Deepwater Port License Application
Blue Marlin Offshore Port (BMOP) Project

Volume IIb – Onshore Project Components Environmental Evaluation (Public)
Topic Report 1: Project Description, Purpose, and Need

Submitted to:

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Deepwater Port License Application
Blue Marlin Offshore Port (BMOP) Project

Volume I:	General (Public), including Deepwater Port License Application and Appendices (*under separate cover*)
Volume IIa:	Offshore Project Components Environmental Evaluation (Public) (*under separate cover*)
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ABBREVIATIONS AND ACRONYMS

AC	alternating current
API	American Petroleum Institute
Applicant	Blue Marlin Offshore Port LLC
ASME	American Society of Mechanical Engineers
ATWS	Additional Temporary Workspace
BMOP	Blue Marlin Offshore Port
BMPs	Best Management Practices
bph	barrels per hour
CALM	Catenary Anchor Leg Mooring
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DWP	Deepwater Port
DWPA	Deepwater Port Act
EC	East Cameron
EFRD	Emergency Flow Restricting Device
EI	Environmental Inspector
FERC	Federal Energy Regulatory Commission
HDD	horizontal directional drill
hp	horsepower
Hwy	Highway
GOM	Gulf of Mexico
ICWW	Intracoastal Waterway
LDNR	Louisiana Department of Natural Resources
LQ	living quarters
MARAD	United States Maritime Administration
MLV	Mainline valve
MP	Milepost
NPDES	National Pollutant Discharge Elimination System
NEPA	National Environmental Policy Act
NRCS	Natural Resource Conservation Service
NT	Energy Transfer Nederland Terminal
NWI	National Wetlands Inventory
PAC	permanent access canal
PAR	permanent access road
PHMSA	Pipeline and Hazardous Materials Safety Administration
PLEMs	Pipeline end manifolds
Project	Blue Marlin Offshore Port Project
ROW	Right-of-way
SPAR	Spill Prevention and Response
TAC	temporary access canal
TAR	temporary access road
TC	TC Energy

TPWD	Texas Parks and Wildlife Department
TWS	Temporary Workspace
U.S.	United States
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USDOT	United States Department of Transportation
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VBT	Vent Boom Tripods
VLCC	Very Large Crude Carriers
WC 509	West Cameron Lease Block 509
WMA	Wildlife Management Area

PROJECT FAST FACTS

General Project Terminology	
Applicant	Blue Marlin Offshore Port LLC
Project Name	Blue Marlin Offshore Port (BMOP)

BMOP Location and General Information	
Nederland Terminal (NT)	The location where the oil for BMOP originates. This is the existing Sunoco Partners Marketing & Terminals L.P. facility located in Nederland, Jefferson County, Texas
New 42-inch Pipeline	37.02 miles of 42-inch pipeline from NT to Station 501
Existing Mainline from Cameron parish Louisiana to WC 509	Cameron Parish, Louisiana Louisiana State Blocks: WC 11, 20, 21 OCS Blocks: WC 21, 44, 43, 58, 79, 78, 95, 114, 113, 132, 133, 148, 169, 170, 183, 196, 205, 212, 213, 224, 230, 241, 245, 246, 255, 258, 259, 266, 269, 276, 275, 277, 282, 408, 431, 432, 433, 456, 459, 482, 483, 484, 508, 509
Deepwater Port Location (Platform – CALM Buoys)	West Cameron Block 509 (WC 509) West Cameron 508 (WC 508) East Cameron 263 (EC 263)
Deepwater Port Water Depth	156 to 162 feet water depth
Loading Capacity	80,000 barrels per hour (bph)

BMOP Deepwater Port Components	
Existing Stingray Pipeline (Mainline)	One existing 36-inch Outer Diameter (OD) pipeline, approximately 104 miles long from Station 501 in Cameron Parish, Louisiana to WC 509. This line consists of the existing 36-inch OD subsea line from WC 509 to Station 701 and the existing 36-inch OD onshore line from Station 501 to Station 701.
Deep Water Port (DWP)	The offshore loading facility site located in WC 509, WC 508, and EC 263. The facilities consist of the existing WC 509 Platform Complex; two new PLEMs and CALM Buoys in WC 508 and EC 263; two new Crude Oil Loading Pipelines from the WC 509 Platform Complex to the PLEMs and the flexible hoses attached to the CALM Buoys. The WC 509 Platform Complex will be converted from gas service to oil and gas service. The converted platforms will support oil export and natural gas transportation.
WC 509 Platform Complex (509 Complex)	The existing WC 509 Platform Complex consists of three platforms and two Vent Boom Tripods (VBT). The WC 509A Platform is the natural gas gathering platform. This will also house the 36-inch riser and pig barrel of the crude oil Mainline. The WC 509B Platform currently is the natural gas compression and control platform. It houses natural gas compressors, separators, the Control Room and Platform Complex's utilities. The WC 509B Platform will continue to house the natural gas separation facilities and the Platform Complex's utilities. It will also house the crude oil Control Room, metering facilities, and pig barrels for the two Crude Oil Loading Lines. The WC 509C Platform is the Living Quarters (LQ) platform and will continue in that role. The WC 509 VBTs are utilized to bridge the natural gas vent piping to a point approximately 660 feet from the 509B Platform and will continue in this role for any planned and emergency natural gas blowdowns.

BMOP Deepwater Port Components	
WC 148 Platform	The existing WC 148 Platform will be converted from natural gas transportation service to oil transportation service. All gas piping facilities on the deck will be removed and replaced with new pipe and a new Mainline Valve (MLV). This valve will be able to be remotely operated.
Catenary Anchor Leg Mooring (CALM) System	There will be two floating Calm Buoys installed approximately 4,710 feet and 6,085 feet from the WC 509B Platform. The CALM Buoys will be installed with a minimum of 5,000 feet separation. Each Buoy will be moored in place with 6 or more anchor chains connected to engineered anchors installed at locations around the Buoy. Flexible hoses will be connected from the PLEMs to the Calm Buoys. Floating flexible hoses will also be connected to the CALM Buoy and, during loading, the opposite end will be connected to the ship. CALM Buoy No. 1 will be installed in WC 508 and CALM Buoy No. 2 will be installed in EC 263.
Crude Oil Loading Pipelines	Two 36-inch diameter pipelines from the existing WC 509B Platform to the PLEMs.
Pipeline End Manifold (PLEM)	One PLEM will be installed on the seafloor at each CALM Buoy. Each PLEM will be connected to a 36-inch Crude Oil Loading Pipeline from the WC 509B Platform and a CALM Buoy floating above the PLEM. The two PLEMs will be in WC 508 and EC 263.
VLCC or other Crude Carrier	Very Large Crude Carriers (VLCCs), Suezmax, Aframax or other large capacity seafaring vessels.
Meter for Measuring Departing Crude Oil	The DWP will have two-meter stations with associated prover and lab facilities. One of the meter stations will be located at the new BMOP Pump Station adjacent to the NT and one will be located on the offshore crude export platform (WC 509B Platform).
Pre-fabrication Yards	Existing yards will be used along the northern Gulf of Mexico (GOM) coast.
Support Facility	An onshore support base will be established at an existing port facility to provide the necessary security to support the DWP operations.

BMOP Onshore Pipeline Components	
BMOP Pump Station	The onshore metering, pumping, and pig launcher station will be located in Nederland, Texas, adjacent to the existing NT.
Onshore Crude Oil Pipeline	A new, approximate 37.02-mile, 42-inch OD pipeline connecting the existing NT in Jefferson County, extending across Orange County, Texas to the existing 36-inch OD Mainline at Station 501 in Cameron Parish, Louisiana.
Station 501	The existing NGPL/Stingray interconnect facility (Station 501) will be abandoned and demolished. A new pig receiver and launcher will be installed to connect the new 42-inch OD onshore pipeline with the existing 36-inch OD onshore Stingray Mainline.
Station 701	The existing compressor Station 701 in Cameron Parish, Louisiana will be demolished. All existing natural gas equipment will be removed from the Station except for several large 10,000-barrel storage tanks. Approximately 1,000 feet of new 36-inch pipe, surge tanks, surge valves, and a new MLV will be installed. The existing 10,000-barrel tanks located at Station 701 will be converted to surge relief tanks.
Stingray ANR Tap Removal Site	BMOP will remove the tap and install 36-inch pipe in its place.

BMOP Onshore Pipeline Components	
Mainline Valves (MLV)	Six new MLVs will be installed within the permanent pipeline right-of-way (ROW) of the new build pipeline. MLVs will also be installed at the BMOP Pump Station, Station 501, and Station 701. These valves will be used for isolation and spill control purposes.
Pipeline Pig Launchers and Receivers	Pig Launchers/Receivers will be located at the BMOP Pump Station, Station 501, and the DWP. These are utilized for cleaning the pipelines and running intelligent devices to assess pipeline integrity.
Access Roads and Canals	The Project will utilize existing access roads and canals. One new temporary access road and four new permanent access roads will be required.
Pipe and Contractor Yards	BMOP will utilize existing facilities along the northern GOM coast, U.S. or international locations for manufacturing pipe and for fabricating the PLEMs, CALM Buoys, and end connectors. Pipe coating activities will be performed at existing facilities along the northern GOM coast. Selection of the marine contractor will be completed after the MARAD filing; however, the successful contractor(s) will utilize existing fabrication and logistical facilities located along the northern GOM coast.

1.0 PROJECT DESCRIPTION, PURPOSE, AND NEED

1.1 PROJECT OVERVIEW

Blue Marlin Offshore Port LLC (the Applicant) is proposing to develop the Blue Marlin Offshore Port (BMOP) Project (Project) in the Gulf of Mexico (GOM) to provide crude oil transportation and loading services for crude oil produced in the continental United States (U.S.). A Project overview map is provided in **Figure 1-1**. The Deepwater Port (DWP) will be utilized to load the transported crude oil onto very large crude carriers (VLCCs) (and other crude oil carriers) for export to the global market. The Applicant is filing this application for a license to construct, own, and operate the Deepwater Port (DWP) pursuant to the Deepwater Port Act (DWPA) of 1974, as amended, and in accordance with U.S. Coast Guard (USCG) and U.S. Maritime Administration (MARAD) implementing regulations.

The primary purpose of the Project will be to provide for safe and reliable long-term supply of crude oil for export to the global market. Oil for export will be transported out of the existing Sunoco Partners Marketing and Terminals, L.P., a terminal and storage facility in Jefferson County, Texas (Nederland Terminal or NT). This terminal is connected to multiple crude oil pipelines connecting to production from across the U.S. In addition, an affiliate of the Applicant owns the Stingray Pipeline System and has confirmed that its subsea pipeline and offshore platforms are suitable for converting to facilitate crude oil export from a DWP in the northern GOM. The Applicant has the exclusive right to lease or purchase the Stingray Pipeline System for use in the Project.

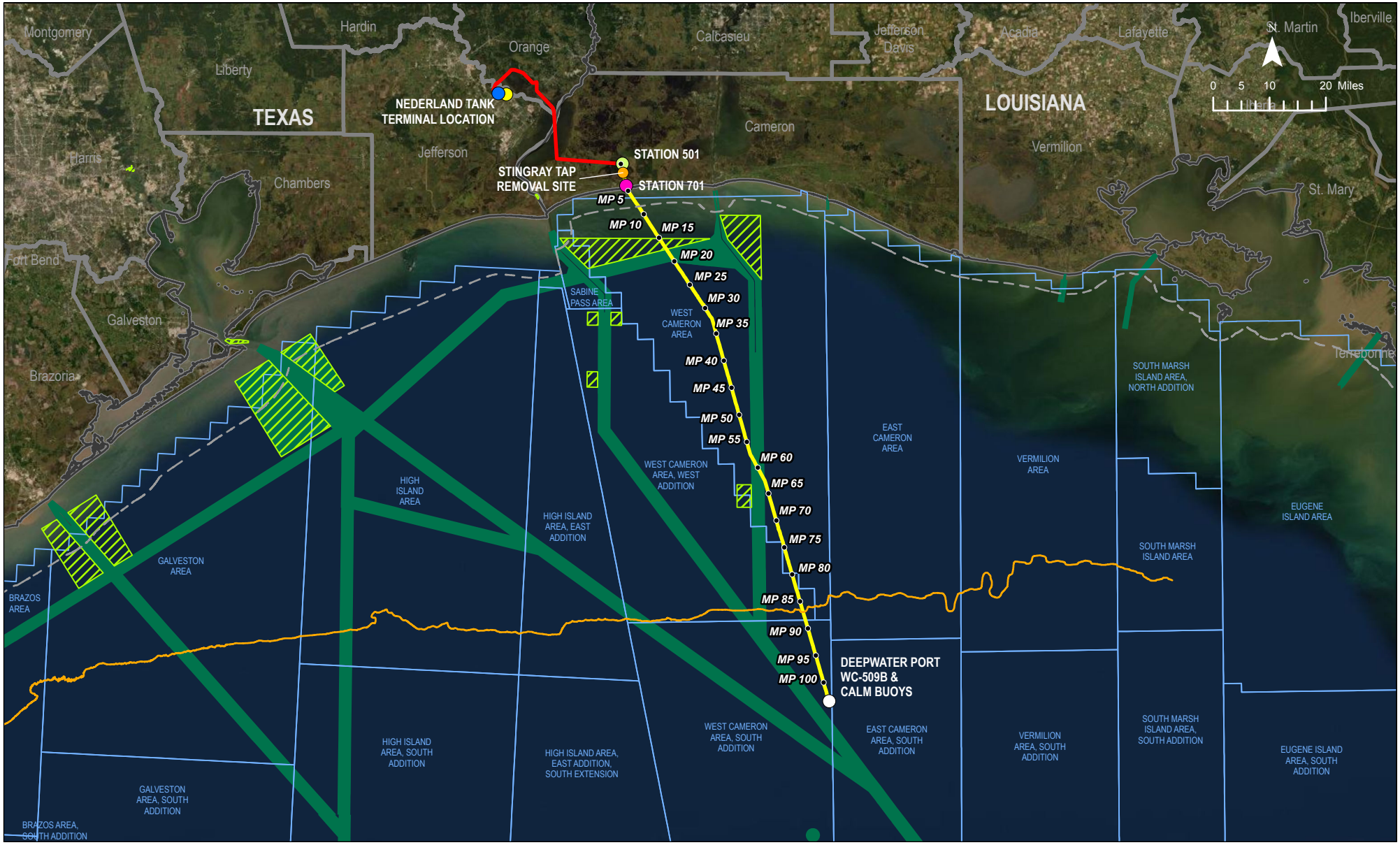
The DWP will be located in federal waters within and adjacent to the Outer Continental Shelf (OCS) in West Cameron Lease Blocks (WC) 509 and 508 and East Cameron Block 263. The DWP will be approximately 99 statute miles off the coast of Cameron Parish, Louisiana, with an approximate water depth of 162 feet. Crude oil will be routed from pumps at Nederland, through a new 42-inch outer diameter (OD) onshore pipeline to the existing Stingray Mainline at Station 501 (see Section 1.1.1), and from there through the existing Stingray Mainline to the DWP.

