

**Right-of-Way Leasing  
Act AS 38.35.050**

**APPLICATION FOR PIPELINE RIGHT-OF-WAY LEASE  
Liberty Sales Oil Pipeline**

**1. Date of Application:**

August 4, 2017

**2. Name and Address of Applicant(s):**

Richard Novcaski  
Area Operations Manager  
Harvest Alaska, LLC  
3800 Centerpoint Drive, Suite 1400  
Anchorage, AK 99503  
Phone: (907) 777-8336  
e-mail: rnovcaski@hilcorp.com

**Authorized Agent:**

Mike Dunn  
Liberty Operations Manager  
Hilcorp Alaska, LLC  
3800 Centerpoint Drive, Suite 1400  
Anchorage, AK 99503  
Phone: (907) 777-8382  
e-mail: mdunn@hilcorp.com

## **PART I PROPOSED ROUTE**

The proposed Liberty Pipeline bundle consists of an offshore segment that consists of a nominal pipe size (NPS) 16-inch outer casing, a NPS 12-inch sales oil pipeline, a NPS 4-inch spare utility pipeline, fiber optic cable, and cathodic protection equipment. The sales oil pipeline is a single-phase subsea pipe-in-pipe pipeline system that will transport sales-quality crude from the Liberty Drilling and Production Island (LDPI) to shore, where an above-ground pipeline will continue to the existing Badami Sales Oil Pipeline (Badami Pipeline). From there, crude is transported to the Endicott Sales Oil Pipeline, which ties into Pump Station 1 of the Trans-Alaska Pipeline System (TAPS) for eventual delivery to markets in Alaska and the west coast of the United States. A separate application for a Pipeline Right-of-Way Lease is being submitted for the utility pipeline as required by SPCS.

The proposed pipeline route is divided into the following segments.

### **Offshore Pipeline**

The offshore segment is a nearly straight route from the LDPI to a landfall located about 5.6 miles to the south-southwest of the island. The offshore route was selected based on bathymetric data, minimizing the route traversing strudel scour zones, avoidance of the Boulder Patch, and on landfall siting criteria.

### **Shore Transition Area**

The shore transition area refers to the segment where the pipeline transitions from (buried) offshore segment to (elevated) overland segment. The shore transition area will be located to provide protection from coastal erosion expected during the pipeline design life. The proposed length of the onshore setback from the shoreline is approximately 350 feet, starting from the 4 foot elevation to the daylight of the pipeline. This set back distance accounts for the average long-term erosion rate and the maximum expected short-term erosion rate and also accounts for any potential ice ride-up associated with sea ice movement.

### **Onshore Pipeline**

The overland route is approximately 1.5 miles long. It extends south to a tie-in with the Badami Pipeline approximately 1.5 miles west of the Kadleroshilik River. The overland route avoids major lakes and intersects the Badami Pipeline at a proposed new gravel pad. The onshore segment of the sales oil line will be elevated on VSMs similar to typical onshore pipelines on the North Slope.

#### **3. Point of Origin:**

The point of origin of the Liberty Pipeline is the LDPI which is located at approximately Section 28, Umiat Meridian, Township 11 N, Range 18 E (U011N018E).

#### **4. Point of Termination:**

The point of termination for the Liberty Pipeline is at the Badami Pipeline, which is located at approximately Section 36, Umiat Meridian, Township 10 N, Range 17 E (U010N017E).

**5. Total proposed length: \_\_\_\_\_miles\_\_\_\_\_kilometers**

The proposed total length is 7.1 miles (11.4 km), of which 5.6 miles is offshore (9.0 km) and 1.5 miles is overland (2.4 km).

**6. Total length proposed to cross state lands: \_\_\_\_\_miles\_\_\_\_\_kilometers**

The total length of pipeline crossing state lands is 1.5 miles (overland segment). The pipeline also crosses 4.5 miles of state waters nearest to shore.

**7. Attach a map or plat showing the proposed alignment of the centerline of the pipeline right-of-way and indicate the areas of state upland ownership throughout the length of the proposed right-of-way.**

Please see land ownership figure (Figure 1).

**8. Proposed crossings of streams and other bodies of water. (For each crossing indicate the width and depth of the stream or water body.)**

A majority of the Liberty Pipeline (5.6 miles) is located offshore in marine waters of Foggy Island Bay. The overland segment of the Liberty Pipeline, including installation of expansion loops accommodate thermal growth of the pipeline, will avoid impacts to water bodies (e.g., creeks, ponds) to the extent practicable, but may span smaller water bodies if unavoidable. The onshore segment of the Liberty Pipeline is aboveground supported by VSMs. The VSMs will be placed outside of large water bodies. Installation is planned during the winter season to avoid impacts to water bodies.

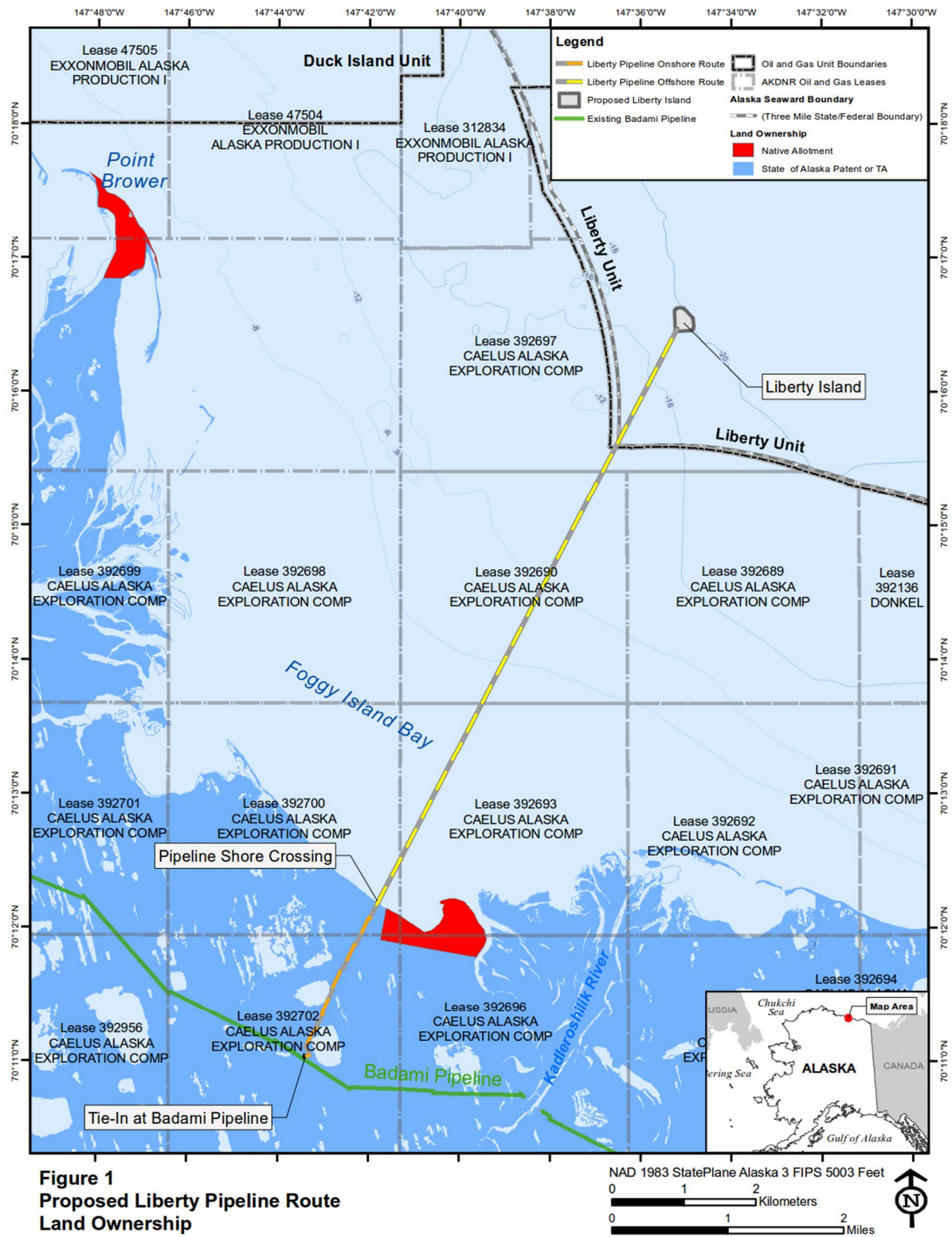
**9. Attach a map or plat showing the proposed alignment of the centerline of the pipeline right-of-way where it crosses the beds of streams or other bodies of water.**

A majority of the Liberty Pipeline (5.6 miles) is located offshore in marine waters of Foggy Island Bay. The overland segment of the Liberty Pipeline is designed to avoid water bodies as shown on Figure 2.

**10. Width of the proposed temporary right-of-way required for construction for each segment of the pipeline route on state lands.**

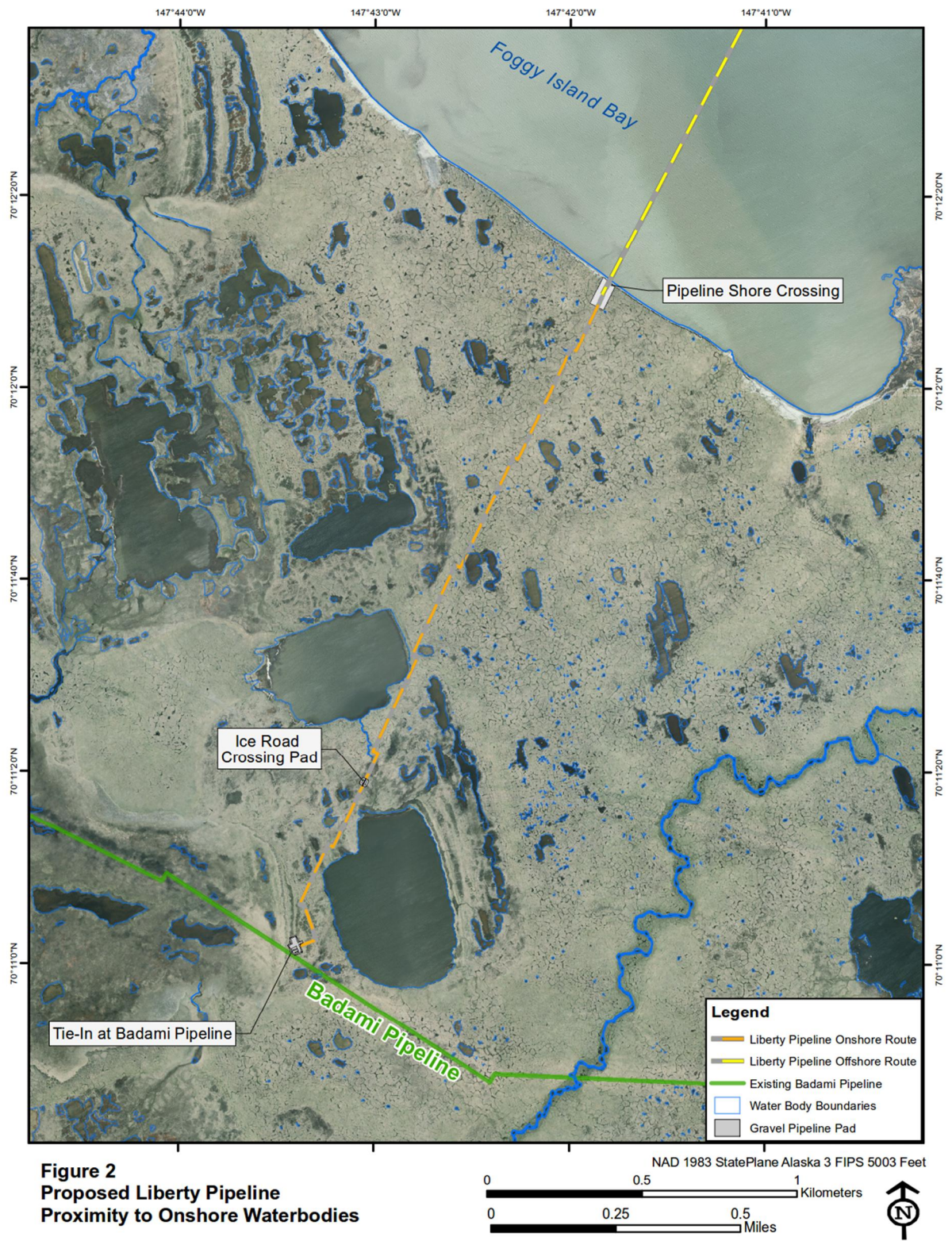
The Liberty Pipeline will be constructed during a winter season within a proposed temporary construction right-of-way (400 feet wide overland, 1,500 feet wide offshore). An ice road and/or thickened sea ice will be built within the construction right-of-way to support pipeline construction. Near the shore crossing some section of both the overland and offshore pipeline construction ROW will be wider to accommodate temporary construction pads as identified in Section 11.

