Senate Finance Committee
26 March 2012

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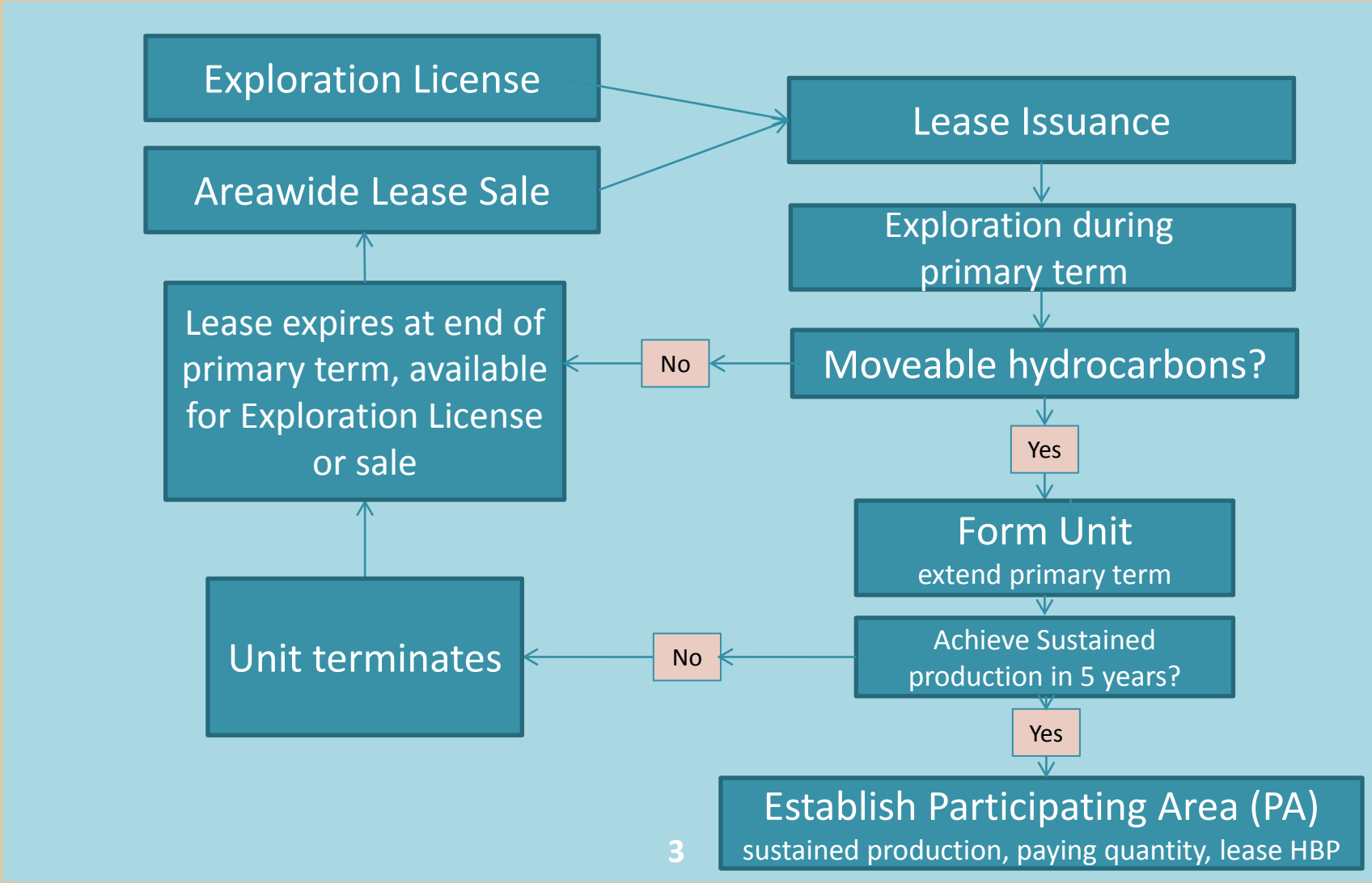
Director

Division of Oil and Gas

Outline of Presentation

- Land Disposition
- Land Management
- Facility Capacity and Access

Land Management:
Life of Lease



Alaskan Areawide Leasing System

- Covers areas where
  - limited or no data exists regarding actual resource potential
  - some basins have shown production or promise
- New rental rates provide a mechanism to encourage timely exploration without additional administrative burden to State
- Leaseholder has exclusive right to *explore* for resources
- System is a product of U.S. Oil and Gas law
  - Highest-bid lease sales (competitive)
  - Non-discriminatory: Encourages parties of all sizes and experiences to participate in an unbiased fair system
- State can impose work commitments and special terms in lease sales (AS 38.05.035 (h))

Current Lease Terms

- Primary Producing Areas (North Slope, Cook Inlet)
  - Primary Term: 10 years
  - Minimum bid: $25.00/acre
  - Rental:
    - Year 1-7: $10.00/acre
    - Year 8+: $250.00/acre
- North Slope Foothills
  - Primary Term: 10 years
  - Minimum bid:$10.00/acre
  - Rental:
    - Year 1: $1.00/acre
    - Year 2: $1.50/acre
    - Year 3: $2.00/acre
    - Year 4: $2.50/acre
    - Year 5 and following: $3.00/acre
- Lease term expenditures (20 tracts/5,760 acres each)
  - Minimum bonus bid for land is $25/acre
  - 20 tracts @ 5760 acres X $25 =$2.88 million
  - Rentals: $10/acre = $1.15M each year in annual rentals years 1-7’
  - Rentals: $250/acre = $28.8M each year in annual rentals years 8-10

Exploration Licensing System

- Areas not within areawide lease sales
- No rental fee or upfront bonus payment
- Term up to 10 years
  - When work commitment is fulfilled, licensee may convert part or all of license area to leases (subject to $3/acre rental fee and, when producing, no less than 12.5% royalty)
- State is provided all geological & geophysical information acquired
- If competing proposals, highest bid for minimum work commitment is selected
- Imposes financial work commitments (AS 38.05.131-.134)
- Licensee must commit 25% of total specified work commitment by fourth anniversary of license issuance

Current Status of State Leases

- Active leases: 1416 leases (largest tract: 9 square miles)
- Of these, 46% of leases are in units (producing)
- 0.5% are leases producing without being in units
- 46% of leases are in the hands of companies currently actively exploring on part of their lease hold*
  - Apache, Buccaneer, Nordaq, LINC, Repsol, Great Bear, Brooks Range, Anadarko
  - Included in this number are Foothills leases where lessees have conducted field work in the past (gas-prone areas)
- The remaining 7.5% may or may not be under exploration
  - A majority of these leases (approximately 95%) are held by individuals or groups of individuals, not major corporations

*The list is not extensive; this only includes companies we know are currently actively exploring.

