

# Overview of the Alaska Oil and Gas Industry

Marilyn Crockett, Executive Director

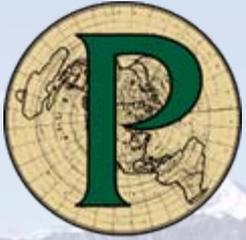
Alaska Oil & Gas Association

*IOGCC Midyear Issues Meeting*

*Anchorage, Alaska*

*May 12, 2009*

# AOGA Member Companies



PIONEER  
NATURAL RESOURCES



StatoilHydro

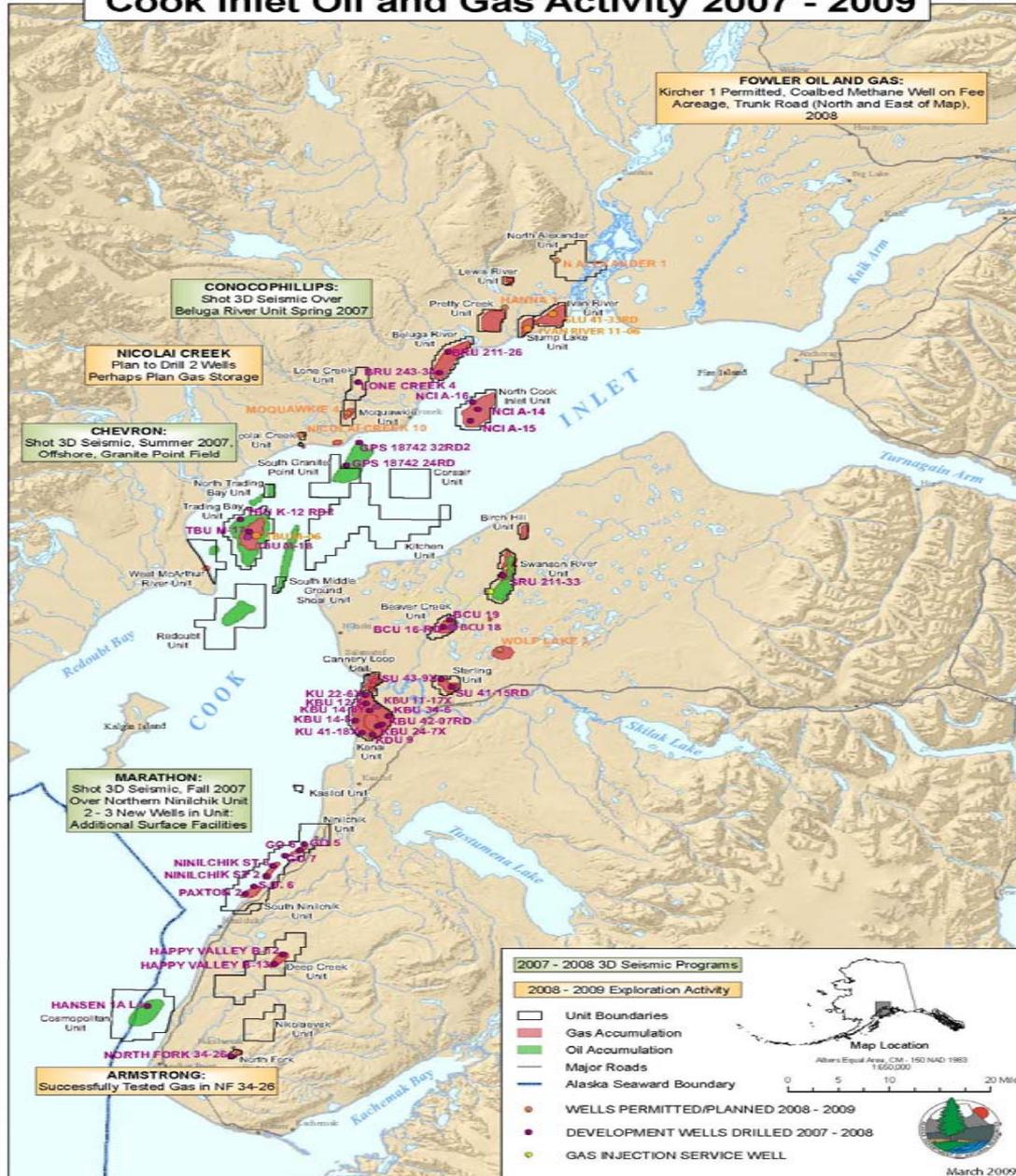
ExxonMobil™



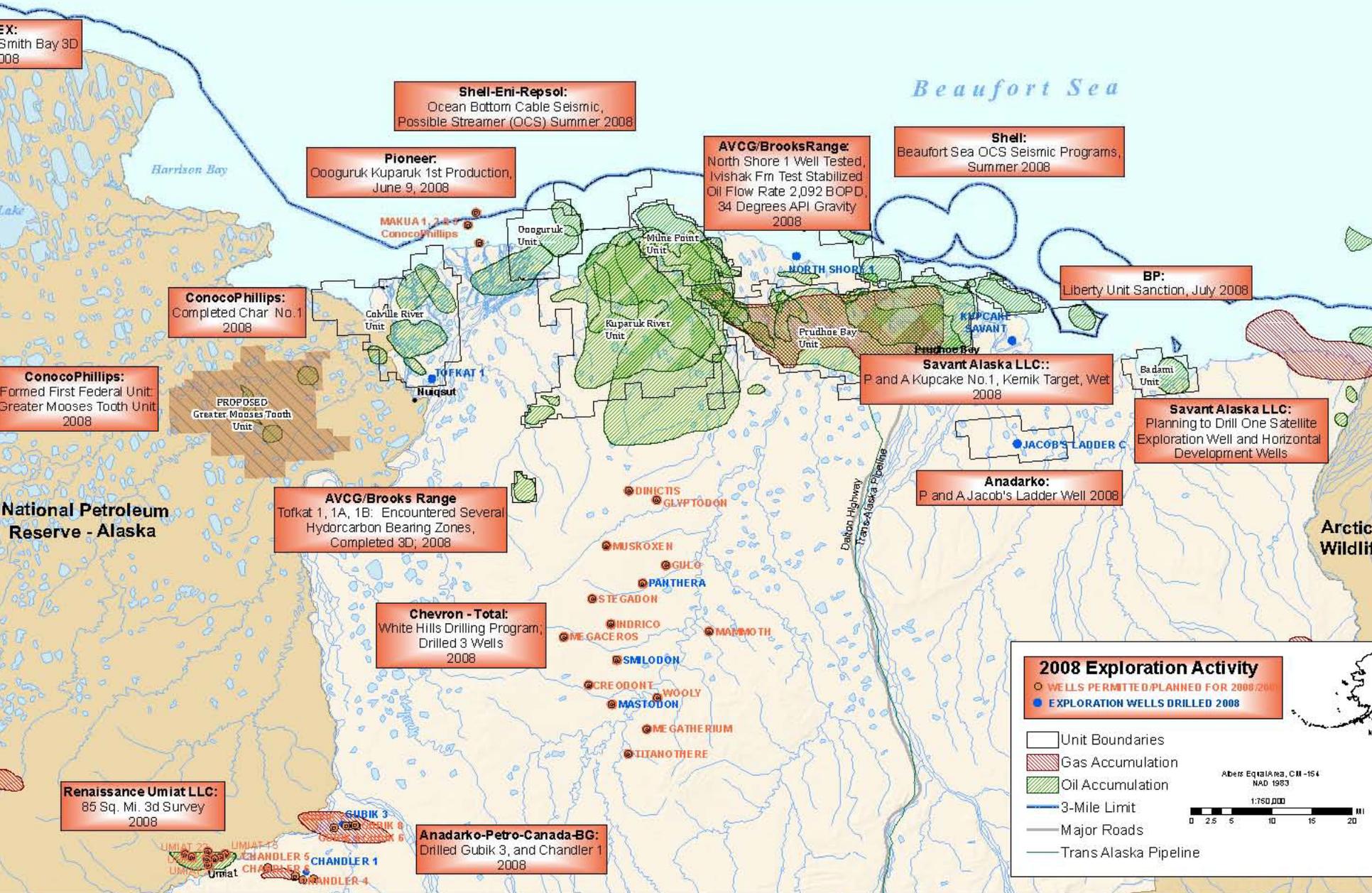
# Alaska's Oil and Gas Industry

- Where we are
- What it means to Alaska and its Residents
- How we do it
- Where we're going