As depicted in **Figure 1-1**, the BMOP facilities consist of the pumps and meters at NT; a new 37-mile, 42-inch OD pipeline; the existing 36-inch OD Mainline; an existing fixed, manned platform complex at WC 509; an existing platform at WC 148; two new Crude Oil Loading Pipelines; and two new PLEM and CALM Buoys located in WC 508 and EC 263. A Project overview map of the onshore Project components is provided in **Figure 1-2.** Details of the Project's offshore facilities are provided in Topic Report 1, "Project Description, Purpose, and Need" (Volume IIa). This Topic Report includes details of the onshore Project facilities.

1.1.1 Abandonment and Conversion of Existing Facilities

The Stingray Pipeline is currently comprised of a 36-inch pipeline (Mainline) that is fed natural gas and natural gas liquids by multiple lateral pipelines from various suppliers and producers that feed natural gas into the Mainline. Stingray transports natural gas and liquids on the Mainline from the WC 509 Platform Complex to the onshore compressor station facility (Station 701) near Holly Beach in Cameron, Louisiana, and northward approximately four additional miles to the NGPL/Stingray interconnect (Station 501). The Stingray facilities from WC 509 to Station 501 will be abandoned through a FERC 7(b) Order. This work will be completed by Stingray. Stingray will assign the existing right-of-way (ROW) Grant (and associated facilities—platforms at WC 148 and WC 509) to BMOP or another affiliate of ET for use in the BMOP Project. The Applicant intends to operate the new facilities under 49 Code of Federal Regulations (CFR) Part 195. Details of the existing offshore Stingray Mainline facilities are provided in Topic Report 1 (Volume IIa).

BMOP PROJECT - FIGURE 1-1 - PROJECT OVERVIEW MAP



LEGEND

- EXISTING OFFSHORE PIPELINE MILEPOSTS
- STINGRAY TAP REMOVAL SITE
- NEDERLAND TANK TERMINAL LOCATION
- NEDERLAND PUMP STATION
- STATION 701 (TO BE CONVERTED TO OIL SERVICE)
- STATION 501 (TO BE CONVERTED TO OIL SERVICE)
- DEEPWATER PORT WC-509B AND CALM BUOYS
- EXISTING PIPELINE TO BE CONVERTED TO OIL SERVICE
- PROPOSED ONSHORE PIPELINE (NEW BUILD)
- DEPTH CONTOUR -108'
- STATE WATERS BOUNDARY
- SAFETY ANCHORAGES
- PROTRACTION AREA
- SHIPPING FAIRWAY
- COUNTY / PARISH
- STATE BOUNDARY

BLUE MARLIN OFFSHORE PORT PROJECT

PROJECT OVERVIEW MAP

COUNTY/PARISH:	VARIOUS	DRAWN BY:	CA
STATE:	TX/LA	CHECKED BY:	CW

DATE:	2020/09/17	PROJECTION:	NAD 1983 UTM Zone 15N

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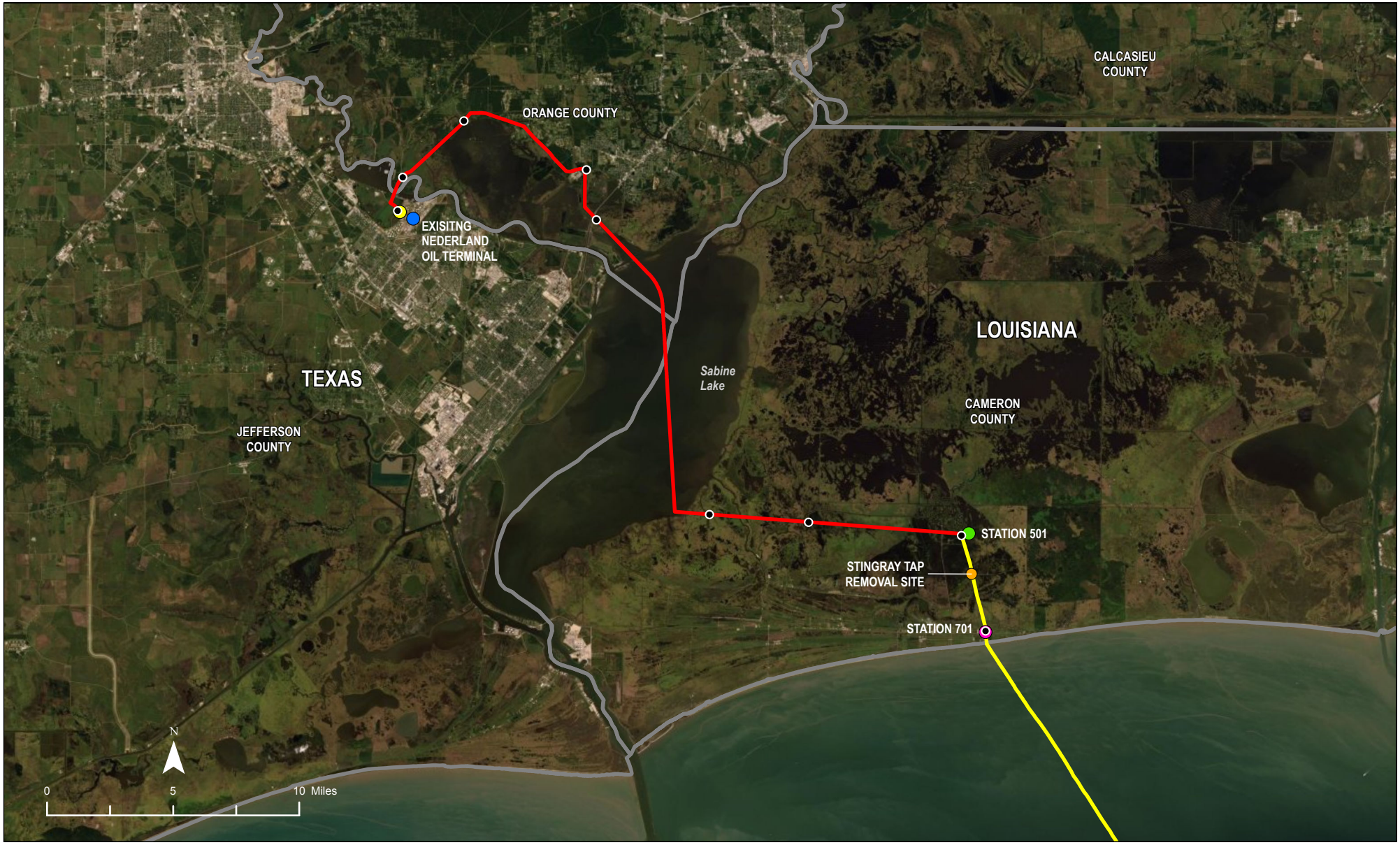
BLUE MARLIN OFFSHORE PORT PROJECT
FIGURE 1-1

DWG:	0802-01-005	SHEET:	1 OF 1

BMOP PROJECT - FIGURE 1-2 ONSHORE PROJECT COMPONENT OVERVIEW MAP



LEGEND

- MAINLINE VALVE
- NEDERLAND PUMP STATION
- STATION 501 (TO BE CONVERTED TO OIL SERVICE)
- STATION 701 (TO BE CONVERTED TO OIL SERVICE)
- EXISITNG NEDERLAND OIL TERMINAL
- STINGRAY TAP REMOVAL SITE
- EXISTING PIPELINE TO BE CONVERTED TO OIL SERVICE
- PROPOSED 42-INCH PIPELINE
- COUNTY / PARISH

BLUE MARLIN OFFSHORE PORT PROJECT
FIGURE 1-2 - ONSHORE PROJECT COMPONENT OVERVIEW MAP

COUNTY/PARISH:	VARIOUS	DRAWN BY:	CA
STATE:	TX/LA	CHECKED BY:	CW
DATE:	2020/09/17	PROJECTION:	NAD 1983 UTM Zone 15N

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BLUE MARLIN OFFSHORE PORT PROJECT
FIGURE 1-2

DWG:	0802-01-009	SHEET:	1 OF 1

1.1.2 Major Onshore Project Components

All facilities for the proposed BMOP Project will be designed, constructed, tested, operated, and maintained in accordance with the U.S. Department of Transportation (USDOT) regulations in 49 CFR Part 195 (Transportation of Hazardous Liquids by Pipeline) and all other applicable federal and state regulations. Details of the offshore supply components are provided in Topic Report 1 (Volume IIa). The Project will consist of construction and operation of the following onshore components:

New Onshore Facilities

- A new, approximate 37-mile, 42-inch OD pipeline connecting the existing NT in Jefferson County, Texas, to the existing 36-inch OD Mainline at Station 501 in Cameron Parish, Louisiana.
- A new pump station (BMOP Pump Station) located adjacent to the existing NT in Jefferson County, Texas at MP 0.0. The land where the BMOP Pump Station site is located is to be filled as part of the "Nederland Terminal Buildout Project," which is anticipated to commence construction in January 2021, prior to construction of the BMOP Project. The pump station will include:
    - A pipeline header;
    - MLV;
    - Metering and pump equipment;
    - Electrical substation; and
    - Permanent access road.
- Six new MLVs will be installed within the permanent pipeline right-of-way (ROW) of the new build pipeline. MLVs will also be installed at the BMOP Pump Station, Station 501, and Station 701. These valves will be used for isolation and spill control purposes.

Conversion of Existing Onshore Facilities

- The existing Station 501 is located at approximate MP 37 of the new 42-inch pipeline in Cameron Parish, Louisiana. All existing natural gas-related equipment owned by BMOP will be removed from the Station and new pipeline facilities will be installed. The new 42-inch pipeline will tie into the existing 36-inch Mainline at the site. The conversion of Station 501 will be expanded to include:
    - A pig receiver for the new 42-inch pipeline termination;
    - Pig launcher for existing 36-inch Mainline; and
    - MLV.
- The existing compressor Station 701 in Cameron Parish, Louisiana, located at approximate MP 3.9 on the converted Stingray Mainline in Cameron Parish, Louisiana, will be demolished. All existing natural gas equipment will be removed from the Station except for several large 10,000-barrel storage tanks. Approximately 1,000 feet of new 36-inch pipe, surge tanks, surge valves, and a new MLV will be installed. The existing 10,000-barrel tanks located at Station 701 will be converted to surge relief tanks.
- The existing ANR Tap (Stingray Tap Removal Site) is located at approximate MP 1.6 on the converted Stingray Mainline in Cameron Parish, Louisiana (approximate MP 38.6 on the BMOP pipeline system). BMOP will install a 36-inch OD pipe segment following removal of the tap.
- The existing Mainline from Station 501 to the Station 701 will be converted to crude oil service.

Onshore Support Facilities

- Temporary use of existing pipe and contractor yards; and

- Use of existing public roads, highways, and canals and construction of new temporary and permanent access roads.

1.2 PROJECT PURPOSE AND NEED

The Project's purpose and need is included in Section 1.2 of Topic Report 1 (Volume IIa) of this DWP license application.

1.3 LOCATION AND DESCRIPTION OF ONSHORE PROJECT COMPONENTS

The Applicant is proposing to construct new facilities and convert existing facilities listed in **Table 1-1**. **Appendix A (**Volume IIb) includes the U.S. Geological Survey (USGS) topographic quadrangle maps (**Appendix A-1**), aerial alignment sheets depicting wetland and waterbodies (**Appendix A-2**), National Wetlands Inventory (NWI) maps (**Appendix A-3**), Natural Resource Conservation Service (NRCS) soils maps (**Appendix A-4**), and land use maps (**Appendix A-5**) depicting the location of the Project facilities. Typical and site-specific drawings are included in **Appendix B1** and **B2** (Volume IIb), respectively.

