkhorn coral can also be found in the Flower Garden Banks, though the area is not a designated critical habitat for this coral. Various coastal counties in Florida are also designated as critical habitats for protected coral species. These coral habitats are located outside of the planning area and are not expected to be impacted by the proposed operations. The following table comprehensively details the designated critical habitat for each protected coral species in the Flower Garden Banks National Marine Sanctuary and Florida.

		Protected Corals						
		Elkhorn Coral *Acopora palmate*	Staghorn Coral *Acopora cervicornis*	Boulder Star Coral *Orbicella franksi*	Lobed Star Coral *Orbicella annularis*	Mountainous Star Coral *Orbicella faveolate*	Rough Cactus Coral *Mycetophyllia ferox*	Pillar Coral *Dendrogyra cylindrus*
Designated Critical Habitat	**Flower Garden Banks National Marine Sanctuary**							
	East Flower Garden Bank			X	X	X		
	West Flower Garden Bank			X	X	X		
	Rankin Bank			X	X	X		
	Rankin Bank			X	X	X		
	Geyer Bank			X	X	X		

	McGrail Bank			X	X	X		
	Florida (outside of planning area)							
	Martin County					X		
	Palm Beach County	X	X	X	X	X		X
	Broward County	X	X	X	X	X	X	X
	Miami-Dade County	X	X	X	X	X	X	X
	Monroe County	X	X	X	X	X	X	X

Potential IPFs to protected corals from the proposed operations include accidents.

Accidents: It is unlikely that an accidental surface or subsurface spill would occur from the proposed operations (refer to statistics in **Item 5**, Water Quality). Oil spills cause damage to corals only if the oil contacts the organisms. Due to the distance from the Flower Garden Banks National Marine Sanctuary (37.9 miles) and other critical coral habitats, no adverse impacts are expected. The operations proposed in this plan will be covered by GOM Shelf's Regional OSRP (refer to information submitted in **Section 9**).

There are no other IPFs (including emissions, effluents, physical disturbances to the seafloor, and wastes sent to shore for disposal) from the proposed operations that are likely to impact protected corals.

20.7 - Endangered Beach Mice

There are four subspecies of endangered beach mouse that are found in the dune systems along parts of Alabama and northwest Florida. Due to the location of Eugene Island Block 346 and the beach mouse critical habitat (above the intertidal zone), there are no IPFs that are likely to impact endangered beach mice.

20.8 - Navigation

The current system of navigation channels around the northern GOM is believed to be generally adequate to accommodate traffic generated by the future Gulfwide OCS Program. As exploration and development activities increase on deepwater leases in the GOM, port channels may need to be expanded to accommodate vessels with deeper drafts and longer ranges. However, current navigation channels will not be changed, and new channels will not be required as a result of the activities proposed in this plan.

(C) IMPACTS ON PROPOSED OPERATIONS

The site–specific environmental conditions have been taken into account for the proposed operations. No impacts are expected on the proposed operations from site-specific environmental conditions.

(D) ENVIRONMENTAL HAZARDS

During the hurricane season, June through November, the Gulf of America is impacted by an average of ten tropical storms (39-73 mph winds), of which six become hurricanes (> 74 mph winds). Due to its location in the Gulf, Eugene Island Block 346 may experience hurricane and tropical storm force winds and related sea currents. These factors can adversely impact the integrity of the operations covered by this plan. A significant storm may present physical hazards to operators and vessels, damage exploration or production equipment, or result in the release of hazardous materials (including hydrocarbons). Additionally, the displacement of equipment may disrupt the local benthic habitat and pose a threat to local species.

The following preventative measures included in this plan may be implemented to mitigate these impacts:

1. Drilling & completion
    a. Secure well
    b. Secure rig / platform
    c. Evacuate personnel

Drilling activities will be conducted in accordance with NTL No.'s 2008-G09, 2009-G10, and 2010-N10.

2. Platform / Structure Installation

    Operator will not conduct platform / structure installation operations during Tropical Storm or Hurricane threat.

3. Pipeline Installation

    Operator will not conduct pipeline installation operations during Tropical Storm or Hurricane threat.

(E) ALTERNATIVES

No alternatives to the proposed operations were considered to reduce environmental impacts.

(F) MITIGATION MEASURES

No mitigation measures other than those required by regulation will be employed to avoid, diminish, or eliminate potential impacts on environmental resources.

(G) CONSULTATION

No agencies or persons were consulted regarding potential impacts associated with the proposed operations. Therefore, a list of such entities has not been provided.

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Although not cited, the following were utilized in preparing this EIA:

- Hazard Surveys

SECTION 18
ADMINISTRATIVE INFORMATION

18.1 EXEMPTED INFORMATION DESCRIPTION

The proposed bottomhole location of the planned well has been removed from the Public Information copy of the DOCD as well as any discussions of the target objectives, geologic or geophysical data, and interpreted geology.