Land Management:
When is a PA formed?

- A PA is formed once the unitized reservoir is on “sustained production”: wells are producing into a pipeline or other means of transportation to market
- Separate PA required for each producing horizon
- Approval of a PA includes approval of allocation factors
  - Sets out proportions of costs and revenues paid and received by working interest owners
  - Approval meets 11 AAC 83.303: Protect all parties

What is a Plan of Development (POD)?

- Once a PA is formed, a POD is required under 11 AAC 83.343
  - Must be filed for approval if a PA is proposed, or reservoir sufficiently delineated to initiate development activities
  - POD is submitted annually for review and approval
  - If POD deemed insufficient for approval, DNR may propose modifications. If Operator agrees to modifications, POD approved.
    - If not accepted by Operator, and no approved POD, current POD may expire.
  - **Development activities must be conducted under an approved POD**

POD Requirements

Unit Plan of Development: 11 AAC 83.343(a)(1-4)

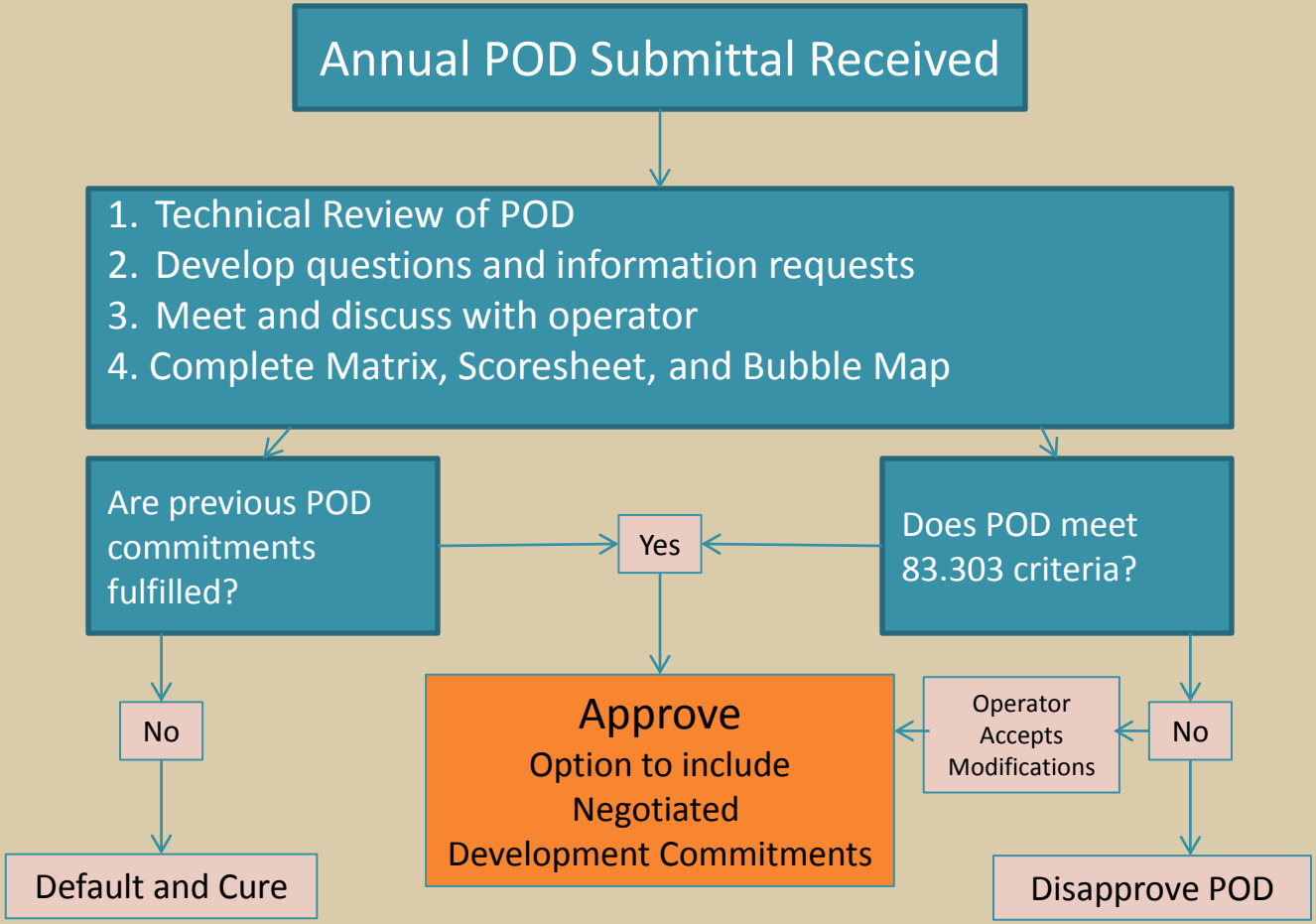
- **Describes what the POD *must* include**

1. long-range proposed development activities for the unit, including plans to delineate all underlying oil or gas reservoirs, bring the reservoirs into production, and maintain and enhance production once established
2. plans for the exploration or delineation of any land in the unit not included in a PA;
3. details of the proposed operations for at least one year following submission of the plan; and
4. the surface location of proposed facilities necessary for unit operations (pads, roads, camps, etc.).

North Slope Units and PAs: February 2012
18 Existing SOA Units, 42 PAs, 2 Units Proposed