TABLE 1-1
Proposed Onshore Project Facilities

Facility	Location (County/Parish, State)	Approximate Milepost	Approximate Length (miles)	Proposed Work Description
Pipeline				
Onshore Pipeline	Jefferson and Orange County, Texas Cameron Parish, Louisiana	0.00 - 37.02	37.02	Install 37.02 miles of 42-inch pipeline connecting the existing NT in Jefferson County, Texas, to the existing 36-inch onshore Stingray Mainline at Station 501 in Cameron Parish, Louisiana.
Aboveground Facilities				
BMOP Pump Station	Jefferson County, Texas	0.00	N/A	A new pump station located within the existing NT in Jefferson County, Texas. The pump station will include: • 42-inch OD pipeline header; • MLV; • Meter Station; • Six pumps and associated equipment; • Two transformers in existing electrical substation; and • Permanent access road.
Mainline Valves (MLVs)[a]				
MLV 1	Orange County, Texas	1.65	N/A	Six new MLVs will be installed within the permanent pipeline ROW of the 42-inch OD new build pipeline. MLVs will also be installed at the BMOP Pump Station, Station 501, and Station 701.
MLV 2		4.96		
MLV 3		10.83		
MLV 4		13.01		
MLV 5	Cameron Parish, Louisiana	26.98		
MLV 6		30.92		

TABLE 1-1
Proposed Onshore Project Facilities

Facility	Location (County/Parish, State)	Approximate Milepost	Approximate Length (miles)	Proposed Work Description
Conversion of Existing Facilities				
Station 501	Cameron Parish, Louisiana	37.02 (0.00 Mainline Milepost)	N/A	All existing BMOP-owned natural gas-related equipment will be removed from the Station and new crude oil pipeline facilities will be installed. The new 42-inch pipeline will tie into the existing 36-inch Mainline at the site. The conversion of Station 501 will be expanded to include: • 42-inch pipeline tie-in with pig receiver; • 36-inch tie-in to existing Mainline with pig launcher; • MLV; and • Electrical communication and power connections for valve actuation and operational data communications.
Conversion of Stingray Pipeline between Station 501 and 701	Cameron Parish, Louisiana	MP 0.0 to 3.94 (Mainline Milepost)	3.94	Conversion of existing 36-inch pipeline from natural gas to oil service.
Stingray Tap Removal Site	Cameron Parish, Louisiana	1.61 (Mainline Milepost)	N/A	Install a new 36-inch OD pipeline segment following removal of the tap.
Station 701	Cameron Parish, Louisiana	3.94 (Mainline Milepost)	N/A	The existing Stingray compressor Station 701 will be demolished. All existing natural gas equipment will be removed from the Station except for two 10,000-barrel storage tanks. The new facility will maintain office space, a natural gas interconnect, and surge tanks. The new facility will include: • Approximately 1,000 feet of new 36-inch pipe; • Surge valves and associated equipment; • Two 10,000 bbl surge tanks; and • One 36-inch MLV.
Access Roads				
TAR-01	Jefferson County, Texas	0.5	0.02	Access to BMOP Pump Station and HDD-001 site located inside the NT.
PAR-03[b]	Orange County, Texas	1.68	2.76	From Church House Road to MP 2.0 for pipe, equipment, mats, and other materials necessary for pipeline construction push site. New permanent access road to MLV 1.
TAR-03-A	Orange County, Texas	1.73	0.17	From Church House Road. Extension of PAR-03 to staging area.

TABLE 1-1
Proposed Onshore Project Facilities

Facility	Location (County/Parish, State)	Approximate Milepost	Approximate Length (miles)	Proposed Work Description
PAR-05[b]	Orange County, Texas	4.98	1.25	From South Main St / FM 105 to ROW for pipe, equipment, mats, and other materials necessary for pipeline construction push site. New permanent access road to MLV 2.
TAR-05-A[c]	Orange County, Texas	5.36	0.90	From South Main St / FM 105 to ROW for pipe, equipment, mats, and other materials necessary for pipeline construction land lay section.
TAR-06	Orange County, Texas	5.69/5.99	1.45	From Hwy 1135/105 to ROW for pipe, equipment, mats, and other materials necessary for pipeline construction land lay section.
TAR-06-A	Orange County, Texas	6.10/6.57	8.36	From Tillie Smith to ROW for pipe, equipment, mats, and other materials necessary for pipeline construction land lay section.
TAR-07	Orange County, Texas	6.74	0.05	From Tanglewood Dr - for pipe, equipment, mats, and other materials necessary for pipeline construction land lay section.
TAR-08	Orange County, Texas	7.28	0.05	From Utopia and Shangrila to ROW for pipe, equipment, mats, and other materials necessary for pipeline construction land lay section.
TAR-09	Orange County, Texas	7.67	0.01	Temporary access drive from Bessie Heights Rd. to staging site for pull in and pull out.
TAR-10	Orange County, Texas	8.23	0.07	From Sheridan Drive to ROW for pipe, equipment, mats, and other materials necessary for pipeline construction land lay section.
TAR-11	Orange County, Texas	9.46	0.71	From Hwy 1442 to ROW for pipe, equipment, mats, and other materials necessary for pipeline construction land lay section.
TAR-12	Orange County, Texas	10.28	0.95	From Powerhouse Road to ROW both east and west - for pipe, equipment, mats, and other materials necessary for pipeline construction land lay section.
TAR-12-A	Orange County, Texas	10.40	0.66	From Powerhouse Road to MLV 3 for pipe, equipment, mats, and other materials necessary for pipeline construction land lay section and HDD.
PAR-13 [b]	Orange County, Texas	10.76	0.89	From Suncrest Drive to ROW for pipe, equipment, mats, and other materials necessary for pipeline construction land lay section. New permanent access road to MLV 3.
TAR-14	Orange County, Texas	10.78	0.81	For pipe, equipment, mats, and other materials necessary for pipeline construction land lay section and HDD.

TABLE 1-1
Proposed Onshore Project Facilities

Facility	Location (County/Parish, State)	Approximate Milepost	Approximate Length (miles)	Proposed Work Description
PAR-15[b]	Orange County, Texas	12.84	0.33	From Hwy 87 to ROW for pipe, equipment, mats, and other materials necessary for pipeline construction HDD section tie-in to push section. New permanent access road to MLV 4.
PAR-19	Cameron Parish, Louisiana	30.94	2.67	From Deep Bayou Road to ROW for pipe, equipment, mats, and other materials necessary for pipeline construction push section support and installation of MLV 7.
TAR-20-A	Cameron Parish, Louisiana	36.21	0.47	From Cameron Meadows Oilfield Road to ROW for pipe, equipment, mats, and other materials necessary for pipeline construction push section support.
PAR-20	Cameron Parish, Louisiana	36.98	4.58	From Cameron Meadows Oilfield Road to ROW for pipe, equipment, mats, and other materials necessary for pipeline construction push section support.
TAR-20-B	Cameron Parish, Louisiana	1.61 (Stingray Mainline Milepost)	1.06	From Cameron Meadows Oilfield Road to Private Road to access to Stingray Tap.
Access Canals				
TAC-02	Orange County, Texas	1.68	0.66	From Neches River to barge slip near MLV 2 location.
TAC-04	Orange County, Texas	2.73	1.45	From Neches River to HDD site for access of equipment necessary for HDD and equipment, mats, and other materials necessary for pipeline construction.
TAC-15-B	Orange County, Texas	12.20	0.50	Canal at Hwy 87 for crew boat access to HDD site.
TAC-15-C	Orange County, Texas	12.87	0.87	Hwy 87 for barge access for off-loading pipe.
PAC-16	Cameron Parish, Louisiana	27.00	1.50	From Sabine Lake to Row for pipe, equipment, mats, and other materials necessary for pipeline construction push section support.
TAC-17	Cameron Parish, Louisiana	28.18	2.13	From Sabine Lake to ROW for pipe, equipment, mats, and other materials necessary for pipeline construction push section support.

Notes:

[a] MLV 1 through MLV 6 are located along the pipeline permanent ROW. MLVs will also be installed within the facility boundaries of the BMOP Pump Station, Station 501, and Station 701. There will be one MLV at WC 148 and WC 509 as discussed in Volume IIa, Topic Report 1.

[b] Four new permanent access roads (PARs) will be required to extend existing roads to MLV sites (i.e., PAR-03, PAR-05, PAR-13, and PAR-15).

[c] One new temporary access road (TAR-05-A) will be required to access the construction ROW in Orange County, Texas. This temporary access road will be returned to pre-construction conditions following construction.

1.3.1 Onshore Pipeline

The Project will consist of a new-build approximate 37-mile, 42-inch pipeline connecting the existing NT in Jefferson County, Texas, to the existing Mainline at Station 501 in Cameron Parish, Louisiana. The new build pipeline route begins at the proposed BMOP Pump Station and proceeds north across the Neches River continuing almost to Bridge City, Texas, before turning east/southeast and crossing Sabine Lake. After leaving Sabine Lake in Cameron Parish, Louisiana, the route proceeds east for approximately 11 miles to Station 501 where it will tie into the existing Mainline.

Collocation of the new build pipeline will minimize impacts on vegetation communities during construction and operation of the pipeline system. **Table 1-2** outlines the areas of collocation for the onshore pipeline. Approximately 11.86 miles (32 percent) of the pipeline route is collocated with existing powerline, road, canal and/or foreign utility ROW. In addition, conversion of the approximate 103.4 miles of Mainline from natural gas to oil service will minimize impacts to onshore and offshore communities.

The Project will utilize nine horizontal directional drills (HDDs) along the pipeline route to cross selected existing foreign pipelines, major roadways, and major waterbodies, and also as a mitigating measure to avoid impacts to wetlands and/or sensitive resources. A description of the HDD method and the location of the HDDs are included in Section 1.5.3.2.

TABLE 1-2
Collocation of the Onshore Pipeline with Other Rights-of-Way

Collocated Facility Name	Approx. Milepost		Approximate Collocation Distance (miles)
	Start	End	
Powerline and Pipeline	0.00	0.72	0.72
Powerline and Multiple Pipelines	0.72	1.19	0.47
Powerline and Multiple Pipelines	1.40	1.70	0.30
Multiple Pipelines	2.02	2.27	0.25
Powerline and Multiple Pipelines	3.07	7.57	4.50
Powerline and Multiple Pipelines	7.57	9.89	2.32
Multiple Pipelines	10.36	10.77	0.41
Canal System	11.14	13.74	2.6
Pipeline	31.13	31.42	0.29
		TOTAL	**11.86 (32%)**

1.3.2 Aboveground Facilities

1.3.2.1 *Mainline Valves*

MLVs are designed to divide a pipeline into segments for safety reasons, including shutting down product flow and allowing access to the pipeline from the surface. As detailed in **Table 1-1**, six new MLVs will be installed within the permanent pipeline ROW of the new build pipeline. MLVs will also be installed at the BMOP Pump Station, Station 501, and Station 701. The sites for MLV 1 through MLV 4 in Orange County, Texas will be graded with gravel and/or shell. MLV 5 and MLV 6 in Cameron Parish, Louisiana will be installed on platforms due to the saturated conditions within the marsh. These valves will be used for isolation and spill control purposes and will be considered Emergency Flow Restricting Device (EFRD) valves.

MLVs will be installed in locations along the pipeline system that are accessible to authorized employees, and that are protected from damage and tampering in accordance with USDOT standards described in 49 CFR Part 195. The MLVs will also be installed in locations that will minimize damage or pollution from accidental hazardous liquid discharges in accordance USDOT standards. The MLVs will be located in fenced sites and will have electric motor operators installed for operation either locally or remotely.

1.3.2.2 *BMOP Pump Station*

The BMOP Pump Station is located in Jefferson County, Texas, adjacent to the existing NT on land that is currently being permitted for development in Jefferson County, Texas. The BMOP Pump Station site is proposed to be filled and developed as part of the "Nederland Terminal Buildout Project," which is anticipated to commence construction in January 2021, prior to construction of the BMOP Project. The pump station will include:

- 42-inch OD pipeline header;
- MLV;
- 48-inch OD pig launcher;
- Six 9,000 horsepower (hp) mainline electrical pumps;
- Metering equipment;
- Two electrical transformers in existing electrical substation (An existing substation owned by Entergy is located at NT that will supply the electrical power source for the BMOP Pump Station); and
- Permanent access road.

1.3.2.3 *Station 501*

The existing Station 501 is located at approximate MP 37 of the new 42-inch pipeline in Cameron Parish, Louisiana. All of Stingray's owned existing natural gas-related equipment will be removed from the Station and new crude oil pipeline facilities will be installed. The new 42-inch pipeline will tie into the existing 36-inch Mainline at the site. The conversion of Station 501 will be expanded to include:

- 42-inch pipeline tie-in with pig receiver;
- 36-inch tie-in to existing Mainline with pig launcher;
- MLV; and
- Electrical communication and power connections for valve actuation and operational data communications.

The final site will be graded with rock and gravel and have a 6-foot-tall chain-link fence around the perimeter.

1.3.2.4 *Station 701*

The existing Compressor Station 701 is located at MP 3.9 of the existing Mainline in Cameron Parish, Louisiana. All of the existing natural gas equipment will be removed from the site except for two 10,000-barrel storage tanks. BMOP will maintain the office space, a natural gas interconnect (owned by others), and surge tanks. Approximately 1,000 feet of new 36-inch pipe will be installed across the Station to connect the 36-inch onshore pipeline segment from Station 501 to the 36-inch Mainline going to WC 509.

Surge tanks, surge valves, and a new MLV will also be installed. The existing 10,000-barrel tanks located at Station 701 will be converted to surge relief tanks.

1.3.2.5 *Stingray Tap Removal Site*

The existing ANR Tap (Stingray Tap Removal Site) is located at approximate MP 1.6 on the converted Mainline in Cameron Parish, Louisiana. BMOP will install a new 36-inch pipeline segment following removal of the tap.

1.3.3 Access Roads and Canals

The Applicant intends to utilize existing public roads, highways, and canals to access the sites during construction. Details of the planned temporary and permanent access roads and canals are provided in **Table 1-1**. Limited improvements (i.e., grading and gravel refresh) are planned for some existing private roads to support Project construction; however, widening of access roads is not anticipated to be required. One new temporary access road (TAR-05-A) will be required to access the construction ROW in Orange County, Texas. Access roads that will not be used for facility operations will be returned to pre-construction conditions or per landowner agreement following construction. Four new permanent access roads (PARs) will be required to extend existing roads to MLV 1 through MLV 4 (i.e., PAR-03, PAR-05, PAR-13, and PAR-15). The existing facility sites have permanent gravel/paved access roads leading to the facilities. Existing canals to be used for construction equipment are necessary for HDD equipment, mats, and other materials necessary for pipeline construction to be brought to the work site. The access canals will not require improvements (i.e., dredging) for channel deepening or widening. The location of access roads and canals are shown on the mapping provided in **Volume IIb, Appendix A**.