**Figure 1. Proposed Liberty Pipeline Route – Land Ownership**





**Figure 2. Proposed Liberty Pipeline Proximity to Onshore Waterbodies**



**11. Size and location of any sites, in addition to the proposed pipeline right-of-way, requested on a temporary basis during construction.**

Several support sites, in addition to the proposed construction right-of-way, will be required to construct the Liberty Pipeline. Onshore temporary construction ice roads and pads are shown on Figure 3. These sites include:

- Construction Storage Ice Pad: An ice pad for the temporary staging of construction materials and construction support will be located onshore near the shoreline and the offshore construction ROW. This large laydown area is expected to support both offshore and onshore pipeline construction activities and the construction field offices, maintenance buildings, and warehouses (Zone 3). The pad will be approximately 23 acres, 1,000 feet by 1,000 feet, located onshore near shore transition.
- Primary Trench Spoil Storage: The primary storage area for trench spoils will be an approximate 200-foot-wide section along the west side of the pipeline trench from the 8-foot isobaths to the shore (Zone 1). The area will be approximately 46 acres, 200 feet by 10,000 feet.
- Secondary Trench Spoil Storage: A second site for temporary storage of material excavated during trenching will be located close to shore on the west side of the pipeline right-of-way (Zone 2). The planned size of the storage area is approximately 230 acres, 5,000 feet by 2,000 feet. The storage area would be on grounded sea ice within the 5-foot isobaths.
- Fabrication Ice Pad: A pipe stringing and laydown area for the offshore pipeline bundle fabrication will be located onshore between the tie-in pad and the shore crossing location (Zone 3). This ice pad will be approximately 35 acres, 400 feet by 3,800 feet.

**12. Width of the proposed right-of-way required for operating the completed pipeline for each segment of the pipeline route on state lands.**

The permanent ROW will be 50 feet wide, with 25 feet on either side of the pipeline centerline. At the shore transition area, the ROW will be 200 feet wide, centered on the pipeline, to accommodate access to the entire transition trench. The permanent offshore ROW will be 200 feet wide, centered on the pipeline.

**13. Size and location of any sites, in addition to the proposed pipeline right-of-way, requested for the operation of the completed pipeline.**

The Liberty Pipeline will originate at the LDPI which is located in federal Outer Continental Shelf (OCS) waters. Sites needed for the operation of the completed pipeline on State of Alaska lands include a gravel pad with metering facilities near the tie-in to the Badami Pipeline (tie-in facilities) and a gravel road-crossing pad at the pipeline intersection with the Badami ice road corridor (see Figure 3).

The tie-in area will include a gravel pad with a working surface area of approximately 173 feet by 150 feet, including an adjacent helipad approximately 60 feet by 60 feet. The Badami Tie-In Pad will be approximately 5 feet above grade. Approximately 3,500 cubic yards of gravel is expected to be required for tie-in pad construction.

Planned tie-in facilities include metering equipment, a Remote Terminal Unit (RTU) associated with the control and SCADA systems and a thermoelectric generator (TEG) for power generation. A receiver skid may be temporarily placed on the pad as necessary. The RTU will be contained in a heated enclosure. Propane tanks on the pad will provide a fuel source for the TEG to ensure a continual heat source for the RTU and provide power for sensors and communication equipment. The propane tanks, and associated piping, will be insulated as necessary to keep the propane in a gaseous state for use in arctic conditions.

A road crossing will be installed at the pipeline intersection with the Badami ice road corridor to facilitate uninhibited ice road access over the pipeline. Toe-to-toe dimensions of the road crossing are approximately 80 feet by 80 feet.

**14. Legal description of state lands within the proposed pipeline right-of-way that are reserved or committed to any purpose. (For each tract of such state lands, state the purpose to which it is reserved or committed.)**

The proposed Liberty Pipeline crosses the following sections as shown on Figure 4. Land commitments, leases and special classifications are listed for each segment.

**U010N017E, Sections 24, 25, & 36**

- ADL 415843 Reconveyance/Native Allotment on portions of Sections 25 and 25; not affected by location of pipeline ROW
- ADL 392700 Caelus Alaska Exploration, Oil & Gas Lease (Section 24)
- ADL 392702 Caelus Alaska Exploration, Oil & Gas Lease (Sections 25 & 36)
- LAS 28591 Savant Alaska LLC Off-road Travel Authorization
- ADL 50666 North Slope Area Special Use Land (land classification)
- ADL 417577 and ADL 417578 Application Complete - ROW Lease Application Received from Office of Project Management for an Oil and Gas Pipeline in 2005 (Section 25)
- ADL 415965 Nutaaq Pipeline LLC – Badami Utility Pipeline ROW (Sections 25 and 36)
- ADL 415472 Nutaaq Pipeline LLC – Badami Sales Oil Pipeline ROW (Sections 25 and 36)

**U010N018E, Sections 5, 7, 8, 18, & 19**

- ADL 415843 Reconveyance/Native Allotment on portion of Section 19; not affected by location of pipeline ROW
- ADL 50666 North Slope Area Special Use Land (land classification)
- ADL 392690 Caelus Alaska Exploration, Oil & Gas Lease (Sections 5, 7, and 8)
- ADL 392693 Caelus Alaska Exploration, Oil & Gas Lease (Sections 18 and 19)

**U011N018E, Sections 28, 32, & 33**

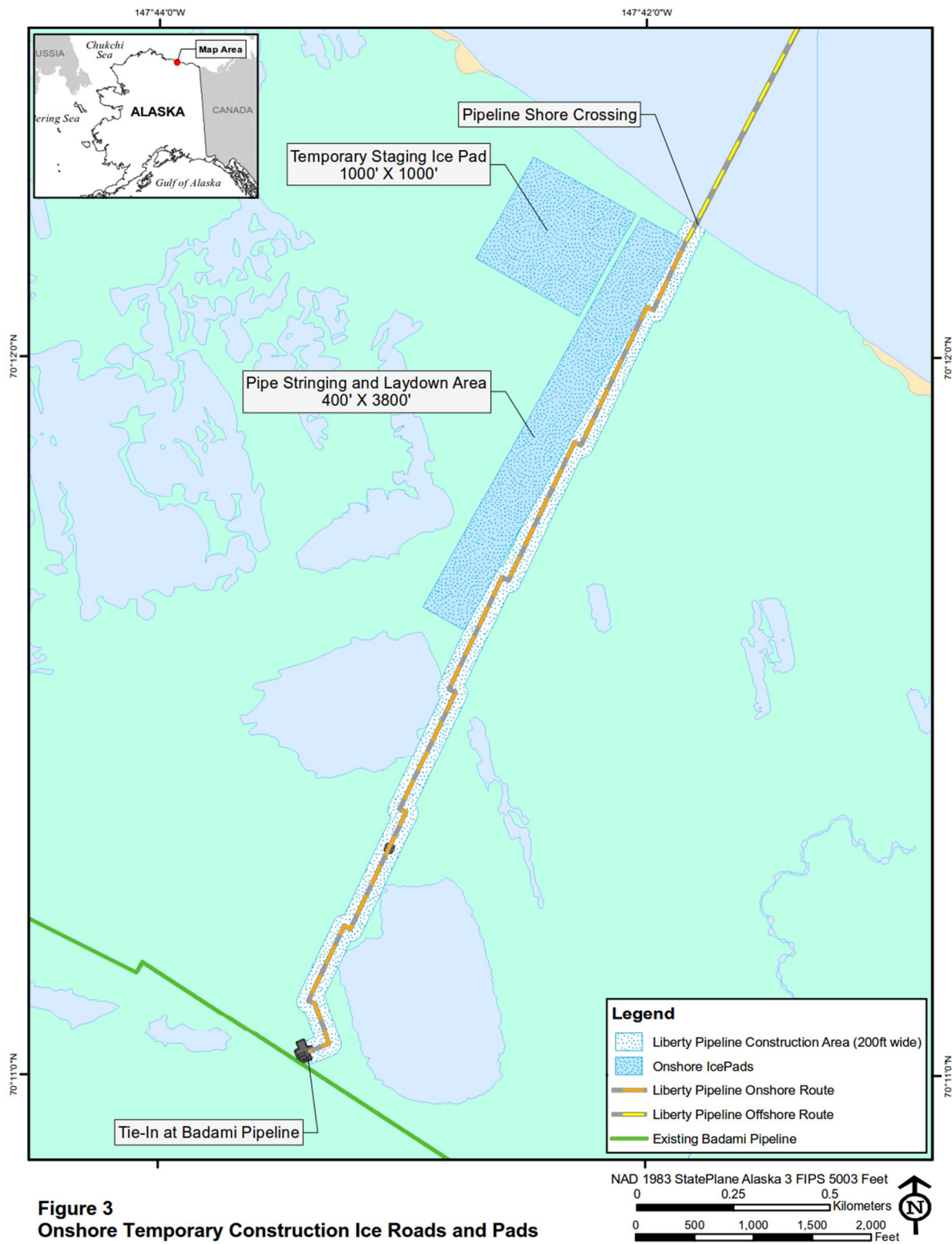
- ADL 50666 North Slope Area Special Use Land (land classification)
- ADL 418041 Application Received - Hilcorp Alaska, LLC Non-Exclusive ROW,

Liberty Development Project (Submitted by BPXA in 2007)

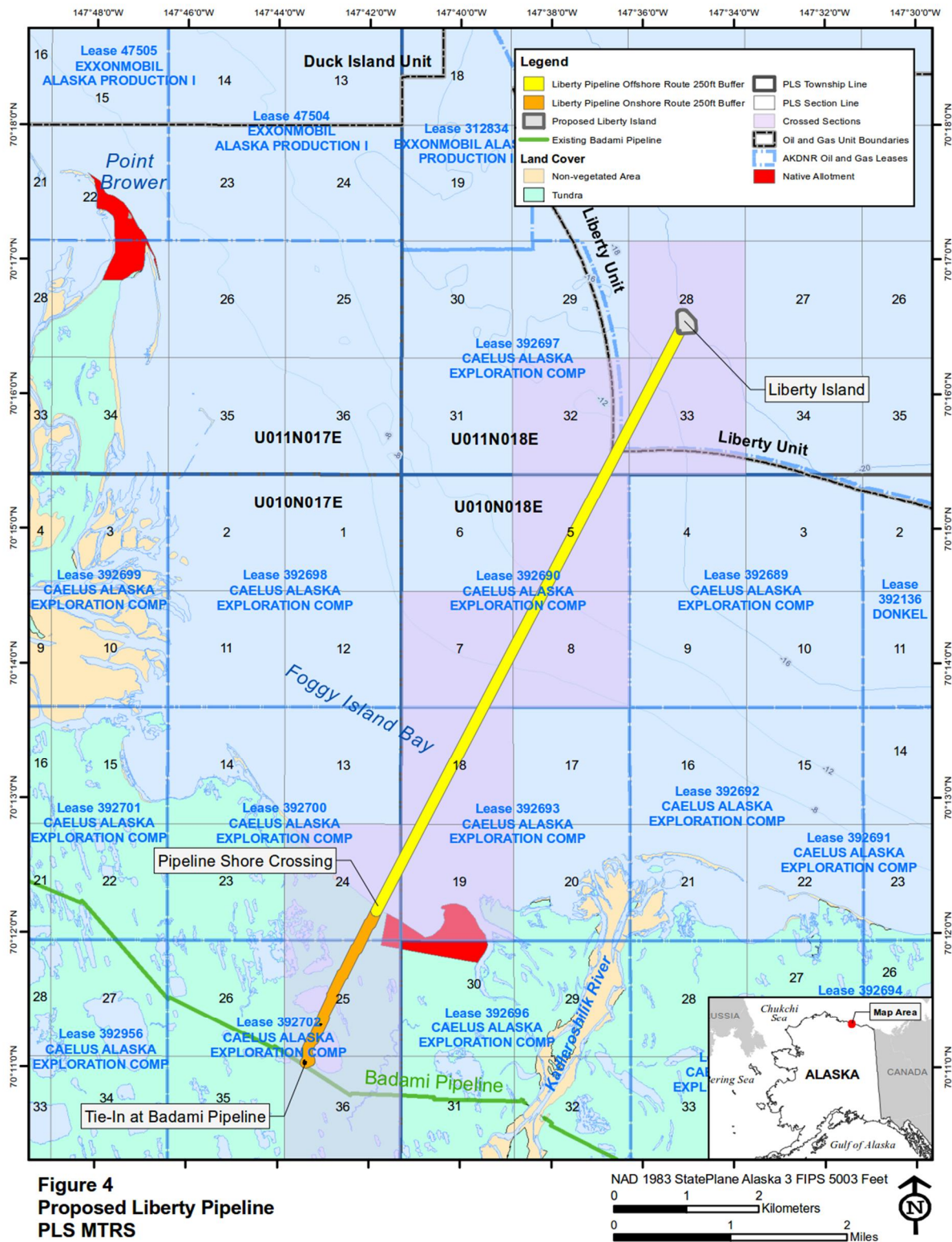
- ADL 392697 Caelus Alaska Exploration, Oil & Gas Lease (Sections 32 & 33)



**Figure 3. Onshore Temporary Construction Ice Roads and Pads**



**Figure 4. Proposed Liberty Pipeline PLS MTRS**



## PART II

### PROJECT DESCRIPTION

#### 15. Substance(s) to be transported:

Sales quality crude oil will be transported from LDPI through a subsea NPS 12-inch x NPS 16-inch PIP system bundled to a NPS 4-inch coiled line pipe utility line, along with an armored fiber optic cable and cathodic protection anodes on both the NPS 16-inch casing pipe and NPS 4-inch utility line. The utility line will be installed as a contingency for possible future use as a fuel gas delivery line or to allow for a circulation loop with the sales oil pipeline during upset conditions. The sales oil pipeline and the spare utility pipeline will be US Department of Transportation (US DOT) regulated pipelines.

#### 16. Size, engineering and design characteristics and amount of each type of pipe to be used:

The tables provided below provide the offshore sales oil pipeline design properties and onshore sales oil pipeline design parameters, respectively.