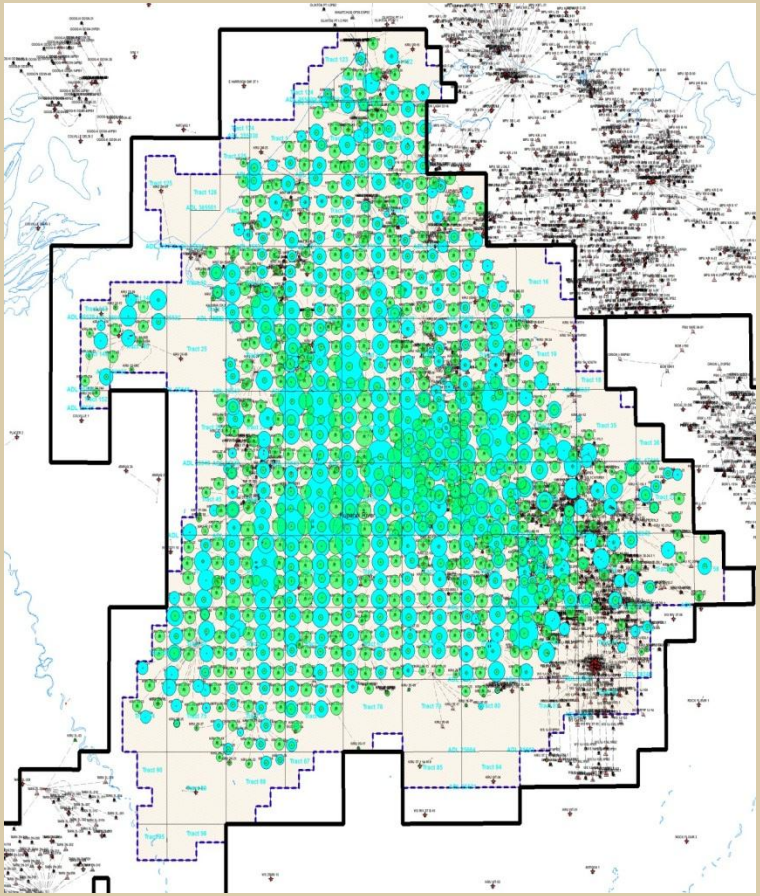
- Akjaq Unit (Proposed)
- Arctic Fortitude Unit
- Badami Unit
  - Badami Sands PA
- Bear Tooth Unit (Federal)
- Beechey Point Unit
- Colville River Unit
  - Alpine, Nanuq Nanuq, Nanuq Kuparuk, Fiord Kuparuk, Fiord Nechelik, Qannik PAs
- Dewline Unit
- Duck Island Unit
  - Eider, Endicott, Sag Delta North PAs
- Greater Moose's Tooth Unit (Federal)
- Kachemach Unit
- Kuparuk River Unit
  - Kuparuk, Meltwater, Tabasco, Tarn, West Sak, NEWS PAs
- Liberty Unit (Federal)
- Milne Point Unit
  - Kuparuk, Schrader Bluff, Sag River PAs
- Nikaitchuq Unit
  - Schrader Bluff PA
- Northstar Unit
  - Northstar PA
- Oooguruk Unit
  - Kuparuk, Nuiqsut, Torok PA's
- Placer Unit
- Prudhoe Bay Unit
  - Aurora, Borealis, Gas Cap, Lisburne, Midnight Sun, Niakuk, Combined Niakuk North Prudhoe Bay, Oil Rim, Orion, Polaris, Pt McIntyre, West Beach, West Niakuk, Raven PAs
- Putu Unit
- Qugruk Unit
- Southern Miluveach Unit
- Telemark Unit (Proposed)
- Tofkat Unit

POD Process


Annual POD Submittal Received
1. Technical Review of POD
2. Develop questions and information requests
3. Meet and discuss with operator
4. Complete Matrix, Scoresheet, and Bubble Map
Are previous POD commitments fulfilled?
Does POD meet 83.303 criteria?
Yes
No
No
Operator Accepts Modifications
Approve
Option to include Negotiated Development Commitments
Default and Cure
Disapprove POD

