FAX TRANSMITTAL

STATE OF ALASKA
OFFICE OF THE GOVERNOR

FRANK H. MURKOWSKI
GOVERNOR

LOREN LEMAN
LIEUTENANT GOVERNOR

DIVISION OF GOVERNMENTAL
COORDINATION
JOINT PIPELINE OFFICE
411 W. 4th AVE., SUITE 2C
ANCHORAGE, AK 99501

Telephone: (907) 257-1353
Fax: (907) 272-3829

Date: February 12, 2003
Pages: 52 + cover

From: Serena Sterrett Kaye Laughlin's office
Phone: 907-257-1353
E-mail: ssterret@jpo.doi.gov

Regarding: Northstar Development Project

To: Connie Thoman Fax No.: (509) 972-4444

Comments: ACMP Consistency Analysis

BP EXPLORATION

BP Exploration (Alaska) Inc.
900 East Benson Boulevard
P.O. Box 196612
Anchorage, Alaska 99519-8612
(907) 561-5111

July 15, 1998

Mr. Glenn Gray
Division of Governmental Coordination
Office of the Governor
Office of Management and Budget
P.O. Box 110030
Juneau, Alaska 99811-0030

Northstar Development Project
ACMP Consistency Analysis

Dear Mr. Gray,

BP Exploration (Alaska), Inc. (BPXA) hereby submits the enclosed Alaska Coastal Management Program (ACMP) Consistency Analysis in support of the Northstar Development Project permit applications. This analysis document is being submitted in accordance with 15 CFR 930.58(a)(3) and (4). It also supports our recently submitted Coastal Project Questionnaire (CPQ) which consolidated all previously submitted CPQ's for the project.

The ACMP Consistency Analysis summarizes how BPXA's Northstar Project design and operational features and related environmental mitigation measures conform to the policies and standards of the ACMP and North Slope Borough Coastal Management Program. Reference is made in the analysis to other BPXA documents where more detail is provided about these project features. In addition, Coastal Management is addressed in the "Draft Environmental Impact Statement, Beaufort Sea Oil and Gas Development/Northstar Project" (see Section 7.5.1.4).

The CPQ submitted at your request on June 19, 1998, consolidated the information from previous CPQs including the overall project (10/8/96), Pipeline Right-of-Way application (6/3/96), Material Sales application (6/3/96), and the Solid Waste Treatment Facility application (5/29/98). The earlier CPQs were submitted at various times due to the uncertainty of when the consistency review would begin for each of these processes and because we were advised by the various agencies to submit a CPQ with the permit applications.

Also included for your review is a draft document entitled *"Demonstration of Conformance with Title 19, North Slope Borough Municipal Code (NSBMC) Chapter 19.70 North Slope Borough Policies."* This document will be submitted to the NSB in September 1998 as a component of BPXA's request for rezoning and master plan approval.

Should you have any questions, please contact Tom Barnes at 564-5154.

Sincerely,

Peter T. Hanley, Permitting Supervisor
HSE - Alaska

Enclosures (2)

cc: Mr. Gene Pavia, DGC, Anchorage
Mr. Jon Dunham, NSB, Barrow

FILE COPY

BP Exploration (Alaska)
Northstar Development Project

Alaska Coastal Management Program (ACMP)
Consistency Analysis

July 1998

NORTHSTAR DEVELOPMENT PROJECT
ACMP Consistency Analysis

BP Exploration (Alaska), Inc. (BPXA) submitted an application to the U.S. Army Corps of Engineers and other agencies for approval to develop the Northstar Unit Oil Field from the existing Seal Island located in the Beaufort Sea at T13N, R13E, Sec. 11, for the purpose of producing and transporting sales quality oil to the Trans-Alaska Pipeline. The field will be developed from Seal Island, a man-made gravel island constructed in State of Alaska (State) waters approximately 6 miles offshore, due north from Point Storkersen in waters approximately 40 feet deep. The proposed transportation corridor linking the Northstar production facilities at Seal Island to existing infrastructure at Pump Station 1 (PS-1) and the Central Compression Plant (CCP) will require Federal, State and North Slope Borough (NSB) authorization.

The Northstar reservoir involves five state leases and two federal leases as listed below:

State Leases	Federal Leases
ADL 312798	OCS Y-0179
ADL 312799	OCS Y-0181
ADL 312808	
ADL 312809	
ADL 355001	

This document, as required by 15 CFR 930.58(a)(3) and (4), describes activities associated with the proposed development and analyzes policies and plans that may pertain to the proposed action, including land and water uses and natural resources in the affected coastal zone. Also included is a brief discussion of potential impacts, methods for mitigation of environmental effects, and analysis of consistency with State and NSB policies. The document, "Draft Environmental Impact Statement. Beaufort Sea Oil and Gas Development/Northstar Project" (DEIS) recently issued by the U.S. Army Corps of Engineers also contains an analysis of ACMP and North Slope Borough Coastal Management Plan (NSBCMP) consistency (see Table 7.5-1).

1. BACKGROUND

Section 307(c)(1) of the Coastal Zone Management Act (CZMA), as amended, requires that:

"...each Federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs."

For each proposal to undertake operations on a lease, a CZMA section 307(c)(3) analysis and consistency certification must be submitted by the lessee to the affected State. Activities within the coastal zone must comply with standards of the Alaska Coastal Management Program (ACMP) and enforceable policies of approved local coastal district programs, in this case the NSBCMP. The NSBCMP also notes that "offshore activities taking place beyond the three-mile limit (i.e., seaward boundary of the NSB coastal district) shall be conducted, to the maximum extent practicable, in accordance with goals, objectives, and policies of the North Slope Borough Coastal Management Program in the standards and guidelines of the Alaska Coastal Management Program" (NSBCMP p. 1-17).

In June 1995, BPXA submitted an application to U.S Army Corps of Engineers (USACOE) for development of the Northstar oil field. The USACOE application was supported by the Northstar Final Project Description (FPD) (which also serves as the Development and Production Plan (DPP) in accordance with 30 CFR Part 250.34 as related to the two Federal leases in the Northstar Unit.) The FPD describes the numerous measures incorporated within project design, construction, and operations to avoid or mitigate potential environmental impacts

This report has been prepared by BPXA to support certification that activities involved in development of the Northstar oil field are consistent to the maximum extent practicable with enforceable provisions of the ACMP and the NSBCMP.

USACOE determined that an EIS specifically assessing the proposed Northstar Development Project was required before approval to develop could be issued. A number of other federal permits and authorizations will be based on conclusions of the EIS. The Draft EIS was released by the Corps for public review and comment on June 1, 1998. A final Record of Decision is expected in January 1999.

Based on extensive pre-application agency involvement, planning and design to reduce or mitigate environmental impacts, substantial technical support documentation and previous environmental assessments, along with twenty years of successful operating experience on the North Slope, BPXA believes that no significant project changes will be required, and that coastal project consistency will be affirmed. In support of BPXA's coastal project consistency certification, a review of applicable coastal management standards and policies and a discussion of project consistency based on available information, is presented in the following sections. Note that this document supplements BPXA's description of project environmental design

features and permitting practices in the FPD, engineering design "Technical Notes" written in support of the pipeline right-of-way (ROW) application and the "Northstar Oil Discharge Prevention and Contingency Plan" (ODPCP) all of which demonstrate conformance with ACMP and NSB policies and standards.

2. APPLICABLE STANDARDS AND POLICIES

15 CFR 930 Subpart E requires OCS exploration, development and production activities to be conducted in a manner consistent with approved coastal zone management programs. Accordingly, activities within the coastal zone of Alaska must be consistent with the ACMP. Project consistency with the ACMP is defined as "compliance with the standards of the ACMP, including the enforceable policies of an approved coastal resource district program" (6 AAC 50.190). For the Northstar Unit, the approved coastal resource district program is the NSBCMP. Applicable standards and policies of the ACMP and the NSBCMP are described below.

2.1 ALASKA COASTAL MANAGEMENT PROGRAM

The Alaska Coastal Management Act of 1977 was enacted to manage development and land use in coastal areas to balance use of coastal areas with protection of valuable coastal resources (AS 44.19.891-894 and AS 46.40). The ACMP established statewide standards and boundaries. The NSBCMP refines those standards and boundaries to best fit circumstances in the NSB coastal management district, as described in section 2.2.

ACMP guidelines and standards were developed by the Alaska Coastal Policy Council (CPC), with an accompanying EIS prepared by the NOAA Office of Ocean and Coastal Resource Management (OCRM). Statewide standards developed by the CPC cover Coastal Habitats, Coastal Resources, and Uses and Activities. These standards are briefly discussed below.

Coastal Habitats. Eight coastal habitats were identified in the standards, and each has a policy specific to maintaining or enhancing the attributes that contribute to its capacity to support living resources (6 AAC 80.130[b] and [c]). Activities and uses that do not conform to the standards may be permitted if there is a significant public need, no feasible prudent alternative exists, and all feasible and prudent measures are incorporated to maximize conformance.

Coastal Resources. Two policy areas come under this heading (1) air, land and water quality; and (2) historic, prehistoric, and archaeological resources. For policy area (1), the ACMP defers to the Alaska Department of Environmental Conservation (ADEC), and the standards incorporate by reference all statutes, regulations and procedures of the ADEC that pertain to protecting air, land and water quality (6 AAC 80.140). Policy area (2) requires only identification of the "areas of the coast which are important to the study, understanding, or illustration of national, state, or local history or prehistory (6 AAC 80.150).

Uses and Activities. Nine topics are addressed under this heading: coastal development, geophysical-hazard areas, recreation, energy-facility siting (a use of State and Federal concern), transportation and utilities, fish and seafood processing, timber harvesting and processing, mining and mineral processing, and subsistence. Uses and activities relevant to the Northstar Development include coastal development, geophysical hazards, energy-facility siting, transportation and utilities, mining and mineral processing, and subsistence.

2.2 NORTH SLOPE BOROUGH COASTAL MANAGEMENT POLICIES

The ACMP provides for district coastal programs to be developed in conformity with the general guidelines and standards of the ACMP, while reflecting unique local issues, resources and policies. Consequently, statewide standards and interim boundaries of the ACMP were

refined in the NSBCMP, the applicable coastal management program for the Northstar Development. The NSBCMP was adopted by the North Slope Borough in 1984, and approved by the Alaska CPC in April 1985 and the OCRM in May 1988.

The goal of the NSBCMP is to balance exploration, development, and extraction of nonliving natural resources with maintaining and ensuring access to the living resources upon which the Inupiat traditional cultural values and way of life are based. The NSBCMP contains four categories of policies: (1) Standards for Development; (2) Required Features for applicable development; (3) Best-effort Policies that address both allowable developments and required features; and (4) minimization of negative impacts.

Development Standards: These policies prohibit severe harm to subsistence resources or activities that disturb cultural and historic sites.

Required Features: These policies address: reasonable use of vehicles, vessels, and aircraft; engineering criteria for offshore structures; drilling plans; oil-spill control and cleanup plans; pipelines; causeways; residential development associated with resource development; and air quality, water quality, and solid waste disposal.

Best Effort Policies: Policies in this category address development that could cause significantly decreased productivity of subsistence resources or ecosystems, or restrict access of subsistence users to a subsistence resource. They also put restrictions on various modes of transportation, beach mining, or construction in flood plains and geologic hazard areas. These policies allow for exceptions if (1) there is a "significant public need for the proposed use and activity" and (2) developers have "rigorously explored and objectively evaluated all feasible and prudent alternatives..."and briefly documented why the alternatives have been eliminated from consideration. If an exception to a best-efforts policy is granted, the developer must take "all feasible and prudent steps to avoid the adverse impacts the policy was intended to prevent." Where development has not met the two criteria identified above, and the developer has taken all feasible and prudent steps to maximize conformance with the policy, the best-efforts policies address various required features of development. For example, siting policies include State habitat policies and non-interference with important cultural sites or essential routes for transportation to subsistence resources.

Minimization of Negative Impact: These policies are designed to minimize negative impacts of applicable project development. They apply to projects involving recreational use, transportation and utility facilities, and seismic exploration. Protected features include permafrost, subsistence activities, important habitat, and migrating fish and wildlife. Geologic hazards must also be considered in site selection, design, and construction.

The NSB has adopted administrative procedures for implementing their coastal management policies based on the permit process established under Title 19 of the Borough's Municipal Code (NSBMC) Land Management Regulations and the consistency review process under Title 46 of the Alaska Statutes. Therefore, onshore activities and some offshore activities of the Northstar Development Project are subject to the ACMP, as amended by the NSBCMP, as well as the NSB Land Management Regulations (LMR's). The NSBCMP and NSB LMR's have similar policies.