##### Liberty Offshore Pipeline Design Properties

	CASING	OIL PIPELINE
Outside Diameter (OD) (inches)	16	12.75
Nominal Pipe Size (NPS)	16	12
Wall Thickness (inches)	0.625	0.500
Pressure-Temperature Rating	N/A	ASME B16.5 Class 600
Maximum Operating Pressure (psig)	To be determined	1,480
Line Pipe Material	API 5L X52	API 5L X52
Coating	min 12-16-mils fusion bonded epoxy plus 12-16 abrasion resistant overlay(ARO)	min 12-16-mils fusion bonded epoxy plus 12-16 abrasion resistant overlay (ARO)
Insulation	None	Radiation barrier
Design Flowrate (BOPD)	N/A	70,000
Length (miles)	5.6	

### Liberty Onshore Pipeline Design Parameters

OIL PIPELINE	
Outside Diameter (OD) (inches)	12.75
Nominal Pipe Size (NPS)	12
Wall Thickness (inches)	0.438
Pressure-Temperature Rating	ASME B16.5 Class 600
Maximum Operating Pressure (psig)	1,480
Line Pipe Material	API 5L X65
Coating	12 to 16 mils fusion bonded epoxy
Insulation	3 inches polyurethane with galvanized steel jacket
Design Flowrate (BOPD)	70,000
Bends	3 diameter radius induction bends
Wind Vibration Dampers	Top mounted "Tuned Vibration Absorber"

The NPS 12-inch pipeline will have an abrasion resistant overlay (ARO) to help protect the primary coating system from being damaged during transport and installation in the NPS 16-inch casing. The NPS 16-inch casing will also have an ARO to protect the primary coating system from being damaged during transport and backfill operations.

#### 17. Size, number and location of pumping, compressing, heating or refrigeration stations:

There will not be any pumping, heating, compressing, or refrigeration stations within the State of Alaska ROW. Oil shipping pumps on the LDPI will be sufficiently sized to deliver oil to the Badami Pipeline.

#### 18. Transportation capacity of the proposed pipeline: \_\_\_\_\_ per day

The planned nominal plant capacity is 70,000 barrels of oil per day (BOPD) of sales oil.

#### 19. Estimated life of the pipeline:

The facilities and pipeline are designed for an operational life of 25 years, based on design criteria which anticipate extreme environmental events (e.g., wave, ice, storm, seismic conditions, etc.). In a situation where the operational life of the Liberty Field exceeds 25 years, facility upgrades such as replacement of equipment and/or piping may be required. Through proper maintenance and operating procedures such as pipeline cleaning, use of corrosion inhibitors and routine in-line-inspections, the operational life of the pipeline may extend beyond the design life of 25 years.

#### 20. Planned temperature at which each substance will be transported and whether it will be heated or refrigerated to maintain that temperature.

Sales oil will typically leave LDPI at 100°F, up to a maximum of 150°F. Insulation or a radiation barrier will be applied along the entire sales oil pipeline. New heating or refrigeration elements are not included in the Liberty project scope. Any required heating of Liberty oil will take place at the Endicott glycol bath heaters near TAPS Pump Station 1.

**21. The pipeline will be (check as appropriate):**

- ☐ Supported over the surface along its entire length
  - ☐ On the surface along its entire length
  - ☐ Partially buried along its entire length
  - ☐ Completely buried along its entire length
  - ☒ None of the above
- (If this is checked, attach a map showing which segments of the pipeline are planned to be over the surface, on the surface, partially buried and wholly buried.)

The proposed Liberty Pipeline will be buried for the offshore segment of the pipeline, the shore transition area, and the Badami ice road corridor. The pipeline will be supported above ground for the remainder of the overland segment, as shown in Figure 2.

**Offshore Pipeline Segment**

Offshore, the pipeline will be buried in a subsea trench. The proposed minimum depth of cover over the pipeline bundle is approximately 7 to 9 feet below mudline (the distance from the top of the bundle to the original undisturbed seabed elevation). The target trench depth is 9 to 11 feet (the distance from the trench bottom to the original undisturbed seabed).

**Overland Pipeline Segment**

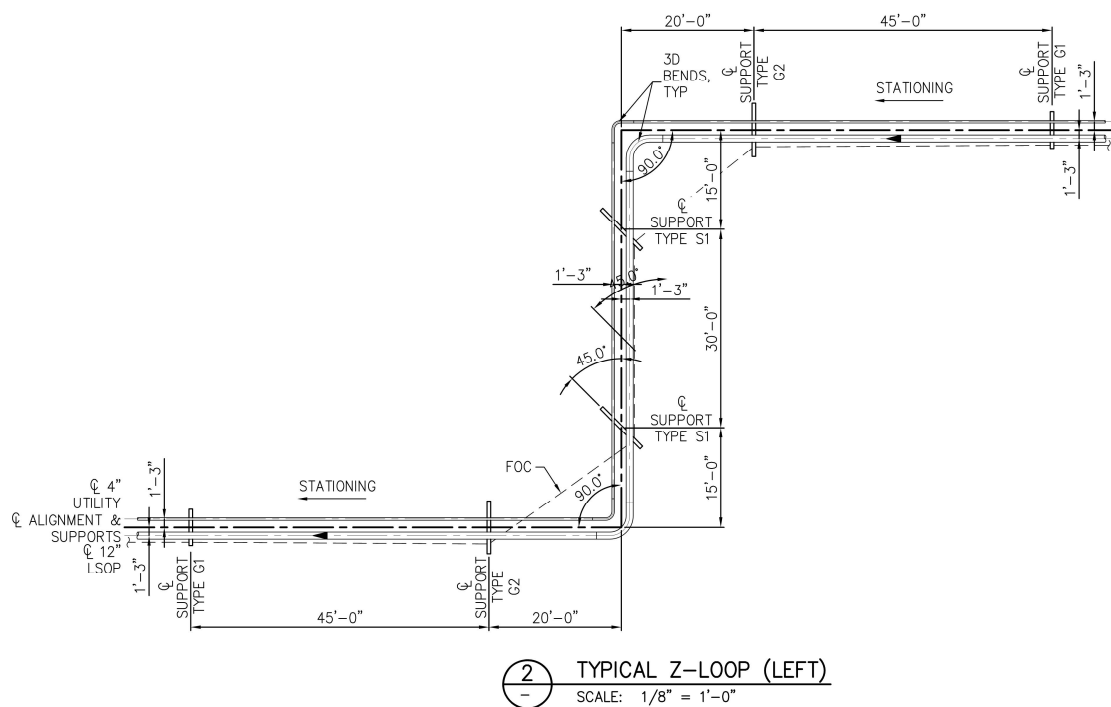
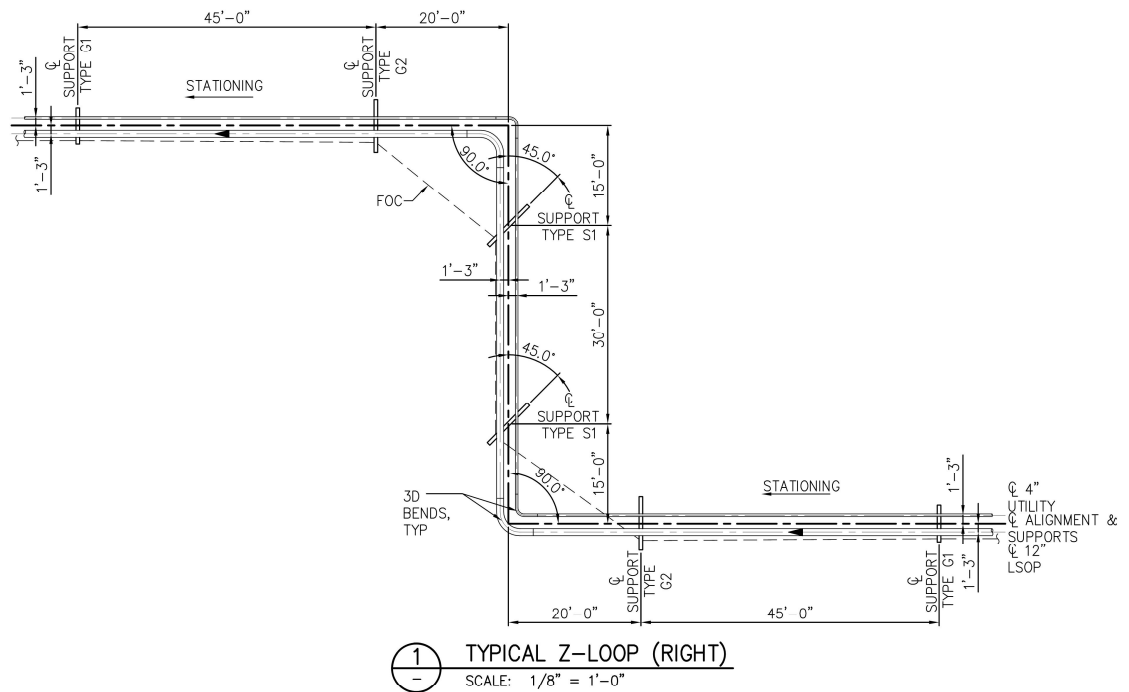
The overland segment of the pipeline will be supported on VSMs from the shore transition area to the tie-in with the Badami Pipeline. The aboveground pipeline will include expansion loops or offsets to account for thermal expansion or contraction of the pipeline spaced approximately 1,300 feet apart. A typical “L” or “Z” style loop is shown in Figure 5 (DPP Figure 7-8). The current design does not have vertical loops or check valves at the beginning or the end of the pipeline. The lowest point of the pipe rack, with the exception of the actual pipe supports, will be at least 7 feet above the tundra surface, as shown in Figure 6 (DPP Figure 7-10).

**Buried Segments of Overland Pipeline**

Two overland segments of the Liberty Pipeline are buried: the shore transition area and the pipeline intersection with the existing Badami ice road corridor. At the shore transition area, the pipeline will be buried from the shoreline to an inland point where the pipeline transitions from buried to aboveground mode.

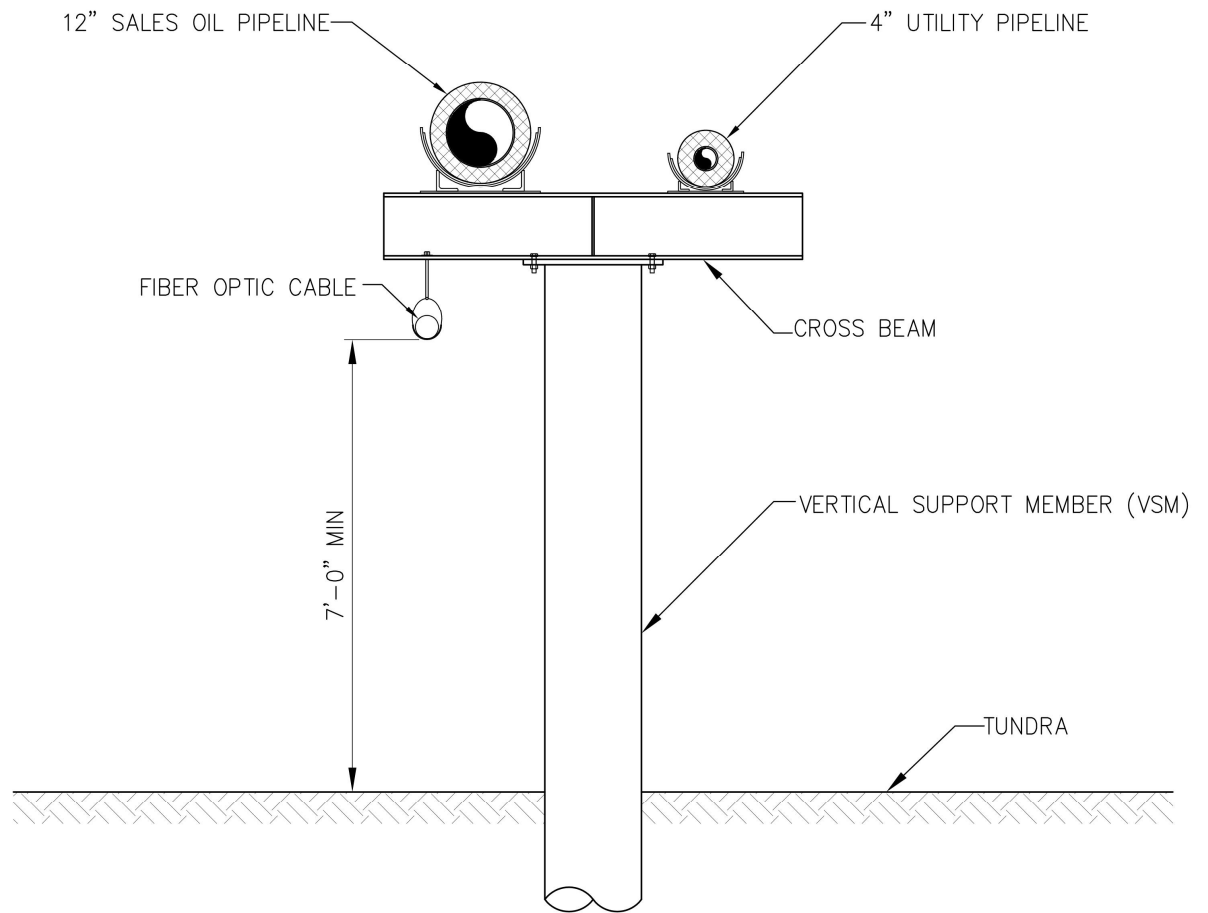
At the pipeline intersection with the existing Badami ice road corridor, a typical North Slope road crossing will be installed to facilitate uninhibited access over the pipeline. The pipeline will continue on VSM to the Badami tie in pad. Typical road crossing details are shown in Figures 7 and 8 (DPP Figures 7-12 and 7-13).