Evaluating PODs on a complex unit - DOG Evaluation Tools

Bubble Map



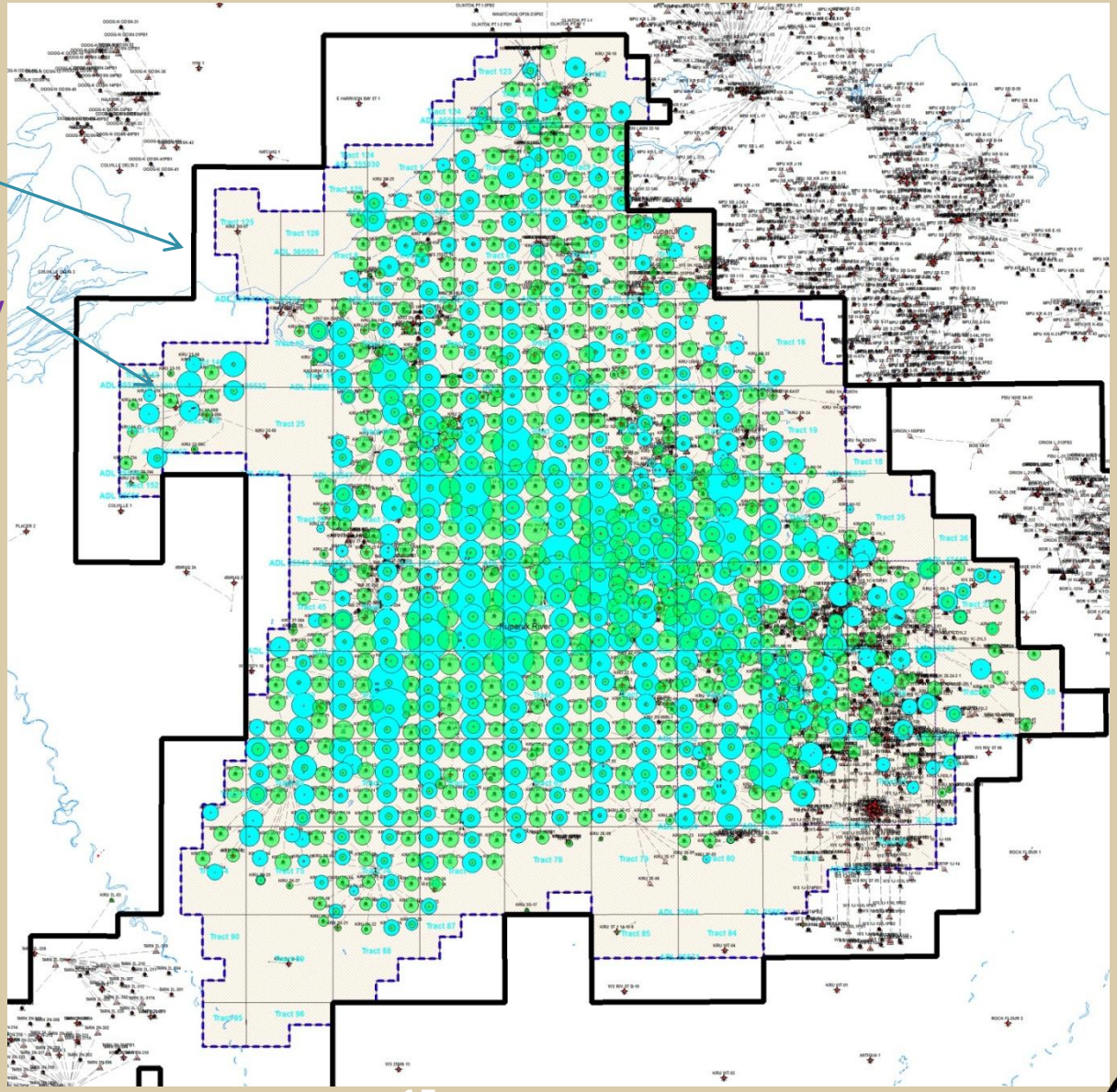
Score sheet

Unit Name:		**POD Decision**			**Decision Due By Date:**		
PA Name:					Form Submitted Date:		
Include Bubble Map as attachment, (drainage radius of all wells in all PAs)							
GG &E Narrative Summary (AOGCC Pool Statisitics, 2010)							
Geology:							
Cum Production Stats:							
OOIP CONFIDENTIAL							
Cum Oil Produced to Date: (YE 2010)	MMSTB						
% Recovery to Data:							
Cum Voidage Replacement to date (YE 2010)	MRBI/MRBP						
Average Daily Production:		2008	2009	2010	2011	2012	2013
Oil	MSTB/D						
Water	MSTB/D						
Gas	MMSCF/D						
Average Water Cut	%						
Average Current GOR	SCF/STB						
Original GOR	SCF/STB						
Average Current Reservoir Pressure	psi						
Original Reservoir Pressure	psi						
Bubble Point Pressure	psi						
Average Daily Injection:		2008	2009	2010	2011	2012	2013
Water	MSTB/D						
Gas	MMSCF/D						
Well activity		2008	2009	2010	2011	2012	2013
Well Status	**# Active wells**						
Producer (active as of year end)							
Injector (active as of year end)							
Shut in (through entire year)							
Drilling Activity							
New Wells							
CTD							
Workovers							
Sidetracks							
Facilities (current capacities)	**Oil**		**Gas**		**Water**		
Current POD Pertinent Issues (Bullet Points)							
Recovery Factor (Inc? Dec? Causes)							
Field Decline							
Infrastructure							
Facility issues							
Pipeline issues							
Well issues							
Data							
Core							
Logging							
Well test data							
Seismic							
Facilities							
Plan Forward							
Explore							
Seismic							
Drilling / Workover							
Maintenance and Repair							
Production							

Kuparuk River Unit (KRU) Bubble Map

KRU Boundary

Kuparuk PA Boundary



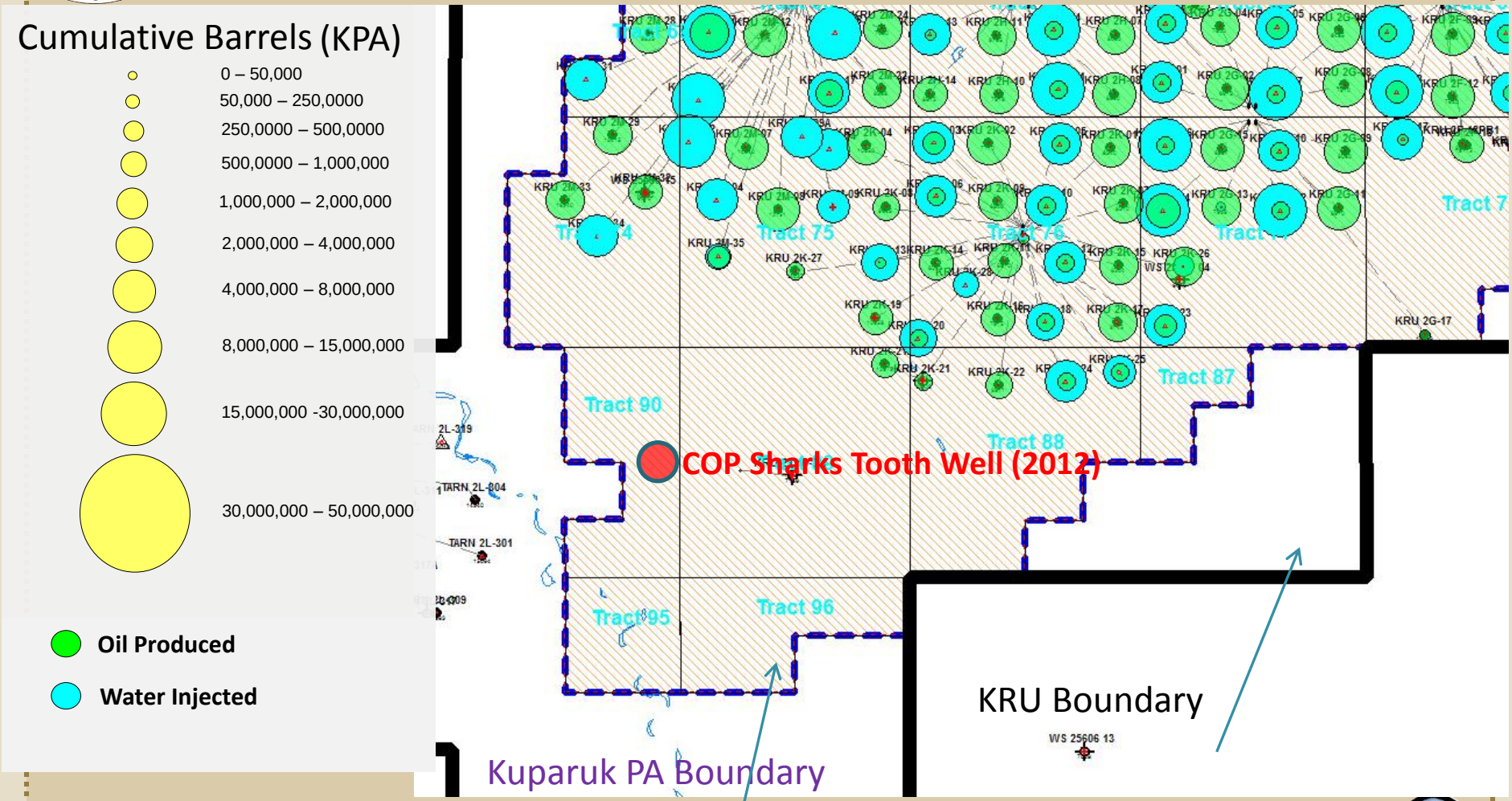
Cumulative Barrels (KPA)