1.3.4 Pipe and Contractor Yards/Staging Areas

The Applicant plans to utilize existing pipe and contractor yards in the Project area that have been used on previous projects. Locations will be finalized once construction contractors are selected and under contract.

The Applicant is proposing to use staging areas during onshore construction to support HDD operations and equipment off-loading. The locations of the staging areas are shown on the mapping provided in **Appendix A**. Use of these staging areas will result in temporary impacts and will be returned to pre-construction conditions following construction.

1.4 LAND REQUIREMENTS

Table 1-3 summarizes land requirements for construction and operation of the Project components. Typical and detailed site-specific drawings of the Project facilities are provided in **Volume IIb, Appendix B1**. Current land uses of all areas affected by the Project are described in Topic Report 8, "Land Use, Coastal Zone, Recreation and Aesthetics" (Volume IIb. Details of the Project's offshore facilities are provided in Topic Report 1 (Volume IIa). A description of the land requirements for the proposed onshore Project facilities is provided in the following sections.

TABLE 1-3
Land Requirements for the Project

Facility	Land Affected During Construction[a] (Temporary Impacts)	Land Affected During Operation[b] (Permanent Impacts)	Total Acreage
	Acres	Acres	
Onshore Project Components			
Onshore New Build Pipeline	655.36	223.07	878.43
New MLVs[c]	0.00	0.68	0.68
BMOP Pump Station[d]	0.00	8.15	8.15
Station 501[e]	0.77	2.17	2.94
Station 701[f]	0.90	32.12	33.02
Stingray Tap Removal Site[g]	1.86	0.92	2.78
Access Roads[h]	0.40	0.70	1.10
Staging Areas	20.34	0.00	20.34
Onshore Project Total	**679.63**	**267.81**	**947.44**

Notes:
[a] Construction Acreage = all workspace during construction activities (Temporary Workspace [TWS] within construction Right-of-Way [ROW] and Additional Temporary Workspace [ATWS]; excludes Operational ROW). Construction ROW represents a 150-foot-wide construction ROW in upland and wetland areas and a 300-foot-wide ROW for in-water construction in Sabine Lake.
[b] Operational acreage = 50-foot wide permanent ROW to be acquired for operation. Operation areas will be maintained as new permanent pipeline ROW or aboveground facility area.
[c] Represents operational impacts for MLV 1 through MLV 6.
[d] The BMOP Pump Station site is proposed to be graded and filled as part of the "Nederland Terminal Buildout Project," which is anticipated to commence in January 2021, prior to construction of the BMOP Project.
[e] Acreage includes existing Station 501 footprint and new expansion area (operation impacts) and ATWS (construction impacts).
[f] Acreage includes existing Station 701 footprint (operation impacts) and ATWS (construction impacts).
[g] Acreage includes existing Stingray Tap site (operation impacts) and ATWS (construction impacts).
[h] Acreage includes 1 new temporary access road (TAR-056-A) and 4 new permanent access roads (PAR-03, PAR-05, PAR-13, and PAR-15).

1.4.1 Onshore Pipeline

Land requirements for the proposed onshore pipeline are summarized in **Table 1-3**, and a description of the land requirements is provided in the following sections. Construction ROW limits for the proposed pipeline is shown on aerial alignment sheets included in **Volume IIb, Appendix A-2**. **Volume IIb, Appendix B1** includes typical ROW cross-section drawings for the various pipeline construction configurations.

1.4.1.1 *Pipeline Right-of-Way*

Construction of the new pipeline will require temporary (construction) workspace to facilitate construction equipment, referred to as the construction ROW. The Applicant proposes to use a 150-foot-wide construction ROW in upland and wetland areas and a 300-foot-wide ROW for in-water construction in Sabine Lake to provide a safe work site and promote effective implementation of erosion control measures as needed. In wetlands, the use of a 150-foot-wide ROW is necessary to avoid the potential safety hazards associated with the large diameter pipe and the equipment needed to handle the pipe, saturated and/or granular soils, including shifting soils and trench wall collapse in saturated conditions. Additionally, the spoil materials will not stack, and a wider area is required for spoil placement to avoid impacts to off ROW

areas. Following construction, the Applicant will retain a 50-foot-wide permanent ROW over the pipeline. The existing 36-inch pipeline maintains a 50-foot-wide permanent ROW. **Volume IIb, Appendix B1** includes typical ROW cross-section drawings for the various pipeline construction configurations.

1.4.1.2 *Additional Temporary Workspace and Staging Areas*

During construction activities, additional temporary workspaces (ATWS) and staging areas will be required beyond the width of the 150-foot-wide construction corridor at certain designated locations to provide the space necessary for safe and efficient installations of the proposed pipeline. ATWS and staging areas will be required during construction in areas such as the following:

- MLVs;
- Roadway, waterbody, wetland, or other utility crossings;
- Points of utility intersection and crossovers;
- Entry and exit locations for the HDD construction method; and
- Start and end locations for the push/pull construction method in wetlands.

The extent of ATWS and the staging areas are determined on a site-specific basis and are depicted on the aerial alignment sheets provided in **Volume IIb, Appendix A-2**. The ATWS areas are restricted to the minimum size necessary to safely construct the pipeline.

1.4.2 Aboveground Facilities

Land requirements for the proposed aboveground facilities are summarized in **Table 1-3**. Station 501 and Station 701 will be located at existing sites that will be converted for the Project and the BMOP Pump Station will be located adjacent to the existing NT; thus, minimizing new land requirements for the Project. Construction workspace requirements for the proposed facilities are shown on the Project mapping included in **Volume IIb, Appendix A**. A description of the land requirements for the proposed aboveground facilities is provided in the following sections.

1.4.2.1 *Mainline Valves*

Six new MLVs will be installed within the permanent pipeline ROW of the new build pipeline. MLVs will also be installed at the BMOP Pump Station, Station 501, and Station 701. These valves will be used for isolation and spill control purposes.

The MLV sites will be located within the new permanent pipeline ROW (or on proposed facility sites) and will be approximately 50 feet by 100 feet (0.1 acre). The sites for MLV 1 through MLV 4 in Orange County, Texas will be graded with gravel and/or shell. MLV 5 and MLV 6 in Cameron Parish, Louisiana will be installed on platforms due to the saturated conditions within the marsh. The MLVs along the pipeline ROW will have a 6-foot-tall chain-link fence around the perimeter.

1.4.2.2 *BMOP Pump Station*

The BMOP Pump Station site is located on approximately 8.2 acres adjacent to the existing NT in Jefferson County, Texas. The BMOP Pump Station will include installing a pipeline header, metering and pump equipment, an electrical substation, a MLV, a pig launcher and an access road. The BMOP Pump Station site is proposed to be graded and filled as part of the "Nederland Terminal Buildout Project," which is

anticipated to commence construction in January 2021, prior to construction of the BMOP Project. Once the land is filled and BMOP permits acquired, the BMOP Pump Station will be built. Station 501

1.4.2.3 *Station 501*

The existing Station 501 is located on approximately 0.5 acre in Cameron Parish, Louisiana. The new 42-inch onshore pipeline will tie into the existing 36-inch Mainline at this site. Station 501 will be expanded 1.6 acres to include a new pig receiver for the 42-inch pipeline termination, a new pig launcher for the existing 36-inch Mainline, and a new MLV. Approximately 0.8 acre of ATWS will be required outside of the existing facility during construction.

1.4.2.4 *Station 701*

Station 701 is an existing 32.1 acre-compressor station that will be converted for the Project. Existing natural gas equipment will be removed from the station and approximately 1,000 feet of new 36-inch pipe will be installed across the station and a new MLV will be installed. BMOP will maintain the office space, a natural gas interconnect (owned by others), and surge tanks. It is anticipated the existing 10,000-barrel storage tanks (owned by others) associated with Station 701 may be utilized as the surge tanks. Approximately 0.9 acre of ATWS will be required along the existing Mainline on the north side of the station for installation of the 36-inch pipe. Following construction, ATWS areas will be returned, as closely as possible, to pre-construction contours and allowed to naturally revegetate.

1.4.2.5 *Stingray Tap Removal Site*

The existing ANR Tap (Stingray Tap Removal Site) is located at approximate MP 1.6 on the existing Mainline in Cameron Parish, Louisiana. The existing tap provides a natural gas delivery interconnect with TC Energy pipeline. BMOP will install a 36-inch OD pipe segment following removal of the tap. Approximately 1.9 acres of ATWS will be required along the existing Mainline on the north and south sides of the site to excavate and install the pipeline segment across the site.

1.4.3 Access Roads and Canals

The Applicant intends to utilize existing public roads, highways, and canals to access the sites during construction. Land requirements for temporary and permanent access roads and canals are provided in **Table 1-1**. One new temporary access road (TAR-05-A) will be required to access the construction ROW in Orange County, Texas. Access roads that will not be used for facility operations will be returned to pre-construction conditions or per landowner agreement following construction. Four new permanent access roads (PARs) will be required to extend existing roads to MLV 1 through MLV 4 (i.e., PAR-03, PAR-05, PAR-13, and PAR-15). The existing facility sites have permanent gravel/paved access roads leading to the facilities. The access canals will not require improvements (i.e., dredging) for channel deepening or widening. The location of access roads and canals are shown on the mapping provided in **Appendix A** (Volume IIb).

1.5 CONSTRUCTION AND INSTALLATION

The Project facilities will be designed, constructed, tested, operated, and maintained in accordance with the USDOT regulations in 49 CFR Part 195 (Transportation of Hazardous Liquids by Pipeline) and all applicable laws, regulations, and standards that are intended to protect the public by preventing or mitigating pipeline failures or accidents, and ensure safe operation of the facilities.

In addition to federal requirements and guidelines, the following plans will be implemented (included in **Appendix C**) to ensure adequate protection of environmental and cultural resources during onshore construction.

- Onshore Construction Best Management Practices (BMPs) provided in **Appendix C-1** (Volume IIb);
- Revegetation Plan provided in **Appendix C-2** (Volume IIb);
- Spill Prevention and Response (SPAR) Plan provided in **Appendix C-3** (Volume IIb);
- Unanticipated Discovery Plan (i.e., cultural, historical, paleontological resources, human remains, and contaminated media) provided in **Appendix C-4** (Volume IIb); and
- HDD Contingency Plan provided in **Appendix C-5** (Volume IIb).

The following sections identify the general construction procedures for routine (conventional) pipeline construction for the Project, as well as the specialized construction techniques that will be utilized in environmentally sensitive areas.

1.5.1 Construction Schedule and Workforce

1.5.1.1 *Construction Schedule*

Construction of the Project is planned to begin in November 2021 for onshore fabrication and August 2022 for offshore installation with Project completion and commissioning scheduled for July 2023. Procurement of major platform equipment is expected to take 10 months. Deck fabrication, outfitting, and onshore pre-commissioning are expected to take 11 months with delivery to the offshore sites staggered to accommodate the tasks of the primary installation vessels. Loadout, transport, and installation will take approximately 3 months. Conversion of the Mainline to oil service, which will occur concurrently with prefabrication and construction of the other DWP components, will take approximately 6 months. Final offshore commissioning and startup activities will take approximately 2 months. Onshore pipeline construction, including the BMOP Pump Station, is planned to begin March 2022 and be complete by April 2023. A construction schedule is included in Topic Report 1 (Volume IIa), Figure 1-11.

1.5.1.2 *Workforce Estimate*

A complete discussion of the Project's workforce for the offshore and onshore components is provided in Section 1.4.1.2 of Volume IIa, Topic Report 1.

1.5.2 Pre-Construction Surveys

Table 1-4 provides a summary of the pre-construction field surveys completed for Project's onshore components and the percent of surveys complete based on landowner consent.

TABLE 1-4
Onshore Pre-Construction Surveys

Survey	Percent Complete	Survey Report Location
Wetland and Waterbody Delineation	100%	Volume IIb, Appendix D-1
Listed Species Survey	100%	Volume IIb, Appendix D-2
Benthic Surveys (Sabine Lake)	80% (diver and tong verifications survey methodologies have received agency approvals and are currently underway)	Volume IIb, Appendix D-3 [*To be submitted at a later date*] See TPWD and LDWF Agency Correspondence, Volume IIb, Appendix D-3 regarding sampling verification plans.
Archeological Investigations (Onshore)	95%	Volume III, Appendix E [*Confidential*]
Onshore Geotechnical Investigation (HDD Locations) [a]	70%	Volume III, Appendix C [*Confidential*]
Noise Assessment for HDD Operations	100%	Volume IIb, Appendix F

Note:
[a] All geotechnical investigations in Texas are complete awaiting final geotechnical reports. Commencement of geotechnical investigations in Louisiana in support of one water to water HDD and MLV platform locations is pending a permit receipt of a permit form LDNR.

1.5.3 Onshore New Build Pipeline

Table 1-5 lists the proposed construction methods by MP. As described in the following sections, the Applicant will use a combination of conventional and specialized construction procedures to complete the proposed pipeline installation. Special construction techniques (i.e., push/pull, HDD, bore, and barge lay) are required when a pipeline is installed across saturated wetlands, waterbodies (i.e., Sabine Lake), roads, major utilities, and other sensitive environmental areas.