# Cook Inlet Oil and Gas Activity 2007 - 2009



# North Slope Oil and Gas Activity 2008



**EX:**  
Smith Bay 3D  
2008

**Shell-Eni-Repsol:**  
Ocean Bottom Cable Seismic,  
Possible Streamer (OCS) Summer 2008

**Pioneer:**  
Oooguruk Kuparuk 1st Production,  
June 9, 2008

**AVCG/BrooksRange:**  
North Shore 1 Well Tested,  
Ivishak Fm Test Stabilized  
Oil Flow Rate 2,092 BOPD,  
34 Degrees API Gravity  
2008

**Shell:**  
Beaufort Sea OCS Seismic Programs,  
Summer 2008

**ConocoPhillips:**  
Completed Char No.1  
2008

**BP:**  
Liberty Unit Sanction, July 2008

**ConocoPhillips:**  
Formed First Federal Unit:  
Greater Mooses Tooth  
2008

PROPOSED  
Greater Mooses Tooth  
Unit

**Savant Alaska LLC:**  
P and A Kupcake No.1, Kemik Target, Wet  
2008

**Savant Alaska LLC:**  
Planning to Drill One Satellite  
Exploration Well and Horizontal  
Development Wells

**National Petroleum  
Reserve - Alaska**

**AVCG/Brooks Range**  
Tofkat 1, 1A, 1B: Encountered Several  
Hydrocarbon Bearing Zones,  
Completed 3D; 2008

**Anadarko:**  
P and A Jacob's Ladder Well 2008

**Chevron - Total:**  
White Hills Drilling Program;  
Drilled 3 Wells  
2008

**Renaissance Umiat LLC:**  
85 Sq. Mi. 3d Survey  
2008

**Anadarko-Petro-Canada-BG:**  
Drilled Gubik 3, and Chandler 1  
2008

**2008 Exploration Activity**

- WELLS PERMITTED/PLANNED FOR 2008
- EXPLORATION WELLS DRILLED 2008

- Unit Boundaries
- ▨ Gas Accumulation
- ▨ Oil Accumulation
- 3-Mile Limit
- Major Roads
- Trans Alaska Pipeline

Arctic Equivalency, CM-154  
NAD 1983  
1:750,000

0 2.5 5 10 15 20

# *Alaska Production*

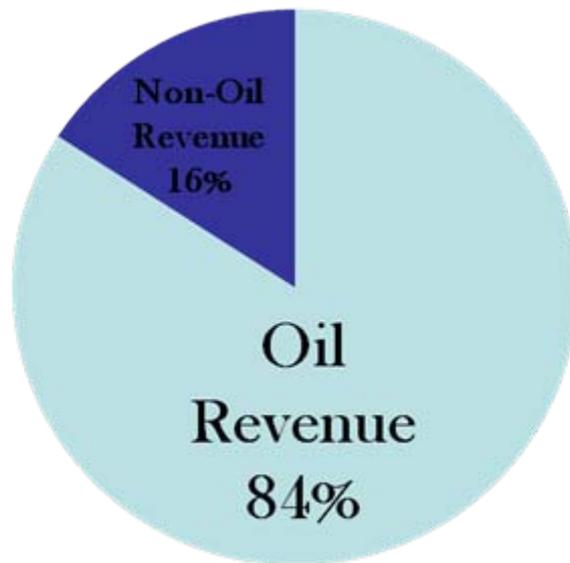
- Oil production peaked in FY 1988 at 2 million barrels per day (bpd).
- Production has declined 38% in the last 10 years.

FY 99  
1.1 Million bpd



Source: Department of Revenue

“Oil revenues continue to dominate the unrestricted revenue picture – and is projected to provide more than 84% of General Purpose Unrestricted Revenue through FY 2018.”



- Department of Revenue

*Revenue Sources Book*

Fall 2008

## *FY 08 Petroleum Revenue*

Royalty	\$	3,219.7MM
Production Tax	\$	6,879.0MM
Property Tax	\$	358.0MM
Corporate Income Tax	\$	605.8MM
Other	\$	<u>443.5MM</u>
<b>TOTAL</b>	<b>\$</b>	<b>11,506.0MM</b>

Royalty includes Permanent Fund contribution (\$782.6MM) and School Fund contribution (\$16.5MM).

Property tax figure (also known as ad valorem) includes local government shares (\$276.5MM).

Other includes restricted revenues from NPR-A and tax settlements.

Total (minus Permanent Fund, School Fund, local property tax, and other) represents **93%** of unrestricted revenue.

**TOTAL:**                    **\$96 Billion** (Restricted & Unrestricted)

Royalties:                    \$42 billion (50%)

Production Tax:            \$34 billion (35%)

Other:                        \$20 billion (15%)

Petroleum Revenue has constituted 83% of the state's unrestricted revenue since statehood.

# Study Team

- Information Insights
  - Fairbanks and Anchorage
- McDowell Group
  - Juneau and Anchorage
- Sponsors: AOGA & its member companies

# Key Findings

- 88 percent of state general fund revenues
- \$236 million in local property taxes
- \$28 million in charitable contributions
- Significant in every region in study

# Key Findings

- 41,744 jobs in Alaska
  - 9.4 percent of all employment in the state
  - 12 percent of private sector employment
- \$2.4 billion payroll in Alaska
  - 11.2 percent of all wages
  - 21 percent of private sector wages



**How we do it: the  
Environmental Challenge**

All of the oil and gas  
produced in Alaska...

...is produced in  
sensitive environments



# The Toolbox for Oil and Gas Development in Sensitive Areas in Arctic Alaska

- 3-D Seismic
- Extended Reach Drilling
- Directional Drilling
- Horizontal Completions
- Wildlife and Fisheries Studies
- Roadless Development
- Predictable Permitting Systems
- Performance Accountability
- Remote Sensing
- Habitat Mapping
- Inter-Agency Cooperation
- Coiled Tubing
- Rehabilitation
- Advanced Drilling Fluids
- Air Quality Monitoring
- Modular Drilling Rigs

# The Toolbox for Oil and Gas Development in Sensitive Areas in Arctic Alaska (cont.)

- Water Quality Baseline Studies
- Good Community Relationships
- Knowledgeable Agency Staff
- Downhole Separation Technology
- Zero Tolerance for Incidental Damage from Seismic
- Grind and Inject Technology
- Ice Roads and Ice Pads
- Great Rocks
- Multilateral Completions
- Leak Detection Systems
- Rolligons
- A Little Luck