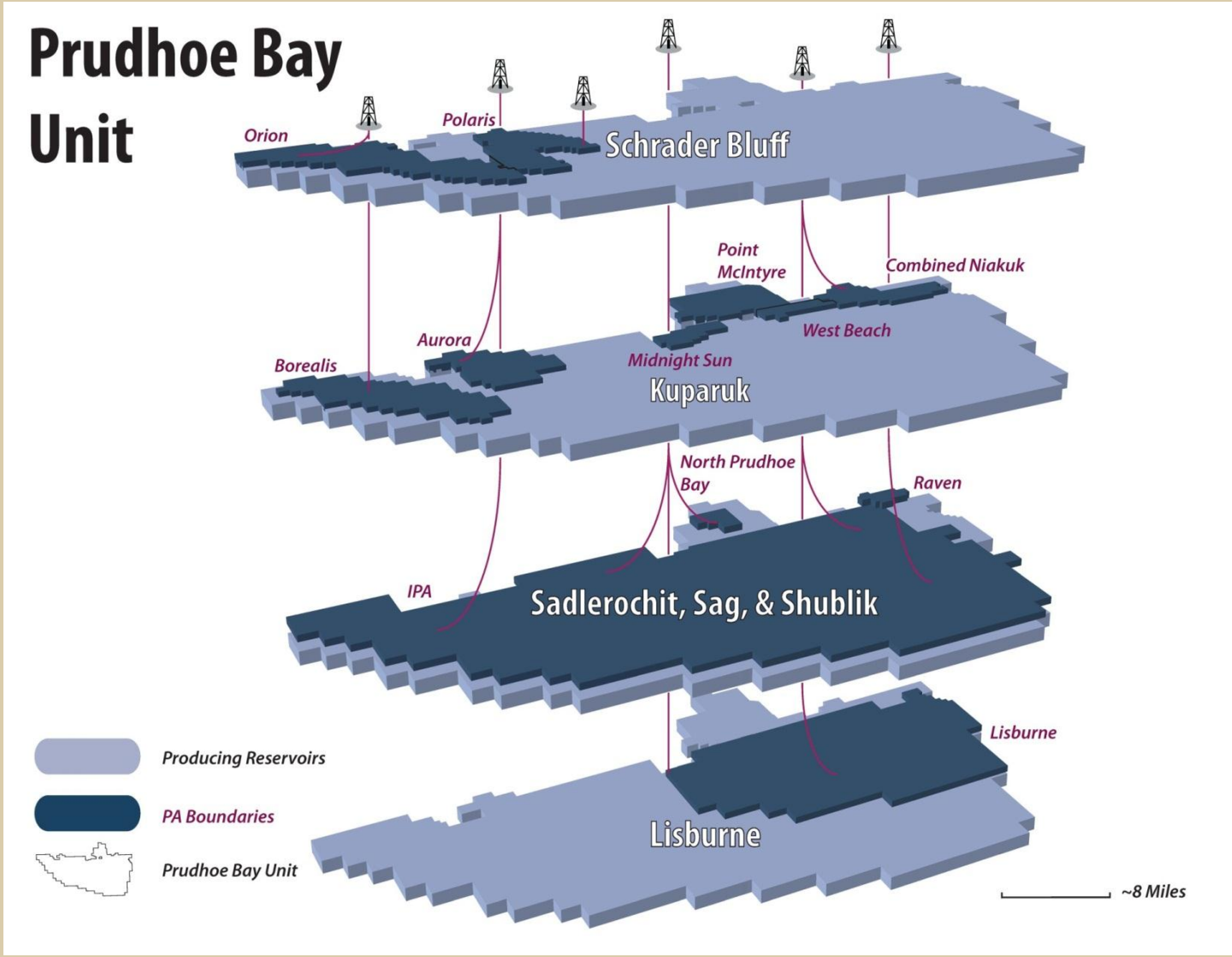
- 0 – 50,000
- 50,000 – 250,0000
- 250,0000 – 500,0000
- 500,0000 – 1,000,000
- 1,000,000 – 2,000,000
- 2,000,000 – 4,000,000
- 4,000,000 – 8,000,000
- 8,000,000 – 15,000,000
- 15,000,000 -30,000,000
- 30,000,000 – 50,000,000

Oil Produced

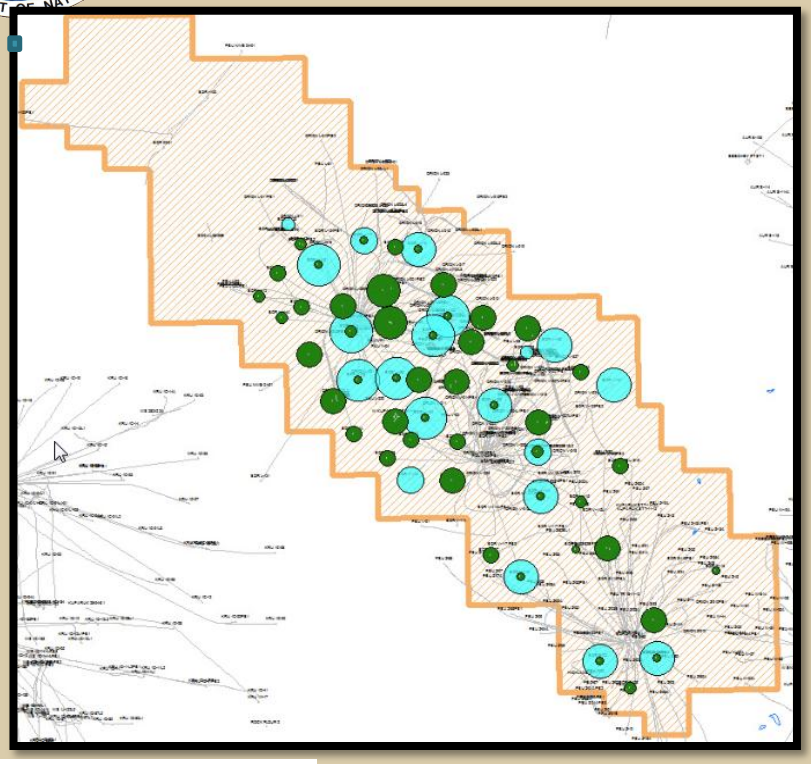
Water Injected

Southwest Portion Kuparuk River Unit (KRU)