3. ANALYSIS OF COASTAL MANAGEMENT CONSISTENCY

This section presents an analysis of Northstar Development Project consistency with the ACMP, to the maximum extent practicable, as defined in 15 CFR 930.32. Elements of the proposed project that will occur in, or directly affect use of the coastal zone include the island, the oil and gas pipelines, the pipeline landfall pad, and the gravel mine. Development of these facilities, including construction and production activities as described in the Northstar Final Project Description (FPD) and the "Draft Environmental Impact Statement, Beaufort Sea Oil and Gas Development/Northstar Project" (DEIS) will be evaluated for consistency with Statewide ACMP standards, and NSB coastal district policies under the ACMP.

Consistency language of the CZMA includes both direct and indirect effects of a proposed activity on any land or water use or natural resource of the coastal zone. For purposes of this analysis, effects of the project have been estimated assuming that the project is constructed and operated as proposed in the FPD, and all mitigation measures provided for by existing laws, regulations, lease sale stipulations and lease specific stipulations are in place.

The analysis is organized according to the relevant standards of the ACMP. Policies of the NSBCMP are assessed in conjunction with the most closely associated statewide standard, as determined by the State Findings and Conclusions on the NSBCMP. The description of related standards and policies is followed by a discussion on project consistency. Project planning and design elements are included as they support ACMP consistency. A summary table of voluntary mitigation proposed by the applicant can be found in the DEIS, Volume 1, Table ES-1, provides additional information in support of the consistency determination.

3.1 COASTAL DEVELOPMENT (6 AAC 80.040)

3.1.1 State Standards

The intent of 6 AAC 80.040(a), the water dependency standard, is to ensure that water-dependent uses and activities are given priority and that onshore developments and activities that can be placed inland do not displace activities dependent on shoreline locations. State standard 6 AAC 80.040(b) also requires that placement of structures and discharges of dredged material into coastal waters comply with standards contained in 33 CFR Parts 320-323, regulations of the U.S. Army Corps of Engineers (USACOE).

3.1.2 NSBCMP Policies

The NSBCMP does not have an enforceable policy specifically equivalent to 6 AAC 80.040; however, NSBCMP 2.4.5.2(h) requires development to avoid interference with important existing uses of the coastal zone, including cultural uses or transportation to subsistence use areas, which has implications similar to 6 AAC 80.040.

3.1.3 Project Consistency

The only Northstar Development Project component requiring a shoreline location is the pipeline landfall site, but this would not displace shoreline-dependent activities. However, most project components are subject to USACOE regulations, including: offshore pipeline dredge and fill activities, island construction, ocean dumping, and all onshore excavation and fill activities in wetlands. As described in the FPD and DEIS, project alternatives have been evaluated and associated impacts have been mitigated to allow development under these provisions. Examples include:

- Construction of island site on top of remnant of existing island
- Winter construction of island and offshore pipeline
- Subsea burial of offshore pipeline
- Winter construction of onshore pipeline from ice roads
- Use of frozen water bodies as staging areas during construction
- Disposal of pipeline trench spoils in water depths greater than 5 feet

3.2 GEOPHYSICAL HAZARD AREAS (6 AAC 80.050)

3.2.1 State Standards

The statewide standard (6 AAC 80.050) requires coastal districts and State agencies to identify areas in which geophysical hazards are known, and in which there is a substantial probability that geophysical hazards may occur. Development in these areas is prohibited until siting, design, and construction measures for minimizing property damage and protections against loss of life have been provided.

3.2.2 NSB Policies

NSBCMP 2.4.4(b) requires that offshore structures be able to withstand geophysical hazards and forces which may occur while at the drill site." It also requires monitoring programs and safety systems capable of securing wells in case unexpected geophysical hazards or forces are encountered."

NSBCMP 2.4.4(h) requires that offshore oil transport systems (e.g., pipelines) be designed to withstand geophysical hazards, especially sea ice.

NSBCMP 2.4.5.1(j) is a "Best Effort Policy", which requires compliance unless (1) there is a significant public need for the proposed use and activity; (2) the development has rigorously explored and objectively evaluated all feasible and prudent alternatives to the proposed use or activity and cannot comply; and (3) all feasible and prudent steps have been taken to avoid the adverse effects the policy was intended to prevent. This policy discourages approval of development in known geophysical hazard areas until siting, design and construction measures for minimizing property damage and life protection have been provided.

NSBCMP 2.4.6 (c) requires that development maintain the natural permafrost insulation quality of existing soils and vegetation.

NSBCMP 2.4.6(f) requires that development in floodplains, shoreline areas and offshore areas be sited and designed for construction to minimize loss of life or property due to various geologic forces (e.g., sea waves, ice gouging, erosion).

3.2.3 Northstar Development Project Consistency

Geophysical hazards in the Northstar Development Project area include pack ice override, seabed ice scour, strudel scour and potential storm surges. The island and pipeline route were sited and designed to avoid these hazards.

To ensure design integrity, BPXA conducted geotechnical investigations at the island location and along the pipeline route. Additionally, BPXA performed a Shallow Hazards Survey, a high-resolution geophysical survey to detect seafloor or shallow geological conditions that might pose a hazard to drilling, such as faulting, permafrost, ice and current scour. No shallow hazards were discovered as a result of that survey.

Island slope protection will be provided to assure the integrity of the gravel island by protecting it from the erosive forces of waves, ice override, and currents. The slope protection

design incorporates improvements from many past Alaskan arctic island constructions (since 1975). Improved design components include:

- concrete mix and rebar design,
- filter fabric mat underlayer,
- engineered block profile design,
- mat anchors, and mat linkage.

These improvements have resulted in a slope protection system whose features include:

- enhanced slope profile,
- filter fabric installation around island fill areas to avoid leaching of fines,
- use of linked concrete mat to eliminate gravel bags and their potential impact on marine animal life and boat traffic,
- concrete mat anchored at the sheet pile wall and extended to the island toe
- subsea gravel berm surrounding the island and
- 75 foot gravel bench between the island slope and the sheet-pile wall.

Other measures have been incorporated into the pipeline design for protection from geophysical hazards. These include:

- substantial depth of burial to protect from ice gouging,
- pipe wall thickness 2.5 times greater than required for the operating pressure,
- buried pipeline shore transition to protect against storms, ice pile-up and coastal erosion,
- cathodic protection and pipeline coatings to minimize the effects of corrosion,
- two independent, sophisticated pipeline leak detection systems,
- use of intelligent pigs to monitor conditions and detect changes, and
- special shoreline design features to minimize and accommodate thaw settlement.

Pipeline design is subject to technical review by the State Pipeline Coordinators Office (SPCO), which solicits independent third party review of select elements of pipeline design and construction plans. A series of Technical Notes have been prepared by BPXA covering the many facets of design considerations to support BPXA's application to the SPCO for a Pipeline Right-of-Way Lease

The surface facilities, as described in the Unit Plan of Operations, are subject to review and approval by the Alaska Department of Natural Resources, Department of Oil and Gas (ADNR/DOG). All wells include safety systems to shut-in any well as needed. This includes numerous surface safety valves and a sub-surface safety shutdown valve on each well. The facilities on the island are manned on a 24-hour per day basis. Drilling and well completion in the Beaufort Sea have previously been accomplished successfully using the same state-of-the-art technology that will be utilized in Northstar Development Project. Well designs are reviewed and permitted by the Alaska Oil and Gas Conservation Commission (AOGCC). The proposed Class I (Industrial) disposal well is being permitted by the U.S. Environmental Protection Agency.

Elements of the Northstar Development Project that have been sited in areas of permafrost will, by design, maintain the natural permafrost insulation quality of existing soils and

vegetation. The onshore portion of the sales oil and products pipelines will be elevated on standard VSMs.

Proposed development in onshore and offshore areas has been sited and designed to minimize loss of life or property due to active geophysical forces at the site. Coastal consistency review associated with federal and state permits required by the Northstar Development Project, as well as an approved EIS, will ensure consistency with related Federal, State and Borough policies and standards to the maximum extent practicable.

3.3 ENERGY FACILITIES (67 AAC 80.070)

3.3.1 State Standards

The Northstar Development Project is an energy-related facility (6 AAC 80.900[22]), of State concern. Use authorized under a state or federal lease for petroleum resource extraction is also a use of state concern (8 AAC 80.070[c]). The ACMP requires that decisions concerning siting and approval of energy-related facilities be based, to the extent feasible and prudent, on 16 standards. The Statewide standards require that facilities be sited to (1) minimize adverse environmental and social effects while satisfying industrial requirements, and (2) be compatible with existing and subsequent uses (6 AAC 80.070[b][1] and [2]).

Other ACMP standards require that facilities be consolidated and sited in areas of least biological productivity, diversity, and vulnerability (6 AAC 80.070[b][3] and [13]) and that facilities be sited where existing infrastructure is capable of satisfying industrial requirements (6 AAC 80.070 [b][7]). The statewide standard also requires that facilities be sited to minimize the probability along shipping routes, of spills or other forms of contamination which affect fishing grounds, spawning grounds and other biologically productive or vulnerable habitats (6 AAC 80.070[b][11]). Facility siting must permit the free passage and movement of fish and wildlife with due consideration for historic migratory patterns (6 AAC 80.070[b][12]).

3.3.2 NSB Policies

NSBCMP 2.4.5.2(f) requires that transportation facilities and utilities be consolidated to the maximum extent possible.

NSBCMP 2.4.5.2© requires that facilities not absolutely required in the field be located in designated compact service bases that are shared to the maximum extent possible.

NSBCMP 2.4.4(f) requires that plans for offshore drilling include a relief well drilling plan and an emergency countermeasures plan.

NSBCMP 2.4.4(g) requires that offshore drilling operations and petroleum storage and transportation facilities have an oil spill control and clean-up plan. The NSBCMP notes that this policy is not intended to establish new regulations for offshore facilities: it restates and highlights requirements of existing regulations.

3.3.3 Northstar Development Project Consistency

Three major issues of concerns regarding energy facilities in the Beaufort Sea are: siting; potential effects on subsistence, and spill prevention and response.

The Northstar Development Project has been designed to accommodate ACMP and NSBCMP siting criteria. Accordingly, the island site, pipeline route, and spoils disposal site were selected to avoid or minimize potential impacts to subsistence resources and activities. Buried subsea pipelines were selected for offshore transport of oil and gas and onshore pipelines are designed to ensure free passage of wildlife.

In the Beaufort Sea, bowhead whales are hunted and harvested as a primary subsistence activity. Seal Island is only 6 miles offshore, in fairly shallow waters and well outside of the main whale migration corridor. Since bowhead and beluga whales migrate along the mid-Beaufort coast during spring (e.g., April-May) and early fall (e.g., September-October), neither island nor pipeline construction activities (conducted primarily in winter) will interfere with migration patterns. All drilling activities will be conducted from the bottom founded gravel island, which minimizes noise propagation into the water and thus disturbance to migrating whales.

The State of Alaska has oil spill planning standards and regulations (e.g., 18 AAC 75, Oil Discharge Prevention and Contingency Plan) that apply to the Northstar Development Project, both through the Alaska Coastal Zone Management Program policies and the state portion of the Northstar pipeline right-of-way. Other controls include the national Contingency Plan and the Alaska Regional Contingency Plan. Spill planning and response resources available to Northstar include mutual support from other oil and gas operators, Alaska Clean Seas, the North Slope Spill Response Project Team, and the U.S. Coast Guard. BPXA has prepared and submitted on June 1, 1998, an Oil Discharge Prevention and Contingency Plan (ODPCP) to the Alaska Department of Environmental Conservation for the Northstar Unit.

Federal and state regulatory agencies hold a broad range of review and approval authority over Northstar operations through required plans and permits. Agency review often involves an assessment of the risks associated with the planned activities and potential effects that might result. EPA, USACOE, ADEC, and ADNR conduct compliance inspections, and subsequent reports of activities by the developer are required to confirm compliance with the regulations and approved permits. Investigations of accidents and oil spills with subsequent reports are prepared to correct problems and alert operators of safety concerns.

The State Pipeline Coordinator's Office (SPCO), charged with the review and approval process for the pipeline Right-of-Way (ROW), employs a multidiscipline staff to perform the technical and environmental review of the proposal, including petroleum and structural engineers, geologists and geophysicists, biologists, and environmental scientists and inspectors.