# Putting the Toolbox to Work



# Winter Seismic Operations



# Ice Road Access



# Winter Drill Rig



# The Following Summer



# *Footprint Reductions through*

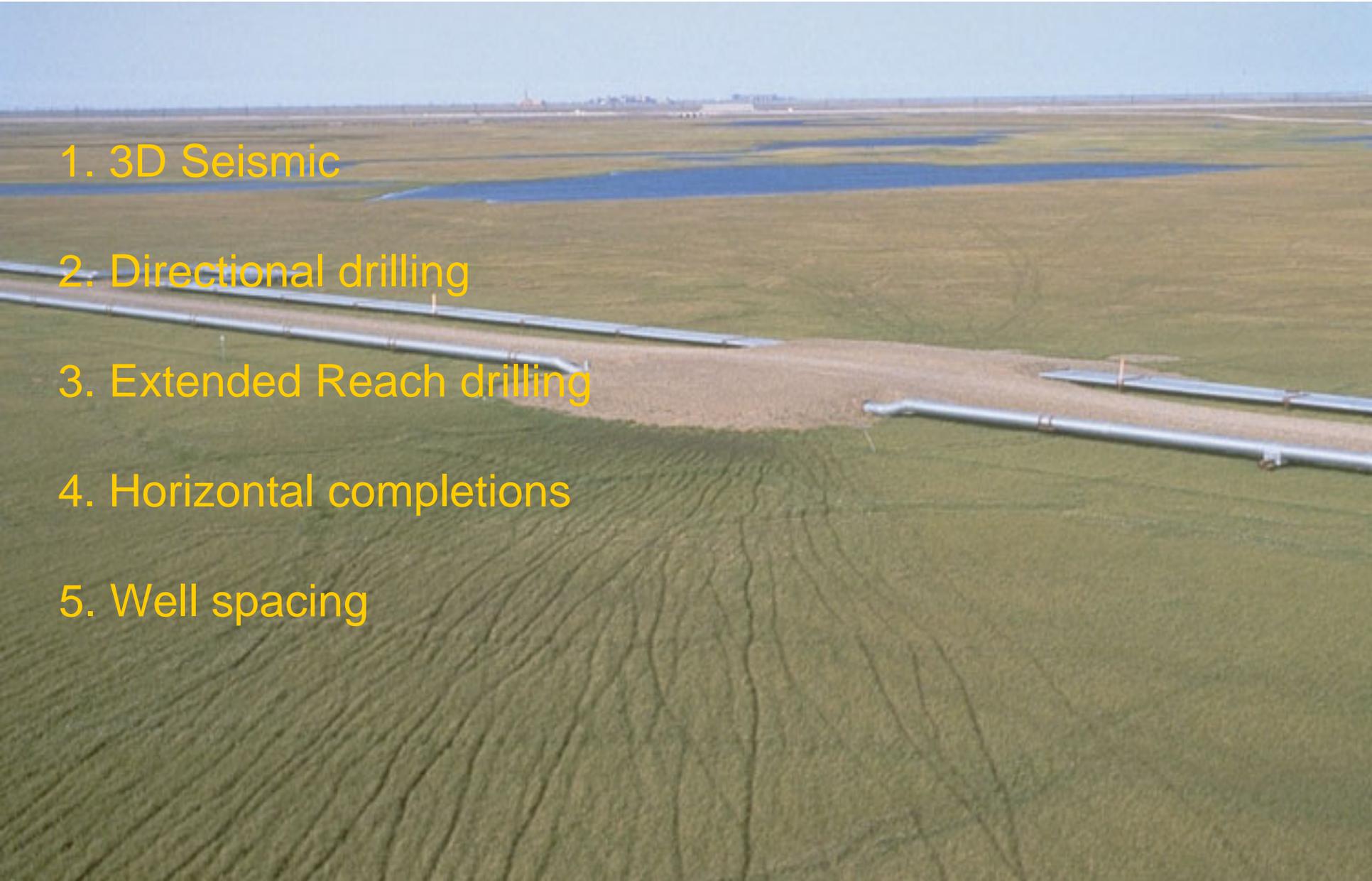
1. 3D Seismic

2. Directional drilling