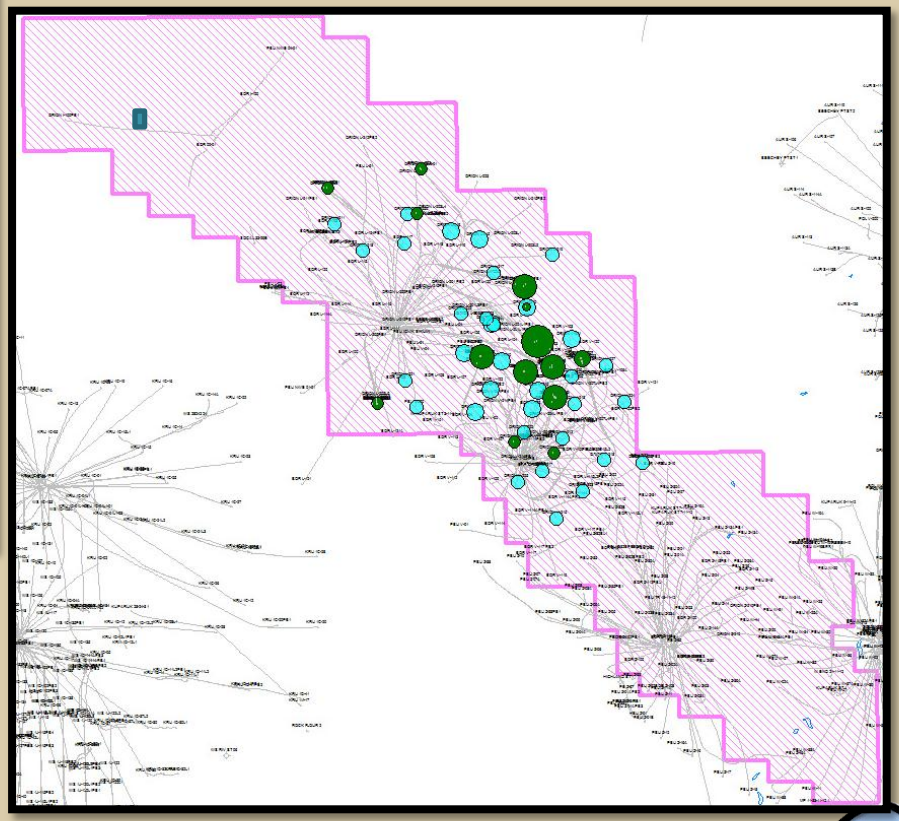



Prudhoe Bay Unit
Orion
Polaris
Schrader Bluff
Point McIntyre
Combined Niakuk
West Beach
Aurora
Borealis
Midnight Sun
Kuparuk
North Prudhoe Bay
Raven
IPA
Sadlerochit, Sag, & Shublik
Lisburne
Lisburne
Producing Reservoirs
PA Boundaries
Prudhoe Bay Unit
~8 Miles

Borealis Cumulative Production and Injection



Orion Cumulative Production and Injection

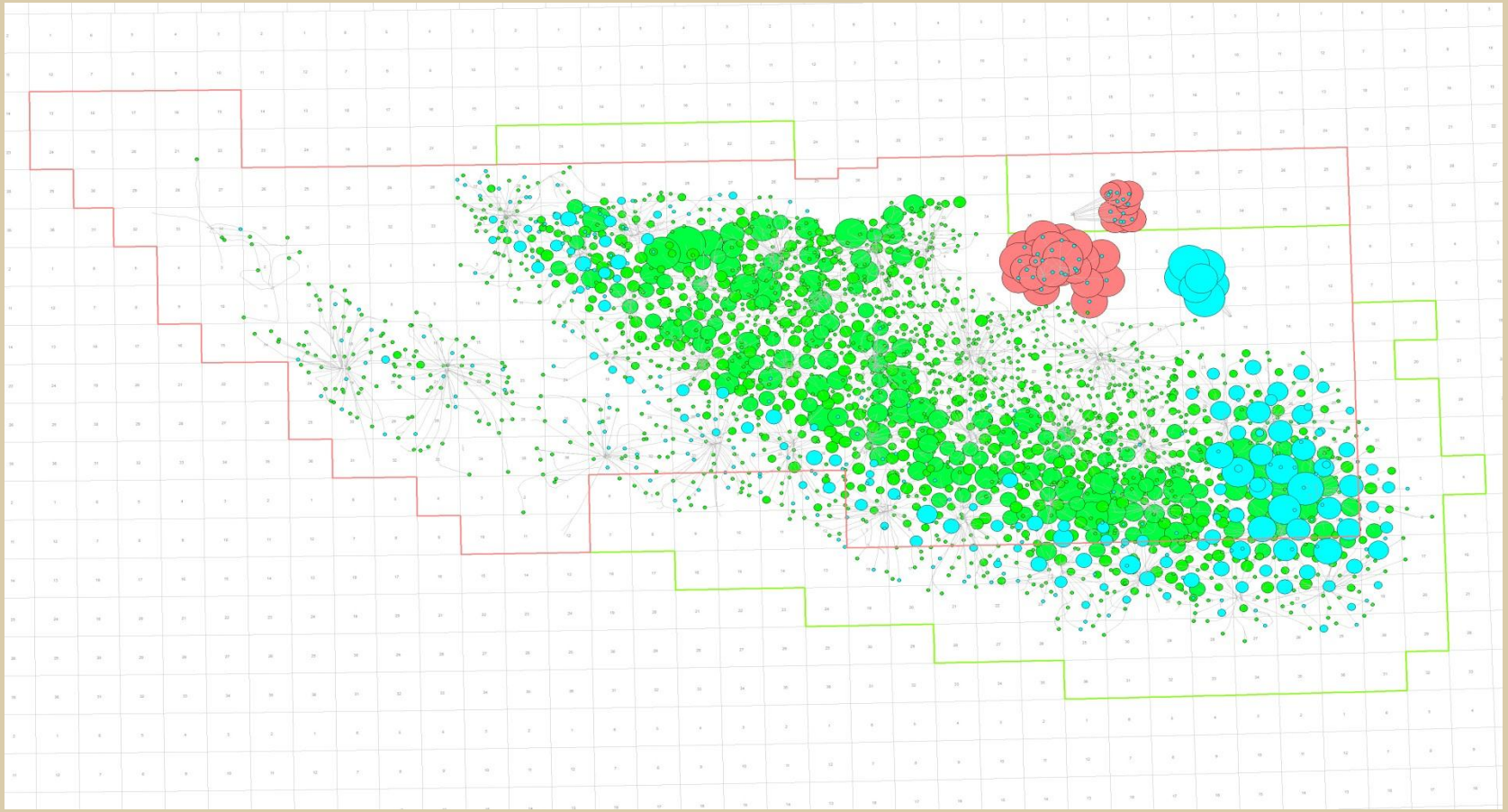


Cum Barrels

- 0 – 50,000
- 50,000 – 1,000,000
- 1,000,000 – 2,000,000
- 2,000,000 – 4,000,000
- 4,000,000 – 8,000,000
- 8,000,000 – 15,000,000