The NSBCMP does not establish policies for offshore facilities; therefore consistency with related enforceable policies to the maximum extent practicable is supported through compliance with EPA, USACOE, ADEC, and ADNR regulations. Permits, approvals, and consultations needed for the Northstar Development Project are:

USACOE
- Section 404- Dredge and Fill
- Section 10- Structures in Navigable waters
- MPRSA Section 103- Transport of Dredged Material for Ocean Disposal

USEPA
- NPDES- Discharges into Marine Environment
- UIC Class 1 Industrial Well- for Underground Injection of Industrial Wastes
- SPCC Plan- Spill Prevention Containment and Countermeasures
- MPRSA Section 103- Ocean Dumping

USFWS
- Letter of Authorization for Incidental Take
- Endangered Species Act Consultation
- Fish and Wildlife Consultation

NMFS
- Endangered Species Consultation
- Fish and Wildlife Consultation
- Marine Mammal Protection Consultation
- Marine Mammal Incidental Harassment Authorization

NSB
- Rezoning and Master Plan Approval
- CZMA Coastal Zone Consistency

ADEC
- Section 401 Certificate of Reasonable Assurance- Dredge and Fill
- Section 401 Certificate of Reasonable Assurance- NPDES and Mixing Zones
- ODPCP Approval- Oil Discharge Prevention
- CAAA Title V Operating Permit
- PSD Permit

ADFG
- Fish Habitat Permit- Minesites and River Crossings

AOGCC
- Class II Area Injection Order

ADGC
- Coastal Zone Consistency Review

ADNR/DL
- Material Sales Contract- Gravel
- Land Use Permit- Access, Ice Roads

ADNR/DOG
- Unit Plan of Operations Plan Approval- Oil and Gas Development

ADNR/DMWM
- Temporary Water Use
- Water Rights

ADNR/JPO
- Pipeline Right-of Way

ADNR/SHPO
- NHPA Cultural Resources Concurrence

In summary, Federal, State and Borough regulations, and BPXA design criteria and voluntary mitigation have assured consistency with the ACMP to the maximum extent practicable. Mitigation measures incorporated into the project are detailed in the Northstar Development Project FPD as well as summarized in the DEIS, Executive Summary, Table ES-1.

3.4 TRANSPORTATION AND UTILITIES (6 AAC 80.080)

3.4.1 State Standards

This statewide standard requires transportation and utility routes to be compatible with district programs, and sited inland from shorelines and beaches unless the route is water dependent or no feasible and prudent inland alternative exists to meet public need for the route or facility.

3.4.2 NSB Policies

The NSBCMP contains several policies related to transportation that are relevant to this analysis.

NSBCMP 2.4.6(b) is a policy under the category of "Minimization of Negative Impacts." It requires siting, design, construction, and maintenance of transportation and utility facilities (including ice roads) to minimize alteration of shorelines, water courses, wetlands, tidal marshes, and significant disturbance to important habitat and avoid critical fish migration periods.

All other relevant NSBCMP policies are "best effort" policies, and subject to some flexibility if three criteria are met: (1) there is a significant public need for the proposed use and activity, (2) all feasible and prudent alternatives have been rigorously explored and objectively evaluated, and (3) all feasible and prudent steps have been taken to avoid the adverse effects the policy was intended to prevent.

NSBCMP 2.4.5.1(f) regulates transportation development, including pipelines, which significantly obstructs wildlife migration. Other policies subject to the three criteria are NSBCMP 2.4.5.1(h), which discourages duplication of transportation corridors from resource extraction sites and NSBCMP 2.4.5.2(f) which requires transportation facilities to be consolidated to the maximum extent possible, as discussed above in Section 3.3.2.

NSBCMP 2.4.5.1(g) also prohibits development to accommodate large-scale movement of crude oil or natural gas via marine tankers, subject to the three criteria listed above.

3.4.3 Northstar Development Project Consistency

The Northstar offshore pipeline continues inland after landfall (with a setback to accommodate shoreline erosion) and is thus consistent with the State Standard and NSBCMP policies to minimize shoreline alteration and avoid use of tankers. In the Northstar Development Project, only the location of the landfall is subject to a siting decision -- the offshore island site is determined by resource location, and the facilities to which the oil will be shipped (PS-1) are already in place. Landfall siting and the pipelines conform to standards and district policies. The offshore portion of the Northstar pipeline is buried, which avoids concerns over possible obstruction of fish passage. The onshore portion of the Northstar pipeline is supported on VSMs, elevated to allow unrestricted wildlife crossing. Because this is the standard construction practice for pipelines on the North Slope, interference with caribou movement should be minimal, with no change in the overall distribution and migration pattern expected.

3.5 MINING AND MINERAL PROCESSING (6 AAC 80.110)

3.5.1 State Standards

Gravel extraction is required for construction of Seal Island, limited pipeline trench backfill, and onshore pads. The ACMP statewide standards (6 AAC 80.110(a) requires that mining and mineral processing be compatible with other standards, adjacent uses and activities, state and national needs and district programs. Under 6 AAC 80.110(b), gravel may be taken from coastal waters, intertidal areas, barrier islands and spits when no feasible and prudent non-coastal alternative is available to meet the public need.

3.5.2 NSB Policies

NSBCMP 2.4.5.1(I) prohibits gravel extraction from nearshore areas unless it is determined that there will be no substantial alteration of shoreline dynamics.

NSBCMP 2.4.5.2(a) and (d) may place constraints on extraction activities in active floodplains to lessen environmental degradation of coastal lands and waters and to ensure floodplain integrity.

3.5.3 Northstar Development Project Consistency

The material source for Northstar gravel will be a new mine site to be developed near the mouth of the Kuparuk River. BPXA selected the site over other alternatives because it is the nearest gravel source to Seal Island thus requiring less haul distance and ice road construction and will result in creation of new overwintering fish habitat when extraction is completed. The site will be mined and rehabilitated under a plan that must be approved by the USACOE (with review by USF&WS and NMFS), and the Alaska Departments of Natural Resources, Division of Fish and Game. The mining plan was developed in conjunction with these agencies to minimize impact to coastal resources and to be consistent with the ACMP to the maximum extent practicable. The Northstar minesite rehabilitation plans are consistent with other recent plans, which have been approved by the NSB and other agencies. Examples of measures incorporated into the project plan to minimize impact include:

- Winter extraction/transport to minimize impacts on fish and migratory species
- Ice Road Construction to minimize tundra damage
- Rehabilitation of minesite to provide fish over-wintering habitat
- Gravel removal from an un-vegetated portion of the floodplain

3.6 SUBSISTENCE (6 AAC 80.120)

3.6.1 State Standards

Maintenance of the subsistence way of life is a primary concern of the residents of the NSB and state and federal resource agencies. Accordingly, ACMP Standard 6 AAC 80.120 guarantees opportunities for subsistence use of coastal areas and resources.

3.6.2 NSB Policies

A number of important NSB policies relate to adverse effects to subsistence resources. NSBCMP 2.4.3(a) requires that development not deplete subsistence resources below the subsistence needs of local residents of the Borough.

NSBCMP 2.4.3(b) requires that offshore drilling and development not significantly interfere with subsistence not jeopardize the availability of whales for subsistence purposes.

NSBCMP 2.4.3(d) requires that development not preclude reasonable subsistence-user access to a subsistence resource. Where access is reduced or restricted, development can occur only if no feasible or prudent alternative is available, and then the activity is subject to conditions of best-effort policies.

NSBCMP 2.4.5.1(a) states that development likely to result in significantly decreased productivity of subsistence resources or their ecosystems will be allowed only if (1) there is a significant public need for the proposed use and activity, and (2) all feasible and prudent alternatives to the proposed use have been rigorously explored and objectively evaluated. NCB CMP 2.4.5.1(b) will allow development which restricts subsistence user access to a subsistence resource only under those same two terms described above.

3.6.3 Northstar Development Project Consistency

The protection of subsistence uses and resources has been addressed throughout the planning and design of the Northstar Development Project.

Temporary, localized reduction in subsistence resource and/or changes in subsistence resource distribution patterns could occur as a result of disturbance from aircraft and vessel traffic, drilling activities, and construction activities. Many elements of project design and operation should minimize long term effects on subsistence resources in the project area. Examples of these are:

- buried subsea pipeline with the onshore segment elevated to 5 feet in new pipe corridors to avoid obstructing the passage of fish and wildlife,
- flights and shipments planned to avoid sensitive wildlife,
- drilling from the gravel island utilizing a top-drive drill rig to minimize noise,
- drill rig electrical power from the facility turbines rather than rig diesel generators,
- no permanent gravel road built for pipeline access,
- winter construction of island and pipelines and
- sealift activity limited to only two summers completed by September 1st of each year.

BPXA is extremely sensitive to potential effects of a spill on the environment and has incorporated numerous planning, prevention, and response elements into design and operations of the Northstar Development Project. As noted in Section 3.3.3, various levels of control are in place (by the applicant and governing agencies) to minimize the potential for oil spills and subsequent effects on subsistence activities and resources. Examples of spill prevention measures incorporated into the Northstar design are:

- pipeline wall thickness 2 1/2 times that indicated by operating pressure,
- offshore pipeline buried 7-9 feet below the seabed for protection from ice scour, strudel scour, and boat traffic,
- two separate and independent pipeline leak detection systems provided.
- emergency automated block valves at both the island and the shore crossing,
- all production wells equipped with remote operated surface and subsurface safety valves for emergency well shut-in,
- all petroleum storage tanks have double walls and double bottoms.

In summary, based on the extensive research and advancements associated with spill planning and response on the North Slope and avoidance and prevention measures built into the design, the Northstar Development Project, as described in the FPD and the DEIS, will prevent unreasonable conflicts with subsistence hunting activities thus assuring consistency with the ACMP to the maximum extent practicable.

3.7 HABITATS (6 AAC 80.130)

3.7.1 State Standards

The Statewide standard for habitats contains an overall standard and policies specific to eight habitats: offshore areas; estuaries; wetlands and tideflats; rocky islands and sea cliffs; barrier islands and lagoons; exposed high-energy coasts; rivers, streams, and lakes; and important upland habitat (6 AAC 80.130[a]). The ACMP Statewide 6 AAC 80.130(b) requires that habitats in the coastal zone are managed to maintain or enhance the biological, physical, and chemical characteristics of the habitat that contribute to its capacity to support living resources. The offshore habitat is designated a fisheries conservation zone (6 AAC 80.130[c][1]). Activities and uses that do not conform to the standards may be permitted if there is a significant public need and no feasible prudent alternatives to meet that need, and all feasible and prudent measures are incorporated to maximize conformance (6 AAC 80.130[d]).

3.7.2 NSB Policies

NSBCMP 2.4.5.2(g) contains a district policy that reiterates the applicability of the Statewide standard, in addition to several others that augment the overall policy or can be related to activities within a specific habitat.

(NSBCMP 2.4.5.2(b) is district policy requiring that development be located, designed, and maintained in a manner that prevents significant adverse impacts on fish and wildlife and their habitat, including water circulation and drainage patterns and coastal processes.

NSBCMP 2.4.6(d) requires that airports and helicopter pads be sited, designed, constructed, and operated in a manner that minimizes their impact on wildlife.

NSBCMP 2.4.6(e) emphasizes the means for providing for unimpeded wildlife crossings, and provides a set of guidelines and intent statement to ensure compliance.

NSBCMP 2.4.6(g) requires that seismic exploration be conducted in a manner that minimizes impact on fish and wildlife.

In addition, NSBCMP 2.4.4(a)) requires that vehicles, vessels, and aircraft that are likely to cause significant disturbance avoid areas where species that are sensitive to noise or movement are concentrated at times when such species are concentrated.

Restrictions on storage of toxic substances are more specifically covered under policies and regulations to protect air, land, and water quality.

3.7.3 Northstar Development Project Consistency

The Northstar Development Project could potentially affect several habitat types identified in the Statewide standard, including offshore; wetlands; and rivers, lakes and streams. In the Northstar Development Project area, marine mammals are an important offshore resource, and are included in the analysis of offshore habitat.

