August 2007

Northeast National Petroleum Reserve-Alaska

DRAFT Supplemental Integrated Activity Plan/Environmental Impact Statement

Volume 4: Maps

In Cooperation with the North Slope Borough
The Bureau of Land Management Today

Our Vision
To enhance the quality of life for all citizens through the balanced stewardship of America’s public lands and resources.

Our Mission
To sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

BLM Cover Photos:
2. Caribou, northern Alaska.
   Photo by BLM Branch of Energy
Northeast National Petroleum Reserve–Alaska

Draft

Supplemental Integrated Activity Plan/Environmental Impact Statement

VOLUME IV: Maps

Prepared by

U.S. Department of Interior
Bureau of Land Management
Anchorage, Alaska

In Cooperation with the North Slope Borough

August 2007
TABLE OF CONTENTS

VOLUME IV: MAPS

1-1. National Petroleum Reserve-Alaska and the North Slope
1-2. Generalized Land Status in the National Petroleum Reserve-Alaska
1-3. Special Areas within the National Petroleum Reserve-Alaska

2-1. Northeast National Petroleum Reserve-Alaska Alternative A (No Action Alternative)

3-1. Major Sedimentary Basins and Tectonic Features in the Northern Alaska and Contiguous Offshore Continental Shelves
3-2. North Slope and the National Petroleum Reserve-Alaska Oil and Gas Fields and Pipelines and Active Leases
3-3. Oil Potential of the Northeast National Petroleum Reserve-Alaska
3-4. Oil and Gas Fields and Selected Exploration Wells and Recent Exploratory Wells in the National Petroleum Reserve-Alaska and Prudhoe Bay
3-5. Soil Types in the Northeast National Petroleum Reserve-Alaska
3-6. Major Drainages and Hydrologic Units in the National Petroleum Reserve-Alaska
3-7. Locations and Depths of Lakes and Ponds in the Northeast National Petroleum Reserve-Alaska
3-8. Earth Cover in the Northeast National Petroleum Reserve-Alaska
3-14. Average Occurrence of all Adult and Juvenile Geese on Goose Molting Lakes in the Northeast National Petroleum Reserve-Alaska
Northeast NPR-A Supplemental IAP/EIS

3-18. Onshore Density of Large Shorebirds in the Northeast National Petroleum Reserve-Alaska
3-20. Teshekpuk Lake Herd Caribou Seasonal Ranges in the Northern Alaska (1990-2005 Satellite Telemetry Data)
3-21. Central Arctic Caribou Seasonal Ranges in Northern Alaska
3-22. Western Arctic Herd Caribou Seasonal Ranges in Northern Alaska
3-23. Teshekpuk Lake Caribou Herd Calving Areas (successful females only) in the Northeast National Petroleum Reserve-Alaska
3-26. Moose, Muskox, and Wolverine Sightings and Habitat in and near the National Petroleum Reserve-Alaska
3-29. Polar Bear Den Sites and Sightings in and near the Northeast National Petroleum Reserve-Alaska
3-31. Bowhead Whale Density Offshore and Nearshore in the National Petroleum Reserve-Alaska
3-32. Onshore Density and Locations of Spectacled Eiders in the Northeast National Petroleum Reserve-Alaska; and Nearshore and Offshore Beaufort Sea Distribution
3-33. Onshore Sightings of Stellar's Eiders in the Northeast National Petroleum Reserve-Alaska
3-34. Cultural Resources in the Northeast National Petroleum Reserve-Alaska
3-35. Barrow, Atqasuk, and Nuisut Community Subsistence Areas in the National Petroleum Reserve-Alaska
3-36. Nuiqsut Subsistence Use Areas for Moose and Birds in the National Petroleum Reserve-Alaska
3-37. Nuiqsut Subsistence Use Areas for Caribou, Fish, and Whales in the National Petroleum Reserve-Alaska
3-38. Barrow Subsistence Use Areas for Whale, Moose, and Caribou in the National Petroleum Reserve-Alaska
3-39. Barrow Subsistence Use Areas for Fish and Birds in the National Petroleum Reserve-Alaska
3-40. Atqasuk Subsistence Use Areas for Caribou, Moose, Fish, and Birds in the National Petroleum Reserve-Alaska
3-41. Wainwright Subsistence Use Areas in the National Petroleum Reserve-Alaska
3-42. Anaktuvuk Pass Subsistence Use Area in and near the National Petroleum Reserve-Alaska
3-43. Surface and Subsurface Split Estate Lands in the National Petroleum Reserve-Alaska
3-44. Locations of Possible Oil and Gas Staging Facilities in the National Petroleum Reserve-Alaska
Map 1-1. National Petroleum Reserve-Alaska and the North Slope
The information displayed on this map should be used for graphic display only. For official land status information, refer to Cadastral Survey Plats, Master Title Plats.