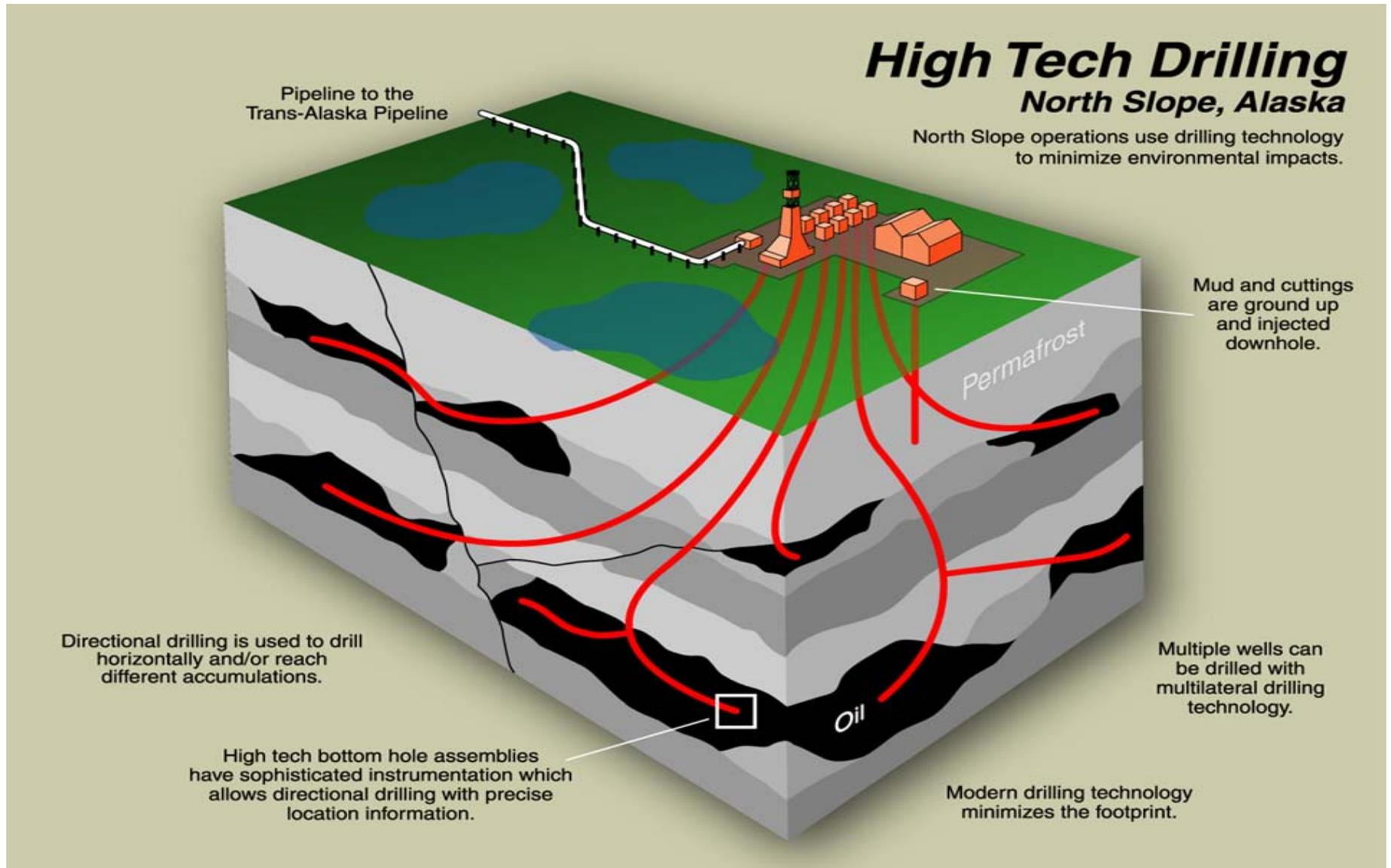
3. Extended Reach drilling

4. Horizontal completions

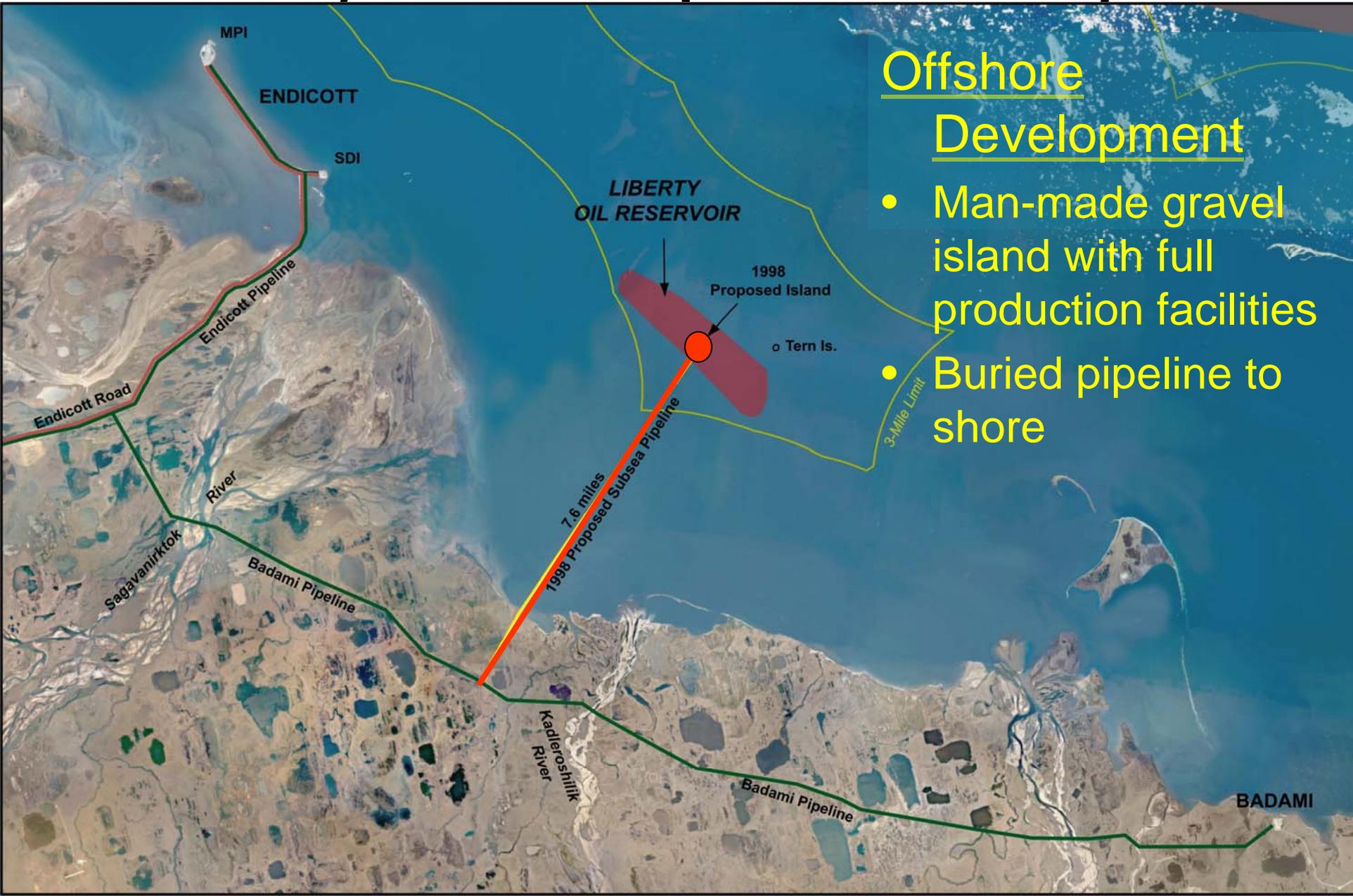
5. Well spacing



# Directional Drilling



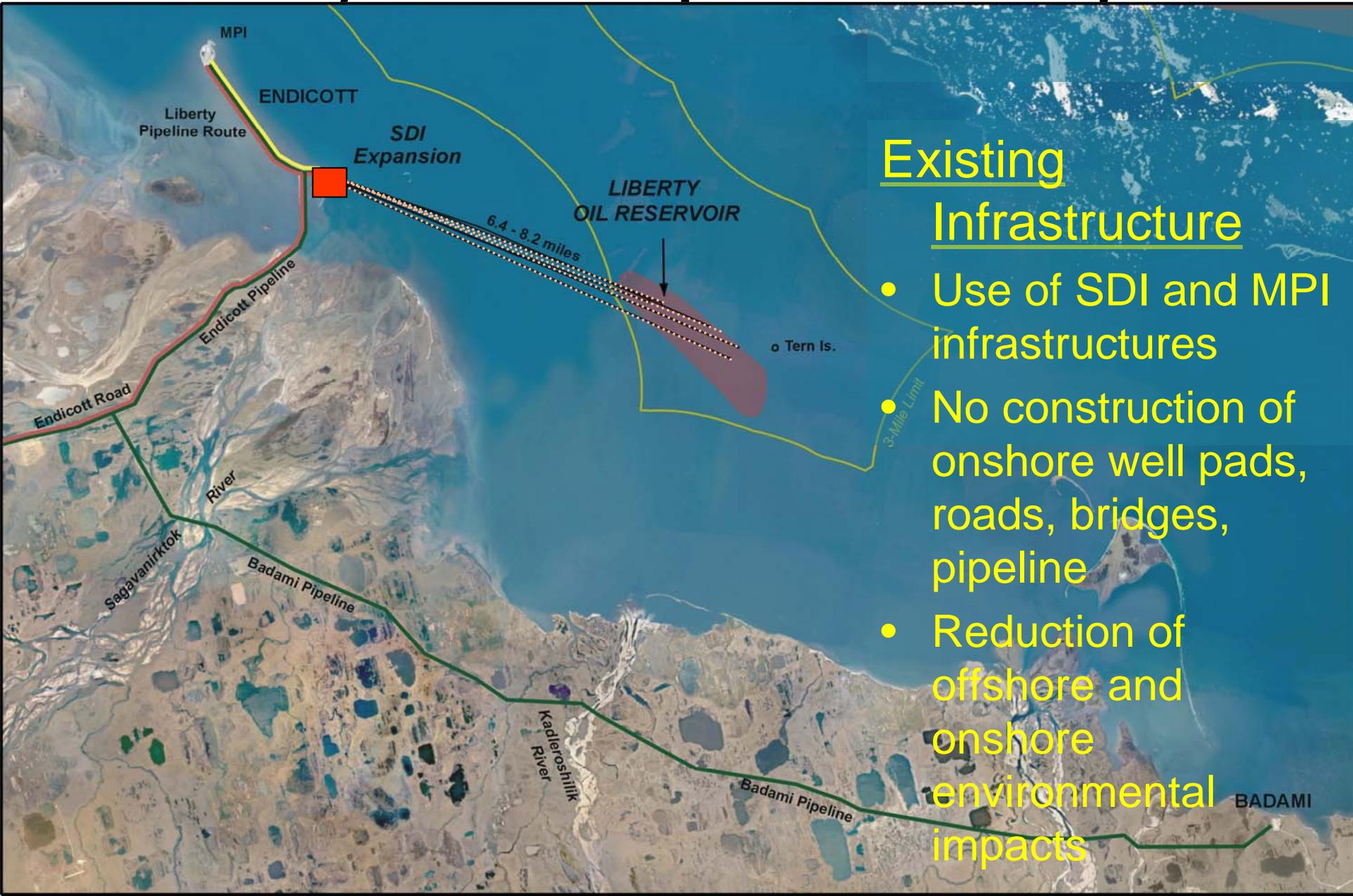
# Liberty Development Project:



