TABLE 1-1
MITIGATION MEASURES INCORPORATED INTO BPXA's PROPOSED PROJECT

Action	Effects
System Design	
Cathodic protection of offshore pipelines	Reduce potential for pipeline corrosion and pipeline failure
SCADA system for real-time monitoring of flows and to detect leaks, including Pressure Point Analysis for leak detection	Reduce/minimize potential oil spills to the environment
Valves at Putuligayuk River crossing	System back-up to reduce the volume of an oil spill to the river
Catwalk access to Putuligayuk River valves	Minimize impacts to tundra
Enclosure of the shore approach SCADA valve	Reduce the potential for failure and resulting oil spill; containment of oil should failure occur
Placement of conex units directly on gravel island surface	Elimination of sheltered areas that could be used by polar bears or other wildlife
Installation of a remotely controlled shut-down valve at pipeline terminus (PS1)	Reduce/minimize potential oil spills to the environment
Installation of quick-closure valves at Seal Island and at the landfall	Reduce/minimize potential oil spills to the environment
Discharge of domestic wastewater, storm water, process water, etc. into disposal well	Minimize waste discharges and impacts to the environment
Use of double-walled containers for hazardous materials	Reduce/minimize potential contaminant releases to the environment
Storage of lubrication oils in seal-welded floor buildings	Reduce/minimize potential contaminant releases to the environment
Reinjection of produced water	Minimize waste discharges and impacts to the environment
Construction of onshore pipelines on 5-foot (1.5 m) high VSMs and routing pipe through existing caribou crossings	Minimize impacts to caribou movements
A 75-foot (22.9 m) wide bench and gravel berms around island perimeter	Minimize potential damage to island from ice and waves
Sheet pile walls around island perimeter	Reduce potential contaminant releases to the marine environment by preventing damage to island facilities
Dry low NO_x emissions technology and BACT applied to all main air emissions pollution sources (e.g., power generator and gas compression turbines)	Reduces air emission pollutants to atmosphere
Drilling and production facilities on gravel island	Minimize noise transmission into the water column compared with other platform options
Grind-and-inject facility and disposal of drill cuttings and fluids to disposal well	Eliminates potential contaminant releases from storage and transportation of drilling wastes
110-foot (33.5 m) setback of shoreline valve pad	Maintain clear shoreline corridor for caribou passage and provide protection from ice override

TABLE 1-1 (Cont.)
MITIGATION MEASURES INCORPORATED INTO BPXA's PROPOSED PROJECT

Action	Effects
Construction Methods	
Winter construction	Minimize potential impacts to tundra, subsistence hunting, and migratory species
Construction of ice roads	Minimize potential impacts to tundra; reduce need to acquire permanent access right-of-way
Subsea burial of offshore pipelines	Minimize the potential for pipeline failure and oil spills to the marine environment
Post-construction revegetation of pipe trench at landfall	Minimize impacts to tundra and stabilize permafrost soils
Containment drip pans to be used during hydrostatic testing	Reduce the potential for contaminant release
Use of frozen water bodies as staging areas during construction	Reduce land requirements for right-of-way; minimize impacts to tundra
Storage/reuse of overburden at gravel excavation site	Reduce impacts to the site and improved site restoration potential
Gravel excavation and rehabilitation work at new mine site	Rapid creation of scarce, deep overwintering fish habitat
Disposal of pipeline trench spoils in water depths greater than 5 feet (1.5m)	Avoid blocking of circulation in shallow water and maximize natural dispersion
Construction of island on top of existing island remnant	Minimize impacts to seafloor and amount of new gravel needed from mine site
All drilling powered with fuel gas engines	Minimize diesel storage on island and reduce air emissions compared with normal North Slope diesel fueled drilling
Operation Measures	
Continuous manning of the facility	Reduce the possibility of an oil release to the environment; minimize the volume should a spill occur
Visual surveillance of pipeline during operation	Rapid detection of oil releases to the environment; minimize the volume spilled should a spill occur
Oil discharge prevention and contingency plan	Reduce the risk of oil spills; minimize volume spilled should a spill occur; expedite cleanup to minimize effects
Additional wall thickness (over standard) of pipelines	Reduced risk of pipeline failure
Periodic pipeline inspections using intelligent pigs	Early detection of structural problems that may lead to pipe failure
Dechlorination of any discharge with the potential to carry chlorine into the marine environment	Elimination of chlorine discharges to marine environment
Use of muted colors on island facilities	Reduce visual contrast of island structures

Notes: BACT = Best Available Control Technology
m = Meter
NO_X = Oxides of Nitrogen
PS1 = Pump Station No. 1
SCADA = Supervisory Control and Data Acquisition
VSM = Vertical Support Member