### Figure 5. Typical Z-Loop



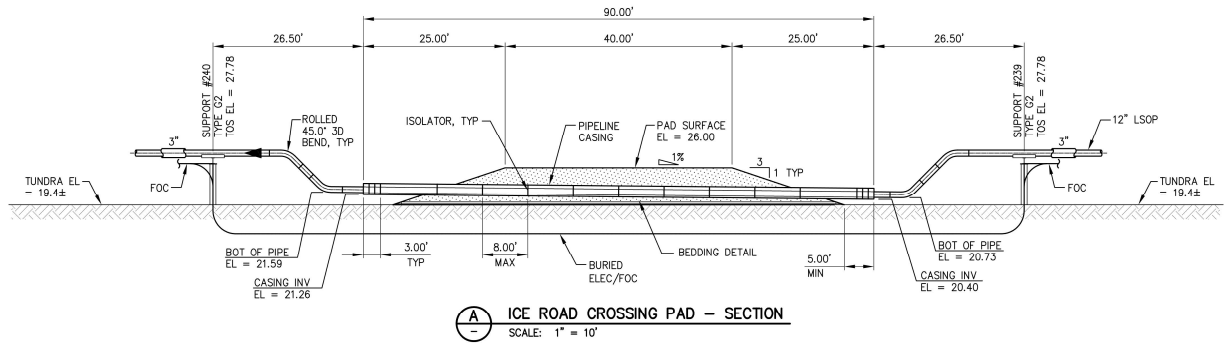


**Figure 6. Typical VSM Support**

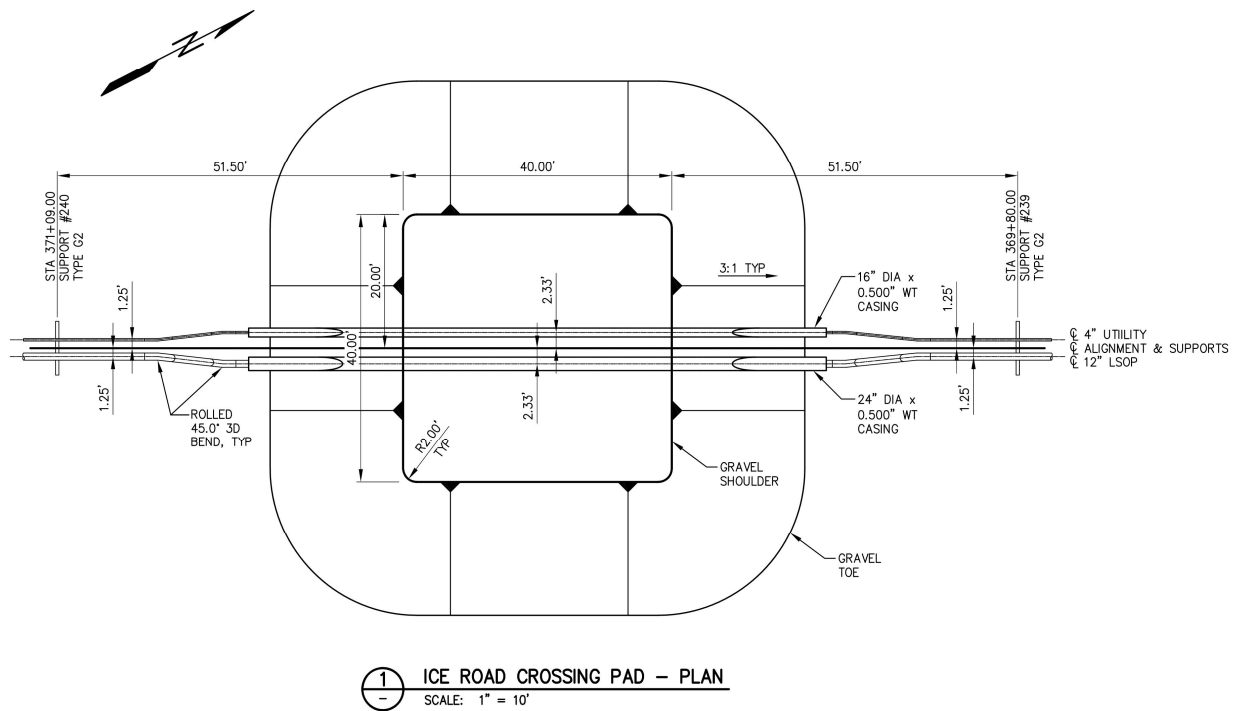


ABOVE GROUND PIPE ON VSM  
NOT TO SCALE

### Figure 7. Ice Road Crossing Pad – Section View



**Figure 8. Ice Road Crossing Pad – Plan View**



## **22. Describe the methods to be employed for partially or completely burying any portion.**

Descriptions of the methods for ditch excavation for the buried segments of the Liberty Pipeline are provided below.

### **Offshore Pipeline**

The offshore section of the pipeline will be constructed during the winter within a proposed temporary construction right-of-way. An ice road and/or thickened sea ice will be built within the construction ROW to support pipeline construction. Figure 9 (DPP Figure 7-14) shows the proposed pipeline route and ice road corridor. Construction will progress from shallower water to deeper water with multiple construction spreads. The pipeline trench will be excavated, the pipeline bundle laid in the trench, and the trench backfilled.

Boring studies have indicated that there will not be significant areas of unsuitable materials along the pipeline route. The geotechnical data indicates that all the trench materials will be returned to the trench slot after placement of the pipeline bundle. The installation will be executed with conventional excavation and dirt-moving construction equipment on thickened sea ice.

The execution sequence of the trenching operations is as follows:

- Thicken sea ice along route. For the floating ice section in particular, this is required to support the excavation weight temporarily, as well as the required construction equipment, and support the loads associated with pipeline installation. Where bottomfast ice is present, thickening of the sea ice will also be required.
- Cut a slot in the ice. The slot will be approximately 10 feet wide. The ice will be cut into blocks using an ice trencher and removed by conventional excavation equipment. The ice will be transported to a location away from the work site to a storage area on grounded sea ice to prevent excessive deflection of the ice in the work area.
- Excavate the trench using long-reach excavators with pontoon tracks. Excavated material will be backfilled over the pipeline in another area of the trench or stockpiled in a designated area.

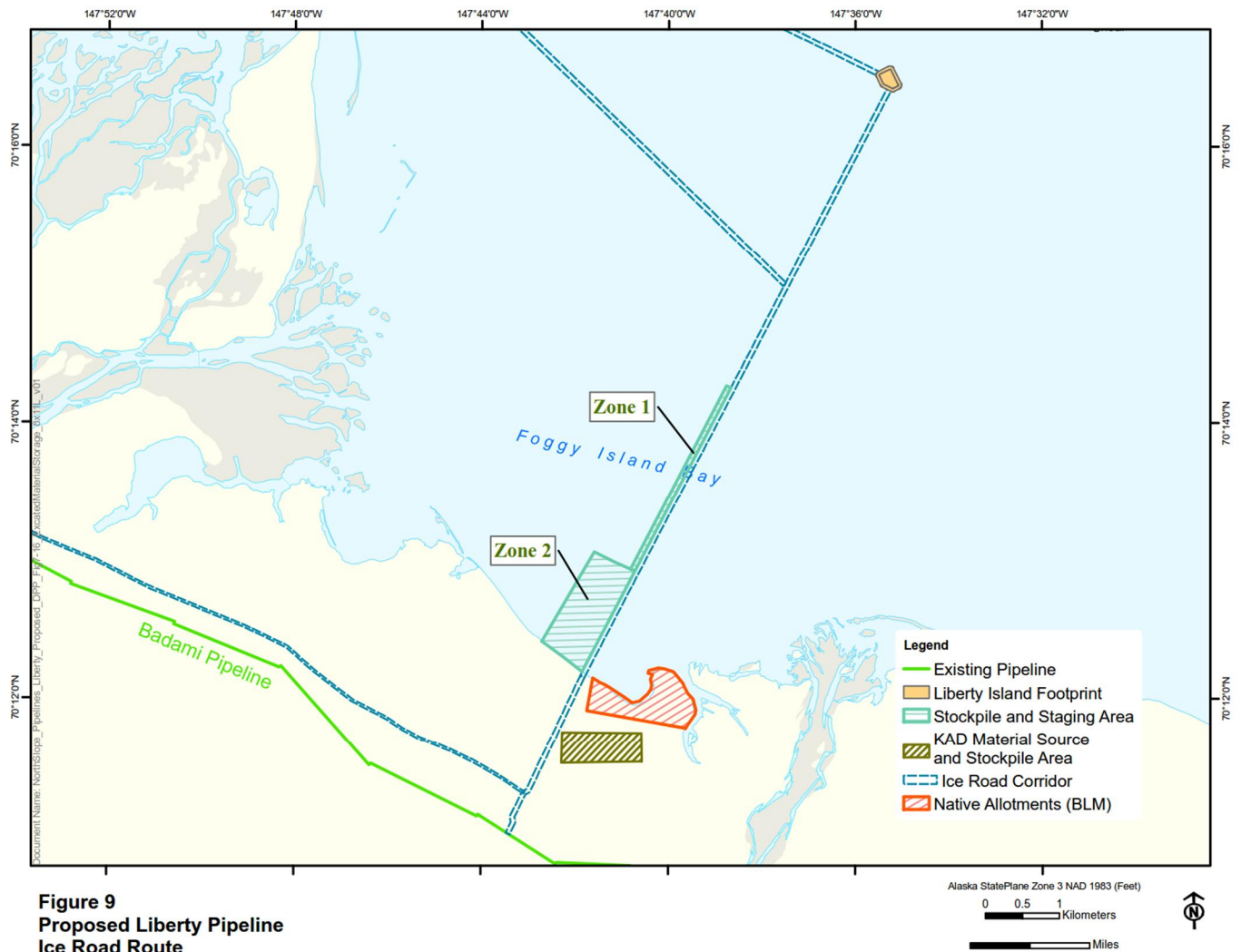
### **Buried Segments of Overland Pipeline**

**Shore Transition Segment:** The shore transition segment trench may extend up to 350 feet long and 150 feet wide near the shoreline. Thaw-stable backfill will be used as necessary to minimize thaw settlement in the shore transition area between the offshore segment and the overland segment. The soil will typically be placed in 12- to 24-inch thick lifts and compacted. The actual lift thickness will vary based on proximity to the pipe and on the maximum particle size of the material being placed. After laying the pipeline, the trench will be backfilled. Cuttings from VSM installation may also be placed in the onshore segment of the trench. In the onshore segment of the trench, the backfill will be topped with a thin layer of fine-grained soils and organics, and seeded as needed to promote re-vegetation. Coarser granular material from the gravel mine or the excavation will be used at the shore crossing as needed to achieve erosion resistance similar to the adjacent, undisturbed material. This plan minimizes any increase in coastal bluff erosion due to construction.

**Ice Road Crossing Pad:** The gravel pad at the Badami ice road crossing will be placed on top of the tundra groundcover as shown in Figures 7 and 8 (DPP Figures 7-12 and 7-13). The pipeline will pass through the gravel pad above the tundra through a preinstalled oversized

pipe casing.

**Figure 9. Proposed Liberty Pipeline Ice Road Route**



## 23. Describe any bridges, trestles, other structures or berms for the support of the proposed pipeline.

The overland segment of the Liberty Pipeline will be supported on VSMs from the shore transition segment to the tie-in with the Badami Pipeline; no bridges, trestles, or berms will be used for support of the proposed pipeline. The aboveground pipeline will be elevated allowing free passage of terrestrial mammals and reducing impacts to tundra. The bottommost portion of the pipe rack will be elevated to a minimum of 7 feet above the tundra surface. Design and installation of the VSMs will be completed following typical procedures used for other elevated pipelines on the North Slope. The VSMs will be set in oversized holes and backfilled with a sand slurry. A typical depiction of the aboveground pipe on VSMs is shown in Figure 6 (DPP, Figure 7-10) and the overland pipeline approximate site plan is shown in Figure 4.

**24. Describe the proposed method for all stream crossings and crossings of other bodies of water.**

A majority of the Liberty Pipeline (5.6 miles) is located offshore in marine waters of Foggy Island Bay as described under responses to items 21 and 22.

The overland segment of the Liberty Pipeline, including installation of expansion loops accommodate thermal growth of the pipeline, will avoid impacts to water bodies (e.g., creeks, ponds) to the extent practicable, but may span smaller water bodies if unavoidable. The onshore segment of the Liberty Pipeline is aboveground supported by VSMs. The VSMs will be placed outside of large water bodies. Installation is planned during a winter season to avoid impacts to any water bodies.

**25. Describe the proposed methods for grades, cuts or fills.**

Cuts and fills will take place offshore and at the shore transition area as described in response to item 22.

**26. Discuss planned facilities for spill or leak prevention and containment.**

The proposed Liberty Pipeline system was designed to ensure safety and prevent leaks. The following safety measures have been identified for specific components of the project.

**Pipeline Design**

The following measures were included in pipeline design to ensure safety and prevent leaks:

- The pipeline route in Foggy Island Bay is shoreward of the barrier islands and shoals, thus affording protection from large ice keels that could gouge the seabed.
- The present design calls for trenching the pipeline in the seabed so that the top of the pipe is at least 7 feet below the original seabed. The trench will then be backfilled over the top of the pipes.
- The pipeline will be designed to accommodate bending without exceeding codified stress limits based upon design loads due to ice keel, free spanning caused by a strudel scour, and predicted maximum thaw settlement.
- The pipelines, including the NPS 16-inch casing, will be coated on the outside to prevent external corrosion.
- The NPS 16-inch casing pipe will be protected with a cathodic protection system consisting of sacrificial anodes placed along the direct buried segments of the pipelines.
- The subsea segment of the NPS 12-inch inner sales oil pipeline will not be exposed to soils or an electrolyte, and will not require cathodic protection.
- The shore transition is buried to protect against storms, sea ice ride-up, and coastal erosion. The transition from buried mode to aboveground mode will be set back from the shoreline.
- The PIP design will provide additional leak detection capability through annulus monitoring.