In many areas of the NSB, what might typically be classified as uplands are classified as wetlands, based in part on restricted drainage due to underlying permafrost. Therefore, all onshore development will be constructed to avoid (1) adverse effects to the natural drainage

patterns, (2) destruction of important habitat, and (3) discharge of toxic substances, which complies directly with 6 AAC 80.130(c)(3). The project has been sited and designed to minimize potential effects to wetlands through island location, pipeline route selection and tie-in to existing infrastructure. The onshore pipeline will be elevated on VSMs and constructed in winter to minimize drainage changes and potential effects on movement patterns of local wildlife. No permanent gravel roads will be constructed adjacent to the onshore pipelines. These project components are intended to minimize potential impacts on Caribou movements. This is consistent with NSBCMP 2.4.6(e). If needed to assure consistency, specific conditions could be incorporated in the NSB development permit.

Rivers, lakes, and streams will be managed to protect natural vegetation, water quality, important fish and wildlife habitat and natural flow (6 AAC 80.130[c][7]). Gravel mine development will disturb the Kuparuk River to some extent; however this activity has been sited to avoid major impacts and designed to ensure protection of riverine and aquatic habitat and wildlife resources. Gravel extraction is also subject to policies discussed in Section 3.5. For the Northstar Development Project, the mining plan incorporates several impact-reducing or mitigating features, including no permanent access road and establishment of over-wintering habitat for fish where it currently does not exist as the minesite floods at breakup following the single winter excavation.

Consideration for protection of marine habitats has also been incorporated into many elements of Northstar island design. Examples include:

- island construction over an existing gravel island,
- minimization of island footprint,
- filter fabric installation around island fill areas to avoid leaching of fines,
- use of linked concrete mat slope protection to eliminate gravel bags and their potential impact on marine animal life and boat traffic,
- construction methods to minimize solids dispersion in the water,
- winter construction to minimize conflicts with marine mammals and anadromous fish;
- minimization of pipeline length,
- avoidance of salt marsh habitat and native allotments.

3.8 AIR, LAND AND WATER QUALITY (6 AAC 80.140)

3.8.1 State Standards

The air, land, and water quality standards of the ACMP incorporate by reference all the statutes pertaining to, and regulations and procedures of, the Alaska Department of Environmental Conservation (ADEC) as of 1992. All statutes and regulations of the ADEC that have been adopted pursuant to the Clean Air Act (CAA) and Clean Water Act (CWA) are automatically incorporated into the ACMP.

3.8.2 NSB Policies

The NSB reiterates the same standard in its district policies and emphasizes the need to comply with specific water and air quality regulations in other policies as well. NSBCMP 2.4.3(h) state that development shall comply with state or federal land, air and water quality standards or regulations.

NSBCMP 2.4.4 requires development that results in water or airborne emissions to comply with all sate and federal regulations.

NSBCMP 2.4.4 requires industrial and commercial development to be served by solid waste disposal facilities that meet state and federal regulations.

As a precaution against accidental spills, within its jurisdiction, the NSBCMP requires use of impermeable lining and diking for fuel storage units greater than 660 gallons NSBCMP 2.4.4(k) and 2.4.5.1(d).

3.8.3 Northstar Development Project Consistency

BPXA's goal in the design of Northstar has been to minimize air emissions and discharges to the marine environment. At Northstar, BPXA has elected to maintain "zero discharge" of drilling and production wastes to the marine environment therefore, muds and cuttings, produced water and other associated wastes will be injected down an EPA approved, UIC Class 1 non-hazardous injection. This eliminates discharge to surface waters and associated concerns about potential impact to water quality. When the Class 1 disposal well is operational, domestic wastewater will be treated and injected as well.

Some discharges and emissions will occur during development and operations of the Northstar production facilities; however, air and water quality are protected by regulation and will be subject to strict permitting requirements under CAA Title V and CWA Sections 401 and 402. Several minor waste streams will be discharged under an individual NPDES permit, to be issued by EPA. This permit receives extensive public and agency review; EPA will carefully evaluate effects on receiving waters and require conditions for discharge and monitoring to protect water quality. The ADEC must issue a Certificate of Reasonable Assurance under Sec. 401 before the USEPA can issue an NPDES permit.

Deck drainage will be collected in two surface sumps to prevent direct, uncontrolled runoff to the ocean. The sumps will have the capacity to retain 24-hours of runoff from a 10-year rainfall event. The contents of the surface sumps will only be released to the ocean after a visual

inspection confirming that no visible sheen is present. Otherwise, all fluids collected in the sump will be injected down the disposal well.

Trash, garbage and other combustible solid wastes will be collected and stored onsite for transport to an approved disposal facility. Other than ocean disposal of excess pipeline trench spoils (i.e., ocean floor sediments) which is regulated under the Ocean Dumping Act, no offshore disposal of solid wastes will occur from the Northstar Development Project.

Water quality may be affected by oil spills, dredging, discharges and emissions, gravel mining, and island construction (gravel fill). The Northstar oil spill contingency plan considers a range of release scenarios, including a worst case planning scenario (as per 18 AAC 75) and other smaller chronic spills.

Several spill prevention methods have been incorporated into the Northstar design. To minimize the risk of a pipeline rupture, the wall thickness is 2.5 times thicker than industry design standards prescribe. To minimize corrosion potential, cathodic protection of the pipeline is provided through the installation of sacrificial anodes attached to the pipeline all along the offshore route. The oil pipeline will have automated shutdown valves at both the island and onshore to limit the amount of oil available in the unlikely event of a leak or rupture in the offshore segment. Two state-of-the-art leak detection systems will continuously monitor the pipeline for leaks.

Implementation of oil spill cleanup capabilities are described in the Northstar Oil Discharge Prevention and Contingency Plan (ODPCP) which has been submitted to ADEC for review and approval under 18 ACC 75. The ODPCP has also been submitted to the Minerals Management Service (MMS), the U.S Department of Transportation Research and Special Programs Administration (DOT RSPA) and the U.S. Coast Guard (USCG) for review and approval under the Oil Pollution Act of 1990 (OPA 90).

The Northstar Development Project design meets the federal secondary containment standards of "Spill Pollution Control and Countermeasures" (SPCC) at 40 CFR Part 112 and the Alaska "Secondary Containment Requirements for Aboveground Oil Storage and Surge Tanks" at 18 AAC 75.075 through the use of double walls and double bottoms for all hydrocarbon storage tanks.

All associated construction activities (e.g., gravel mining, gravel island construction, pipeline valve pad, and subsea pipeline installation) will be completed within the first or second year of construction so that effects to water quality would be short-term, localized and minimal.

Technical support and modeling for the Northstar air permitting effort, indicate that conformance with all applicable air quality regulations is expected and that no conflict between air emissions from the Northstar Development Project and air quality policies in the ACMP and NSBCMP should occur. The project meets NAAQS and related increments at the island edge.

BPXA is required to have air permits, land use and development permits, and water quality compliance (401 Certification) before Northstar Development Project can be initiated. These authorizations require coastal management consistency before they can be issued which

provides another layer of regulatory control on project compliance with the ACMP and that the project is consistent with the ACMP to the maximum extent practicable.

3.9 HISTORIC, PREHISTORIC, AND ARCHAEOLOGICAL RESOURCES (6 AAC 80.150)

3.9.1 State Standards

The ACMP Statewide standard requires that coastal districts and appropriate State agencies identify areas of the coast that are important to the study, understanding, or illustration of National, State, or local history or prehistory.

3.9.2 NSB Policies

The NSB developed additional policies in coastal management planning to ensure protection of its heritage. NSBCMP 2.4.3(e) requires that development likely to disturb cultural or historic sites listed on the National Register of Historic Places, sites eligible for inclusion in the National Register, or sites identified as important to the study, understanding or illustration of national, state, or local history or prehistory shall (1) be required to avoid the sites; or (2) be required to consult with appropriate local, state and federal agencies and survey and excavate the site prior to disturbance.

NSBCMP 2.4.3(g) prohibits development from causing surface disturbance of newly discovered historic or cultural sites prior to archaeological investigation.

Traditional activities at cultural or historic sites are protected under the NSBCMP. NSBCMP 2.4.3(f) prohibits development from significantly interfering with traditional activities at these sites.

NSBCMP 2.4.5.2(h) is a best-effort policy that requires development to be located, designed, and maintained in a manner that does not interfere with the use of a site that is important for significant cultural uses or essential for transportation to subsistence use areas as well a cultural use sites.

3.9.3 Northstar Development Project Consistency

Standards of the ACMP require identification of important historical and archaeological resources. Policies in the NSBCMP clearly establish what is required in the event a historic, prehistoric or archaeological site is encountered during development. Accordingly, in planning the Northstar Development Project, BPXA researched historical and archaeological resources in the project vicinity in 1996. No evidence of archaeological or cultural resources were found (see "Northstar Development Project, Archaeological and Cultural Resources Reconnaissance, North Slope Alaska", Lobdell, 1996). BPXA will investigate all possible onshore or offshore archaeological resources that may be encounter during the construction period.

BPXA has had an active, effective community and agency coordination program for many years, and has been able to identify and address concerns regarding historical and archaeological resource protection throughout the planning process. As a result, activities associated with the Northstar Development Project are consistent to the maximum extent practicable with the ACMP concerning historic, pre-historic, and archaeological resources.

4. CONSISTENCY DETERMINATION

Section 3 analyzed the Northstar Development Project to determine whether the project is consistent to the maximum extent practicable with enforceable provisions of the ACMP. For this analysis, the Northstar Development Project is defined as in the FPD submitted to USACOE and considered in the DEIS, which includes detailed assessment of potential impacts and identification of project mitigation. Based on these documents and other applicable laws and regulations, BPXA evaluated the proposed project based on compliance with the ACMP and the NSBCMP, and certified coastal project consistency.

This document summarizes the basis of the analysis that was performed. The conclusion of the analysis is that the proposed activities, their associated facilities and their effects as proposed are consistent to the maximum extent practicable with the enforceable policies of the ACMP and the NSBCMP.

NORTHSTAR DEVELOPMENT PROJECT

BP EXPLORATION (ALASKA)

Demonstration of Conformance with Title 19, North Slope Borough Municipal Code (NSBMC) Chapter 19.70 North Slope Borough Policies

Draft

July 1998

CHAPTER 19.70 BOROUGH POLICIES

Sections:

19.70.010 Introduction. The policies contained in this chapter are applicable to the approval of all development and uses within the Borough. Economic Development and Area Wide policies are applied to all lands and waters within the Borough boundary. Village, Coastal Management, Beaufort Offshore and Transportation Corridor policies are applied to approvals within their respective areas.

19.70.020 Village Policies. The following policies are intended to guide the approval of development and uses in the village districts.

A. Development and uses will not be allowed which grossly violate guidelines on the rate or amount of growth adopted by a village as a part of its comprehensive development plan.

B. Development and uses in a village is required to be consistent with the relevant adopted village comprehensive development plan.

C. Development and uses are encouraged which provide or materially contributes to lower-cost fuel or power.

D. Development and uses are encouraged which provide local employment in the villages.

BPXA CONFORMANCE WITH POLICIES

Village Policies, 19.70.020, are not applicable to rezoning for this project.

19.70.030 Economic Development Policies. Consideration will be given to the following beneficial impacts from development and uses.	See Local Concerns and Traditional Knowledge, Sec. 1.0 Social Issues which is a part of this application.
A. Development which uses suppliers or subcontractors from within the Borough for work which can be accomplished competitively by local private businesses or regional or village corporations.	
B. Development which will significantly employ local Borough residents, unless residents of the local villages express no interest in the work.	
C. Utilization of flexible employment procedures by the applicant to allow subsistence pursuits by local Borough resident employees.	
D. Incorporation of job training programs by the applicant for Borough residents.	
E. Development and uses which are related to or encourage Inuplat arts and crafts.	
F. Utilization of locally obtained energy, such as locally produced coal and natural gas, or renewable sources or energy.	
G. The generation of excess of tax revenues over demand for expenditures by the development.	
19.70.040 Offshore Development Policies. The following policies are intended to guide the approval of development and uses in the portion of the Beaufort Sea within the Borough boundary. Case by case extension to the time periods below may be granted during approval or as a use permit if the activity will not significantly impact subsistence activities, will have minimal environmental risk and all review agency comments have been addressed.	A total of 23 development wells will be drilled to produce the Northstar reservoir. The reservoir will be developed from a 421 foot by 465 foot gravel island located approximately 6 miles offshore of the Point McIntyre/Point Storkersen area.
A. Drilling shall be conducted from bottom founded structures.	Drilling will be conducted from a gravel island.
B. Drilling above threshold depth may occur year-round	BPXA drilling plans are consistent with this policy.

C. Drilling below threshold depth shall be conducted during the winter (November 1 through April 15) and be completed as early in this period as practicable.