## Offshore Development

- Man-made gravel island with full production facilities
- Buried pipeline to shore

# Liberty Development Project:



## Existing Infrastructure

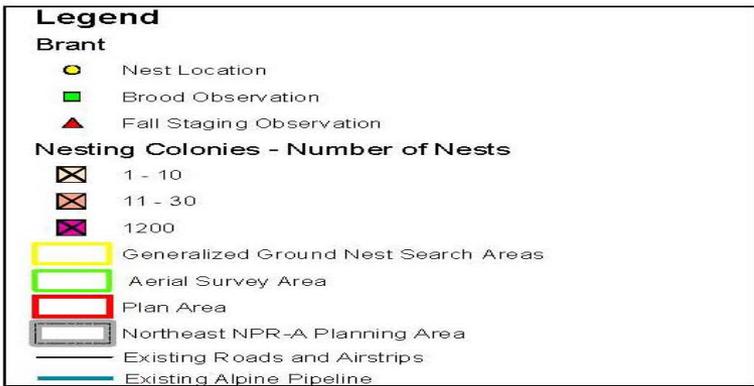
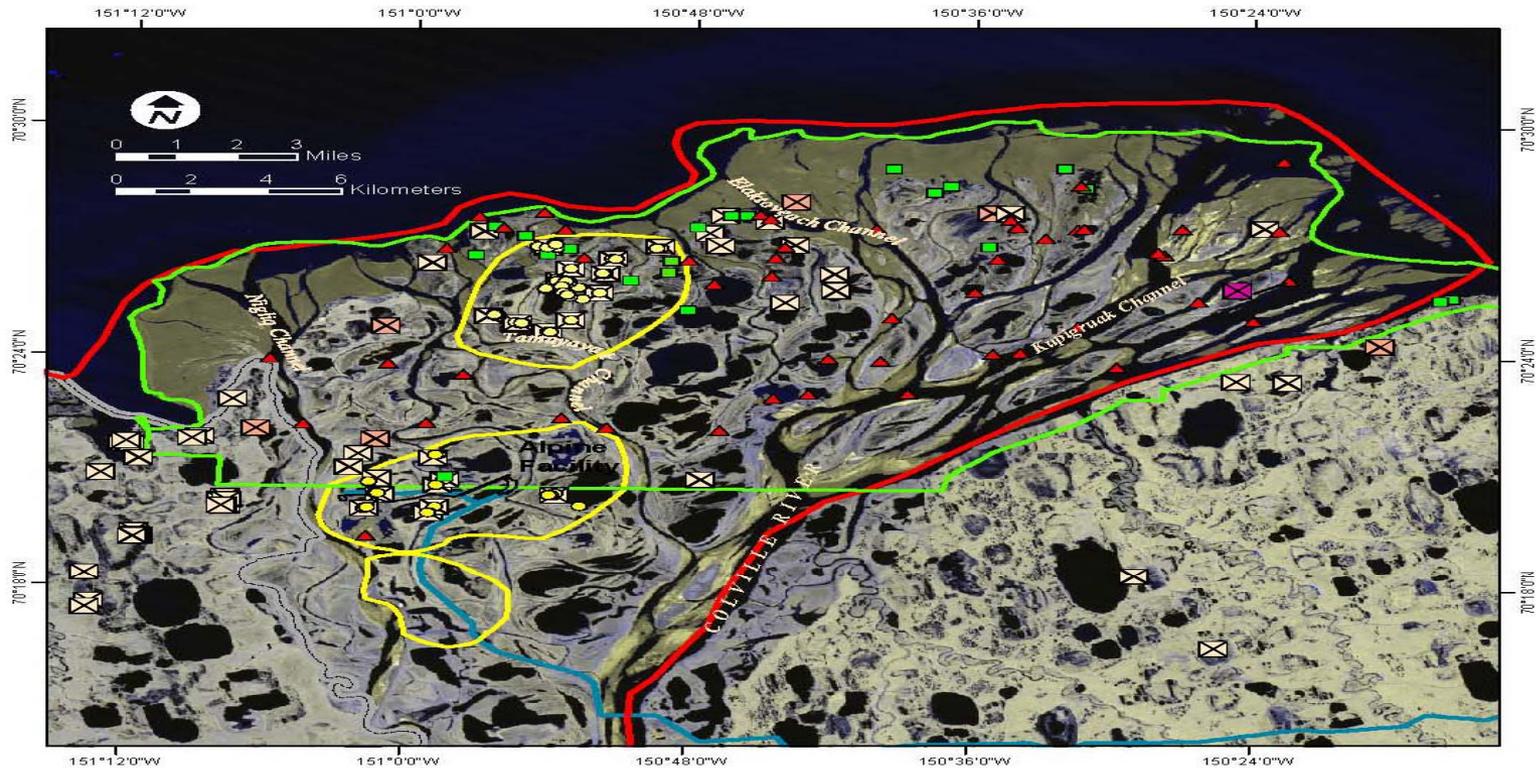
- Use of SDI and MPI infrastructures
- No construction of onshore well pads, roads, bridges, pipeline
- Reduction of offshore and onshore environmental impacts

# Liberty uERD Perspective: 8-Mile Departure



# Baseline Studies

- Water quality and volume in lakes proposed for water sources
- Fish species present in lakes, streams and rivers
- Hydrology studies
- Habitat mapping for purpose of staging spill response equipment
- Caribou studies
- Subsistence surveys
- Archaeological/cultural surveys
- Bird nesting and brood rearing surveys (numerous bird species)
- Vegetation studies
- Evaluation of presence of threatened or endangered species



**Notes:**

- 1) Horizontal Datum NAD 83, Coordinate System Alaska State Plane Zone 4, Feet
- 2) Aerial photography provided by ABR
- 3) Point locations are from ground-based and aerial surveys during nesting, brood rearing, and fall staging; and point locations may represent an individual bird, a pair, a family group, or a flock of up to 700 birds
- 4) Nest Location Data at CD-3 for years 2000-2003, CD-4 for years 2000-2002, Alpine for years 1996-2001
- 5) Brood Rearing Data at CD-3 for years 2000-2003
- 6) Aerial survey data for brood rearing and fall staging birds, 1992-2002
- 7) Nesting colony data are from aerial and ground nest surveys in the Colville Delta; aerial surveys conducted in 1992, 1993, 1995-1998, and 2000; ground nest searches conducted at Alpine in 1996-2001, CD-3 in 2000-2004 and CD-4 in 2000-2002
- 8) Brant Point Locations: see Johnson et al., 2004 and references therein

**Figure 3.3.3.2-4  
Plan Area Brant Locations  
at Colville River Delta Sites**

# Examples of Long-term Monitoring Studies

- Vegetation and Active Layer Studies (Vlad Romanovsky)
- Tundra Nesting Birds
- Snow Geese, Brant and Ravens
- Foxes
- Nearshore Fish Studies
- Grizzly Bear Studies
- Polar Bear Studies
- Ringed Seal Counts from North Star