- The sales oil pipeline will be equipped with a launcher barrel on LDPI. The sales oil pipeline will connect to the existing Badami Pipeline with a piggable wye, allowing the pig to be received at the existing Badami Pipeline receiver located at the tie-in with the Endicott Oil Pipeline. A temporary connection for a receiver barrel will also be provided at the Badami Pipeline tie-in pad.
- In-line inspection tools (i.e., “smart pigs”) will be used during operations to monitor pipe conditions, measure any changes, and evaluate pipeline geometry.
- In-line inspection tools will be used every five (5) years, as a minimum, as required by regulations. A baseline in-line inspection will be conducted prior to start-up,
- The elevated overland pipeline section will be of conventional, proven North Slope design.
- The pipeline is designed with no flanges, valves, or fittings in the subsea section to eliminate the possibility of leaks from such components.
- The pipeline will have isolation valves located on LDPI and at the Badami Pipeline tie-in pad.
- A fiber optic distributed temperature sensing system will be employed along the buried subsea pipeline. This system will be able to detect soil temperature variations along the pipeline route, indicating erosional or similar environmental changes.

### **Hydrotesting**

After installation, the pipelines will be pressure tested to satisfy applicable regulations and codes. To reduce the volume of test medium required, the NPS 12-inch and NPS 4-inch pipeline segments will be tested one after the other by transferring the testing fluid from one to the other.

### **Monitoring and Surveillance**

Liberty will be added to Harvest Alaska’s existing approved Surveillance & Monitoring Plan. Harvest Alaska, LCC, as designated Operator, will conduct long-term monitoring and surveillance of the pipeline system to ensure mechanical and operational integrity as required by the State Pipeline Coordinator’s Section, the Bureau of Safety and Environmental Enforcement (BSEE), and the Pipeline and Hazardous Materials Safety Administration (PHMSA). The program will generally include visual inspections/aerial surveillance and pig inspections.

Visual inspections of the pipeline system will be conducted by aerial surveillance as required. The goal of these surveys will be to supplement pipeline monitoring systems through visual observation. Pipeline isolation valves will be inspected on a regular basis.

In addition to visual observations/inspections, HAK will conduct a regular sales oil pipeline pig inspection program to assess continuing pipeline integrity. Types of data collection pigs used may include:

- Wall thickness measurement pigs
- 3D geometry pigs (axial, vertical, and lateral)
- Gauging pigs



In addition to routine meter, pump, and valve operations, the main focus of the operating procedures for the subsea pipeline bundle will be to monitor integrity of the components. Monitoring the subsea pipeline will involve a continual review of flow properties, pressure-based monitoring, fiber optic cable temperature sensing monitoring, and various inspections. A pipeline bundle monitoring plan will be developed for this purpose.

Mass balance and pressure monitoring leak detection systems will be incorporated into the export pipeline design. These systems work in parallel and provide redundant measurements to ensure accuracy. It is expected that under optimal conditions, these systems would be capable of detecting a leak of 1% of volumetric flow in the pipeline over a 24-hour period. Pipeline flow at the Liberty Pipeline, as well as all HAK crude oil pipelines on the North Slope, can be stopped within 1 hour after verified detection of a spill, as required by 18 AAC 75.055(b). If the leak detection system alarms, the control board operator proceeds through a series of steps to determine the cause of the alarm. Emergency shutdown of the crude oil transmission pipeline can be activated at the control room. Pipeline emergency shutdown will result in a complete pipeline shutdown.

### **Spill and Pollution Prevention Procedures**

Liberty project planning includes pollution and spill prevention measures, as well as spill response preparedness. HAK has developed and submitted to BSEE a Liberty Oil Spill Response Plan (OSRP) which meets requirements of 30 CFR 550.250(a)(1), 30 CFR 254 Subpart B, and NTL No. 2012-N06. The Liberty OSRP describes the steps HAK will take to prevent, prepare for, and respond to potential oil spills, including a description of the strategies and tactics to respond to a Worst Case Discharge. In addition, HAK has developed comprehensive spill prevention and response plans, including an ODPCP, Spill Prevention Control and Countermeasure Plans, and Facility Response Plans for operations on the North Slope and at Northstar and Endicott. These plans provide the overall framework for spill prevention and response measures for HAK-operated fields on the North Slope. As they do for other North Slope oil production operations, Alaska Clean Seas will serve as the primary Oil Spill Removal Organization and Response Action Contractor, as approved by the U.S. Coast Guard (USCG) and the Alaska Department of Environmental Conservation (ADEC), respectively.

Additional special spill prevention programs will be developed for specific Liberty operations where a need is identified, such as a Special Barging Spill Management Program and a Targeted Ice Road Spill Management Program.

### **Training**

The Liberty Development project will have a robust training system in place to ensure employee safety, regulatory compliance, and outstanding environmental performance. HAK employees and contractors with job duties directly involving inspection, maintenance or operation of oil storage and transfer equipment on the Liberty leases will be trained to successfully fulfill their duties in spill prevention and spill response. Facility personnel will also receive training on how to report oil spills.

## **27. Proposed access roads, airstrips, heliports, float plane facilities, communication facilities, storage sites for equipment and materials, material sites, and material**

**disposal sites, whether planned for construction, operation or maintenance support:**

Permanent access roads, airstrips, float plane facilities or storage sites are not planned for the pipeline construction or operation. A permanent heliport facility will be developed at the Badami Tie-In Pad, at the end of the pipeline. Temporary access roads and storage sites for equipment and materials will be constructed with ice to facilitate construction of the pipeline.

Logistics is a critical consideration in all aspects and phases of the Liberty Development. The LDPI is separated from existing North Slope infrastructure by water; the nearest gravel pad and road is the Endicott Satellite Drilling Island (SDI) and causeway, about 7.3 miles west-northwest of the site. During construction, large quantities of gravel, pipe, and heavy modules will be moved to the island. Drilling operations will require re-supply of mud products, cement, casing, tubing, wellheads, and other material to the island. During ongoing field operations, replacement parts and consumables will be needed on a continuing basis.

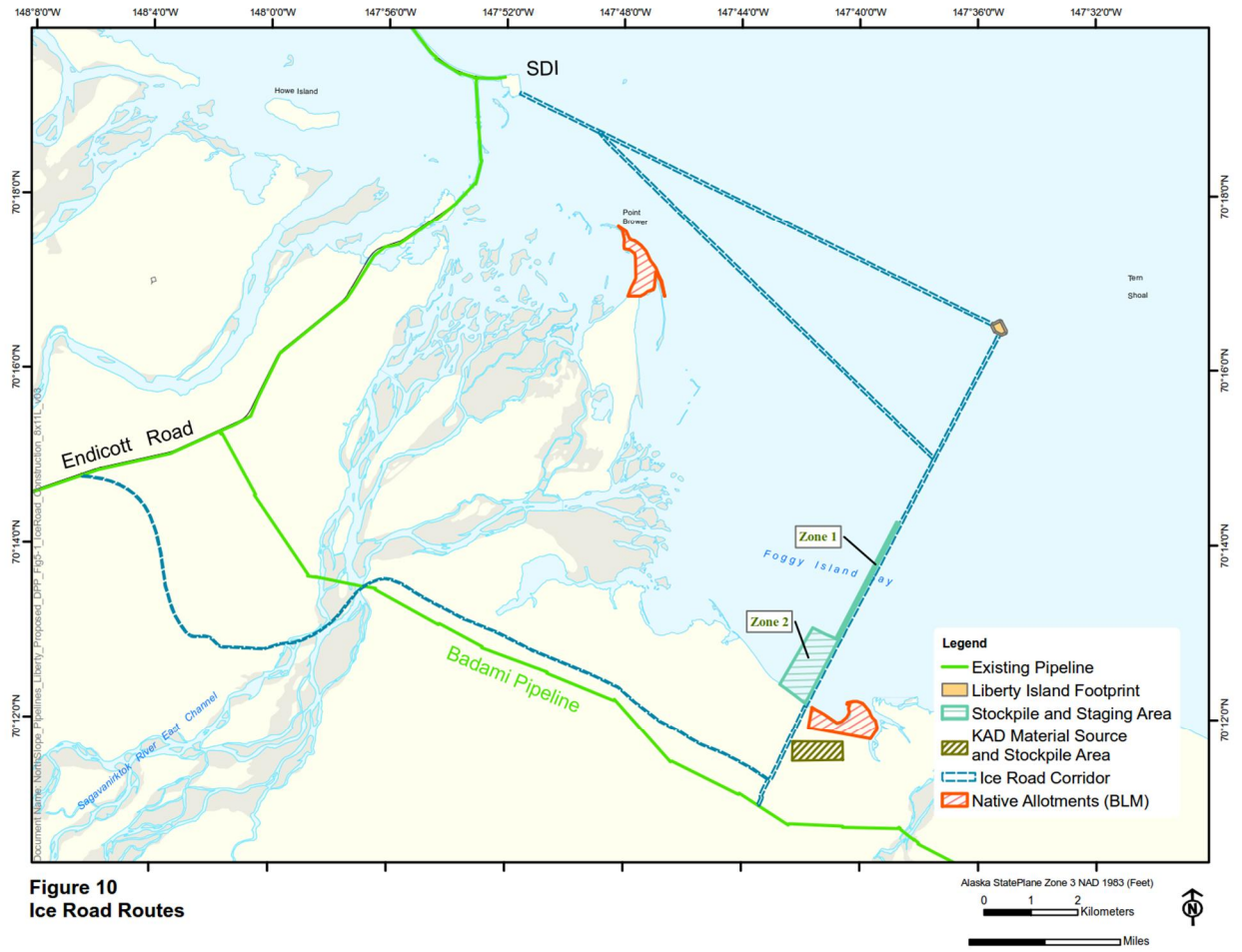
**Gravel Roads**

Existing roads (e.g., the Alaska Highway System and North Slope gravel roads) will be used. Portions of the Endicott field between the Main Production Island (MPI) and the SDI will be used. No new gravel roads will be constructed.

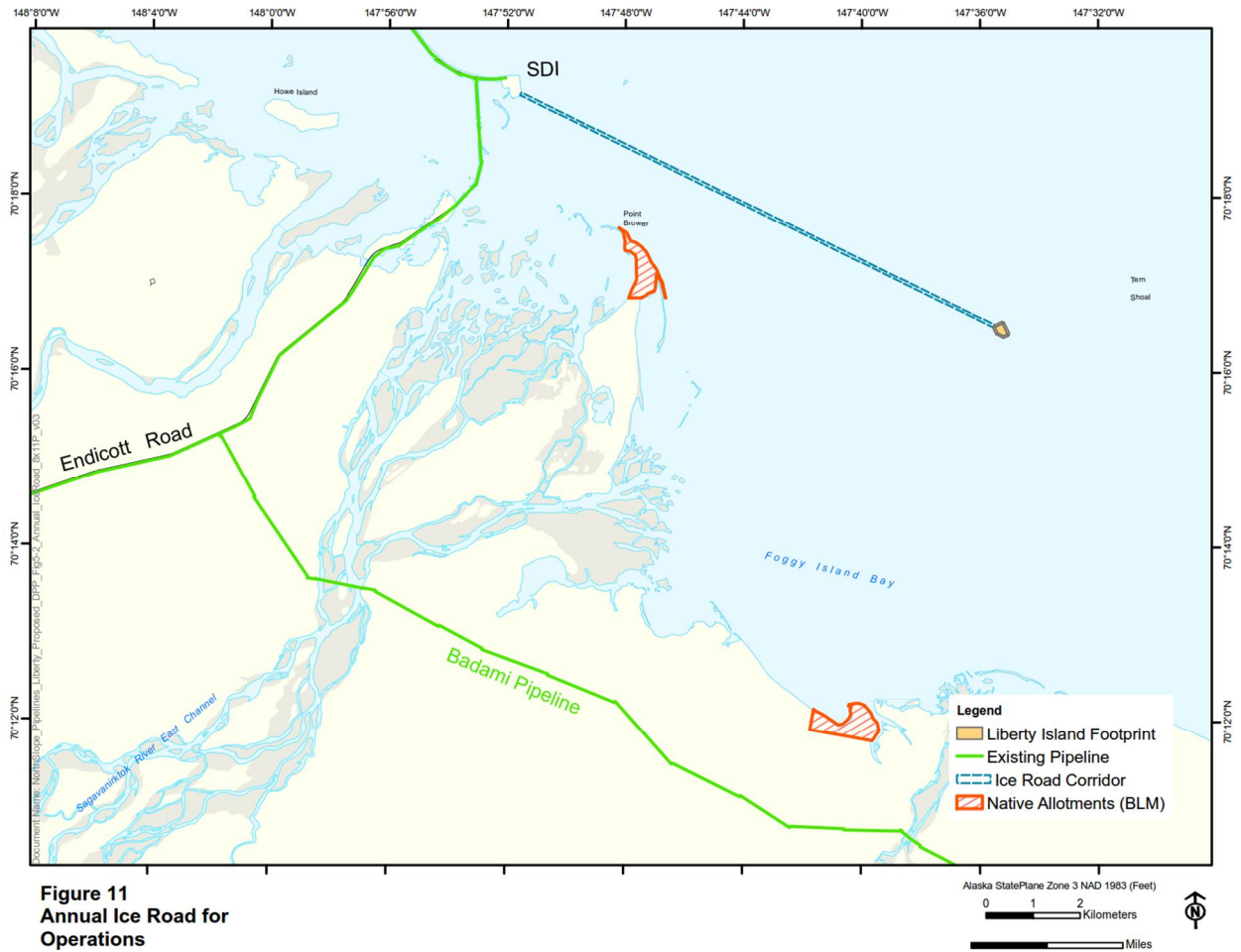
**Ice Roads**

During winter, ice roads will be built to support island and pipeline construction activities, and will be used in subsequent years to support drilling activities and production operations. An ice road connecting SDI to LDPI is expected to be constructed annually to resupply the island and transport personnel. Ice roads are commonly used on the North Slope for winter tundra travel typically from January through mid-April, and for offshore access typically from February through mid-May. All ice roads will be permitted by the State of Alaska, Department of Natural Resources (ADNR) Division of Mining, Land and Water (DMLW). Approximate ice road routes during island and pipeline construction are shown in Figure 10 (DPP Figure 5-1). The ice road route to support ongoing re-supply and production operations is shown in Figure 11 (DPP Figure 5-2).