We interpret the intent of this requirement to apply to exploration wells where the risk of drilling into an unknown formation may be somewhat higher than a known formation. The wells to be drilled from Northstar are development wells, not exploration wells.

A total of 7 exploration and appraisal wells have been drilled on the Northstar structure by Amerada Hess and Shell in the 1980's. In addition, the Northstar field is directly analogous to the [illegible] by Prudhoe Bay Field i.e. same geological horizons, same reservoir (Ivishak), same pressure regimes etc, where well over a thousand wells have been drilled. Consequently there is a considerable amount of offset data available to [illegible] drill the Northstar development wells safely and efficiently. The first place that well control is managed is in the planning stage. For instance, the casing design, casing shoe setting depths, mud weights, drilling hazards etc. are already well defined for the Northstar wells unlike the uncertainty which exists when drilling an exploration well in a new area. In the unlikely event that a well control incident i.e. kick, occurs the pressures and types of hydrocarbons to be managed are known. The casing design is such that kicks can be handled within the limits of the system and associated surface equipment i.e. blowout prevention equipment. All blowout prevention equipment and wellheads/Xmas trees are rated for the pressure regimes that exist.

To further enhance the safety of the Northstar well and minimize risk of spills, Northstar will install subsurface safety valves (SSSV's) in the completion strings of all the production wells at an approximate depth of 2000 ft.

D. Confirmation, extension and delineation drilling, well testing and other well completion activities shall be completed by June 15. Consistent with C above, any additional drilling or other activities shall not penetrate any new oil or gas bearing formations, or significantly increase the risk of an oil spill.

As in C above, we interpret the intent of this requirement to apply to exploration wells where the risk of drilling into an unknown formation may be somewhat higher than into a known formation. The wells to be drilled from Northstar are development wells, not exploration wells.

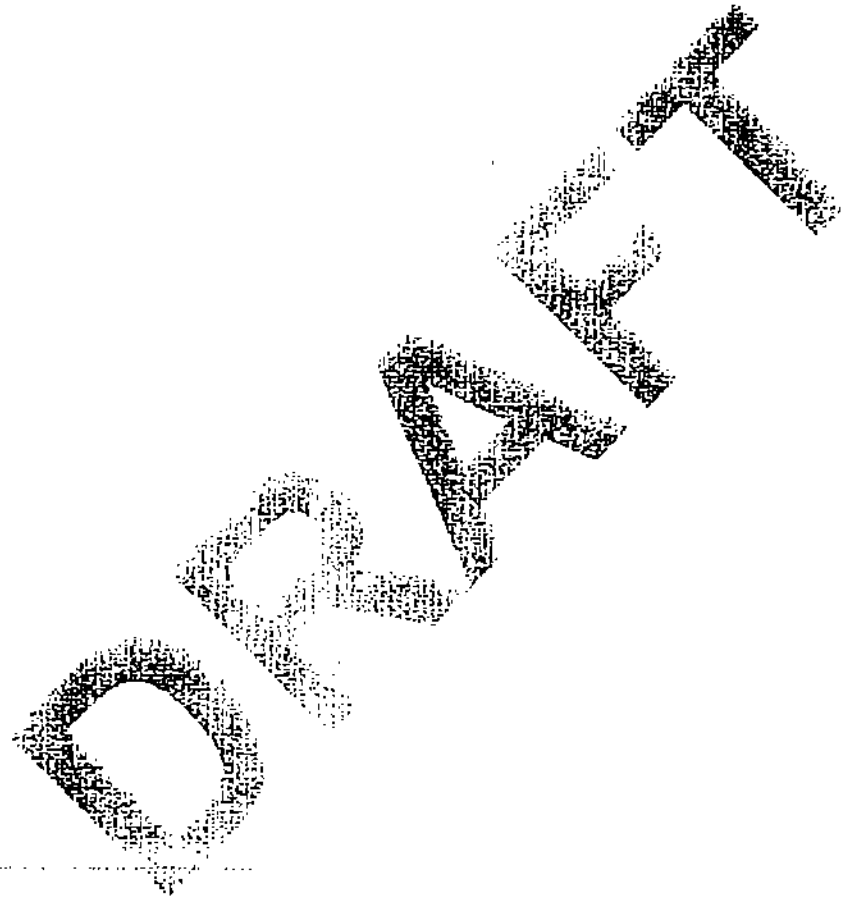
E. All nonessential boat, barge and air traffic associated with drilling activity shall occur prior to or after the period of whale migration through the area. Essential traffic (traffic that could not reasonably occur prior to or after the period of whale migration through the area) shall avoid disrupting the whale migration, subsistence activities, and be coordinated with the Alaska Eskimo Whaling Commission.

Nonessential boat, barge and air traffic associated with drilling will be scheduled to avoid periods when whales are migrating through the area.

Essential traffic movement shall be closely coordinated with the North Slope Borough and Alaska Eskimo Whaling Commission avoid disrupting whale migration and subsistence activities. The delivery of the Northstar facilities will take place in two summer sealifts that are scheduled to arrive by August 15th and be completed prior to September 1st.

Prior to winter each year, a barge will be used to transport a four months supply of drilling consumables during September to provide sufficient quantities until an ice road is built in January each year. Replenishment traffic will be generally be local from Prudhoe Bay to Seal Island and back, well outside of the major whale migration routes.

F.	Year-round drilling can occur following the unitization and approval of the plan of Operation and Borough approval of a Master Plan and rezoning to the Resource Development district for the proposed development.	The Northstar Development is already unitized. BPXA is applying for Borough approval of the Northstar Master Plan and Rezoning concurrent with the submittal of this document.



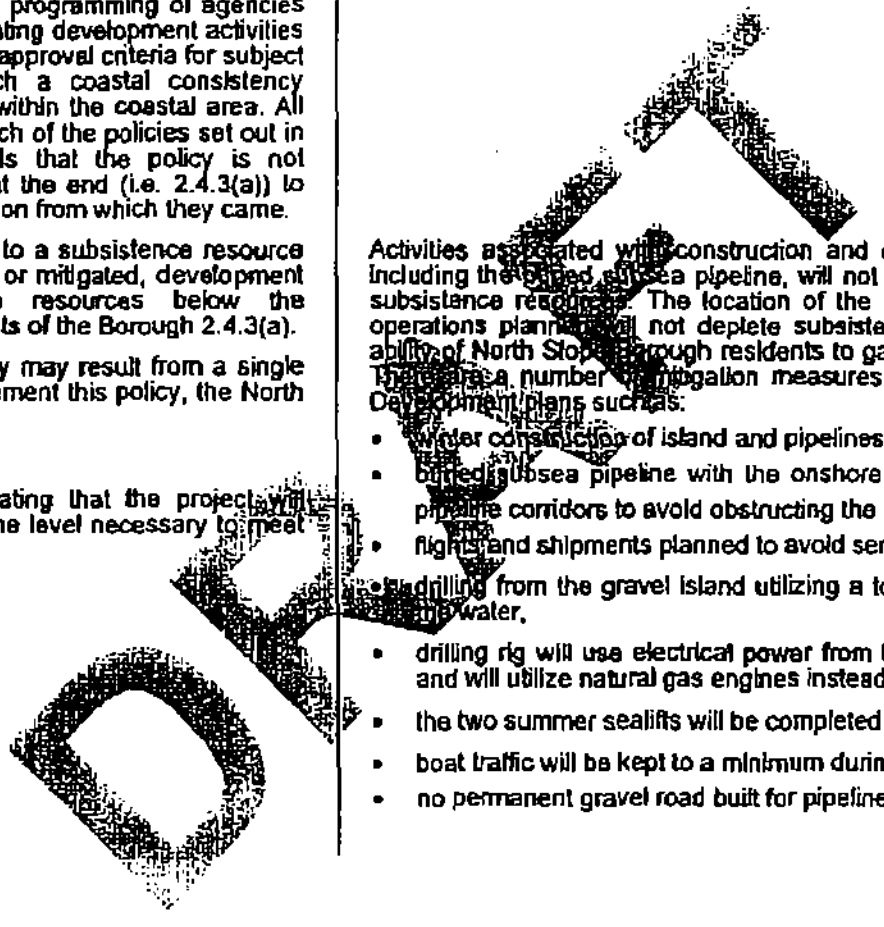
19.70.050 **Coastal Management and Area Wide Policies.** The Borough has developed these policies that identify general and specific courses of action to achieve region wide comprehensive plan goals and the implementation of the coastal management program. The policies in this section are a guide for the actions and programming of agencies and organizations currently active or anticipating development activities anywhere in the Borough. They are also the approval criteria for subject uses and are the standards under which a coastal consistency recommendation or determination is made within the coastal area. All development and uses must comply with each of the policies set out in this section unless the Administrator finds that the policy is not applicable. These policies are referenced at the end (i.e. 2.4.3(a)) to the Borough Coastal Management Plan section from which they came.

A. When extensive adverse impacts to a subsistence resource are likely and cannot be avoided or mitigated, development shall not deplete subsistence resources below the subsistence needs of local residents of the Borough 2.4.3(a).

Intent: The impacts addressed in this policy may result from a single project or from a series of projects. To implement this policy, the North Slope Borough would need to establish:

a. Documentation of subsistence needs.

b. A preponderance of the evident indicating that the project will deplete a subsistence resource below the level necessary to meet those needs.



Activities associated with construction and operation of the Northstar facilities, including the buried subsea pipeline, will not have significant adverse impacts on subsistence resources. The location of the Northstar facilities and the types of operations planned will not deplete subsistence resources or interfere with the ability of North Slope Borough residents to gain access to subsistence resources. There are a number of mitigation measures that have been built into Northstar Development plans such as:

- winter construction of island and pipelines,
- buried subsea pipeline with the onshore segment elevated to 5 feet in new pipeline corridors to avoid obstructing the passage of fish and wildlife,
- flights and shipments planned to avoid sensitive wildlife,
- drilling from the gravel island utilizing a top-drive drill rig to minimize noise in the water,
- drilling rig will use electrical power from the facility as soon as it is available and will utilize natural gas engines instead of diesel engines until then,
- the two summer sealifts will be completed prior to September 1st of each year,
- boat traffic will be kept to a minimum during the whale migration season and
- no permanent gravel road built for pipeline access.

B. Offshore drilling and other development within the area of bowhead whale migration during the migration seasons shall not significantly interfere with subsistence activities nor jeopardize the continued availability of whales for subsistence purposes. 2.4.3(b).

Intent: The area of the bowhead whale migration will be determined annually on the basis of best scientific information available, including that provided by the North Slope Borough and National Marine Fisheries Service monitoring programs. With respect to seismic exploration, the policy will be implemented by prohibiting seismic exploration in the vicinity of migrating whales when the exploration is likely to significantly interfere with subsistence activities or to jeopardize the continued availability of whales for subsistence purposes.

The Northstar facilities are located approximately 7 to 10 miles south of the main migration corridor for bowhead whales and approximately 17 miles west the main hunting camp for Nuiqsut whalers at Cross Island. We believe that these distances are sufficient to ensure that there will be no significant interference to subsistence resources or activities as a result of the Northstar development. Nevertheless, BPXA will consult with the AEWC and Nuiqsut Whalers prior to and periodically as appropriate during the whale migration season when drilling is underway and will enter into conflict avoidance agreements to avoid interference with subsistence hunting.

C. Development on barrier islands and in the marine and estuarine waters within 3 miles of the passes of Kasegaluk Lagoon intensively used by beluga whales shall not significantly interfere with subsistence use of beluga whales; shall not cause the whales to be displaced from these passes; and shall not jeopardize the continued use of these passes and lagoon system by beluga whales. The passes intensively utilized by beluga whales are Kukpowruk Pass, Akunik Pass, Utukok Pass, Icy Cape Pass, and Alokiakatat Pass (see Coastal Resource Atlas Map 11). 2.4.3(c)

Not applicable to the Northstar Development Project

D. Development shall not preclude reasonable subsistence user access to subsistence resources. 2.4.3(d)

Intent: The intent of this policy is to ensure that development will not preclude reasonable subsistence user access to a subsistence resource on which they depend. "Reasonable access" is access using means generally available to subsistence users. Reasonable opportunities for access to customary subsistence resources must not be precluded. "Precluding access" addresses not only means of access, but access to areas where resources are present and can be used by subsistence users.

See Local Concerns and Traditional Knowledge, Sec. 2.1 Subsistence Access, which is part of this application.