Source: USDOI BLM and MMS 2006

Map 1-2. Generalized Land Status
The information displayed on this map should be used for graphic display only. For official land status information, refer to Cadastral Survey Plats, Master Title Plats, and case files.

Map 1-2. Generalized Land Status in the National Petroleum Reserve-Alaska

Source: USDOI BLM and MMS 2006
Map 1-3. Special Areas within the Arctic

- Teshekpuk Lake Special Area
- Utukok River Uplands Special Area
- Colville River Special Area
- Beluga Whales Habitat

Source: USDOI BLM and MMS 2003
Map 1-3. Special Areas within the National Petroleum Reserve-Alaska

Source: USDOI and MMS 2003
Source: USDOI-BLM 2007

ALTERNATIVE D
Goose Molting Area

Available for Leasing with "General Stipulations and ROPs" only

Lease Tracts with Surface Occupancy Limit to a Maximum of 300 Acres per Block

Goose Molting Area

Facility Location Study Area

Goose Molting Lakes: Permanent oil and gas facilities prohibited
with the exception of pipelines, prohibited

Teshekpuk Lake: Deferred from Leasing; oil and gas facilities prohibited onshore within
(Stipulation K-3)

Coastal Area: Special restrictions on facility placement within 3/4 mile of coast (Stipulation H-17)

Source: USDOI-BLM, 2007

Map 2-5. Northeast National Petr...
STUDY REQUIREMENTS PRIOR TO ANY OIL AND GAS DEVELOPMENT ACTIVITIES

BLM Alaska, in conjunction with appropriate Federal, State, North Slope Borough, and North Slope Science Initiative (NSSI) representatives, will develop a research study of the effects of disturbance on molting brant and other geese, which utilize the lakes north of Teshekpuk Lake. The study will be completed prior to any authorization of construction of permanent facilities within the goose molting area and will include at least 3 years of data collection focused on:

1) providing baseline data for detection and/or measurement of disturbance,  
2) identifying significant development related disturbance factors,  
3) evaluating consequences to geese from disturbance within the GMA considering relevant ROPs and lease stipulations,  
4) identifying additional mitigation measures to protect molting geese which may be necessary as a result of the study, including recommendations for appropriate placement of permanent facilities with respect to the study outcome based on (2), and  
5) identifying specific location of facility(s) within the approximate 5000 acre parcel of land (shown here as Facilities Location Study Area) available within the GMA Lease Tracts F and G (also see Lease Stipulation K-11)

Any additional mitigation practices that are identified as a result of this study which are necessary to achieve the goal of Lease Stipulation K-4 will be implemented prior to authorization of construction.

Source: USDOI-BLM, 2007

NORTHERN ALASKA AND CONTIGUOUS OFFSHORE CONTINENTAL SHELVES
Sedimentary Basins and Tectonic Features

- Arctic Alaska Basin (Ellesmerian tectonics, Devonian-Jurassic)
- Colville Basin (>3 km) (Brookian tectonics, Cretaceous)

Geologic Arch
Herald Thrust Fault System

ARCTIC NATIONAL WILDLIFE REFUGE

Source: USDOI BLM and MMS 2003

Map 3-1. Major Sedimentary Basins
Map 3-1. Major Sedimentary Basins and Tectonic Features in the Northern Alaska and Contiguous Offshore Continental Shelves

Source: USDOI BLM and MMS 2003
Map 3-2. North Slope and the National Wildlife Refuge
Map 3-2. North Slope and the National Petroleum Reserve - Alaska Oil and Gas Fields and Pipelines and Active Leases

Source: USDOI BLM and MMS 2006
Map 3-3. Oil Potential of the Northeast National Petroleum Reserve-Alaska
Source: USDOI BLM and MMS 2002