**Figure 10. Ice Road Routes**



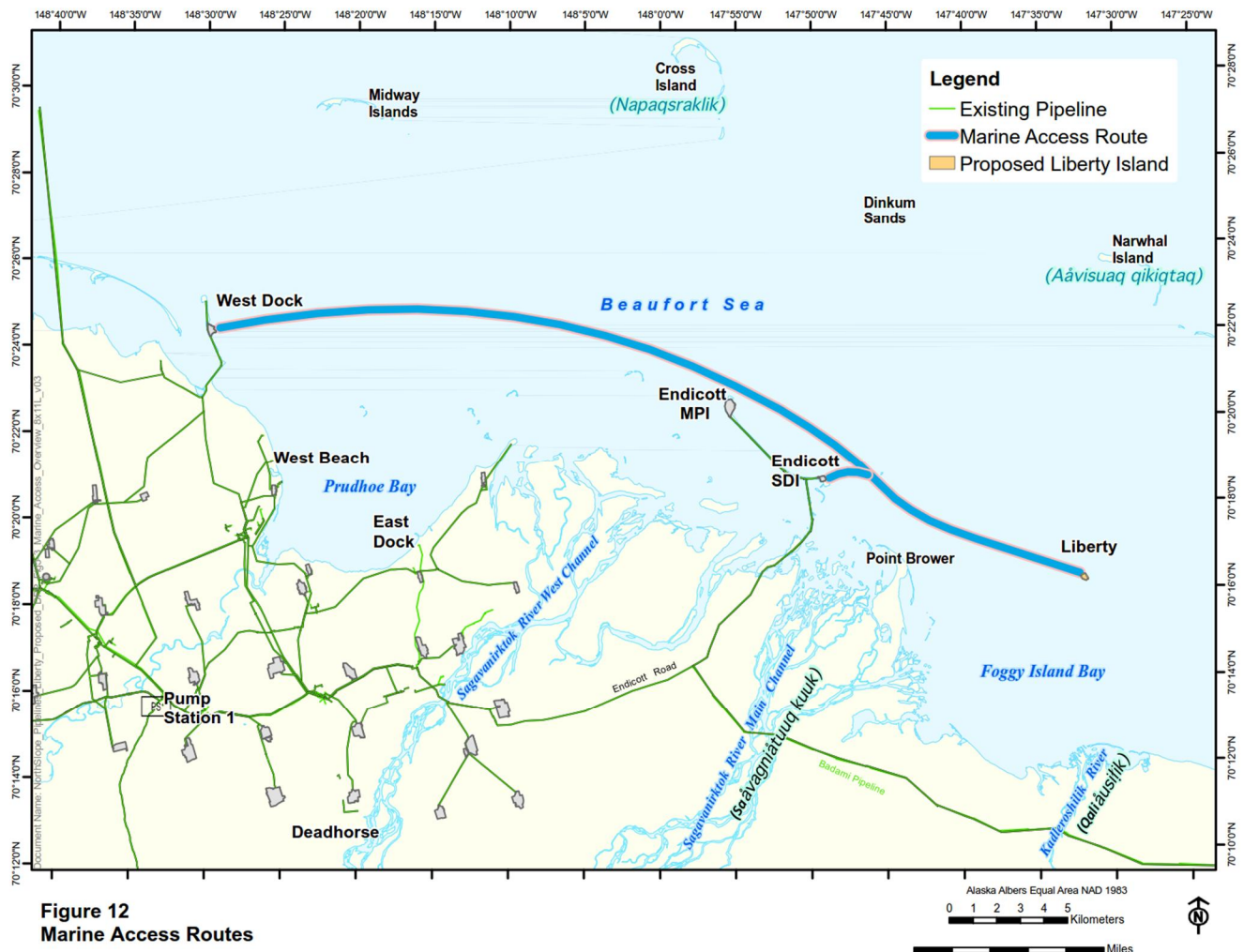
**Figure 11. Annual Ice Road for Operations**



### **Marine Access**

During the open-water season, barges, hovercraft, and/or other vessels will be used to transport equipment, personnel, and supplies to LDPI. Large vessels will include barges and tugs to move large modules and equipment. Smaller vessels will be used to move personnel, groceries, supplies, tools, and smaller equipment. Hovercraft or helicopter will transport personnel and small loads during shoulder seasons when ice roads and open-water vessel support are not available. Arktos™ all-terrain machines will be used for emergency evacuation. The marine routes to move equipment from West Dock (Prudhoe Bay) to LDPI, and to support operations from SDI are shown in Figure 12 (DPP Figure 5-3).

**Figure 12. Marine Access Routes**



### Air Access

Year-round helicopter access to the LDPI is planned, and a helicopter landing site will be constructed on LDPI near the living quarters. In general, air access will be used for movement of personnel and foodstuffs, and for movement of supplies or equipment when necessary. Helicopter use is also planned for pipeline surveillance, personnel transport, re-supply during the broken ice seasons, and access for maintenance and inspection of the onshore pipeline system. Typically air traffic routing is as direct as possible from departure locations such as the SDI, West Dock or Deadhorse to the LDPI, with routes and altitude adjusted to accommodate weather, other air traffic, and subsistence activities. The aircraft flights will be coordinated between HAK and regulatory agencies to avoid disturbances to biological resources. Fixed-wing aircraft would only be used for the Liberty Development on an occasional, as-needed basis for purposes of spill response (spill delineation) and aerial reconnaissance of anomalous conditions, or unless otherwise required by a regulatory authority.

### **Communication Facilities**

The primary communication system between LDPI and onshore facilities will be high bandwidth microwave communications to/from a tower on the island to/from a tower at either SDI or MPI at Endicott. An armored fiber optic cable will be installed along with the subsea pipeline and will be used for control and communication with the Liberty Pipeline facilities on shore. The armored fiber optic cable will be included in the subsea pipeline bundle and will continue on the aboveground supports to the Badami tie-in Pad. Communications equipment will be located in the facilities at the Badami tie-in pad where the Liberty Pipeline connects to the Badami Pipeline.

### **Material Site**

HAK proposes to develop a new mine site specifically for the Liberty Development Project west of the Kadleroshilik River. A source of approximately 1,337,000 cubic yards of gravel is required to meet immediate and potential long-term project needs. The mine site, shown in Figure 13 (DPP Figure 10-2), lies approximately 0.5 miles south of Foggy Island Bay, west of the Kadleroshilik River. The development mine site is approximately 25 acres in size, with the primary excavation area developed as one cell. A 27-acre ice pad perimeter is planned.

Development and operation of the Liberty mine site is planned for one season and is similar to development for other mine sites on the North Slope. The general sequence of activities for mine site development includes removal of snow and ice, removal and stockpiling of unusable overburden material, pit excavation, gravel hauling, backfill of unusable material into the pit breach construction, and flooding to reclaim the pit. Additional reclamation activities will be conducted after the pit is flooded. A Mining and Reclamation Plan will be submitted under separate cover to the ADNRL DMLW for review and approval.

### **Storage Sites and Disposal Sites**

Storage sites are described in response to item 11 above.

Up to two disposal wells will be drilled and will be used for most waste disposal. The disposal wells will be drilled first, so that cuttings from subsequent wells can be disposed of as they are created. Prior to disposal wells being drilled and grind and inject facility being commissioned, wastes will be temporarily stored on-site (e.g., waste muds and cuttings for drilling the well), or transported offsite for appropriate disposal.

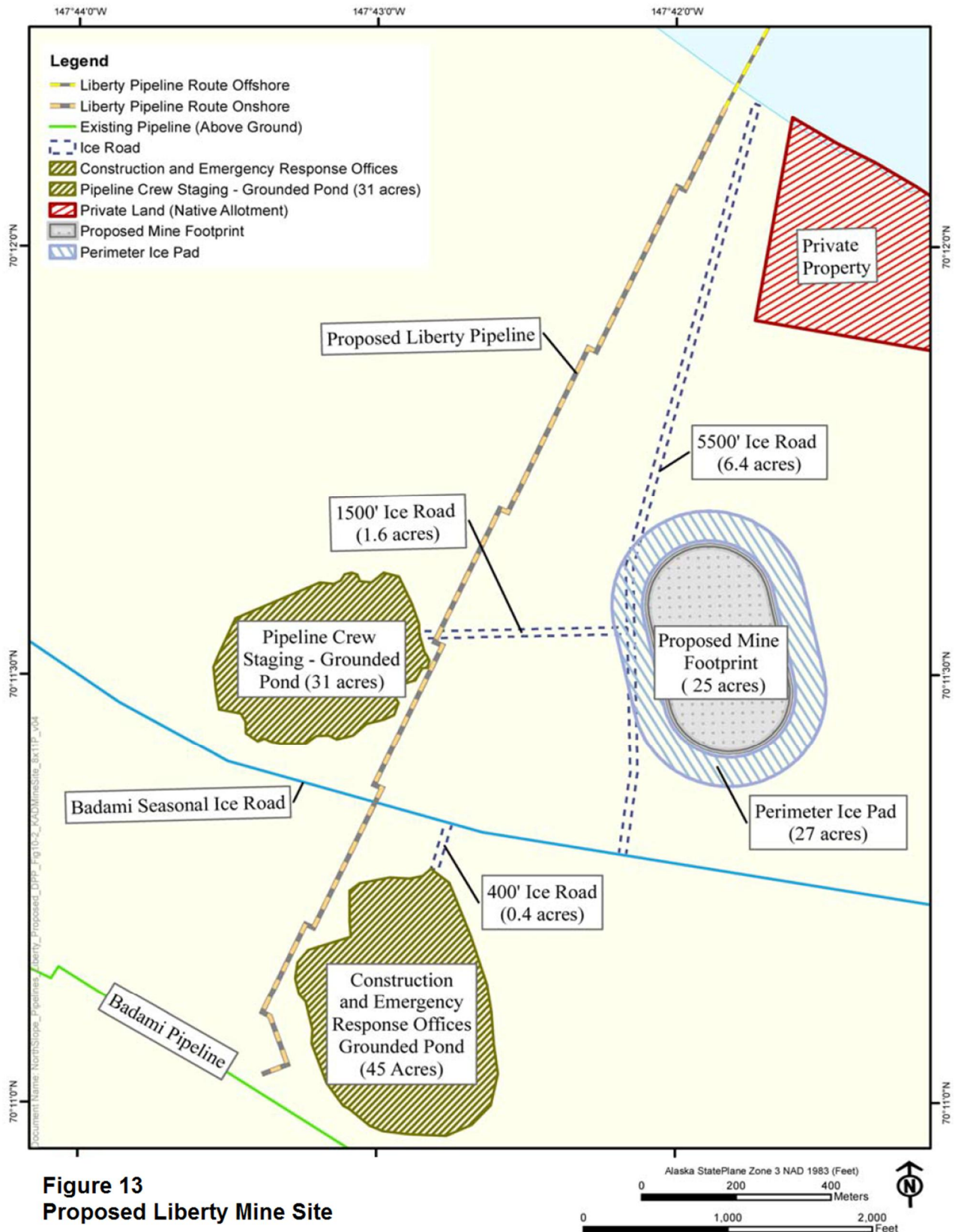
Trench excavation spoils are expected to be used as trench backfill to the maximum extent possible. It is also possible that portions of the ice slot could be reopened and excess spoils placed over the previously backfilled trench to account for subsidence which would eliminate or further reduce the disposal volume.

## **28. Size, number, approximate location and planned duration of field camps:**

A peak workforce of around 300 people is anticipated for pipeline construction. Pipeline construction field camps will likely be a combination of existing infrastructure and project-specific facilities located on LDPI. Where practicable, available camp space from nearby locations (e.g. Endicott) will be used to supplement the temporary camp established by HAK on LDPI. Field camps are expected to be required during one winter season, but could be required for a longer period in the event pipeline construction is delayed.



**Figure 13. Proposed Liberty Mine Site**



**29. Size, number and approximate location of housing for personnel operating or maintaining the pipeline:**

Living quarters with a maximum housing capacity of 30 personnel will be built on LDPI for personnel operating and maintaining the Liberty facilities, including the pipeline.

**30. Size, number and approximate location of health care facilities:**

No new health care facilities will be constructed as part of this project. The construction contractor will be responsible for providing emergency/first response capabilities during construction activities. During operations of the pipeline, the existing clinic in Deadhorse will provide care required beyond first aid. Personnel requiring advanced care will be medically evacuated to Fairbanks or Anchorage for additional treatment.