E.	Development which is likely to disturb cultural or historic sites listed on the National Register of Historic Places; sites eligible for inclusion in the National Register; or sites identified as important to the study, understanding or illustration of national, state or local history or prehistory shall 1) be required to avoid the sites; or 2) be required to consult with appropriate local, state and federal agencies and survey and excavate the site prior to disturbance. (Descriptions of sites identified are contained in Appendix C of the North Slope Borough Coastal Management Program Background Report and referenced on Map 2 of the Coastal Resource Atlas. Information regarding recently discovered sites is available from the Administrator.) 2.4.3(e)	An archaeological and cultural resources reconnaissance survey of the Northstar field area and of the proposed pipeline corridor was conducted in the summer of 1986. A report entitled *Northstar Development Project Archaeological and Cultural Resources Reconnaissance; North Slope, Alaska* was prepared in the fall of that year for submission to the State Historic Preservation Office. A copy of that report has been transmitted to the North Slope Borough Commission on History, Language and Culture. The survey shows that no cultural resources are likely to be affected by the proposed development project.
F	Development shall not significantly interfere with traditional activities at cultural or historic sites identified in the coastal management program. 2.4.3(f)	There are no identified cultural or historic sites within the vicinity of the Northstar offshore development area. All identified onshore sites will be avoided.
G.	Development shall not cause surface disturbance of newly discovered historic or cultural sites prior to archaeological investigation. 2.4.3(g)	If previously undiscovered cultural resources are discovered as a result of project development, any work that may damage these resources will be halted, and the State Historic Preservation Officer and the North Slope Inupiaq History, Language and Cultural Commission will be contacted. Following consultation, a decision will be made to avoid, protect or remove the resources, using appropriate scientific excavation standards, regulations and permit requirements.
H.	Development shall comply with state or federal land, air and water quality standards or regulations. 2.4.3(h)	As a developer on the North Slope, BP has obtained and manages a large number of environmental and land use permits for exploration and production of oil and gas. Northstar operations will comply with all local, state and federal permit stipulations and requirements.
I.	The following features are required for applicable development.	
1.	Vehicles, vessels, and aircraft that are likely to cause significant disturbance must avoid areas where species that are sensitive to noise or movement are concentrated at times when such species are concentrated. Concentrations may be seasonal or year-round and may be due to behavior (e.g., flocks or herds) or limited habitat (e.g. polar bear denning, seal haulouts). Horizontal and vertical buffers will be required where appropriate. Concern for human safety will be given special consideration when applying this policy. 2.4.4(a)	Logistics support requirements for the Northstar development include boats and barges during summer, trucks and rolligons using ice roads during winter, and helicopters year-around depending on weather conditions and project requirements. Routes for vehicles, vessels and barges, and aircraft to and from Seal Island will typically be directly from the West Dock staging area or from the Deadhorse Airport, and will, therefore, avoid areas known to be used by whales and denning polar bears. Except during surveillance of the subsea pipeline, vessels and aircraft will not travel inside the barrier islands between West Dock and Pt. Storkersen or between Pt. Storkersen and the barrier islands. Because of these avoidance efforts, no impacts on caribou or molting birds are expected from routine operations onshore or in the near-shore area.

2. Offshore structures must be able to withstand geophysical hazards and forces, which may occur while at the drill site. Design criteria must be based on actual measurements or conservative estimates of geophysical forces. In addition, structures must have monitoring programs and safety systems capable to securing wells in case unexpected geophysical hazards or forces are encountered. 2.4.4(b)

The Northstar Island is designed for worst case values including:

- Ice type
- Sheet ice thickness,
- Multi-year ice
  - Concentration
  - Floe diameter
  - Floe thickness
  - Keel depth
  - Crushing pressure
- Ice speed

The slope protection design incorporates improvements from many past Alaskan arctic island constructions (since 1975). Slope protection improvements include:

- Slope profile
- Concrete mat and rebar design
- Mat underlayer
- Block profile
- Mat anchors, and mat linkage
- Subsea gravel berm surrounding the island
- 75 foot gravel bench between the island slope and the sheet-pile wall

All wells have safety systems to shut-in any well as needed. This includes numerous subsurface safety valves plus a downhole safety shutdown valve on each well. The facilities on the island are manned on a 24 hour per day basis.

3. Development resulting in water or airborne emissions must comply with all state and federal regulations. 2.4.4(c)

BPXA has applied for state and federal air and water quality permits and approvals required for this project, and will construct and operate the project in full compliance with the terms of those permits.

The Northstar design incorporates many features that go beyond the requirements of state and federal regulations. Once the Class 1 disposal well is completed and available for use, all sewage treatment plant effluent will be injected down the disposal well.

BPXA has proposed emission controls that will exceed requirements of federal and state standards. Drilling operations will be powered by electricity from the main facility, natural gas-fired generators. Typically, drilling power is from smaller and less efficient diesel-fired generators. Once facility electrical power is available, the backup diesel generators on the drilling rig will be converted to natural gas, substantially reducing emissions of sulfur dioxide and particulate matter.

4. Industrial and commercial development must be served by solid waste disposal facilities which meet state and federal regulations. 2.4.4(d)

BPXA's goal in the design of Northstar has been to minimize discharges to the marine environment. BPXA has prepared a waste management plan for the proposed project, as described in Section 6 of the Northstar Development Project, Final Project Description (NSB Master Plan). This plan calls for use of a Class I disposal well and the use of existing, approved solid waste disposal facilities as appropriate. There will be no marine discharge of drilling wastes.

5. Development not on a central sewage system is required to impound and process effluent to state and federal quality standards. 2.4.4(e)

6. Plans for offshore drilling activities are required to include a relief well drilling plan and an emergency countermeasure plan. The relief well drilling plan must identify suitable alternative drilling rigs and their location; identify alternative relief well drilling sites; identify support equipment and supplies including muds, casings, and gravel supplies which could be used in an emergency; and specify the estimated time required to commence drilling and complete a relief well. The emergency countermeasures plan must identify the steps which will be taken to protect human life and minimize environmental damage in the event of 1) loss of a drilling rig; 2) ice override; or 3) loss or disablement of support craft or other transportation systems. 2.4.4(f)

7. Offshore drilling operations and offshore petroleum storage and transportation facilities are required to have an oil spill control and clean-up plan. The plan must contain a risk analysis indicating where oil spills are likely to flow under various sets of local meteorological or oceanographic conditions. Impact areas must be identified and strategies fully developed to protect environmentally sensitive areas; the spill control and clean-up equipment which is available to the operator and the response time required to deploy this equipment under the various scenarios must be contained in the risk analysis. 2.4.4(g)

Intent: Policies 6 and 7 are not intended to establish new regulations for offshore facilities. They restate and highlight requirements of existing regulations. Industry will not be required to go to considerable additional effort as a result of these policies.

BPXA has prepared a waste management plan for the proposed project, as described in Section 6 of the Northstar Development Project, Final Project Description (NSB Master Plan). This plan calls for only occasional discharges during development and approval of the Class I disposal well and during upset conditions. At all other times when the Class I disposal well is available, the sewage system effluent will be injected.

Information required in this section pertaining to a relief well drilling plan and emergency countermeasures plan is contained in the Oil Discharge Prevention and Contingency Plan (ODPCP) developed for the Northstar facility. The ODPCP has been submitted to Alaska Department of Environmental Conservation (ADEC) for review and approval under 18 AAC 75. Consistency determinations from and the North Slope Borough (NSB) are required. The Northstar ODPCP has also been submitted to Minerals Management Service (MMS), U.S. Department of Transportation Research and Special Programs Administration (DOT RSPA), and the U.S. Coast Guard (USCG) for review and approval under the Oil Pollution Act of 1990 (OPA90).

As noted in Issue #6 above, information required in this section regarding an oil spill control and clean-up plan is contained in the Northstar ODPCP which was submitted for review and approval by ADEC, MMS, DOT RSPA, and USCG on June 11, 1998.

8. Offshore oil transport systems (e.g., pipelines) must be specifically designed to withstand geological hazards, specifically sea ice. 2.4.4(h)

The offshore pipelines will be installed in a trench of depth sufficient to avoid contact with an extreme event ice gouge, and to be below the maximum incision depth to avoid damage due to soil motions beneath the ice keel.

Placing backfill material over the pipelines will provide protection from ice pounding. The possible effects of ice wallowing will be overcome by trenching and backfilling the pipelines below the depth of potential ice wallow depressions.

The offshore pipelines are buried in the seabed with the following depth of cover:

- South of the barrier islands 6 feet
- North of barrier islands 7 feet
- North of barrier islands within 2,000-3,000 feet of Seal island 9 feet

This far exceeds the maximum predicted ice gouge depth of 3.5 feet for a 100-year return period.

9. All causeways are required to be sited and designed to allow free passage of fish, marine mammals, and molting birds with due consideration for migration patterns; to prevent changes in water circulation patterns that would have significant adverse impacts on fish and wildlife; and to ensure adequate sediment transport. 2.4.4(i)

Not applicable to this project.

10. Residential development associated with industrial and resource extraction development must be removed and the area rehabilitated to standards consistent with the coastal management program when the industrial or extractive use is completed, unless removal is more environmentally harmful than not removing it. 2.4.4(j)

No permanent residential development is planned for this project.

11. Impermeable lining and diking is required for fuel storage facilities with a capacity greater than 660 gallons. 2.4.4(k)

There will be a single, 2,800 bbl. diesel storage tank located on the island as part of the Northstar facilities. This tank, as well as other large process tanks, will have double walls and double bottoms and will be equipped with surveillance instrumentation continuously monitoring for the presence of liquid within the annular space between the walls. This method of secondary containment meets the "Spill Pollution Control and Countermeasures" (SPCC) requirements of 40 CFR Part 112 and the "Secondary Containment Requirements for Aboveground Oil Storage and Surge Tanks" at 18 AAC 75.075. BPXA represents that the double wall, double bottom with continuous annular leak surveillance meet or exceeds the intent of this policy section and therefore requests a waiver of the lining and diking requirement.

J. The following best efforts are required of all applicable development. All development must comply with each of the policies set out in this section unless the following criteria have been established or the policy is not applicable to the development:

There is a significant public need for the proposed use and activity; and

The developer has rigorously explored and objectively evaluated all feasible and prudent alternatives to the proposed use or activity and cannot comply with the policy. When alternatives are eliminated from considerations, the reasons for their elimination shall be briefly documented by the developer.

Development of the following categories or types will be allowed only if the development has met the criteria above, and the developer has taken all feasible and prudent steps to avoid the adverse impacts the policy was intended to prevent.

The proposed Northstar development will provide significant benefits to the residents of the North Slope Borough through additional taxes and the programs they support, as well as through long and short-term employment opportunities in construction, services, and operations support.

See Section 1.0, Social Issues, "Northstar Development Project, Local Concerns and Traditional Knowledge" which is part of this application.

During the conceptual design phase of the project, BPXA exhaustively evaluated all reasonable site and routing alternatives. A complete alternatives analysis was also performed by the BLM team under the direction of the US Army Corp of Engineers. Those findings are available for review in the public record.

1. Development that will likely result in significantly decreased productivity of subsistence resources or their ecosystems. 2.4.5(a)

Construction activities at Seal Island and the buried pipeline between Seal Island and the mainland are designed to have minimal or no significant effects on the productivity of subsistence resources or their ecosystems.

Expansion of Seal Island will cover about 25 acres of seabed, typically composed of muds, silts, and sandy materials. Coverage of seabed with gravel will result in direct loss of natural seabed habitat, but at the same time will create several different types of habitats. These types consist of gravel substrate in deep areas, shallow water habitats above the subsea berm at the island perimeter, and shallow water habitats with inter-locking concrete blocks. The latter of which provide habitat conditions somewhat similar to those found in the Stefansson Sound Boulder Patch found north and east of the Endicott production islands. The varied water depths and the presence of a hard substrate (in the form of concrete blocks and gravel) will overtime increase habitat diversity within the island area and may result in somewhat increased productivity of benthic and epibenthic organisms.

Installation of the buried subsea pipelines will disturb about 21 acres of seabed between Seal Island and the mainland. This disturbance will be confined to the area immediately adjacent to the pipeline trench which when completed, will resemble an elongated ice scour. Ice scours are typical features in some areas of the Beaufort Sea and represent minor disturbances with no long-term impacts to overall productivity. Likewise, any local increases in sediment due to island construction or pipeline installation will be short-term phenomena that will not effect productivity in the project area.