# Polar Bears

- **Protected by the Marine Mammal Protection Act (MMPA) of 1972**
- **Protected by the ESA as threatened since May 15, 2008**
- **Industry can petition the USFWS for Letters of Authorizations for Incidental Takes and Authorizations for Deterrence Activities under the MMPA**



# Mitigation Steps to Avoid Maternal Dens

- **Activities will not operate or pass within 1 mile of a known polar bear den**
- **Female polar bears & cubs can not be deterred away from den sites**
- **Aerial or ground infrared surveys to identify dens**
- **Satellite tagging of female polar bears by USGS**



# Mitigation Measures Coordinated with USFWS

## Bear Deterrence Training

- Bear Behavior
- Deterrence Methods

## Bear Interaction Plan

- Protect Workers
- Bear Observers

## Food Waste Management

## Safety Devices

- Bear Cages
- Skirting
- Monitoring/Video & Infrared Cameras



Bear cages at Oooguruk Drillsite

# Industry Collaboration to Minimize Bear-Human Interactions

- **Monitoring & reporting requirements**
- **Special training (by USFWS) for all personnel allowed to deter bears**
- **Coordinated Forward Looking Infrared (FLIR) Surveys to detect maternal polar bear dens**

**REPORT  
POLAR BEARS!**



Photo courtesy of Levent Duzgaleci (Bentley Creek Stream)

***Immediately Report Polar Bear Sightings to Security!***

Security must report all sightings to the U.S. Fish and Wildlife Service within 24 hours of the event, so prompt notification of Security is essential.

Polar bears can be dangerous, so please be cautious and always remember to be aware of your surroundings. Remember, only trained personnel are authorized to haze or monitor bear activity.

***Questions or Concerns?***  
***Contact an Environmental Advisor/Specialist or the BP Environmental Studies Group in Anchorage***

ACT, Environmental Advisor (East): 907-559-8810  
Badami, Environmental Specialist: 907-659-1243  
GPB, Environmental Advisor (Services): 907-559-5863  
GPB, Environmental Advisor (TL): 907-559-5190  
GPB, Environmental Advisor (East): 907-659-5628  
GPB, Environmental Advisor (West): 907-559-4739  
GPB, Environmental Advisor (Projects): 907-559-4460  
MPU, Environmental Advisor: 907-570-3362  
Norhata, Environmental Specialist: 907-470-3528  
Environmental Studies Group: Bill Steever: 907-564-4363 or Diane Sandone: 907-584-6857



# Aerial Forward Looking Infrared (FLIR) Surveys



**Star Safire III FLIR Unit**

- Larger landscape view
- Investigate den habitat along the coastline, barrier islands, river bluffs and any potential polar bear habitat
- Identify hot spots/heat signatures

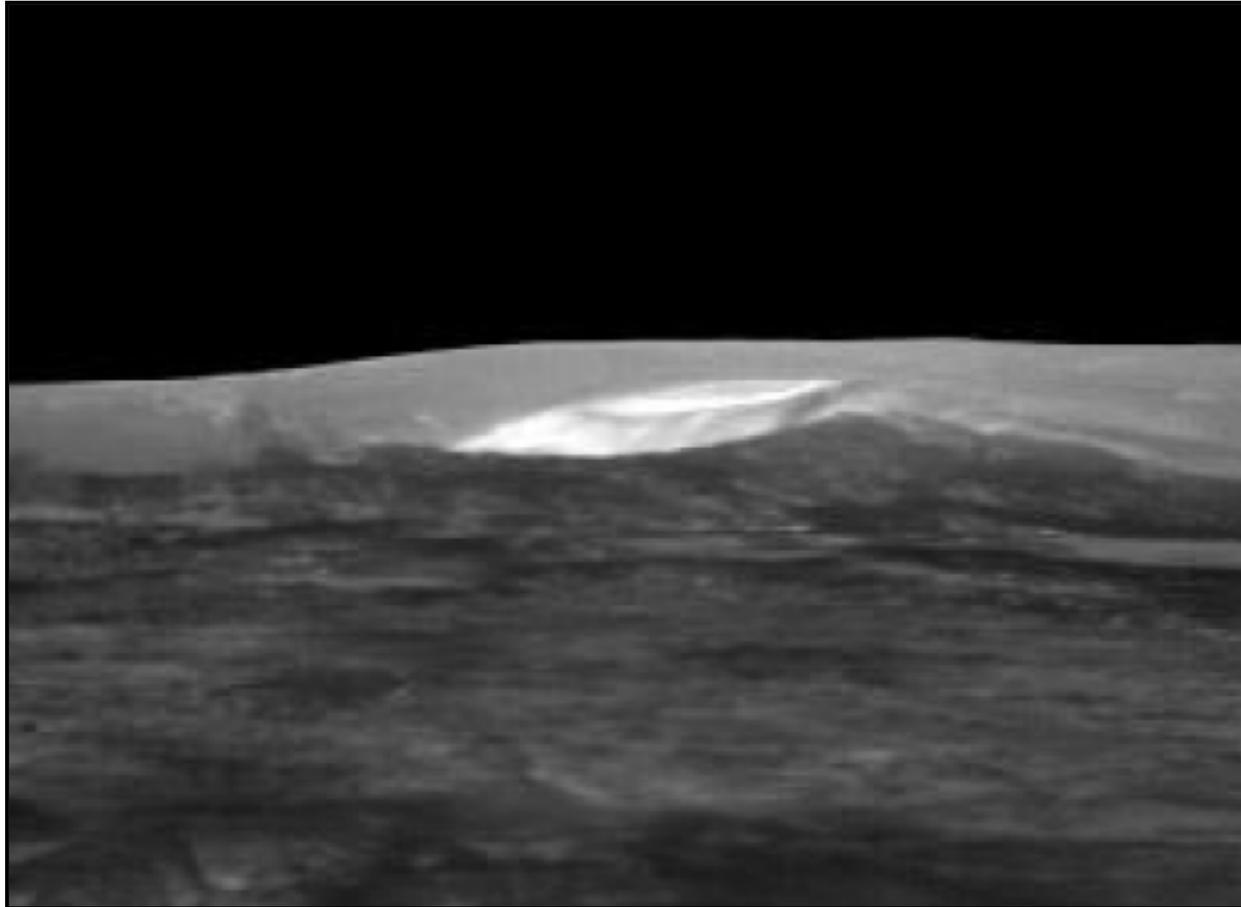


**Mapping and Video Screens**



**Twin Otter**

# FLIR “Hot Spot” and Polar Bear Den Site



# Ground FLIR Survey

- Hand held thermacam & range finder
- Video capabilities
- Using approved tundra travel vehicles
- GPS mapping of routes
- Costs are lower for smaller areas