**31. Approximate number of persons to be employed during construction:**

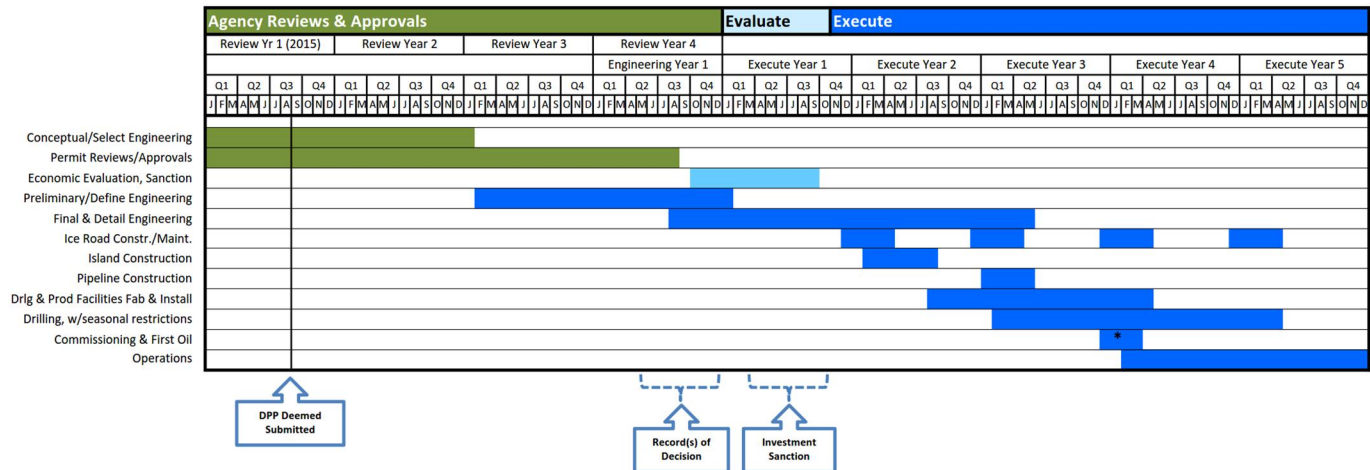
The approximate number of persons to be employed during construction are 300 individuals. This estimate includes engineering, survey, skilled labor, support labor, quality control & inspections, and project management.

**32. Approximate number of persons to be employed to operate and maintain the pipeline:**

A total of 2 personnel per shift will be required to operate the Liberty Pipeline. This includes 1 control room operator, and 1 pipeline operator. An additional 2-6 personnel per shift will be required to maintain the pipeline.

**33. Planned commencement date for construction:**

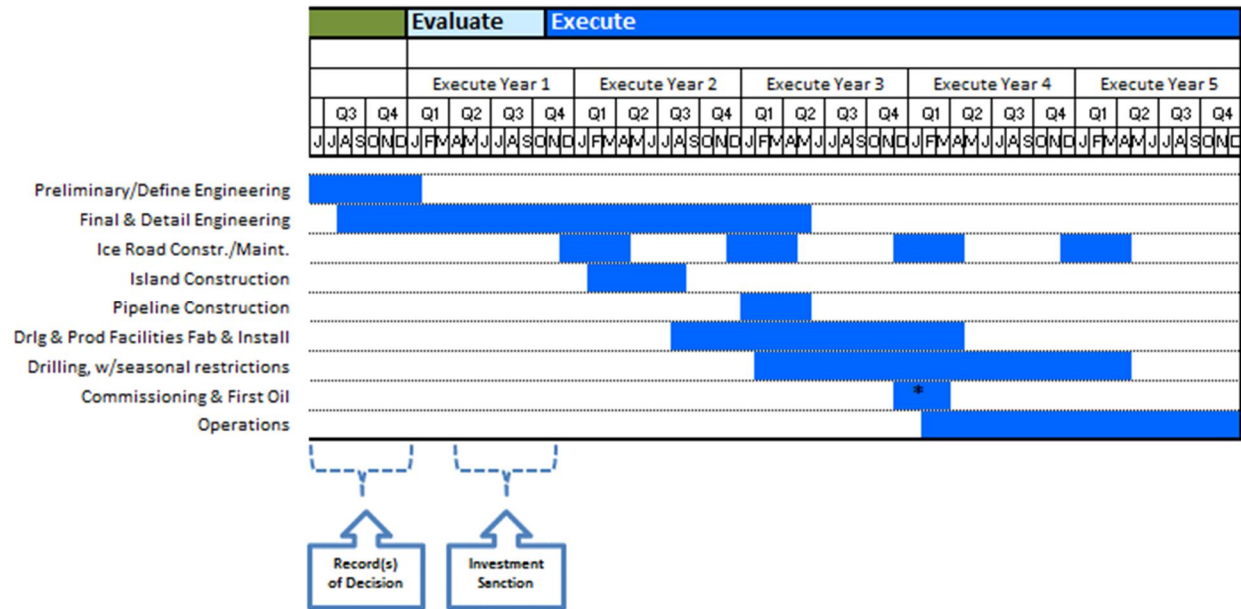
The pipeline will be constructed beginning in 1Q Execute Year 3 (see schedule).



**34. Estimated construction time:**

The pipeline will be constructed from 1Q Execute Year 3 to 2Q Execute Year 3 as shown in the schedule below. The offshore and overland pipeline segments are planned to be installed within the same time frame with two separate construction spreads of equipment and

manpower. The overland sequence of activities includes the installation of VSMs, placement of the pipeline on the VSMs, and installation facilities at the Badami tie-in pad. For the offshore segment, construction will progress from shallower water to deeper water with multiple construction spreads. Hydrotesting of the entire pipeline will be completed prior to commissioning in 1Q Execute Year 4, during the full facility start-up.



### 35. Planned commencement date for operations:

#### Drilling Operations

The drilling unit and associated equipment will be mobilized to the LDPI by barge in 3Q Execute Year 2. Drilling unit commissioning and start-up is scheduled for 1Q Execute Year 3. Drilling will occur year-round, but drilling into the reservoir will be limited to open-water and frozen ice seasons. All the wells are anticipated to be drilled and completed by the end of 2Q Execute Year 5.

#### Production Operations

Production operations are scheduled to commence upon completion and commissioning of the initial facilities and the completion of the first three wells, as described above. First oil is expected in 1Q of Execute Year 4. Production, drilling, and facility installation activities will occur simultaneously until all the wells are drilled and in service as either a producer or injector. Detailed construction planning will be conducted to ensure that simultaneous operations including construction activities, drilling operations and production operations can be managed safely within the confines of the island and the constraints associated with logistics and living quarters.

### 36. Estimated cost of materials: \$ \_\_\_\_\_

According to the current Class 4 cost estimate (+50%/-25%) , permanent onshore pipeline material cost will be roughly \$4 million and permanent offshore pipeline material cost will be roughly \$13 million.

**37. Estimated cost of construction and installation: \$ \_\_\_\_**

According to the current Class 4 cost estimate (+50%/-25%) the total installed cost of the pipeline system (including onshore and offshore pipelines, ice pad and ice road support, and hydrostatic testing) is approximately \$100 million.

**38. Estimated annual cost for operations and maintenance: \$ \_\_\_\_ per year**

For the life of the project, it is estimated operating expenditures would be approximately \$2.6 billion, or \$104 million/year.

**PART III**  
**AVAILABILITY OF INTERCONNECTIONS, TERMINAL FACILITIES**  
**AND STORAGE FACILITIES**

**39. Describe how the proposed pipeline will connect with planned field gathering systems, if any.**

There is no direct connection between planned gathering lines and the proposed Liberty Pipeline.

**40. Discuss the technical and economic feasibility of providing connections with other field gathering systems at intermediate points along the proposed pipeline.**

The Liberty Pipeline will be designed and operated as a common carrier and will transport sales oil. Products to be transported in the Liberty Pipeline must meet the same specifications as required by connected carriers downstream. Pipeline connections to transport hydrocarbons from another field's gathering system would be evaluated on a case-by-case basis.

It is unlikely that providing connections with field gathering system would be technically or economically feasible due to the location of the majority of the pipeline (5.6 miles) being buried in marine waters, and the relative closeness of the Badami Pipeline.

**41. Discuss the technical and economic feasibility of providing connections or interchanges with other pipelines at intermediate points along the proposed pipeline.**

The Liberty Pipeline will be designed and operated as a common carrier and will transport sales oil. Products to be transported in the Liberty Pipeline must meet the same specifications as required by connected carriers downstream. Pipeline connections to transport hydrocarbons from another field's pipeline would be evaluated on a case-by-case basis.

It is unlikely that providing connections or interchanges between other pipelines would be technically or economically feasible due to the location of the majority of the pipeline (5.6 miles) being buried in marine waters, and the relative closeness of the Badami Sales Oil Pipeline.

**42. Describe the location, area and capacity of proposed tank farms or other storage facilities.**

No tank farm or other storage facilities are planned in conjunction with operation of the Liberty Pipeline.

**43. Provide locations of and describe any terminal delivery facility of the proposed pipeline.**

No terminal delivery facilities are planned for the Liberty Pipeline. The Liberty sales oil pipeline will tie into the existing Badami Pipeline, and Liberty oil will be transported to TAPS Pump Station 1 via the Badami Pipeline to Endicott Pipeline network.

**44. Discuss the technical and economic feasibility of providing delivery facilities at intermediate points along the proposed pipeline.**

Proposals to provide delivery facilities at intermediate points along the Liberty Pipeline will be evaluated on a case-by-case basis. However, it is unlikely that providing delivery facilities at intermediate points along the proposed pipeline would be technically or economically feasible due to the location of the majority of the pipeline (5.6 miles) being buried in marine waters, and the relative closeness of the Badami Pipeline.



**PART IV**  
**SAFEGUARDS FOR PERSONS, PROPERTY, THE PUBLIC,**  
**AND THE ENVIRONMENT**

**45. Describe your plans to detect and abate any condition possibly arising from the construction, operation, maintenance or termination of all or any part of the proposed pipeline that may cause or threaten to cause a hazard to the safety of workers on the pipeline project.**

Hilcorp (HAK) believes that safety and a strong environmental performance are integral to the overall success of the Liberty Development. The Liberty Pipeline would be designed, constructed, operated, and maintained in accordance with the requirements of PHMSA within the US DOT and applicable authorizations. These requirements are intended to ensure adequate protection for the public from pipeline failures.

**Construction Planning**

HAK will implement project-wide and site-specific Environmental, Health, and Safety (EH&S) plans to ensure that development and operational activities are conducted in full compliance with regulations and permits, and fully implement agreed-to environmental mitigation measures to protect human health and the environment. HAK corporate practices, along with best practices developed by other Alaska North Slope operators, will be used to develop plans specific for the Liberty Development project. Sources that will be used to support EH&S issues associated with working on the North Slope include the *Alaska Safety Handbook* and the *North Slope Environmental Field Handbook*.

In addition to the EH&S plans, a Construction Plan, a Quality Assurance Plan, and a Surveillance and Monitoring Plan will be developed to outline construction methods, to develop a method to identify potential problems and verify that work is performed in accordance with applicable permit requirements, and to maintain the quality and integrity of the pipeline.

**Emergency and Spill Response Planning**

HAK will develop and implement emergency and spill response plans to respond to emergency situations, including evacuations, loss or disablement of a drilling unit, or an oil spill or blowout.

**EH&S Training Program**

The Liberty Development project will have a robust training system in place to ensure employee safety, regulatory compliance, and outstanding environmental performance. The Liberty project's training program will span different levels, from new worker orientation to technical training for the specialized workforce, to periodic refreshers for experienced workers. The two primary components of this training program include the North Slope Training Cooperative (NSTC) Unescorted Program and the Liberty-specific training. Both programs ensure that personnel assigned to the Liberty Development project are aware of applicable regulatory conditions and requirements, as well as safety, health, environmental, sociocultural, and security expectations and requirements related to working on the North Slope.

Liberty project-specific training includes the following safety-related components:

- Site Orientation and Unique Working Conditions
- Regulatory Compliance and Expectations
- Polar Bear and Wildlife Interaction Plans
- Job Safety Analysis
- Eye, Hand, and Back Safety
- Behavior-Based Safety Processes
- Driving/Road Rules; Winter Driving/Ice Road Rules
- Cold Water Survival
- First Aid/Emergency Medical Treatment

**46. Describe your plans to detect and abate any condition possibly arising from the construction, operation, maintenance or termination of all or any part of the proposed pipeline that may cause or threaten to cause a hazard to the public health and safety.**

The measures outlined under Item #45 also mitigate the risk of hazards to the public health and safety. Additional controls designed to detect and abate public health and safety hazards are outlined below.

**Limited Access**

Road access into the Prudhoe Bay production field beyond Deadhorse is currently restricted by BP security. No other road access to the project site is available. The remote location of the project site makes accidental access by the general public unlikely.

Little subsistence activity takes place in the Liberty area because of its distance from the villages of Nuiqsut and Kaktovik. Other than the Nuiqsut bowhead whale hunt which is based on Cross Island, current subsistence use of the area is incidental to coastal travel for other purposes and occurs sporadically.

**Elevation of Pipeline**

The lowest portion of the onshore Liberty Pipeline pipe rack will be at least 7 feet from the ground surface to reduce impediments to terrestrial mammals. This will also allow free passage of subsistence users traveling via snowmachine.

**Public Outreach**

HAK has a Stakeholder Engagement Program to inform local residents, including subsistence users, about the proposed activities and to obtain feedback on these activities. This program is addressed in more detail under Item #54.

**47. Describe your plans to detect and abate any condition possibly arising from the construction, operation, maintenance or termination of all or any part of the proposed pipeline that may cause or threaten to cause serious and irreparable harm or damages to public or private property.**

The measures outlined under Item #45 also mitigate the risk of harm or damages to public or private property. Measures to detect and abate conditions that could cause or threaten harm to tundra, vegetative cover, fish, or wildlife are addressed in responses to items #48 and #49.

No private property exists within the proposed ROW. The only private land adjacent to the ROW is a Native allotment located east of the ROW near the shore transition area. HAK will work with Inupiat Community of the Arctic Slope and the allottee(s) to ensure that their concerns are addressed.