- Oil Produced
- Water Injected

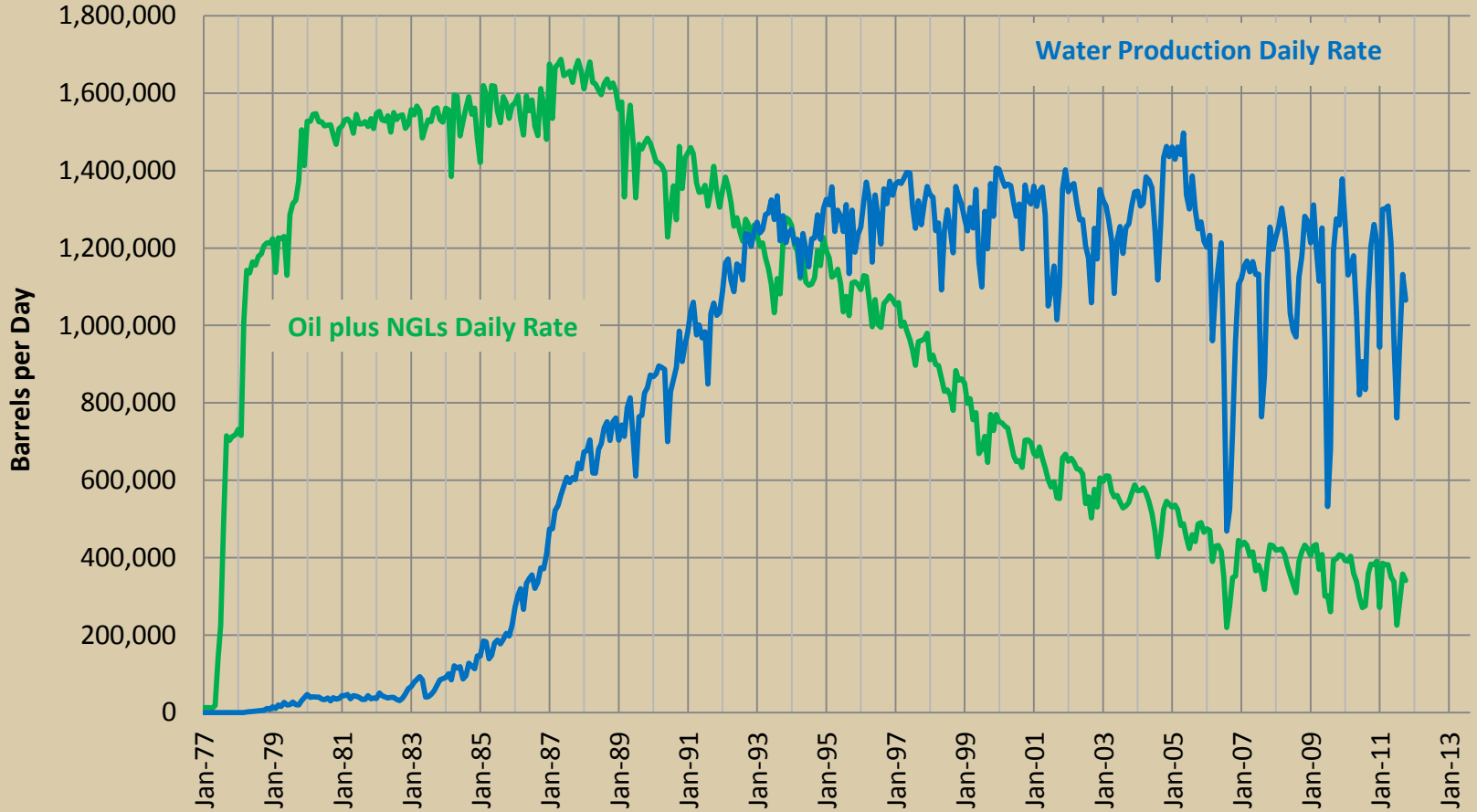
PBU IPA Bubble Map



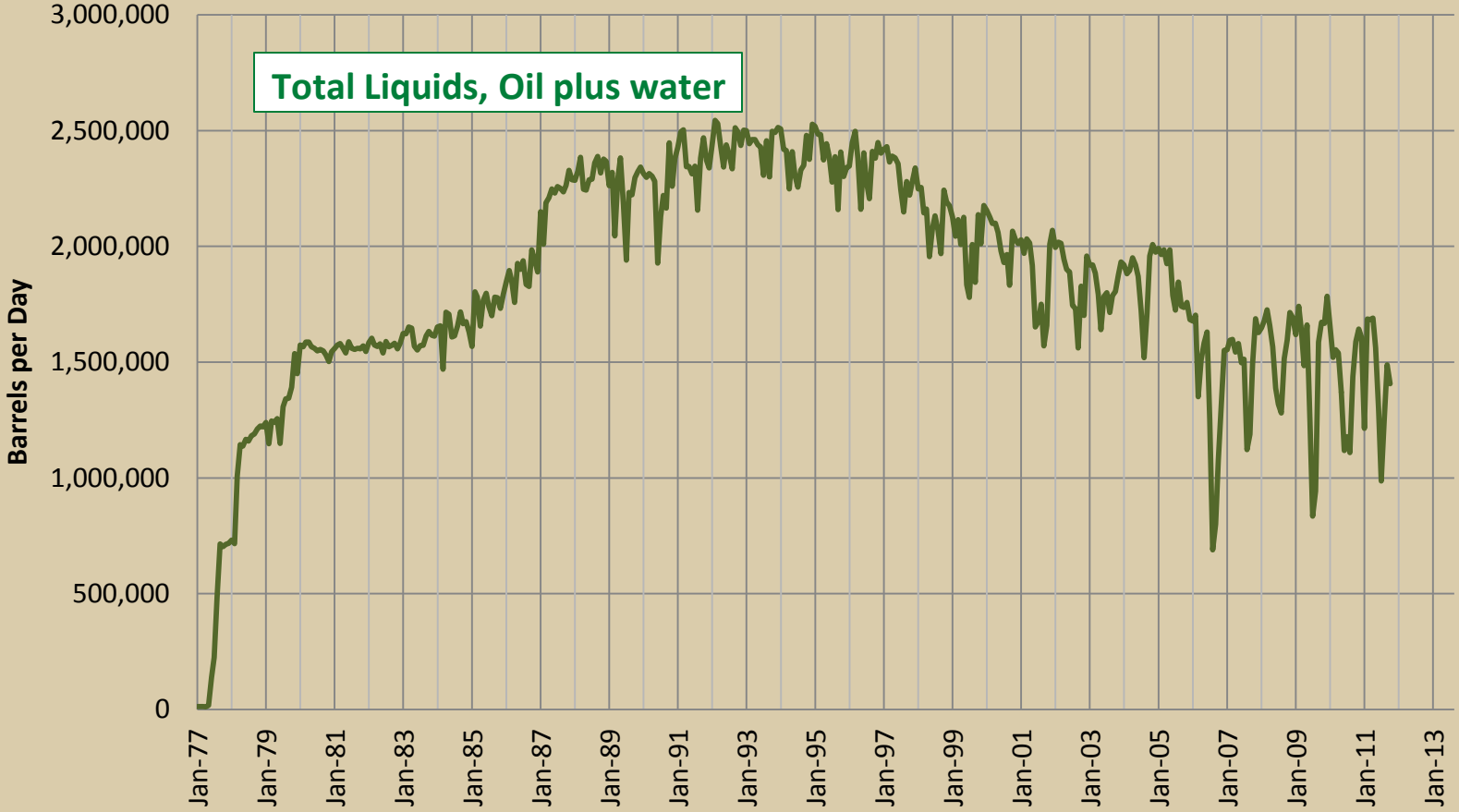
Plans of Development: Summary

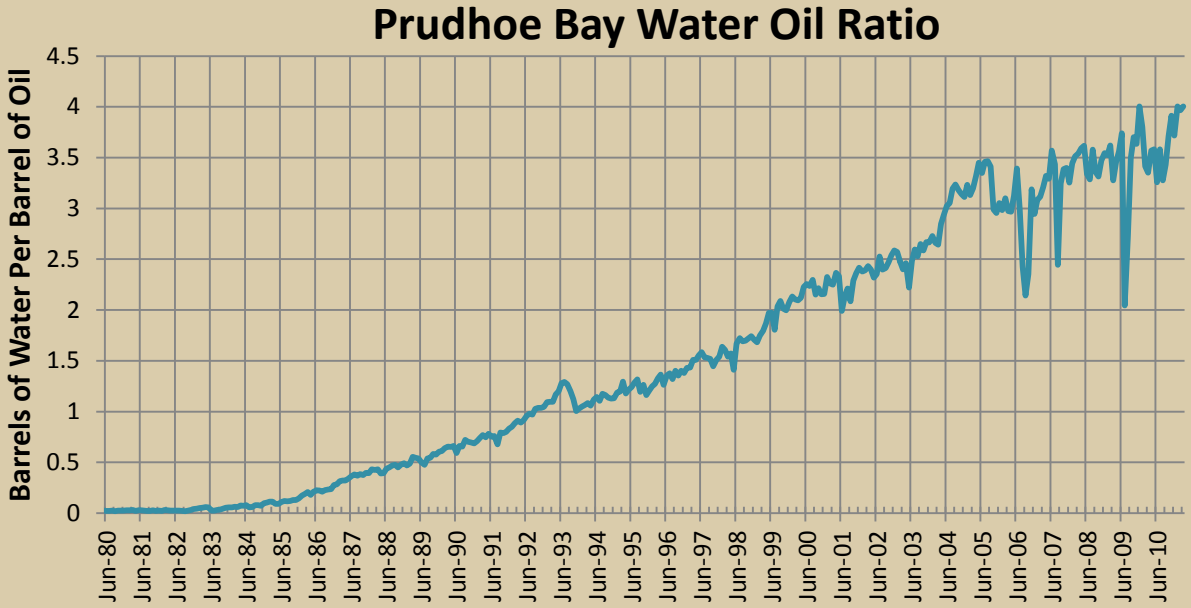
- **Utilizing detailed economic analyses to mandate development of fields or a specific project within a field is potentially counter to State interests.**
  - **Asset allocation is performed by companies and they may determine a project identified by the State does not meet the threshold for development; therefore, a DNR mandate to initiate and complete a project could promote resource waste and require companies to bring on developments that are less beneficial to the State.**