The majority of the construction of the onshore pipeline will occur in inundated wetlands and open water (i.e., Sabine Lake). The pipeline will be installed by the push/pull method in areas of inundated wetlands/marsh and the barge lay method in areas of open water in Sabine Lake. Nine HDD operations will be conducted along the pipeline route for installation across the Neches River, Lower Neches Wildlife Management Area (WMA), foreign pipelines, the Intracoastal Waterway, and canal and highway crossings. Conventional open cut construction techniques will mainly be conducted where the proposed pipeline is collocated with the existing powerline/pipeline corridor in Jefferson and Orange County, Texas in areas where soils are not inundated. The construction crew and spread makeup is not known at this time; however, it is anticipated that one construction contractor will be awarded the work with four construction crews or sub-spreads based on construction methodologies proposed. The four methodologies include: HDD, push/pull, upland/wetland open cut, and shallow water lay barge (Sabine Lake).

TABLE 1-5
Summary of Construction Techniques for the Onshore New Build Pipeline

Milepost		Construction Technique or Pipeline Facility	Construction Method	Pipeline Length (feet)
Begin	End			
0.00	0.02	Launcher	Pre-fabricated pipe string installed with conventional open cut	100
0.02	0.60	Parallel Powerline	Conventional open cut	3,044
0.60	1.25	HDD-001; Neches River	HDD	3,457
1.25	1.65	Parallel Pipeline	Conventional open cut	2,122
1.65	1.66	MLV 1	Fab open cut	60
1.66	1.67	Parallel Pipeline	Conventional open cut	60
1.67	1.69	Private Road	Bore	80
1.69	2.50	Push Site #1 North; Wetland	Push/pull	4,286
2.50	2.89	HDD-002; Foreign Pipelines and Canal	HDD	2,052
2.89	4.96	Push Site #2 South; Wetland	Push/pull	10,933
4.96	4.97	MLV 2	Fab open cut	60
4.97	5.36	Parallel Pipeline; Push Site #2 North; Wetland	Push/pull	2,056
5.36	7.19	Parallel Powerline and Pipeline	Conventional open cut	9,663
7.19	7.22	Tanglewood Dr. Road	Bore	150
7.22	7.63	Parallel Powerline and Pipeline	Conventional open cut	2,185
7.63	7.66	Bessie Heights Rd	Bore	127
7.66	8.17	Parallel Powerline and Pipeline; Near Population	Conventional open cut	2,708
8.17	8.81	HDD-003; TPWD Tract	HDD	3,394
8.81	9.43	Parallel Powerlines and Pipeline; Wetland	Conventional open cut	3,253
9.43	9.86	HDD-004; Pipeline Crossing	HDD	2,272
9.86	10.13	Parallel Powerline and Pipeline	Conventional open cut	1,406
10.13	10.52	HDD-005; Gulf State Utilities Rd, Powerhouse Rd and Canal	HDD	2,101
10.52	10.83	Parallel Pipeline	Conventional open cut	1,619
10.83	10.84	MLV 3	Fab open cut	60
10.84	12.35	Push Site #3 South; Wetland	Push/pull	7,951
12.35	12.99	HDD-006; Highway 73 / 87	HDD	3,384
12.99	13.01	Parallel Canal; Wetland	Conventional open cut	95
13.01	13.02	MLV 4	Fab open cut	60
13.02	13.64	Parallel Canal; Wetland	Conventional open cut	3,270

TABLE 1-5
Summary of Construction Techniques for the Onshore New Build Pipeline

Milepost		Construction Technique or Pipeline Facility	Construction Method	Pipeline Length (feet)
Begin	End			
13.64	14.10	HDD-007; Sabine Lake North Shoreline	HDD	2,460
14.10	14.85	Lay Barge Push Site # 4 North; Wetland	Push/pull	3,938
14.85	15.75	HDD-008; Intracoastal Waterway (ICWW)	HDD	4,766
15.75	20.41	Sabine Lake	Barge lay	24,598
20.41	20.81	HDD-009; 42-inch KM Pipeline Crossing in Sabine Lake	HDD	2,109
20.81	25.59	Sabine Lake	Barge lay	25,218
25.59	26.98	Lay Barge Push Site #5 East; Wetland	Push/pull	7,335
26.98	26.99	MLV 5	Fab open cut	60
26.99	30.92	Lay Barge Push Site #5 East; Wetland	Push/pull	20,753
30.92	30.93	MLV 6	Fab open cut	60
30.93	36.99	Lay Barge Push Site #5 East; Wetland	Push/pull	32,014
36.99	37.02	Receiver	Fab open cut	168

1.5.3.1 *Conventional Pipeline Installation Procedures*

Pipeline construction using conventional techniques typically involves the following sequential activities: clearing; trenching; stringing, welding, and installation; backfilling and grade restoration; hydrostatic testing and tie-ins; and cleanup and restoration. Conventional (open cut) pipeline construction technique will be employed to install the onshore pipeline in areas where the proposed pipeline is collocated with the existing powerline corridor and where soils are not saturated or inundated.

Typical upland construction ROW configurations are included in **Volume IIb**, **Appendix B1** (**Figure B1-1**) and **Figure B1-2** and **Figure B1-3** (parallel transmission line and foreign pipeline). A brief description of each of the main activities is presented in the following sections.

Clearing and Grading

Prior to construction activities, the limits of the approved workspace will be surveyed and staked to clearly identify Project limits. No work or ground disturbing activities will take place outside of the approved Project footprint without prior approval from the MARAD, other permitting agencies, and landowner approvals, as required. Pipeline installation will begin with clearing and grading of the construction ROW and ATWS areas. Large obstacles, such as trees, brush, and logs, will be removed. Timber and vegetative debris may be chipped for use as erosion control mulch or disposed of in accordance with applicable local regulations and landowner requirements. The workspace may be graded, as necessary, to provide a level work surface to allow safe passage of equipment. Temporary erosion controls will be properly installed immediately after initial ground disturbance, and will be maintained until replaced by permanent erosion controls or until restoration is complete.

Trenching

Once the construction ROW has been cleared and graded, a trench will be excavated using a track-mounted excavator or similar equipment to a depth sufficient to allow a minimum of 3 feet of cover (unless otherwise specified) between the top of the pipe and the final land surface after backfilling. The bottom of the trench will be excavated to at least 12 inches wider than the outside diameter of the pipe. Excavated subsoil will be stockpiled separately from topsoil, where required in unsaturated conditions.

If necessary, trench dewatering will be performed in accordance with any applicable permit requirements. BMPs such as filter bags or silt fence/hay bale structures will be used to control erosion and siltation upon discharge. No blasting will be required for onshore construction.

Pipe Stringing and Bending

Once the trench is excavated, the next process is stringing the pipe along the trench. Stringing involves initially hauling the pipe, generally in 40-foot lengths (referred to as joints) or 80-foot lengths (double joints), from existing pipe yards onto the ROW via a stringing truck. The pipe will be off-loaded and placed along the excavated trench end-to-end (or "strung") to allow for welding into continuous lengths known as strings. Individual joints will be strung along the ROW parallel to the centerline so they are easily accessible to construction personnel. At wetland and stream crossings, the amount of pipe required to cross the feature will be stockpiled in temporary work areas close to the water or wetland feature.

Pipe will be delivered to the work area in straight sections. Some bending of the pipe will be required to enable the pipeline to follow the natural grade and direction changes of the ROW. Selected joints will be field-bent by track-mounted hydraulic bending machines, as necessary, prior to stringing. For larger angles (i.e., changes in direction), prefabricated pipe will be installed.

Lowering-In, Padding, and Backfilling

Before the pipeline is lowered in, the trench will be inspected to ensure that it is free of rocks and other debris that could damage the pipe or protective coating. The trench will also be inspected to ensure that the pipe and trench configurations are compatible.

After lowering the pipe into the trench, the trench will be backfilled with previously excavated materials. If the previously excavated material is not suitable backfill (i.e., contains large rocks or other materials that could damage the pipe coating), screen fill (i.e., padding) will be placed around the pipe prior to backfilling. Screened materials will be generated from excavated material and processed with a track-mounted padding machine or a bucket screen on an excavator.

Hydrostatic Testing

Onshore Pipeline

Estimated water use requirements, water uptake source and discharge locations for onshore pipeline construction are provided in **Table 1-6**. The Applicant will obtain and comply with all applicable state permits prior to the discharge of test water.

After burial, the new build onshore pipeline will be hydrostatically tested to ensure the system is capable of withstanding the operating pressure for which it was designed. Hydrostatic testing will be conducted in accordance with Pipeline and Hazardous Materials Safety Administration (PHMSA) requirements (49 CFR §§ 195.505 and 195.588). The water in the pipe will be pressurized and held for a minimum of eight hours.

A four-hour pre-test will be conducted for the HDD string pipe at the locations listed in **Table 1-6**. Any loss of pressure that cannot be attributed to other factors, such as temperature changes, will be investigated. Any leaks detected will be repaired and the segment retested.

The Applicant will not add any chemicals to the onshore component hydrostatic test water, and the discharged water will be tested in accordance with permitting requirements. In addition, the Applicant will implement the measures outlined in its Onshore Construction BMP Plan, which include screening intakes to avoid entrainment of fish and invertebrates; maintaining adequate stream flow rates to protect aquatic life and to provide for all waterbody uses and downstream withdrawals of water by existing users; siting hydrostatic test manifolds outside of wetlands and riparian areas to the maximum extent practicable; regulating discharge rates; using energy dissipation devices; and installing sediment barriers as necessary to prevent erosion, streambed scour, suspension of sediments, or excessive streamflow. Typical construction dewatering structure and filter bag drawings are provided in **Appendix B1** (**Volume IIb**, **Figure B1-18** and **Figure B1-19**). Once a segment of pipe has been successfully tested and dried, the test cap and manifold will be removed, and the pipe will be connected to the remainder of the pipeline.

Existing Mainline

The existing section of the Mainline from Station 501 to Station 701 will be pigged and cleaned prior to hydrostatic testing. If any water is generated during the cleaning process it will be collected at either Station 501 or 701 and hauled off for disposal. The line will be filled with water after the cleaning runs and hydrostatically tested. After completion of hydrostatic testing, the segment between Station 501 and 701 will be dewatered at Station 501 per the discharge permits received for the project. Discharge volumes are provided in **Table 1-6**.

TABLE 1-6
Water Requirements, Sources, and Discharge Locations for Hydrostatic Testing the Onshore Components

HDD ID Number	Approximate Milepost	Approximate Length (feet)	Volume of Water at Pressure (gallons)	Water Uptake Source	Water Discharge Area
Onshore Pipeline					
HDD-01[a]	MP 0.60 - 1.25	3,473	231,231	Water Source 1 - Neches River	Water Discharge 1 - Neches River
HDD-02[a]	MP 2.50 - 2.89	2,059	137,087	Water Source 1 - Neches River	Water Discharge 1 - Neches River
HDD-03[a]	MP 8.17 - 8.81	3,412	227,170	Water Source 2 - Truck to site (from municipal or surface water source)	Water Discharge 2 - Offsite disposal Discharged onsite
HDD-04[a]	MP 9.43 - 9.86	2,283	152,001	Water Source 3 - Truck to site (from municipal or surface water source)	Water Discharge 3 - Discharged onsite
HDD-05[a]	MP 10.13 - 10.52	2,115	140,816	Water Source 4 - Truck to site (from municipal or surface water source)	Water Discharge 4 - Holding pond or onsite

TABLE 1-6
Water Requirements, Sources, and Discharge Locations for Hydrostatic Testing the Onshore Components

HDD ID Number	Approximate Milepost	Approximate Length (feet)	Volume of Water at Pressure (gallons)	Water Uptake Source	Water Discharge Area
HDD-06[a]	MP 12.35 - 12.99	3,395	226,038	Water Source 5 - Old River Cove (Sabine Lake)	Water Discharge 5 - Old River Cove (Sabine Lake)
HDD-07[a]	MP 13.64 - 14.10	2,471	164,518	Water Source 5 - Old River Cove (Sabine Lake)	Water Discharge 5 - Old River Cove (Sabine Lake)
HDD-08[a]	MP 14.85 - 15.75	4,780	318,051	Water Source 5 - Old River Cove (Sabine Lake)	Water Discharge 5 - Old River Cove (Sabine Lake)
HDD-09[a]	MP 20.41 - 20.81	2,520	140,882	Water Source 6 - Sabine Lake	Water Discharge 6 - Sabine Lake
New 42-inch OD Pipeline from NT to Station 501[b]	MP 0.00 - 37.02	195,239	13,373,424	Water Source 7 - Neches River or Sabine Lake or Station 501 Area	Water Discharge 7 Neches River or Sabine Lake or Station 501 Area
Existing 36-inch Mainline from Station 501 to 701[c]	MP 0.00 to 3.90 of the existing Stingray Mainline	20,592	1,052,000	Station 501	Station 501
Aboveground Facilities					
BMOP Pump Station Pig Launcher	MP 0.00	250	19,300	Water Source 1 - Neches River	Water Source 1 - Neches River
Station 501	MP 37.02	400	33,350	Water Source 7 - Neches River or Sabine Lake or Station 501 Area	Water Discharge 7 Neches River or Sabine Lake or Station 501 Area
	TOTAL	**242,989**	**16,215,868**		

Notes:
[a] 4-hour pre-test
[b] 8-hour USDOT test
[c] Hydrostatic test volume for Station 701 is included in the existing 36-inch Mainline from Station 501 to Station 701 pipeline segment.

Cleanup, Restoration, and Revegetation

Following successful completion of hydrostatic testing, workspaces, including the ROW and ATWS, will be returned to pre-construction contours, and debris will be removed and disposed of in accordance with local ordinances and permit conditions. Permanent erosion and sediment control measures, including trench breakers, and vegetation, will be installed. Soils that supported vegetation prior to construction will be revegetated using seed mixes, application rates, and timing windows recommended by local soil conservation authorities or allowed to naturally revegetate or as requested by the landowner. Fences, gates, driveways, and roads disturbed during construction will be restored to pre-construction or better condition.