Island construction and buried subsea pipeline installation will occur during winter when the majority of the subsistence resources important to local users are not in the project area. The main migration route of the Bowhead whales is seaward of Seal Island during their eastward migration during April and May. They are not present in the central Beaufort Sea again until late August or early September during their westward migration towards wintering areas along the ice front in the Bering Sea. The main migration corridor during the fall migration is typically a number of miles north of Seal Island. Any localized impacts within the Seal Island area or along the offshore pipeline route will likely have little or no effects on bowhead whale productivity.

Fish, such as Arctic char, Arctic cisco, least cisco, and broad whitefish, that are important subsistence resources, spend the winter in brackish waters in the delta of the Colville River (ciscos), in fresh lakes or pools (broad whitefish), or in perennial springs (Arctic char) located well inland in the Sagavanirktok River drainage system. These fish typically spend most of the summer foraging in the near-shore waters along the coastline between the Colville and Sagavanirktok rivers. The minor disturbance created by burial of the Northstar pipeline along a narrow corridor between Pt. Storkersen and Seal Island should not have a significant impact on production of these fish species.

Seals may be present in the project area year-around and may be temporarily displaced by construction activities for the island and the buried subsea pipeline however, this localized displacement is not expected to have a negative impact on seal populations within the project area.

Onshore facilities will consist of two various pads covering about 0.4 acres of tundra wetlands, an elevated crude oil sales pipeline between the shoreline and Pump Station No. 1 of the Trans Alaska Pipeline System and a gas supply line from the Prudhoe Bay Gas Central Compressor Plant (CCP). Direct loss of 0.4 acres of tundra wetlands should not negatively impact productivity of subsistence resources in the project area.

Caribou, another important subsistence resource for North Slope residents, will not be present in the project area during major construction activities. Most caribou move inland into or south of the Brooks Range during winter. There are no major construction activities planned for summer that would cause a decrease in caribou productivity.

2. Development which restricts subsistence user access to a subsistence resource. 2.4.5.1(b)

None of the facilities constructed for the Northstar project will restrict subsistence user access to a subsistence resource. Seal Island is located offshore of the traditional routes taken by the residents of Nuiqsut as they move between the Colville River and Cross Island. The Northstar subsea pipelines will be buried 7-9 feet below the seabed between Seal Island and the mainland. The pipelines will not interfere with movements of boats during summer or snow machines during winter within Gwydyr Bay and the lagoon system between the mainland and the barrier islands.

3. Development activities from June 15 to July 31 that will likely displace beluga whales from Kasegaluk Lagoon. These development activities may include, but are not limited to, extensive barge or boat traffic, low altitude or frequent plane and helicopter traffic, and other activities resulting in excessive noise or other forms of disturbance. 2.4.5.1(d)

Kasegaluk Lagoon is located 350 miles west of Seal Island, the site of the Northstar installation and therefore this section is not applicable to this project.

4.	Development on or near a shoreline that has the potential of adversely impacting water quality (e.g., landfills, or hazardous materials storage areas, dumps, etc.). (Near, as used in the phrase "near the shoreline" is defined as that area within a 1,500 foot setback from the mean high water mark along the coast, lake shore, or river) 2.4.5.1(e)	Some Northstar development will occur within 1,500-feet of the coastline. Specifically, the pipeline landfall at Pt. Strokersen and the associated valve pad will be within this 1500-foot setback. There will be no landfills, hazardous material storage areas, dumps or any other disposal activity associated with the Northstar Unit in the near-shore area. Project design features and implementation of the project spill prevention and contingency plan will avoid the potential for adverse water quality impacts.
6.	Public highway development, except for village roads and streets and highways indicated in the state and/or local capital improvements program. 2.4.5.1(f)	Not applicable to this project.
7.	Transportation development, including pipelines, which significantly obstructs wildlife migration. 2.4.5.1(g)	Facilities constructed for the Northstar project will not significantly obstruct wildlife migration. The Northstar facilities will be constructed well south of the main fall migration path of the bowhead whale. The subsea pipelines will not impact the movements of fish or seals in the near-shore waters between Seal Island and the mainland because they are buried 7 to 9 feet below the seabed. The onshore portion of the Northstar pipeline will be elevated a minimum of 5 feet above the tundra surface and will not have any road or permanent work surface adjacent to it for the majority of its length. Numerous research programs conducted since oil and gas development began on the North Slope have shown that caribou migration through areas with elevated pipelines where there are no roads or vehicle traffic in separation between the road and the pipeline. Thus, caribou movements should not be impaired as a result of construction and operation of the onshore portion of the Northstar pipelines.
8.	Development to accommodate large scale movement of crude oil or natural gas via marine tankers. 2.4.5.1(h) Intent: The intent of this policy is to limit development to accommodate large scale movement of crude oil or natural gas via marine tankers to instances where not feasible and prudent alternatives exist, recognizing that development of marine tanker facilities is a use of state concern.	Not applicable to this project.
9.	Duplicative transportation corridors from resource extraction sites. 2.4.5.1(i)	The marine tanker transportation corridors from Valdez to points south will remain unchanged, and not be impacted by Northstar.

10. Mining of beaches, barrier islands, or offshore shoals. In those circumstances where no feasible and prudent alternatives exist, substantial alterations of shoreline dynamics is prohibited. 2.4.51(j)

There will be no substantial alterations to shoreline dynamics due to construction or operation of the Northstar facilities. The only modification to the shoreline will be the area disturbed by excavation of the shore approach for transition from a buried subsea pipeline to an elevated onshore pipeline. A small area of the shoreline will be excavated, the pipeline will be installed and then the trench will be filled with gravel and topped with the previously excavated material. Some re-vegetation work may be conducted at the site to further stabilize the disturbed area. This area will be monitored to identify any significant changes that could affect the shoreline or the pipeline and corrective action will be taken as necessary.

11. Placement of structures in floodplains subject to a 50 year recurrence level and in geologic hazard areas as identified on the following coastal resource atlas map:

Map 6 - Areas of moderate and severe ridging and historic ice override.

Map 7 and 22 - Areas of moderate and severe ice ridging. 2.4.5.1(k)

Seal Island is located on the boundary between the Stable Fast Ice categories of II.A (Low ridging) and I (Moderate ridging). Virtually the entire Northstar pipeline is within Category II.A and Category I (Generally ridge free), with approximately 40 percent located within Category II.A and 60 percent within Category I.

K. The following are required for applicable development except where the development has met the criteria above, and the developer has taken all feasible and prudent steps to maximize conformance with the policy.

1. Mining (including sand and gravel extraction) in the coastal area shall be evaluated with respect to type of extraction operation, location, possible mitigation measures, and season so as to lessen, to the maximum extent practicable, environmental degradation of coastal lands and waters (e.g., siltation of anadromous rivers and streams). 2.4.5.2(a)

BPXA plans to extract approximately 700,000 cubic yards of gravel from a new mine site in the Kuparuk River delta. The gravel from this site will be extracted in the winter to minimize any disturbance to the river and fish. Access to the site will be by ice road so no permanent road is necessary. The site will be rehabilitated and converted to create a combination deep over-wintering fish habitat and shallow fish rearing area after gravel extraction during a 3-month winter period. A detailed mining/rehabilitation plan has been submitted for review and approval in accordance with Alaska Department of Fish and Game guidelines.

2. Development is required to be located, designed, and maintained in a manner that prevents significant adverse impacts on fish and wildlife and their habitat, including water circulation and drainage patterns and coastal processes. 2.4.5.2(b)	The Northstar facilities will be designed, located, and maintained to prevent significant impacts on fish and wildlife and their habitats. Mitigating design features include: • construction activities performed during the frozen winter period, • drilling from the gravel island to minimize transmitted noise into the water, • utilizing facility electrical power for the drill rig once available, • minimizing boat traffic during the migration season, and • elevated on-shore pipelines to facilitate caribou migrations. Addition of gravel to the existing Seal Island will cause short-term increases in turbidity in the immediate vicinity of the island. Likewise, pipeline trench excavation and backfilling following installation of the buried portion of the pipeline will result in localized increases in turbidity between Seal Island and the barrier islands, an area where the ice is not bottom-fast. Because of the very slow water currents under the ice, turbidity is expected to return to normal immediately after construction completion as was noted during the 1996 Test Trench activity. Normal operations on the island and the buried pipeline will not result in alterations to circulation patterns or to the ability of wildlife to move through or use these areas. Coastal processes will not be altered because there are no structures being built in the coastal area. Minor alterations to the shoreline at the landfall of the buried pipeline will be mitigated by restoring the shoreline to its original profile and monitoring changes to assure that significant erosion does not take place. Onshore drainage patterns in tundra wetlands traversed by the elevated pipeline will not be altered. Localized changes to small scale drainage patterns are possible at the sites of the two valve pads; however, engineering design and siting considerations should minimize these changes. Note that there will be no new gravel roads built to access the onshore pipeline.
3. Resource extraction support facilities, including administration offices, operations, [illegible] and other uses not absolutely required in the field must be located in a designated service base which is sited, designed, constructed, and maintained so as to be as compact as possible and to share facilities to the maximum extent possible. 2.4.5.2(c)	Existing facilities will be used to the maximum extent possible during island construction and pipeline installation, as well as in support of operations. Construction crews required for the island and pipeline installation will be housed onshore in existing facilities. Drilling crews will be housed in the permanent Living Quarters (PLQ) when installed on the island with operations personnel also housed in the PLQ. In addition to the facilities located on the 5-acre island, the facilities required to support Northstar have been limited to the following facilities: a valve pad at Pt. Storkersen, a valve pad on the west and east bank of the Put River, a gas offtake facility at the CCP, and a heater at Pump Station #1.

4. Gravel extraction activities within floodplains shall maintain buffers between active channels and the work area, avoid in-stream work, permanent channel shifts and ponding of water, clearing of riparian vegetation and disturbance to natural banks. 2.4.5.2(d)	BPXA plans to extract gravel needed for project construction from active river floodplains in accordance with Alaska Department of Fish and Game guidelines which are intended to avoid adverse impacts to water bodies. All gravel extraction will take place during frozen conditions to minimize any impact on the floodplain. Upon completion of gravel extraction, the site will be prepared, contoured and passages opened to the river to induce flooding thus providing deep-water over-wintering habitat for native fish species. This method has been used at several North Slope locations with great success
5. New subdivisions or other residential development must provide state-approved water and sewer service to prevent damage to fish and wildlife and their habitat. 2.4.5.2(e)	Not applicable to this project.
6. Transportation facilities and utilities must be consolidated to the maximum extent possible. 2.4.5.2(f)	The existing onshore infrastructure (roads, pipeline corridors, TAPS PS-1, Deadhorse housing and communications, airport, medical facilities, spill response equipment) will be utilized by Northstar. New onshore Northstar pipelines will be installed by ice road where existing roads are not available.

7. Development within the Alaska Coastal Management Program-defined coastal habitats must be conducted in accordance with ACMP Standard 6 AAC 80.130(b)*, (c), and (d), and applicable policies of the North Slope Borough Coastal Management Program. These habitats include: offshore areas, estuaries, wetlands and tide flats, rocky islands and sea cliffs, barrier islands and lagoons, exposed high-energy coasts, rivers, streams and lakes, and important upland habitat. 2.4.5.2(g)

* 6 AAC 80.130: (included here for reference)

(a) Habitats in the coastal area which are subject to the Alaska coastal management program include:

(1) offshore areas;

(2) estuaries;

(3) wetlands and tide flats;

(4) rocky islands and lagoons;

(5) barrier islands and lagoons;

(6) exposed high energy coasts;

(7) rivers, streams, and lakes;

(8) and important upland habitat]

(b) The habitats contained in (a) of this section must be managed so as to maintain or enhance the biological, physical, and chemical characteristics of the habitat which contribute to its capacity to support living resources.

(c) In addition to the standard contained in (b) of this section, the following standards apply to the management of the following habitats:

(1) offshore areas must be managed as a fisheries conservation zone so as to maintain or enhance the state's sport, commercial, and subsistence fishery;

(2) estuaries must be managed so as to assure adequate water flow, natural circulation patterns, nutrients, and oxygen levels and avoid the discharge of toxic wastes, and the destruction of productive habitat;

All development associated with the Northstar project within the Alaska Coastal Management Program-defined coastal habitats will be conducted in accordance with ACMP Standard 6 AAC 80.130(b), (c), and (d) and applicable policies of the North Slope Borough Coastal Management Program. All construction and operations in the listed habitat areas will be managed so as to maintain or enhance the biological, physical, and chemical characteristics of the habitat.