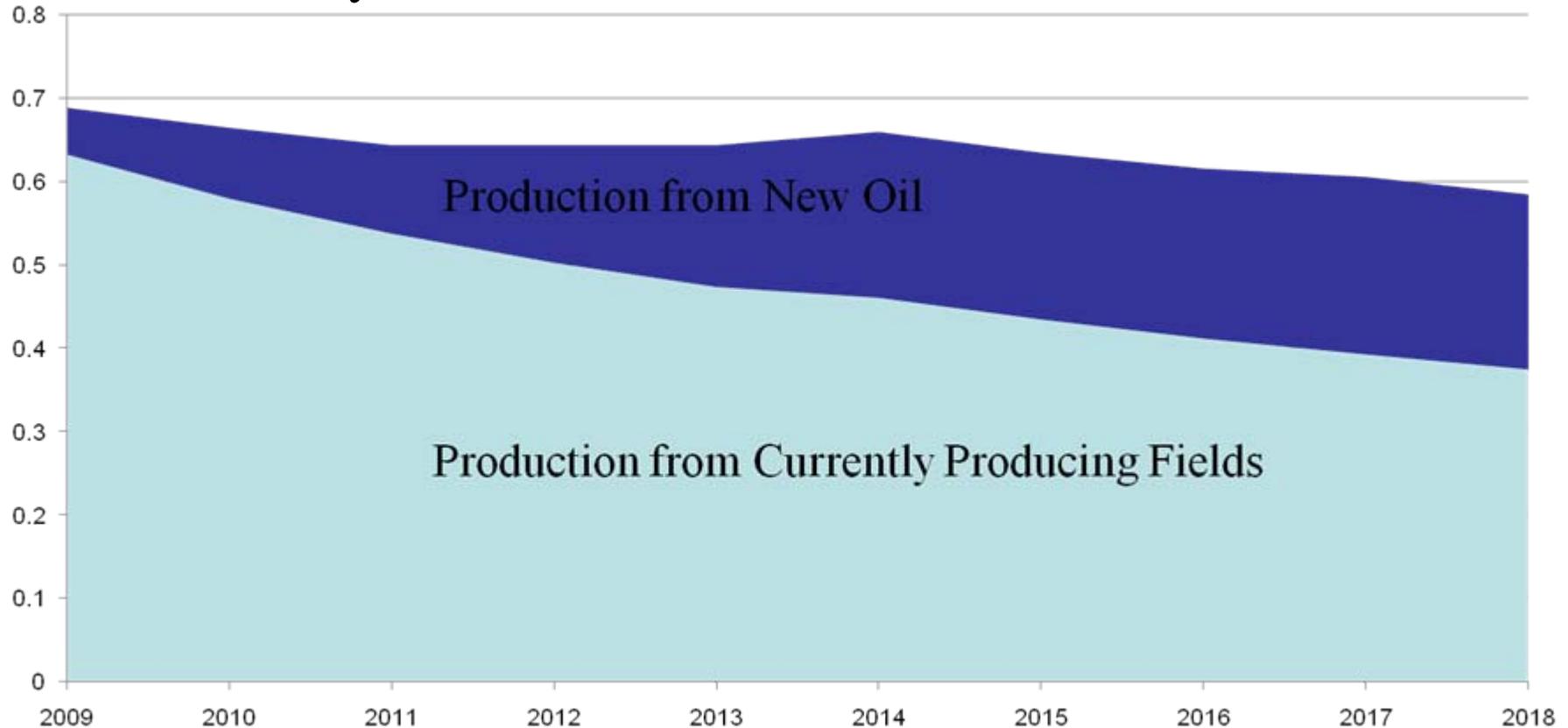


Crew and Tucker Vehicle



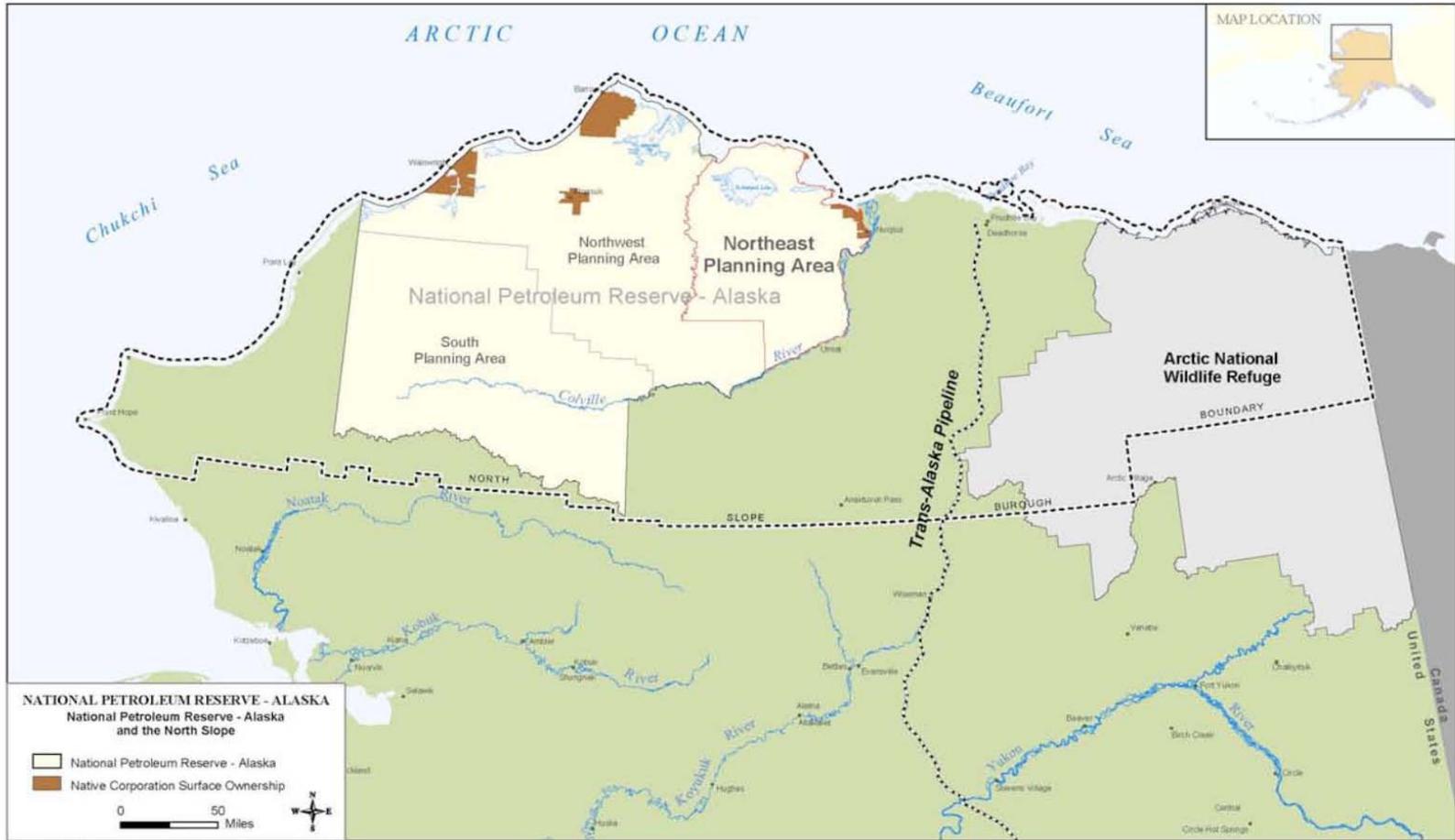
# *Production Forecast*

- In 10 years, the state forecasts 36% of total production will be new oil.
- Even with this new oil, the state is forecasting a 20% reduction in total production in 10 years.