1.5.3.2 *Special Pipeline Construction Methods*

Special construction techniques are required when a pipeline is installed across wetlands, waterbodies (i.e., Sabine Lake), roads, major utilities, and other sensitive environmental resources. In general, ATWS and staging areas adjacent to the construction ROW will be used at most of these areas for staging construction, stockpiling spoil, storing materials, maneuvering equipment, and fabricating pipe. Special pipeline construction methods that will be utilized are described in the following sections.

Wetland and Waterbody Construction

Push/Pull Technique

Because the majority of the pipeline construction is in inundated or excessively wet areas, extensive use of the push/pull method will be required in the Project area (see **Table 1-5**). For the push/pull method, a 150-foot-wide construction ROW will be required to avoid the potential safety hazards associated with saturated and/or granular soils, a wider ditch in saturated conditions, and adequate space for spoil storage to avoid impacts to off-ROW areas, since spoils will not stack in saturated conditions. A typical ROW configuration drawing for the push/pull technique is provided in **Appendix B1 (Figure B1-5)**. This method will reduce storage pile height and prevent material from reentering the trench prior to placement of the concrete-coated pipe.

Equipment on the construction ROW will be minimized and, when used, would be of the type having the least environmental impact in saturated ground conditions. This equipment includes mats, marsh buggies, airboats, amphibious equipment, tracked equipment, and barges. The contractor will use discretion in choosing the equipment that would create the least ground pressure for the specific application. Construction of the Project will comply with applicable permit requirements

The push/pull technique involves stringing and welding the pipeline outside of the wetland and excavating the trench through the wetland using a backhoe supported by equipment mats. The water that seeps into the trench is used as the vehicle to "float" the pipeline into place together with a winch and flotation devices that will be attached to the pipe. After the pipeline is floated into place, the floats are removed, allowing the pipeline to sink into the trench. Pipe installed in saturated wetlands is typically coated with concrete or equipped with set-on weights to provide negative buoyancy. After the pipeline sinks to the bottom of the trench, a marsh buggy or track-hoe working on equipment mats, if practical, will backfill the trench and complete cleanup. Topsoil segregation generally will not be possible in inundated wetland soils.

Push sites in open-water areas will consist of several shallow-draft spud barges connected together to provide a working platform. At the push site, various pipeline operations will take place, including pipe make-up, welding, non-destructive testing, joint coating and coating repairs, and installation of flotation apparatus. Where there is standing water, only enough clearing and trenching will be done to accommodate installation of the pipe. Each excavator used will have a lateral reach sufficient to place spoil within the 300-foot-wide construction ROW. Pipe stringing and lowering in the push lay method will be similar to that described in the conventional lay method.

Prior to backfilling, trench breakers will be installed where necessary to prevent the subsurface drainage of water from wetlands. Equipment mats, terra mats, and timber rip-rap will be removed from wetlands following backfilling. Once revegetation is successful, any installed sediment barriers will be removed from the ROW and disposed of properly.

Open Cut Wetland Method

At open cut wetland crossings, a 150-foot-wide construction ROW will be required to avoid the potential safety hazards associated with saturated and/or granular soils, including shifting soils and trench wall collapse. Typical saturated and unsaturated open cut construction ROW configuration drawings are provided in **Volume IIb**, **Appendix B1** (**Figure B1-6** and **Figure B1-7)**, respectively. Wetland crossings will be completed in accordance with federal and state permits. The Applicant will implement the mitigation measures outlined in its Project-specific Onshore Construction BMP Plan (**Volume IIb**, **Appendix C-1**) and will comply with permit conditions identified in the U.S. Army Corps of Engineers (USACE) Section 10/404 permit for the Project to control erosion and restore the grade and hydrology after construction in wetlands.

Standard open cut pipeline construction methods, similar to construction methods described for uplands, will be used for unsaturated wetlands. Clearing of vegetation in wetlands will be limited to trees and shrubs, which will be cut flush with the surface of the ground and removed from the wetland. Stump removal, grading, topsoil segregation, and excavation will be limited to the area immediately over the trenchline. A limited amount of stump removal and grading may be conducted in other areas to ensure a safe working environment.

In unsaturated wetlands, up to 12 inches of topsoil from the trenchline will be stripped and stored separately from the subsoil. Implementation of proper topsoil segregation, where necessary, will help ensure post-construction revegetation success, thereby minimizing the potential for erosion due to lack of vegetative cover. Topsoil will be segregated across the full width of the construction workspace. Topsoil segregation generally will not be possible in saturated wetland soils. When feasible, subsoil will be stockpiled separately from topsoil. The segregated topsoil and subsoil stockpiles will be replaced in the proper order during backfilling and final grading. The topsoil and subsoil piles will be separated without the use of physical barriers. The Applicant will implement the mitigation measures outlined in its Project-specific Onshore Construction BMP Plan (**Volume IIb**, **Appendix C-1)** and will comply with permit conditions identified in the USACE Section 10/404 permit for the Project to minimize erosion from precipitation. Erosion from wind is not anticipated for a majority of the soil types in the Project area, based on the composition of the soils.

Sediment barriers, such as silt fence and staked straw bales, will be installed as practical and maintained adjacent to wetlands and within temporary extra workspaces as necessary to minimize the potential for sediment runoff. Sediment barriers will be installed across the full width of the construction ROW at the base of slopes adjacent to wetland boundaries. Silt fence or straw bales installed across the working side of the ROW will be removed during the day when vehicle traffic is present and will be replaced each night. Sediment barriers will also be installed within wetlands along the edge of the ROW, where necessary, to minimize the potential for sediment to run off the construction ROW and into wetland areas outside the construction work area. If water is present in the trench, trench plugs will be left in the trench before its entrance into the wetland. The hydrologic integrity of the wetland will be maintained by installing trench breakers where the trench enters and exits the wetland. If trench dewatering is necessary in wetlands, the trench water will be discharged in stable, vegetated areas and/or filtered through a filter bag or siltation barrier. Measures will be taken to minimize heavily silt-laden water from being allowed to flow into a wetland.

Construction equipment working in wetlands will be limited to that essential for ROW clearing, excavating the trench, fabricating and installing the pipeline, backfilling the trench, and restoring the ROW. The method of pipeline construction used in wetlands will depend largely on the stability of the soils at the time of construction. In areas of saturated soils or standing water, low-groundweight construction equipment

and/or timber rip-rap, pre-fabricated equipment mats, or terra mats will be used to reduce rutting and the mixing of topsoil and subsoil.

Areas temporarily disturbed during construction will be restored to their pre-existing contours, to the extent practicable, and allowed to naturally revegetate. Revegetation measures will be implemented in accordance with the Project's Revegetation Plan (**Volume IIb**, **Appendix C-2**).

Open Cut Waterbody Method

The open-cut crossing technique is a "wet" crossing method that is completed while the waterbody continues to flow across the work area (see **Volume IIb, Appendix B1, Figure B1-9).** In general, an open-cut crossing is accomplished using methods similar to conventional upland open-cut trenching. The open-cut construction method involves excavation of the pipeline trench across the waterbody, installation of a prefabricated segment of pipeline, and backfilling of the trench with native material without affecting or diverting flow at the time of crossing. A track mounted excavator (or similar equipment) working from the bank will be used to excavate the trench within the water. Material excavated from the trench will be stored at least 10 feet from the water's edge and sediment barriers (silt fences and/or straw bales) will be installed and maintained at stream crossings to minimize the introduction of sediment into waterbodies from disturbed upland areas. The Applicant will implement the mitigation measures outlined in its Project-specific Onshore Construction BMP Plan (**Volume IIb, Appendix C-1)** and will comply with permit conditions identified in the USACE Section 10/404 permit for the Project to minimize erosion from precipitation.

Sabine Lake

As detailed in **Table 1-5**, the installation of pipeline across the bottom of Sabine Lake using of a variety of special pipeline construction methods including a water to shore HDD to cross the northern shoreline of Sabine Lake, two water to water HDDs (to cross the Intracoastal Waterway and a foreign pipeline within Sabine Lake), the barge lay method to cross open water, and the push/pull technique at two locations including the southern shoreline crossing. As depicted in the typical Sabine Lake ROW construction configuration drawing in **Volume IIb, Appendix B1 (Figure B1-8)**, the construction ROW will be 300-feet wide and the permanent ROW will be 50-feet wide.

Horizontal Directional Drill

An HDD is a trenchless crossing method that involves drilling a hole under the waterbody (or other sensitive features) and installing a prefabricated pipe segment through the hole. As detailed in **Table 1-7,** the HDD construction method will be used at nine locations along the pipeline route and includes shore to shore HDD, water to shore or shore to water HDD (to be determined by contractor) at the Sabine Lake northern shoreline, and two water to water HDDs within Sabine Lake. Typical HDD ROW configurations are provided in **Volume IIb, Appendix B1** (**Figures B1-11** through **B1-14**). A typical HDD overbend tie-in drawing is provided in **Volume IIb, Appendix B1** (**Figure B1-15**). Site-specific HDD drawings for HDD-01 through HDD-09 are provided in **Volume IIb, Appendix B3**.

TABLE 1-7
HDD Locations along the Onshore New Build Pipeline Route

HDD ID Number	Approximate Start – End Milepost	Approximate Length (feet)	Feature Crossed	Typical Drawing
HDD-01	MP 0.60 - 1.25	3,457	Neches River	Shore to Shore (Appendix B1, Figure B1-11)
HDD-02	MP 2.50 - 2.89	2,052	Foreign Pipelines and Canal	Shore to Shore (Appendix B1, Figure B1-11)
HDD-03	MP 8.17 - 8.81	3,394	TPWD Lower Neches WMA Nelda Stark Unit	Shore to Shore (Appendix B1, Figure B1-11)
HDD-04	MP 9.43 - 9.86	2,272	Foreign Pipeline	Shore to Shore (Appendix B1, Figure B1-11)
HDD-05	MP 10.13 - 10.52	2,101	Gulf State Utilities Road, Powerhouse Road and Canal	Shore to Shore (Appendix B1, Figure B1-11)
HDD-06	MP 12.35 - 12.99	3,384	SH 73/87	Shore to Shore (Appendix B1, Figure B1-11)
HDD-07	MP 13.64 - 14.10	2,460	Sabine Lake North Shoreline	Water to Shore or Shore to Water (Appendix B1, Figures B1-12 and B1-13)
HDD-08	MP 14.85 - 15.75	4,766	ICWW within Sabine Lake	Water to Water (Appendix B1, Figure B1-14)
HDD-09	MP 20.41 - 20.81	2,109	Pipeline Crossing in Sabine Lake	Water to Water (Appendix B1, Figure B1-14)

The HDD method involves establishing staging areas along both sides of the proposed crossing in order to avoid trenching in sensitive areas. The process commences with the boring of a pilot hole beneath the waterbody or other feature to be avoided, then enlarging the hole with one or more passes of a reamer until the hole is the necessary diameter to facilitate the pull-back (installation) of the pipeline. Once the remaining passes are completed, a prefabricated pipe segment is pulled through the hole to complete the crossing.

Throughout the drilling process, a slurry of non-toxic, bentonite clay and water will be pressurized and pumped through the drilling head to lubricate the drill bit, remove drill cuttings and hold the hole open. This slurry, referred to as drilling mud or drilling fluid, has the potential to be inadvertently released to the surface through fractures, fissures, or during the drilling of the pilot hole when the pressurized drilling mud is seeking the path of least resistance. The path of least resistance is typically the path back along the drilled pilot hole. However, if the drill path becomes temporarily blocked or large fractures or fissures that lead to the surface are crossed, an inadvertent release could occur at the fracture or fissure location.

The drilling construction contractor will monitor the pipeline ROW and the circulation of drilling mud throughout the HDD operation for indications of an inadvertent drilling mud release and will immediately implement corrective actions if a release is observed or suspected. The Applicant has prepared an HDD Contingency Plan (**Volume IIb, Appendix C-5**) that describes the methods that will be used to avoid or minimize the risk of drilling mud release, as well as the mitigative procedures that will be followed if an inadvertent release does occur.

Depending on the exact soil conditions at each HDD location, an additive to the bentonite mixture may be needed. For example, if the soil at a particular site contains reactive clay, sand, or cobble, a benign polymer additive may be needed.

Water to Water HDD

The Intracoastal Waterway (ICWW) and an existing foreign pipeline on the bottom of Sabine Lake will be crossed using the water to water HDD method. A typical water to water construction configuration is provided in **Volume IIb, Appendix B1** (**Figure B1-14**). A spud barge with an HDD rig and drilling fluid tanks will install the pipeline to a depth of at least 20 feet below these features. Support barges, one storing water for the drilling fluid tanks and the other bringing water from a freshwater source, will accompany the spud barge. Similar to the procedure described above for land-based HDDs, a lay barge will assemble the pipeline for pullback, coat and test the pipeline, fill it with water, and sink it into place. Once pulled through the bore hole, the pipeline on each side of the HDD will be brought to the surface for tie-in, coating, and testing.

Barge Lay

The barge lay method will be required for pipeline sections located in open water in Sabine Lake as it eliminates the need for land-based equipment and fill. Typical drawings depicting the barge lay dredging and pipelay ROW configuration is included in **Volume IIb, Appendix B1** (**Figure B1-16** and **Figure B1-17**, respectively). In open water construction at Sabine Lake, the pipeline trench will be excavated using a barge-mounted clam-bucket (or equal) dredge, and spoil materials will be temporarily stored alongside the trench. Pipe segments will be coated with concrete and then loaded onto pipe barges and transported via tugboat to the lay barges positioned above the trench. Pipe will be offloaded to the lay barges where it will be stored until it can be welded onto the end of the pipeline string. While on the lay barge, pipe segments will be welded, coated, non-destructively tested, then the pipeline will be filled with water and sunk into the trench.