Map 3-4. Oil and Gas Fields and Shoe Bay
Map 3-4. Oil and Gas Fields and Selected Exploration Wells and Recent Exploratory Wells in the National Petroleum Reserve-Alaska and Prudhoe Bay

Source: USDOI BLM and MMS 2002
Map 3-5. Soil Types in the Northeast National Petroleum Reserve-Alaska
MAJOR RIVERS AND HYDROLOGIC UNITS

- Development Site
- Active Stream Gauge
- River

19060101 Hydrologic Unit Code (Colored areas indicate HUC boundaries)

Source: USDOI BLM and USGS 2007; Wahrhaftig

Map 3-6. Major Rivers and Hydrologic Units
Map 3-6. Major Rivers and Hydrologic Units in the National Petroleum Reserve-Alaska
Map 3-7. Locations and Depths of Lakes and Ponds in the Northeast National Petroleum Reserve-Alaska

Source: USDOI and MMS 2003
ARCTIC OCEAN

Map 3-7. Locations and Depths of Lakes and Ponds in the Northeast National Petroleum Reserve-Alaska

Source: USDOI and MMS 2003
Map 3-8. Earth Cover in the Northeast National Petroleum Reserve - Alaska

Source: Onshore Density Data and Nearshore Data: USFWS Migratory Bird Management, Anchorage, AK

Source: Onshore Density Data and Offshore Data: USFWS Migratory Bird Management, Anchorage, AK

Source: Onshore Density Data, Nearshore Data, and Offshore Data: USFWS Migratory Bird Management, Anchorage, AK
ARCTIC OCEAN

Source: Onshore Density Data and Nearshore Data: USFWS Migratory Bird Management, Anchorage, AK

Map 3-14. Average Occurrence of all Adult and Juvenile Geese on Goose Molting Lakes in the Northeast National Petroleum Reserve-Alaska

Source: Onshore Density Data and Nearshore Data: USFWS Migratory Bird Management, Anchorage, AK
Map 3-16. Onshore Density and Nearshore Beaufort Sea Distribution of Long-tailed Ducks in the Northeast National Petroleum Reserve-Alaska
Map 3-16. Onshore Density and Nearshore Beaufort Sea Distribution of Long-tailed Ducks in the Northeast National Petroleum Reserve-Alaska

Source: Onshore Density Data and Nearshore Data: USFWS Migratory Bird Management, Anchorage, AK
Map 3-17. Onshore Density, Nearshore and Offshore Beaufort Sea Distribution and Selected Locations of Satellite Transmitter Equipped King Eiders in the Northeast National Petroleum Reserve-Alaska
Map 3-18. Onshore Density of Large Shorebirds in the Northeast National Petroleum Reserve-Alaska

Source: Onshore Density Data: USFWS Migratory Bird Management, Anchorage, AK
Map 3-18. Onshore Density of Large Shorebirds in the Northeast National Petroleum Reserve-Alaska
Map 3-19. Locations of Raptor Nesting/Activity Sites in the Northeast National Petroleum Reserve-Alaska
Map 3-19. Locations of Raptor Nesting/Activity Sites in the Northeast National Petroleum Reserve-Alaska

Source: USFWS, Fairbanks Fish and Wildlife Field Office Endangered Species Branch; BLM, Fairbanks District Office, Arctic Field Office
Teshekpuk Lake Caribou Seasonal Ranges

- Calving
- Summer
- Winter
- Annual

Source: Alaska Department of Fish & Game and Map 3-20. Teshekpuk Lake Caribou Seasonal Ranges
Source: Alaska Department of Fish & Game and ABR Inc. - Environmental Research and Services

Map 3-20. Teshekpuk Lake Caribou Herd Seasonal Ranges in Northern Alaska (1990 - 2005 Satellite Telemetry Data)
Western Arctic Caribou Seasonal Ranges

Calving
Summer
Migratory
Winter
Peripheral

Source: Alaska Department of Fish and Game
Map 3-22. Western Arctic Caribou
Map 3-22. Western Arctic Caribou Herd Seasonal Ranges in Northern Alaska
Map 3-23. Teshekpuk Lake Caribou Herd Calving Areas (successful females only) in the Northeast National Petroleum Reserve-Alaska (1990 - 2005 Satellite Telemetry Data)
Map 3-23. Teshekpuk Lake Caribou Herd Calving Areas (successful females only) in the Northeast National Petroleum Reserve-Alaska (1990 - 2005 Satellite Telemetry Data)