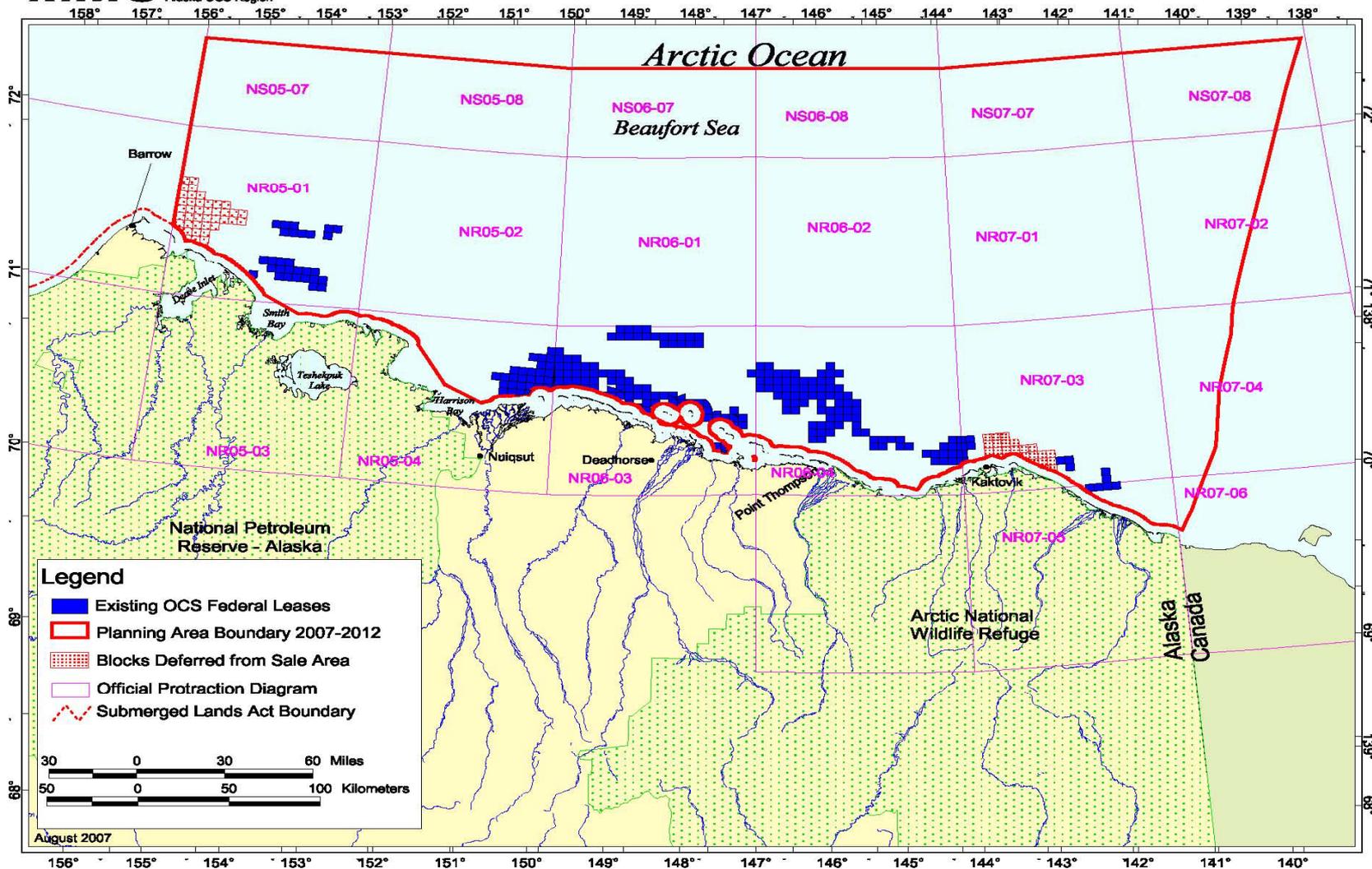
Source: Department of Revenue

# National Petroleum Reserve-Alaska

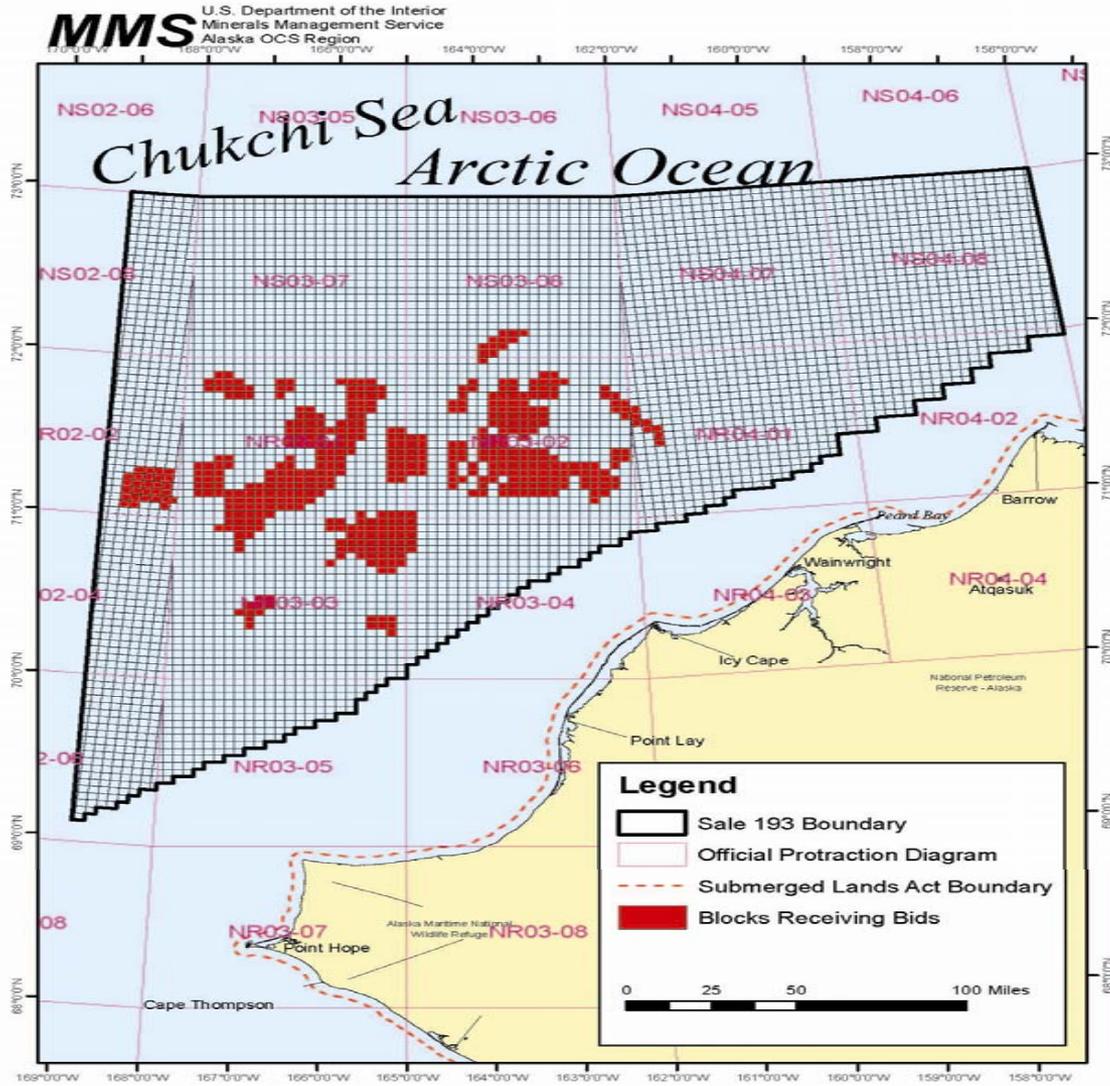


# Beaufort Sea

**MMS** U.S. Department of the Interior  
Minerals Management Service  
Alaska OCS Region



# Chukchi Sea





**AOGA**

*Looking Ahead*