**48. Describe your plans to detect and abate any condition possibly arising from the construction, operation, maintenance or termination of all or any part of the proposed pipeline that may cause or threaten to cause serious and irreparable harm or damages to vegetation or timber.**

No timber resources exist on the North Slope of Alaska, therefore there is no potential for harm to timber resources.

In addition to those measures outlined under Item #45, measures to detect and abate conditions that could cause or threaten harm to tundra or vegetative cover are summarized below.

**Construction Methods**

HAK has designed the offshore segment of the pipeline route to avoid areas of high concentration of the Boulder Patch, mitigating impacts to the Boulder Patch kelp beds and associated benthic community. HAK will employ onshore construction methods standard on the North Slope which have been found to result in minimal disturbance to tundra vegetation. Construction will be performed during winter and will be confined to ice roads and pads. Placement of gravel in onshore areas is limited to the extent practicable for the gravel road crossing at the intersection with the Badami ice road and the tie-in pad. Gravel extraction from the proposed gravel mine would take place over a single winter season and would follow the methods included in the approved Mining and Reclamation Plan. The pipeline will be elevated on VSMS, limiting direct impacts to the tundra. Construction would be performed by trained personnel to ensure that impacts to the tundra will be minimized. Any tundra damage will be noted and appropriate corrective action taken.

**Operation and Maintenance**

During construction and maintenance, tundra impacts will be avoided or minimized by performing pipeline maintenance during the winter season when possible, and performing monitoring and surveillance to identify and address any issues that could cause tundra damage promptly.

**Decommissioning**

Decommissioning of facilities at the end of the operational life will be performed in accordance with approved Decommissioning Plan. Abandonment and rehabilitation of the onshore gravel pads will be completed according to applicable regulatory requirements.

**49. Describe your plans to detect and abate any condition possibly arising from the construction, operation, maintenance or termination of all or any part of the proposed pipeline that may cause or threaten to cause serious and irreparable harm or damages to fish or other wildlife or to their habitats.**

In addition to those measures outlined under Item #45, measures to detect and abate conditions that could cause or threaten harm to fish or other wildlife are summarized below.

### **Construction Methods**

HAK will employ design and construction methods standard on the North Slope which have been found to result in minimal disturbance to fish and wildlife. Construction will be performed during winter when fewer animal species are present. Onshore construction will be confined to ice roads and pads. Placement of gravel in onshore areas is limited to the extent practicable for the gravel road crossing at the intersection with the Badami ice road and the tie-in pad, limiting impacts to bird and wildlife habitat. The lowest point of the onshore pipeline pipe rack, with the exception of the actual pipe supports, will be at least 7 feet above the tundra surface, allowing caribou and other wildlife to cross the pipeline. No streams or rivers are crossed, limiting impacts to fish. Gravel extraction from the proposed gravel mine would take place over a single winter season and would follow the methods included in the approved Mining and Reclamation Plan. The Mining and Reclamation Plan will be designed to provide habitat for fish and waterfowl. Construction would be performed by trained personnel to ensure that impacts to the tundra will be minimized. Any impacts to vegetation, water quality, or tundra damage will be noted and appropriate corrective action taken.

### **Operation and Maintenance**

During construction and maintenance, impacts to fish, wildlife, and wildlife habitat will be avoided or minimized by performing pipeline maintenance during the winter season when possible, and performing monitoring and surveillance to identify and address any issues that could cause impacts promptly.

### **Decommissioning**

Decommissioning of facilities at the end of the operational life will be performed in accordance with approved Decommissioning Plan. Abandonment and rehabilitation of the onshore gravel pads will be completed according to applicable regulatory requirements.

## **50. Describe your plans for restoring areas of vegetation or timber damaged or harmed directly or indirectly by the construction, operation, maintenance or termination of all or any part of the proposed pipeline.**

Construction of the Liberty Pipeline will result in impacts to vegetation along the 5 mile long offshore segment and 1.5 miles of tundra along the onshore segment. Replacement of spoil material in the offshore trench will, over time, mitigate impacts of construction by providing a substrate for reestablishment of marine invertebrate communities in the trench area. Recolonization of the disturbed area is expected to occur over several years as the colonization by marine invertebrate communities occurs slowly. Recovery and re-colonization studies in the Boulder Patch have shown that the kelp community does not recover rapidly from disturbances, and re-colonization may take a number of years. No additional disturbance of the seabed is anticipated during normal operations, but if it becomes necessary to deposit gravel to re-establish depth of cover of the pipeline,

recolonized benthic communities within the immediate vicinity of the deposition will be impacted through direct burial.

The onshore segment of the pipeline will be on VSMs and the shore transition area, which will be constructed during winter as described under item #48. Disturbance to tundra will occur at VSM locations and is not expected to affect adjacent tundra. No additional restoration is planned at the VSM locations. At the shore transition area, impacts to vegetation will be noted and appropriate corrective actions taken. After laying the pipeline in the onshore segment of the transition trench and appropriate backfilling, the backfill will be topped with a thin layer of fine-grained soils and organics and seeded as needed to promote re-vegetation. It is anticipated that the rehabilitation of the Liberty Pipeline shore transition area will be similar to the rehabilitation activities taken at the Northstar Pipeline landfill location. Special Condition #2 of the Department of the Army Permit N-950372 for the Northstar Development, issued in May 1999, required an annual monitoring program be established to monitor shoreline erosion of the Northstar Pipeline shore crossing. Activities taken in response to annual rehabilitation monitoring have included fertilization and re-seeding to promote the establishment of vegetative cover.

**51. Describe your plans for abating erosion and restoring areas eroded as a direct or indirect result of the construction, operation, maintenance or termination of all or any part of the proposed pipeline.**

Island slope protection is required to assure the integrity of the gravel island by protecting it from the erosive forces of waves, ice ride-up, and currents. Linked concrete mat armor has been successfully used at other islands in the Beaufort Sea.

The offshore pipeline trench will be backfilled with both native spoils and select backfill when the observed trench parameters (e.g., depth, properties) do not meet the design requirements. Loose gravel will be used as trench fill material where needed based on the surveyed as-laid configuration of the pipeline bundle in the trench. If required, loose gravel will be used as trench fill material or gravel-filled geotextile bags will be placed axially across the pipeline in the trench, providing uplift resistance during pipeline operation.

The shore transition is buried to protect against storms, ice pile-up, and coastal erosion. The shore transition site will be set back from the shoreline. A fiber optic distributed temperature sensing system will be employed along the buried subsea pipeline. This system will be able to detect soil temperature variations along the pipeline route, indicating erosional or similar environmental changes. The shore transition zone point of landfall was chosen based on relatively lower coastal erosion rates (long-term rate of 2 feet per year). Coarser granular material will be used at the shore transition zone to achieve erosion resistance similar to the adjacent, undisturbed material. This plan minimizes any increase in erosion due to construction through coastal bluffs. At this time, erosion mitigation mats are not planned for use at the shore crossing location. However, erosion mats may be installed after construction if shown necessary by erosion monitoring activities.

Erosion monitoring may be performed to identify erosion areas so that they can be addressed. Plans for restoring erosion areas will be developed when these areas are identified and will be tailored to the specific requirements of the impacted area.

**52. Describe your plans for quality control and your procedures for inspection and testing the pipeline, both during and after construction.**

HAK will develop and implement a detailed Construction Plan.

Harvest Alaska has an existing approved Integrity Monitoring Program and Quality Assurance Plan. The Liberty sales oil pipeline will be incorporated into these existing approved plans to ensure and maintain the quality and integrity of the pipeline.

**53. Describe your plans to ensure compliance by your contractors and subcontractors with the safeguards and stipulations of the right-of-way lease, if issued.**

To execute this project, HAK will employ the services of several dozen contractors. In every situation where a contractor is performing a service for HAK, a HAK staff person will directly oversee the efforts of contractor personnel to ensure that performance standards are met in terms of quality, safety, and environmental stewardship. It is a HAK practice to supervise the work as assertively as necessary to ensure performance and safety standards are met.

All contractor companies who perform work on HAK's behalf must review and adhere to Hilcorp Minimum Contractor Safety Requirements. HAK expects contractors to have the necessary training and systems in place for work they will be conducting. HAK will perform an assessment of contractor EH&S performance and management systems to verify the necessary training, policies, and procedures are implemented as needed for a given activity. In addition to the initial assessment of contractor EH&S systems, HAK conducts ongoing contractor oversight in the form of field audits, periodic training, and contractor safety meetings.

**PART V**  
**SPECIAL SAFEGUARDS FOR NATIVES AND OTHERS SUBSIDING ON THE BIOTIC**  
**RESOURCES OF THE GENERAL AREA OF THE PROPOSED RIGHT-OF-WAY**

**54. Describe your plans and procedures to protect the interests of individuals living in the general area of the proposed right-of-way who rely on the fish, wildlife and biotic resources of the area for subsistence purposes.**

The Liberty Development area encompasses lands traditionally and presently used for subsistence harvest by residents of Nuiqsut and Kaktovik. However, the project area is relatively distant from both communities. Nuiqsut is approximately 80 miles west of the Liberty Development site, and Kaktovik is about 94 miles to the east. For most resources, the area is used rarely, if at all, by subsistence users.

Bowhead whales are a major subsistence resource for the community of Nuiqsut. Although Nuiqsut is located approximately 80 miles west of the Liberty Development, residents conduct their whale hunt in the marine environment immediately north of it and in some years have scouted for whales directly within it. This “far away” area has not been reported to be used for other resources (except during the whaling season) in the last 13 years and probably reflects a pattern of Nuiqsut hunters not traveling as far to hunt, except for whaling, as in the past.

HAK has a Stakeholder Engagement Program to inform local residents, including subsistence users, about the proposed activities and to obtain feedback on these activities. HAK has consulted with and will continue to consult with subsistence users and local organizations, including the North Slope Borough, the Alaska Eskimo Whaling Commission (AEWC), and community of Nuiqsut, to develop project-specific subsistence mitigation measures.

Because the bowhead whale hunt is the primary subsistence use of the Liberty Development area, HAK consultation has been focused on this activity. In particular, HAK has consulted with subsistence users, including potentially affected whaling captains’ associations and the AEWC to obtain input about how to carry out proposed activities in a manner to avoid impacts to the hunt. HAK will take measures to avoid impacts from vessel traffic (marine and aircraft) to the Cross Island bowhead whale hunt.

In addition, HAK plans to sign Conflict Avoidance Agreements (CAAs) between Industry Participants and the AEWC during Liberty construction, operation, and production activities. The CAA identifies measures to be taken to mitigate impacts from oil and gas operations on the subsistence bowhead whale hunt, including limitations on activities during the whale hunt and using agreed-upon communication protocol. These and other mitigation measures may include:

- Describe criteria for island siting and design with Nuiqsut Whaling Captains’ Association and consult on supporting marine traffic (routes, frequency, schedule).
- Employ local subsistence representatives during appropriate project phases.
- Execute and implement a CAA, which may include supporting communications centers during the whaling season and operational procedures, among other mitigation measures.



- Employ personnel skilled at protected species identification on support vessels, when warranted, to prevent vessel-marine mammal interaction during the open-water season.
- Establish preferred marine routes for transport of facilities and supplies to LDPI.
- Establish minimum aircraft altitudes and routes for helicopters and other support aircraft to avoid disturbing bowhead whales and other subsistence resources, consistent with safety requirements and weather considerations.
- Train HAK and contract personnel on the importance of subsistence and measures to avoid conflicts.

**PART VI**  
**FINANCIAL INFORMATION**

**55. Describe the probable financing requirements for the proposed pipeline.**

Harvest Alaska, LLC is 100% owned by Hilcorp Alaska, LLC and will be self-financing its ownership portion of the sales oil pipeline.

**56. Attach an annual financial statement and balance sheet for each applicant, prepared in accordance with generally accepted accounting principles for each of the applicant's three fiscal years immediately preceding the date of this application. The financial statement must be certified by a firm of reputable and independent Certified Public Accountants.**

Please see Attachment A for HAK Annual Financial Statements and Balance Sheets. Financial Statement and Balance Sheets will be submitted as a confidential attachment to the application package.

**PART VII  
OTHER INFORMATION**

**57. Name and address of the proposed general contractor(s) for constructing the pipeline:**

The sales oil pipeline construction general contractor will be selected later in the project. The name and address will be provided to SPCS upon selection.

**58. Name and address of the proposed operator of the pipeline:**

At the time of this application, is expected that the operator of the Liberty sales oil pipeline will be:

Hilcorp Alaska, LLC  
3800 Centerpoint Drive, Suite 1400  
Anchorage, AK 99503  
Phone (907) 777-8300

Hilcorp Alaska has a midstream subsidiary, Harvest Alaska, LLC. Harvest Alaska owns three (3) pipeline systems on the North Slope (Northstar Pipeline, LLC, Endicott Pipeline Company, and Milne Point Pipeline, LLC) and two (2) pipeline systems in Cook Inlet: Kenai Beluga Pipeline, LLC, and Cook Inlet Pipe Line Company. After project sanction, Hilcorp Alaska will assign the Liberty Pipeline system to a yet-to-be-formed subsidiary of Harvest Alaska.

**59. Other information you believe may aid in the consideration of this application.**

Hilcorp submitted the Liberty Development and Production Plan (DPP) and supporting Environmental Impact Analysis (EIA) to BOEM in December 2014, and the DPP was deemed submitted in September 2015. These documents provide detailed information on the Liberty Development Project Description.

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**APPLICATION FEES ARE AS FOLLOWS:**

Less than 50 miles -\$500.00 More than 50 miles -\$1,000.00



**Attachment A**

**Hilcorp Alaska, LLC Financial Statements and Balance Sheets**

**CONFIDENTIAL**