Source: ABR Inc. - Environmental Research and Services

**Fixed Kermal Probability**
- 50%
- 75%
- 99%

**Legend**
- 0 6 12 Mils

**Map Description**
- Teshekpuk Lake
- Cape Simpson
- Smith Bay
- Point
- Cape Halkett
- Atigart Point
- Nuiqsut
- Umiat

**Map Title**
- Teshkpuk Lake Caribou
- Calving Area

**Map Source**
- ABR Inc. - Environmental Research and Services

**Map Details**
- Northeast National Petroleum Reserve-Alaska
- Satellite Telemetry Data (1990 - 2005)
Map 3-25. Teshekpuk Lake Caribou Herd Mosquito Relief Areas in the Northeast National Petroleum Reserve-Alaska (1990 - 2005 Satellite Telemetry Data)
Sightings and Habitat

- Sightings of Wolverings in Bee and Hall, 1956
- Approximate Harvest Locations of Wolverines Bountied in the 1960s
- Sightings of Wolverines, 1977 and 1978
- Approximate Locations of Known Wolverine Harvests 1972 - 1978

Source: USDOI BLM and MMS 1998
Map 3-26. Moose, Muskox, and Wolverine
David M. Bee and Paul F. Hall 1956

Approximate Harvest Locations of Wolverines Bountied in the 1960s

Sightings of Wolverines, 1977 and 1978

Approximate Locations of Known Wolverine Harvets 1972 - 1978

Moose Density - Medium
(0.25 - 1.0 per square mile)

Moose Density - High
(greater than 1.25 per square mile)

Best Potential Habitat for Muskox

Source: USDOI BLM and MMS 1998

Map 3-26. Moose, Muskox, and Wolverine Sightings and Habitat in and near the National Petroleum Reserve-Alaska

Source: USDOI MMS and Naval Ocean Systems Center, 2002
Map 3-29. Polar Bear Den Sites and Sightings in and near the Northeast National Petroleum Reserve-Alaska

Source: USDOI MMS and Naval Ocean System Center 2002

Source: USDOI MMS and Naval Ocean Systems Center 2002

ARCTIC OCEAN

Cape Simpson
Smith Bay
Pit Point
Cape Halkett
Atigun Point
Nulato
Umiat

BELUGA WHALE

Beluga Whale Sighting

Source: USDOI MMS and Naval Ocean Systems Center 2002
Map 3-31. Bowhead Whale Density

Abundance
Number of Whales/Kilometer of Survey Effort
(September-October)

- 0 (surveyed)
- 0.001 to 0.009
- 0.01 to 0.099
- 0.1 to 0.399

Source: USDOI MMS 2002
Map 3-31. Bowhead Whale Density Offshore and Nearshore in the National Petroleum Reserve-Alaska

Source: USDOI MMS 2002
Source: Onshore Density Data, Nearshore Data, and Offshore Data: USFWS Migratory Bird Management, Anchorage, AK; CPAI (ConocoPhillips Alaska, Inc.), Anchorage, AK

Map 3-32. Onshore Density and Locations of Spectacled Eiders in the Northeast National Petroleum Reserve-Alaska; and Nearshore and Offshore Beaufort Sea Distribution
ARCTIC OCEAN

Map 3-32. Onshore Density and Locations of Spectacled Eiders in the Northeast National Petroleum Reserve-Alaska; and Nearshore and Offshore Beaufort Sea Distribution

Source: Onshore Density Data, Nearshore Data, and Offshore Data: USFWS Migratory Bird Management, Anchorage, AK; CPAI (ConocoPhillips Alaska, Inc.), Anchorage, AK
Map 3-33. Onshore Sightings of Steller’s Eiders in the Northeast National Petroleum Reserve-Alaska

Source: USFWS Migratory Bird Management, Fairbanks, AK; USFWS Migratory Bird Management, Anchorage, AK
ARCTIC

Chukchi Sea

Nuiqsut Community Harvest Area

Atqasuk Community Harvest Area

Barrow Community Harvest Area

Native Corporations Surface Owners

Source: Pedersen 1979; Hoffman, Libbey, and 
Map 3-35. Barrow, Atqasuk, and Nuiqsut
SUBSISTENCE AREAS BY COMMUNITY