Following lowering in, surveyors would confirm that the pipe is at sufficient depth to provide a minimum of 4 feet of soil cover. Once sufficient depth of the pipe is achieved to provide the minimum soil cover, the dredge barge will return to backfill the pipe trench and floatation channel, using the available spoil adjacent to the excavation. The bottom will be restored to within 1-foot of the original contour using the clam bucket. Surveyors will confirm that final grade and tolerance have been achieved. Where the 1-foot grade tolerance is not achieved, a section of pipe mounted on the dredge line will be dragged across the bottom to remove the high spot. If low spots remain after high spots have been smoothed over, the low spots will be left for natural silt deposition (i.e., tides and currents) to fill them in over time. Following installation, the pipeline will be hydrotested.

Road Crossings

The roads crossed by the Project and construction crossing method are detailed in **Table 1-8**. Construction across roads will be conducted in accordance with the applicable laws, regulations, and requirements of road crossing permits obtained by the Applicant. Roads will be crossed by the HDD, bore, or open cut method. The Applicant will construct all road crossings in accordance with the State Department of Transportation safety standards and will coordinate traffic control measures with the appropriate state and local agencies. Where heavy equipment is known to use a road crossed by the pipeline, special safety measures, such as thicker-walled pipe or additional cover over the pipe, will be required.

TABLE 1-8
Road Crossings along the Onshore Pipeline Route

Approximate Start Milepost	Road Crossed	Construction Crossing Method
MP 1.67	Private Road	Bore
MP 4.98	Akers Road (PAR-05)	Open cut
MP 5.69	Private Road (TAR-06)	Open cut
MP 5.99	Private Road (TAR-06)	Open cut
MP 6.10	Tillie Smith Road (TAR-06-A)	Open cut
MP 6.57	Tillie Smith Road (TAR-06-A)	Open cut
MP 6.71	Private	Open cut
MP 7.19	Tanglewood Drive	Bore
MP 7.63	Bessie Heights Road	Bore
MP 10.16	Gulf States Utilities Road	HDD
MP 10.28	Road Off Powerhouse Road (TAR-12)	HDD
MP 10.40	Powerhouse Road (TAR-12-A)	HDD
MP 12.35	SH 73/87	HDD
MP 29.33	Deep Bayou Road	Open cut
MP 30.94	Private Road (PAR-19)	Open cut
MP 36.21	Cameron Meadows Oil Field Road (PAR-20A)	Open cut
MP 36.98	Road off Cameron Meadows Oil Field Road (PAR-20)	Open cut

HDD and Bore Method

The HDD and bore methods allow for trenchless installation by drilling a horizontal tunnel beneath a surface feature (such as road) and installing a prefabricated segment of pipeline through the hole. Boring involves excavating a pit on each side of the road or utility, placing the boring equipment in the pit, and then boring a hole under the road or railroad that is at least equal to the diameter of the pipe. Similar to the HDD method, throughout the boring process, a fluid mixture consisting of water and bentonite clay (a naturally occurring mineral) is pumped into the drill hole to lubricate the bit, transport cuttings to the surface, and maintain the integrity of the hole during installation of the prefabricated segment. A typical bore crossing ROW configuration is provided in **Volume IIb, Appendix B1** (**Figure B1-10**).

If a bore installation is successful, there is little to no impact on the surface feature being crossed. However, if a natural fracture or weak area in the ground is encountered during drilling, an inadvertent return of drilling fluid to the environment could occur. The Applicant has prepared an HDD Contingency Plan (**Volume IIb, Appendix C-5**) which will be applicable to the bore construction method to minimize the potential for an inadvertent release of drilling mud and to undertake effective cleanup should a release occur.

Bore crossings for the Project will typically occur during normal construction work hours. However, if necessary, borings could be conducted 24 hours per day, 7 days per week until completed. Each bore crossing typically will require between one to two weeks to complete from start to finish.

Open Cut Method

Most gravel and dirt roads will be crossed by the open cut method, which generally requires temporary lane or road closures and the establishment of detours. Roads will be closed only where allowed by permit or landowner/land-managing agency consent. Most open cut road crossings require only 1 or 2 days to complete, although resurfacing could require several weeks to allow for soil settlement and compaction. In residential areas, landowners will be provided continued access to their properties throughout construction.

Agricultural Construction

Approximately two miles of the pipeline route will be cross agricultural land in Orange County, Texas, as identified in Topic Report 8 of Volume IIb. The Applicant will conserve and segregate topsoil in all actively cultivated and rotated croplands, pastures, and hayfields. The topsoil and subsoil will be stored in separate windrows on the construction ROW to avoid mixing as depicted in the typical agricultural ROW configuration provided in **Volume IIb, Appendix B1** (**Figure B1-4**). The depth of the trench would vary with the stability of the soil, but in all cases, it would be sufficiently deep to allow for at least 4 feet of cover over the pipe. Irrigation systems are not usually used in this part of Texas and none have been identified at this time. If any irrigation systems are damaged during construction, the Applicant will attempt to make repairs within one week unless otherwise negotiated with the landowner.

Residential Construction

The pipeline route will be near a residential area in Orange County, Texas (see Topic Report 8 for details). The Applicant will implement BMPs from its Onshore Construction BMP Plan (**Volume IIb, Appendix C-1**) in areas where construction workspace will be located within 50 feet of a residential property; the BMPs are as follows:

- Avoid removal of mature trees and landscaping within the construction work area unless necessary for safe operation of construction equipment, or as specified in landowner agreements;
- Excavate the trench only once the pipe has been welded and is ready to lay in the trench;
- Immediately backfilling the excavated trench once the pipe is installed;
- Notify the homeowner one week prior to commencing construction activities;
- Fence the edge of the construction work area for a distance of 100 feet on either side of the residence;
- Maintain access to residential properties at all times; and
- Restore all lawn areas and landscaping immediately following clean-up operations, or as specified in landowner agreements. If seasonal or other weather conditions prevent compliance with these time frames, maintain and monitor temporary erosion controls (sediment barriers and mulch) until conditions allow completion of restoration.

1.5.4 Aboveground Facilities

The Stingray Mainline and associated facilities will be abandoned through a FERC 7(b) Order. All of Stingray's existing natural gas equipment will be removed from the Station 501, Station 701, and the Stingray Tap Removal Site as part of BMOP's conversion of the Mainline. Construction and installation of oil facilities at the aboveground facilities (i.e., MLVs, BMOP Pump Station, Station 501, and Station 701) will follow conversion. The construction sequence provided below and explained in detail in the following subsections will be followed at each facility, as applicable:

- Site Preparation (clear, grade, or fill);
- Equipment installation;
- Hydrostatic testing; and
- Restoration.

Mainline Valves

The new MLV sites will be located within the new permanent pipeline ROW, the BMOP Pump Station and at the existing stations (501 and 701) along the existing Mainline. Sites for MLV 1 through MLV 4 in Orange County, Texas will be graded with gravel and/or shell and have a 6-foot chain-link fence around the perimeter. The dimensions of each MLV site will be approximately 50 feet by 100 feet (0.1 acre). A typical MLV drawing is provided in **Volume IIb, Appendix B1** (**Figure B1-21**).

MLV 5 and MLV 6 in Cameron Parish, Louisiana will be installed on a platform due to the saturated conditions in this area and fenced. Therefore, traditional site preparation, including clearing, grading, and compacting, will not occur. Construction will include the placement of a platform on installation piles. A typical MLV on platform drawing is provided in **Volume IIb, Appendix B1** (**Figure B1-22**). The MLVs will be constructed on top of these platforms.

BMOP Pump Station

The BMOP Pump Station is located in Jefferson County, Texas, adjacent to the existing NT on land that is currently being permitted for development in Jefferson County, Texas. The "Nederland Terminal Buildout Project" is anticipated to commence construction in January 2021, prior to construction of the BMOP Project. The site will be cleared, filled and graded with gravel prior to BMOP construction. A site-specific drawing of the proposed equipment to be installed at the BMOP Pump Station is provided in **Volume IIb, Appendix B2 (Figure B2-1)**. The new pump station will include:

- A pipeline header;
- MLV;
- 48-inch OD pig launcher;
- Six 9,000 hp mainline electrical pumps;
- Metering equipment;
- Two transformers in an existing electrical substation; and
- Permanent access road.

Station 501

The new 42-inch pipeline from Nederland will terminate at a point adjacent to, and south of, the site of the former Station 501 that contained the 36-inch Mainline and Kinder Morgan 30-inch pipeline (formerly NGPL) interconnect facility in Cameron Parish, Louisiana. All of the existing natural gas-related equipment owned by BMOP will be removed prior to construction of the new oil service facilities. The new 42-inch pipeline will tie into the existing 36-inch Mainline at the site. The converted Station 501 will be expanded to include:

- 42-inch OD pipeline tie-in with pig receiver;

- 36-inch tie-in to existing Mainline with pig launcher;
- MLV; and
- Electrical communication and power connections for valve actuation and operational data communications.

A site-specific drawing of the proposed equipment to be installed at Station 501 is provided in **Volume IIb, Appendix B2 (Figure B2-2)**. Site preparation of the expanded site required for the connection of the new 42-inch pipeline to the existing Mainline will require preparatory civil work including piling, fill, and rip-rap to stabilize the soil for the new interconnect facility. The final site will be graded with gravel and/or shell and have a 6-foot chain-link fence around the perimeter.

Station 701

The existing Compressor Station 701 is located at MP 3.9 of the existing Stingray Mainline (M.P. 40.9 on the BMOP pipeline system) in Cameron Parish, Louisiana. The existing compressor station will be dismantled and demolished, and all existing natural gas equipment except two 10,000 bbl tanks will be removed from the station. BMOP will maintain the office space, a natural gas interconnect, and surge tanks. The existing and abandoned 36-inch Mainline will be cut at approximately the southern and northern boundaries of Station 701 fence lines and a new 36-inch pipeline installed across the property. It is anticipated the existing 10,000-barrel storage tanks associated with Station 701 will be utilized as the surge tanks. A site-specific drawing of the proposed equipment to be installed at Station 701 is provided in **Volume IIb, Appendix B2 (Figure B2-4)**.

Stingray Tap Removal Site

The existing ANR Tap is located at approximate MP 1.6 (BMOP pipeline MP 38.6) on the existing Mainline in Cameron Parish, Louisiana. TBMOP will install a new 36-inch OD pipeline segment following removal of the tap. ATWS will be required to excavate and install the pipeline segment along the Mainline permanent ROW. A site-specific drawing of the proposed equipment to be installed at the Stingray Tap Removal Site is provided in **Volume IIb, Appendix B2 (Figure B2-3).**

1.5.4.1 *Site Preparation*

If necessary, the first step in preparing the facility footprint after dismantling and removing existing gas facilities (where applicable), will be to clear the workspace, including temporary workspace outside of the existing facility footprint. The workspace will then be graded, where necessary, to create a reasonably level working surface to allow effective use and safe passage of equipment. Temporary erosion controls will be installed, in accordance with the Applicant's Project-specific Onshore Construction BMP Plan, immediately after initial disturbance of the soil. Temporary erosion controls will be properly maintained throughout construction and reinstalled, as necessary, until they are replaced by permanent erosion controls or until restoration is completed.

Equipment Installation

The Applicant would ship necessary equipment to the aboveground facility sites, offload the equipment with cranes or other equipment, and store the equipment on-site within additional temporary workspace until it is ready to be installed. To install the equipment, the construction contractor will place the necessary components on each foundation, level, grout where necessary, and secure. Non-screwed piping will be welded except where connected to flanged components. The Applicant will employ welders and use welding procedures in accordance with American Petroleum Institute (API) and American Society of

Mechanical Engineers (ASME) standards. Welds in large-diameter piping systems will be examined using radiography, ultrasound, or other approved methods to ensure compliance with all applicable codes. Once installed, the construction contractor will clean and paint all aboveground piping. Paint inspection and cleanup procedures will occur in accordance with federal and state regulatory requirements and industry standards.

Hydrostatic Testing

All components in high-pressure service will be hydrostatically tested in accordance with USDOT PHMSA requirements (49 CFR Part 195) before being placed in service. Any detected leaks will be repaired, and the affected segment will be retested. Hydrostatic test water for the Pump Station facilities at the NT will be obtained from the Neches River. Hydrostatic test water for Station 501 and 701 will be obtained from the Neches River or water in or around station 501. Water discharge will be in accordance with state and federal discharge requirements.

Restoration

At the completion of construction, all temporary work areas outside the facility footprint impacted by the Project will be restored to allow natural revegetation. Disturbed areas on facility footprints will either be paved, graveled, or restored with low ground cover.

1.5.5 Environmental Compliance, Training and Inspection

Prior to construction, the Applicant will provide its contractors with copies of specifications, an "approved for construction" Construction Drawing Package, and all environmental permits, certificates, and/or clearances associated with the Project so that construction of the proposed facilities will comply with the measures identified in this Environmental Report and all applicable permitting agencies. Additionally, environmental training will be conducted for its field construction personnel and construction contractor's personnel prior to and during construction of the Project. This training will focus on implementation of the Onshore Construction BMP Plan, Revegetation Plan, SPAR Plan and other Project-specific permit conditions and mitigation measures, as appropriate.

As outlined in the Onshore Construction BMP Plan, at least one Environmental Inspector (EI) per pipeline construction spread will be assigned to the Project. The number and experience of EIs assigned to each construction spread will be appropriate for the length of the construction spread and the number/significance of resources affected. Responsibilities of the EI are further described in the Onshore Construction BMP Plan.