Normal functioning of offshore areas, estuaries, wetlands and tideflats, barrier islands and lagoon systems will not be adversely impacted by Northstar development.

Offshore construction activities to enlarge the island and installation of the buried subsea pipelines will be conducted in winter when the presence of fish resources is minimal. The subsea pipelines will not impact the movements of fish in the near-shore waters between Seal Island and the mainland because they are buried 7 to 9 feet below the seabed.

Affected wetlands and tidelats will be managed so as to assure adequate water flow, nutrients and oxygen levels and avoid adverse effects on natural drainage patterns, the destruction of important habitat and the discharge of toxic substances.

Natural estuaries, rocky islands, seacliffs, barrier islands, lagoons, high energy coasts, rivers, streams or lakes will be affected by this project.

The Northstar project will have minimal effects on coastal and wetland habitats because:

- above ground onshore pipeline elevated 5 feet above the tundra in new pipeline corridors and constructed in winter from ice roads.
- Offshore gravel placement is minimal with 0.4 acres of wetlands impacted for valve pad construction.
- The shore crossing involves excavation of only a small lineal segment of a tundra bluff that will be rehabilitated.

(3) wetlands and tideflats must be managed so as to assure adequate water flow, nutrients, and oxygen levels and avoid adverse effects on natural drainage patterns, the destruction of important habitat, and the discharge of toxic substances;

(4) rocky islands and seacliffs must be managed so as to avoid the harassment of wildlife, destruction of important habitat, and the introduction of competing or destructive species and predators;

(5) barrier islands and lagoons must be managed so as to maintain adequate flows of sediments, detritus, and water;

(6) high energy coasts must be managed by assuring the adequate mix and transport of sediments and nutrients and avoiding redirection of transport processes and wave energy and

(7) rivers, streams, and lakes must be managed to protect natural vegetation, water quality, important fish or wildlife habitat and natural water flow.

(d) Uses and activities in the coastal area which will not conform to the standards contained in (b) and (c) of this section may be allowed by the district or appropriate state agency if the following are established:

(1) there is a significant public need for the proposed use or activity;

(2) there is no feasible prudent alternative to meet the public need for the proposed use or activity which would conform to the standards contained in (b) and (c) of this section; and

(3) all feasible and prudent steps to maximize conformance with the standards contained in (b) and (c) of this section will be taken.

8. Development is required to be located, designed, and maintained in a manner that does not interfere with the use of a site that is important for significant cultural uses or essential for transportation to subsistence use areas. 2.4.5.2(h)

The Northstar development project will not interfere with any known site that is culturally significant or is essential for transportation to subsistence use areas. Throughout the development process land use status was continually checked to assure that none of the Northstar facilities would interfere with traditional cultural use patterns. The Northstar pipeline will be buried from 7-9 feet below the seabed and will not interfere with movements of vessels or other types of transportation between Nuiqsut and traditional subsistence hunting and fishing areas.

L. Applicable development is required to minimize its negative impact.

1. Development associated with purely recreational uses of land and wildlife habitat (i.e., commercial hunting and fishing camps and recreational second-home subdivisions) shall minimize adverse impacts on subsistence activities. 2.4.6(a)

2. Siting, design, construction, and maintenance of transportation and utility facilities (including ice roads) are required to minimize alteration of shorelines, water courses, wetlands, tidal marshes, and significant disturbance to important habitat and to avoid critical fish migration periods. 2.4.6(b)

None of the development activities related to the Northstar project are recreational in nature. All Northstar development facilities and operational support activities are required for the production and transport of oil and gas.

All activities associated with construction and operation of the Northstar facilities have been designed to minimize impacts to important wildlife habitats and to avoid critical fish migration periods. The majority of construction and maintenance activities will be carried out during winter when potential impacts to wildlife and their habitats will be minimal. An ice road will be constructed annually to access Seal Island during winter. This road will be sited to assure that impacts to coastal areas are avoided. Ice road construction will be carried out using water from sources approved by the Alaska Department of Fish and Game and the Alaska Department of Natural Resources.

There will be only minor impacts to the shoreline in Gwydyr Bay at the location where the buried pipeline transitions to an elevated pipeline. Engineering design and monitoring will assure that no significant impacts occur in this area. Tidal marshes and other important habitats were avoided during project engineering to the maximum extent possible; no tidal marshes or wetlands will be impacted by the Northstar development. There will be minor impacts to tundra wetlands because of construction of gravel valve pads at two onshore locations; total wetlands coverage will be about 0.4 acres. These gravel pads may provide some benefit to wildlife, particularly caribou, by creating small patches of insect relief habitat, especially at the coastal site.

Anadromous fish migrations within the project area occur following breakup in the spring when several species of anadromous fish (e.g., Arctic cisco, least cisco, broad whitefish, and Arctic charr) important for subsistence purposes leave over-wintering sites in the major river systems of the Colville and Sagavanirktok rivers and move into coastal waters to feed. These fish, as well as others, forage along the coast until mid- to late-August and when they return to over-wintering rivers. There will be no activities associated with Northstar construction or operations that will interfere with movements of these or other fish species.

Rather than interfere, the gravel extraction activity will actually result in a significant increase in the amount of over-wintering habitat available for fish protection and propagation

3. Development is required to maintain the natural permafrost insulation quality of existing soils and vegetation. 2.4.6(c)	The on-shore sales pipeline will be insulated and installed on vertical support members (VSMs) from the valve pad at the shore landing to Pump Station 1. VSMs are in wide use on the North Slope and do not contribute to degradation of the natural permafrost. In the near-shore area where we expect to see some localized thawing of the permafrost, the integrity of the soils and the pipeline are assured due to the careful placement of select, thaw stable backfill materials and an conservative pipeline design. An extensive thermal analysis conducted indicates that thaw settlements due to permafrost melting are only expected to occur within 1,000 feet of shore and the maximum subsidence will not occur for approximately 4 to 5 years after start-up. The pipeline is designed to accommodate the maximum settlement prediction of 2 feet with an average settlement of less than 1 foot. Regular internal inspections of the pipeline using intelligent pigs will yield information on pipeline position in the trench both with regard to vertical and horizontal directions. In addition, the Northstar crude oil will be chilled to an annual average temperature of 50°F to further mitigate permafrost effects.
4. Airports and helicopters pads are required to be sited, designed, constructed, and operated in a manner that minimizes their impacts upon wildlife. 2.4.6(d)	The helipad on Seal Island is located at the extreme southwest corner of the dock face. Most flights to Seal Island would originate from the Deadhorse Airport. Depending on wind conditions, most flights would leave the mainland in the vicinity of Prudhoe Bay and fly directly to Seal Island. This flight path would not approach waterfowl staging areas on the barrier islands nor would it be closer than 17 miles from Cross Island. Normal supply flights to and from Seal Island would be at least 10 miles from the main migration route typically used by bowhead whales. Periodic pipeline surveillance flights would over-fly the barrier islands and the shoreline in Gwydyr Bay. This activity will be designed to minimize impacts to wildlife at all times of the year.

5. A means of providing for unimpeded wildlife crossing shall be included in the design and construction of structures such as roads and pipelines that are located in areas used by wildlife. Pipeline design shall be based on the best available information and include adequate pipeline elevation, ramping, or burial to minimize disruptions of migratory patterns and other major movements of wildlife. Aboveground pipelines shall be elevated a minimum of 5 feet from the ground to the bottom of the pipe, except at those points where the pipeline intersects a road, pad, or caribou ramp, or is constructed within 100 feet of an existing pipeline that is elevated less than 5 feet. Temporary pipelines (not to exceed 6 months) are exempt from this policy. 2.4.6(e)

Intent: In areas used by wildlife, this policy establishes a five-foot minimum pipeline elevation where elevation is the preferred means of providing for unimpeded wildlife crossings. Best available information will be evaluated during project review to determine if pipeline burial, ramping, elevation, or a combination thereof, will be employed.

6. Development in floodplains, shoreline areas, and offshore areas is required to be sited, designed, and constructed to minimize loss of life or property due to riverine flooding, icings, stream bank erosion, oceanic storms, sea waves, ice gouging and override, and shore erosion. 2.4.6(f)

Onshore, the pipelines will be installed on new VSMs elevated a minimum of 5 feet above the ground, wherever the pipelines follow a new alignment. Where the pipelines follow the alignment of existing lines, they will be installed on new VSMs at the same elevation as the existing lines. The gas line will follow an existing alignment from where it parts company with the oil line to the CCP. The oil line will follow an existing alignment from the Spine Road to the Put River crossing and from the Put River crossing to PS-1.

The pipelines will be installed below grade at the locations of existing road and caribou crossings. Two existing caribou crossings are identified along the alignment of the oil pipeline and three along the alignment of the gas pipeline.

The Northstar slope protection design incorporates improvements from many past Alaska arctic island construction. The island is designed for 'worst case' sea ice type, thickness, concentration, keel depth, crushing pressure and speed. A subsea berm will surround the island to prematurely break incoming wave action and to ground and fracture dangerous incoming ice floes. The island is also designed to accommodate maximum predicted wave heights and storm surge events.

The pipeline design is conservative using a wall thickness 2.5 times greater than would be required by normal engineering standards. The pipeline burial depth of 7 to 9 feet below the seafloor assures that it will not be affected by ice gouging or strudel scour.

The pipeline will be corrosion protected using a system of sacrificial anodes designed to last 20 years even though the project has a 15-year life expectancy. Periodically, from commissioning forward, the pipeline will be pigged with intelligent pigs to determine the rate of corrosion. After every pig run, calculation will be made to determine the maximum allowable pressure for the pipeline.

Two state-of-the art leak detection systems will monitor the flow through the oil pipeline on a continuous basis. In order to ensure the correct operation of the system, regular checks will be conducted on the equipment employed, including the hardware and associated software.

Automatic quick closing pipeline valves will be installed at Seal Island, Point Storkersen, and Pump Station 1 to minimize any spill potential due to a damaged pipeline segment.

The landfall shore approach for the pipelines is approximately 110 feet inland from the shoreline bluff to account for shore erosion over the life of the project.

7.	Seismic exploration must be conducted in a manner that minimizes its impact on fish and wildlife. 2.4.6(g)	No further seismic activity is proposed in the Northstar Unit

19.70.060 **Transportation Corridor Policies.** All uses and development requiring an approval in a Transportation Corridor district must comply with these policies. The policies in this section are used as a basis for approval stipulations by the Borough for development and uses in this district.		Transportation Corridor Policies are not applicable to this project.
A.	Uses will be directly related to the use of the Haul Road as an industrial road serving the Trans Alaska Pipeline, future resource extraction related development and approved resource development districts.	N/A
B.	Research facilities are encouraged to be in a central facility in the disturbed area at Toolik.	N/A
C.	Any expansions or reactivation of airstrips must be done on the basis of plans and permits reviewed and approved by the Borough and appropriate villages. Airport land use shall minimize residential and recreational use at the airport. Land use at airports shall be directly related to the primary industrial uses in the area.	N/A
D.	Sand and gravel use for operation, maintenance and construction of a new natural gas pipeline, and the existing road and pipeline have first priority. Essential government and industrial uses are allowed gravel use but only if its is not feasible and prudent to use existing pads and developed areas.	N/A
E.	Extraction must be conducted in accordance with reclamation plans that provide for enhancement to wildlife habitat, or minimize environmental impacts or improvement to the affected area for human use.	N/A
F.	Reclamation of all upland and floodplain excavations shall be required unless such reclamation would cause greater adverse impact to the environment than leaving the area unreclaimed. Excavated areas should be converted to fish or waterfowl habitat whenever feasible and prudent.	N/A
G.	Where feasible and prudent, stream banks and lake shores of fish bearing waters and drinking water supplies shall be protected by providing an adequate buffer strip of undisturbed vegetation to mitigate adverse impacts.	
H.	Where feasible and prudent all development shall be located outside active flood plains.	

I. Uses and development may be prohibited in sensitive habitats such as wolf den areas, mineral licks and during lambing season in identified Dall sheep lambing areas.

J. Development within the Historical and Cultural Resource Area (see Zoning Map) is required to identify and document archeological sites prior to construction.

L. Existing commercial recreational operators which have been permitted prior to the effective date of this ordinance are allowed to continue in conformance with their status as nonconforming uses. New commercial recreational operations are not allowed within the Transportation Corridor, but may be permitted in the Conservation District.

M. Upon the opening of the Haul Road for public access, the North Slope Borough acknowledges no responsibility for the provision of any services within the Transportation Corridor other than those directly associated with administering the North Slope Borough Code.