- Nuiqsut Community Harvest Area
- Atqasuk Community Harvest Area
- Barrow Community Harvest Area
- Native Corporations Surface Ownership


Map 3-35. Barrow, Atqasuk, and Nuiqsut Community Subsistence Areas in the National Petroleum Reserve-Alaska
Cape Simpson
Smith Bay
Teshkpa

NUIQSUT SUBSISTENCE USE AREA

Bird Harvest Area
Moose Harvest Area
Nuiqsut Community Harvest Area
Native Corporations Surface Ownership

Source: Pedersen 1979; Hoffman, Libbey, and Map 3-36. Nuisut Subsistence Us
Map 3-36. Nuiqsut Subsistence Use Areas for Moose and Birds in the National Petroleum Reserve-Alaska

Source: Pedersen 1979; Hoffman, Libbey, and Spearman 1988
NUIQSUT SUBSISTENCE USE AREA

Whale Harvest Area
Fish Harvest Area
Caribou Harvest Area
Nuiqsut Community Harvest Area
Native Corporations Surface Ownership

Source: Pedersen 1979; Hoffman, Libbey, and Smith 1984

Map 3-37. Nuisut Subsistence Use Area
NUIQSUT SUBSISTENCE USE AREA

- Whale Harvest Area
- Fish Harvest Area
- Caribou Harvest Area
- Nuiqsut Community Harvest Area
- Native Corporations Surface Ownership

Source: Pedersen 1979; Hoffman, Libbey, and Spearman 1988

Map 3-37. Nuisut Subsistence Use Areas for Caribou, Fish, and Whales in the National Petroleum Reserve-Alaska
Source: Pedersen 1979 and SRBA, 1989a

Map 3-38. Barrow Subsistence Use Area
Map 3-38. Barrow Subsistence Use Areas for Whale, Moose, and Caribou in the National Petroleum Reserve-Alaska

Source: Pedersen 1979 and SRBA, 1989a
BARROW SUBSISTENCE USE AREAS

- Fish Harvest Area
- Bird Harvest Area
- Native Corporations Surface Owner

Source: Pedersen 1979; SRBA 1989a

Map 3-39. Barrow Subsistence Use Areas
Map 3-39. Barrow Subsistence Use Areas for Fish and Birds in the National Petroleum Reserve-Alaska
Map3-40. Atqasuk Subsistence Use Areas for Caribou, Moose, Fish, and Birds in the National Petroleum Reserve-Alaska

Source: Pederson 1979
Map 3-41. Wainwright Subsistence Use Area in the National Petroleum Reserve-Alaska
Map 3-42. Anaktuvuk Pass Subsistence Area

ANAKTUVUK PASS SUBSISTENCE AREA
(Described in 1979)

- Anaktuvuk Pass Harvest Area
- Native Corporations Surface Owners

Source: Pedersen 1979
ANAKTUVUK PASS SUBSISTENCE AREA
(Described in 1979)

- Anaktuvuk Pass Harvest Area
- Native Corporations Surface Ownership

Source: Pedersen 1979

Map 3-42. Anaktuvuk Pass Subsistence Use Area in and near the National Petroleum Reserve-Alaska
The information displayed on this map should be for display only. For official land status information, Survey Plats, Master Title Plats, and case files.

Source: USDOI BLM MMS 2004

Map 3-43. Surface and Subsurface

Oliktok Point
Icy Cape
Prudhoe Bay
Deadhorse
Point Lay

LANDS
North Slope Borough Natural Gas, Sand and Gravel
Sand and Gravel; North Slope Borough Subsurface Oil and Gas (Department of Defense)
Corporation Subsurface
Federal Subsurface
North Slope Borough Subsurface Oil and Gas

0 6 12 18 Miles
The information displayed on this map should be used for graphic display only. For official land status information, refer to Cadastral Survey Plats, Master Title Plats, and case files.

Source: USDOI BLM MMS 2004

Map 3-43. Surface and Subsurface Split Estate Lands in the National Petroleum Reserve-Alaska
Map 3-44. Locations of Possible Oil and Gas Staging Facilities

Source: USDOI BLM and MMS 1998
Map 3-44. Locations of Possible Oil and Gas Staging Facilities in the National Petroleum Reserve-Alaska

Source: BLM 2007
Map 3-47. Visual Resource Management Distance Zones in the Northeast National Petroleum Reserve - Alaska
Source: BLM 2007