EIs will have peer status with all other activity inspectors. EIs will also have the authority to stop activities that violate environmental conditions of the environmental permits or approvals, or landowner easement agreements; and to order appropriate corrective action.

1.6 OPERATIONS

The onshore pipeline facilities will be operated and maintained in accordance with PHMSA regulations provided in 49 CFR Part 195. The onshore pipeline will be monitored by the Energy Transfer Control Center 24 hours per day, 7 days per week for pipeline flowrates, pressures, and operating conditions. A change in operating conditions, or in the event of an emergency, immediate communication will be made with the control center for response. The pipeline will also be monitored via aerial patrol, in accordance with 49 CFR Part 195.

The Applicant proposes to install and maintain cathodic protection system compatible with its nationwide pipeline network using primarily impressed current systems with individual anodes and anode beds as required to maintain PHMSA compliance. In addition, this pipeline parallels and high voltage electric transmission line which may require additional alternating current (AC) mitigation measures to be employed. The study to determine AC interference has not been completed at this time. Once complete, AC mitigation protection is expected to be installed during construction.

The Applicant will conduct regular maintenance pigging of the onshore pipelines and will conduct inspections using smart pigs at least once every 5 years. The Applicant will include the maintenance requirements and frequency of inspection for internal and external corrosion, among other factors, in its Port Operation Manual.

Routine vegetation management will occur over the full width of the 50-foot-wide permanent ROW of the onshore pipelines on an annual basis or as needed (PHMSA, 2019). A smaller corridor centered on the pipeline may be cleared as necessary to maintain an herbaceous cover to facilitate corrosion and leak surveys. In wetlands, routine vegetation management will be conducted in the same manner as in uplands; however, vegetation management of inundated or excessively saturated wetlands will be avoided. Trees will be cleared throughout the permanent ROW.

The Applicant's existing onshore facility response plan (Energy Transfer's Coastal Louisiana Pipeline Facility Response Plan [PHMSA Sequence No. 3202]) and offshore spill response plan (Energy Transfer's Sea Robin Oil Spill Response Plan [O-726]) will be modified to include BMOP for operations in accordance with the Oil Pollution Act of 1990 and PHMSA's implementing regulations in 49 CFR Part 194, the National Oil and Hazardous Substances Pollution Contingency Plan, applicable Area Contingency Plans, the USEPA Region 6 Regional Integrated Contingency Plan, and the One Gulf Plan. The plan modifications will be developed to assist personnel with quickly, safely, and effectively responding to a crude oil spill either onshore or offshore and will be prepared during construction of the proposed Project.

1.7 DECOMMISSIONING

Decommissioning will be performed when necessary or at the end of the useful life of the Project. The anticipated life of the Project is 25 years. The Applicant will prepare a decommissioning plan prior to conducting decommissioning activities. The onshore pipeline and onshore facilities will be abandoned and decommissioned in accordance with applicable rules and regulations in place at that time. Decommissioning of the onshore facilities may not occur for some period of time longer than the lifespan of the proposed DWP. At the time of abandonment or removal of the onshore project facilities, it will be conducted in accordance with 49 CFR Part 195 or the applicable regulations that may exist at that time.

1.8 PERMITS, APPROVALS, AND REGULATORY REQUIREMENTS

Construction, operation, and maintenance of the Project facilities will be in accordance with all applicable rules and regulations, permits, and approvals. Applicable permits and approvals for the Project facilities are summarized in **Table 1-17** of Topic Report 1, Volume IIa.

1.9 AGENCY, POLITICAL, AND STAKEHOLDER OUTREACH

The Applicant has conducted, and will continue to conduct, significant regulatory and political outreach for the Project at the federal, state, and local levels (see Appendix B, "Agency and Stakeholder Outreach," Volume IIa).

1.10 EVALUATION OF IMPACTS

1.10.1 Descriptions of Impact

The assessment criteria used to determine potential environmental impacts related to the Project are summarized in **Table 1-9** and are consistent with National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) requirements. Potential impacts on environmental resources may be direct or indirect; adverse or beneficial; short-term or long-term; and negligible, minor, moderate, or major. As used in this assessment, these characteristics are defined below.

TABLE 1-9
Environmental Evaluation Assessment Criteria

Criteria	Values	Definition
Outcome	**Direct**	***Direct effects*** are "caused by the action and occur at the same time and place" of the Project (40 CFR § 1508.8).
	Indirect	***Indirect*** impacts are "caused by an action and are later in time or farther removed in distance but are still reasonably foreseeable. Indirect impacts may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems" (40 CFR § 1508.8). Indirect impacts are caused by the Project, but do not occur at the same time or place as the direct impacts.
	Cumulative	***Cumulative impact*** is "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR § 1508.7).

TABLE 1-9
Environmental Evaluation Assessment Criteria

Criteria	Values	Definition
Type	**Adverse (Negative)**	***Adverse*** would cause unfavorable or undesirable outcomes for the natural or social environment. Negative impacts result in a net loss to the resource.
	Beneficial (Positive)	***Beneficial*** impact would cause positive or desirable outcomes for the natural or social environment. Beneficial impacts result in a net benefit to the resource.
Duration	**Short-term (Temporary)**	***Short-term (or temporary)*** impacts are those that would occur only during a specific phase of the proposed Project, such as noise during construction or certain installation activities. Short-term impacts would end at the time, or shortly after, construction activities ceased. The duration of most short-term impacts would be a few hours to a few days.
	Long-term	***Long-term*** impacts would occur either continually or periodically throughout the life of the Project (e.g., operational air emissions, stormwater discharge), or would last for years after an impact-producing activity occurred (e.g., removal of wildlife habitat).
Magnitude	**Negligible**	***Negligible*** impacts are generally those that might be perceptible, but in certain cases may be undetectable.
	Minor	***Minor*** effects are those that could be perceptible but are of very low intensity and may be too small to measure.
	Moderate	***Moderate*** impacts are more perceptible, can often be quantified, and may approach the thresholds for major impacts.
	Major	***Major*** impacts, based on their context and intensity (or severity), have the potential to meet the thresholds for significance set forth in CEQ regulations (40 CFR § 1508.27). Major impacts warrant additional attention in a NEPA analysis and a review of potential mitigation measures that would fulfill the policies set forth in NEPA, which include avoiding, minimizing, or mitigating major impacts.
Likelihood	**Unlikely**	Low probability.
	Potential	Possible or probable.
	Likely	Certain.

1.10.2 Evaluation Criteria

Table 1-10 provides a framework for establishing evaluation criteria based on quantitative and qualitative analyses for each resource and indicate the potential severity of impact if the criteria were to be violated. These evaluation criteria were developed by environmental professionals in relevant fields in coordination and consultation with stakeholder agencies and were adopted by the MARAD and USCG (MARAD and USCG, 2020). Although some evaluation criteria have been designated based on legal or regulatory limits or requirements, others are based on best standard practice, professional judgment, and BMPs (MARAD and USCG, 2020).

TABLE 1-10
Evaluation Criteria for Determining Environmental Consequences by Resource Type

Resource	Evaluation Criteria
Water Resources	Violate a Federal, state, local, or Federally recognized international water quality criterion or waste discharge requirement
	Cause irreparable harm to human health, aquatic life, or beneficial uses of aquatic ecosystems
	Degrade groundwater quantity or quality
	Degrade marine, coastal, or terrestrial (lakes, rivers, wetlands, tidal environments) water quality
	Increase contaminant levels in the water column, sediment, or biota to levels shown to have the potential to harm marine organisms, even if the levels do not exceed the formal water quality criteria
Biological Resources, Including Threatened and Endangered Species Habitat and Essential Fish Habitat	Violate a legal standard for protection of a species or its critical habitat
	Degrade the commercial, recreational, ecological, or scientific viability or significance of a biological resource or its critical habitat
	Measurably change the population size (density) or change the distribution of an important species in the region
	Introduce new, invasive, or disruptive species in the proposed Project area
	Directly affect nesting migratory birds protected under the Migratory Bird Treaty Act
	Reduce quality and/or quantity of essential fish habitat as defined by the Magnuson-Stevens Fishery Conservation and Management Act, causing adverse effects, such as direct or indirect physical, chemical, or biological alterations of the waters or substrate, and loss of or injury to benthic organisms, prey species, their habitat, and other ecosystem components
Geologic and Soil Resources	Degrade unique geological features
	Prevent recovery of mineral resources due to site(s) of facilities
	Increase the potential for geologic hazards to occur, such as seismic events
	Alter the lithology, stratigraphy, or geological structures that control or contribute to groundwater quality, the distribution of aquifers and confining beds, and groundwater availability
Soils	Alter soil or sediment composition, structure, or function
	Cause permanent loss or impairment of agricultural soils, or affect prime farmland
	Degrade or prevent the study or recovery of paleontological resources
Cultural Resources	Directly or indirectly affect submerged cultural resources
	Cause irretrievable or irreversible damage to a prehistoric or historic property that is listed or eligible for listing on the National Register of Historic Places
	Alter or impair a viewshed (the area from a specific point), scenic quality, or aesthetic value related to a historic property not consistent with applicable laws or regulations
	Adversely affect a prehistoric or historic property that is listed or eligible for listing on the National Register of Historic Places
	Violate cultural resource standards by affecting resources that are of value to Indian culture and heritage

TABLE 1-10
Evaluation Criteria for Determining Environmental Consequences by Resource Type

Resource	Evaluation Criteria
	Disturb human remains, including those interred outside of formal cemeteries
Ocean and Land Use	Alter the functional use of an area already in use
	Conflict with applicable planning and zoning
	Conflict with the Texas Coastal Zone Management Plan
	Affect existing residences or business
Recreation	Interfere with access to coastal recreational shorelines or waterways
	Cause the loss or displacement of an important recreational resource, such as recreational fishing sites and other water-dependent recreational activities
	Degrade recreational value, as established in applicable public agency management plans or policies
Visual Resources	Alter or impair a viewshed, scenic quality, or aesthetic value not consistent with applicable laws or regulations
	Create a new source of substantial light or glare that would, over the long term, adversely affect nighttime views, especially from shoreline areas, adjacent water areas, and other locations where dark skies are an expected or protected value
Transportation	Interfere with access to transportation routes, over the long term
	Cause permanent decreases in the level of service of key transportation arteries
	Cause a substantial increase in maritime traffic
	Cause a substantial increase in the risk of collisions or other incidents (e.g., grounding, air traffic accidents)
Air Quality	Cause or contribute to a violation of National Ambient Air Quality Standards
	Cause or contribute to a violation of a Class I or Class II increment (the maximum allowable increase in concentration that is allowed to occur above a baseline concentration for a pollutant)
	Cause an adverse impact on air quality-related values in a Class I area
	Expose sensitive receptors to substantially increased pollutant concentrations
	Increase emissions of criteria pollutants beyond limits allowed under Clean Air Act regulations
	Substantially increase the emissions of greenhouse gases
	Create objectionable odors, resulting in adverse effects to a substantial number of people
Noise	Cause a substantial change in existing ambient noise levels on land (which would affect humans and wildlife) or underwater (which would affect marine wildlife)
	Exceed U.S. Environmental Protection Agency recommended thresholds for noise levels at noise sensitive receptors
	Violate state or local noise ordinances, limits, or standards, or applicable land use compatibility guidelines

TABLE 1-10
Evaluation Criteria for Determining Environmental Consequences by Resource Type

Resource	Evaluation Criteria
Socioeconomics	Cause substantial change in: • Population or demographics • Housing demand or affordability • The local or regional economy, including employment levels and income • Availability or quality of public services (e.g., schools, emergency services, medical services) • Local and regional economic contributions of recreation and tourism • Local and regional economic contributions of marine commerce and shipping
Environmental Justice	Cause adverse and disproportionate environmental, economic, social, or health impacts on minority or low-income populations
	Cause adverse and disproportionate environmental health or safety risks to children
Safety and Security	Cause adverse risks to public safety from operation of both onshore and offshore Project components
	Violate Federal safety regulations
	Disregard standard or best practices for safety and security of the facilities

In evaluating potential impacts on these resources from construction, operation, and decommissioning of the Project, the Applicant has included an analysis of the Project's environmental consequences of each resource type based on the evaluation criteria outlined in **Table 1-10**, and developed mitigation measures to comply with federal, state, and local requirements for permits and authorizations, and to reduce potentially adverse environmental effects for the proposed Project. The environmental consequence analysis and mitigation measures for the onshore project facilities are and included in each topic report in Volume IIb.

1.11 EVALUATION OF CUMULATIVE IMPACT ANALYSIS

To facilitate NEPA analysis, a framework for cumulative impact assessment is included in Appendix C, "Evaluation of Cumulative Impacts Analysis," Volume IIa. The cumulative impacts discussions are included in the Topic Reports in Volumes IIa and IIb. Cumulative impacts are the collective result of the incremental impacts of an action that, when added to the impacts of other past, present, and reasonably foreseeable future actions, would affect the same resources, regardless of what agency or person undertakes those actions (40 CFR § 1508.7). Cumulative impacts can result from actions that individually have minor impacts but that, collectively, impose significant impacts over a period of time. Compliance with NEPA requires an analysis of cumulative impacts (40 CFR § 1508.25(a)(2) and 40 CFR § 1508.25(c)(3)).

1.12 REFERENCES

Pipeline and Hazardous Materials Safety Administration (PHMSA). 2019. PIPA Recommended Practice BL12: Notify Stakeholders of Right-of-Way Maintenance Activities. Available online at: https://primis.phmsa.dot.gov/comm/pipa/pipa_practice_BL12.htm?nocache=458. Accessed April 2020.

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https://www.maritime.dot.gov/ports/deepwater-ports-and-licensing/pending-applications. Accessed April 2020.