- **The Plan of Development (POD) is not a contract or legal device; however, there are legal consequences for default of a unit agreement that apply to PODs.**
- **The Plan of Development process has yielded tremendous value for the State through promoting technological advancements, maintaining the productivity of mature fields, and influencing higher recovery factors.**

Prudhoe Bay Unit, Oil and Water Production Rates



Prudhoe Bay Unit,
Total Fluid Production and Water Injection Rates




Prudhoe Bay Water Oil Ratio
Barrels of Water Per Barrel of Oil
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
Jun-80
Jun-81
Jun-82
Jun-83
Jun-84
Jun-85
Jun-86
Jun-87
Jun-88
Jun-89
Jun-90
Jun-91
Jun-92
Jun-93
Jun-94
Jun-95
Jun-96
Jun-97
Jun-98
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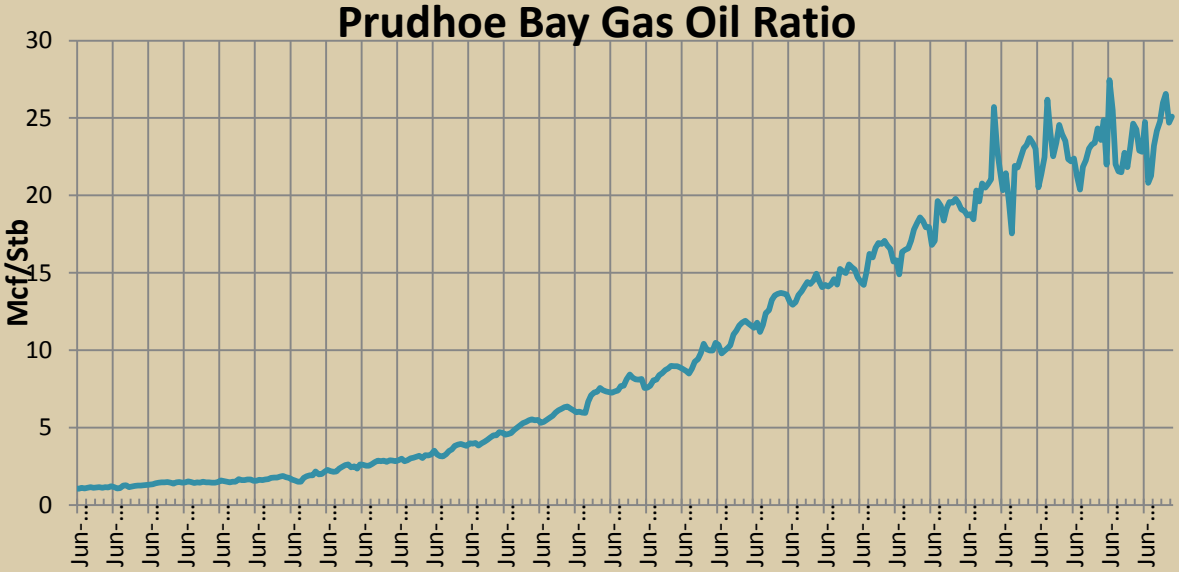
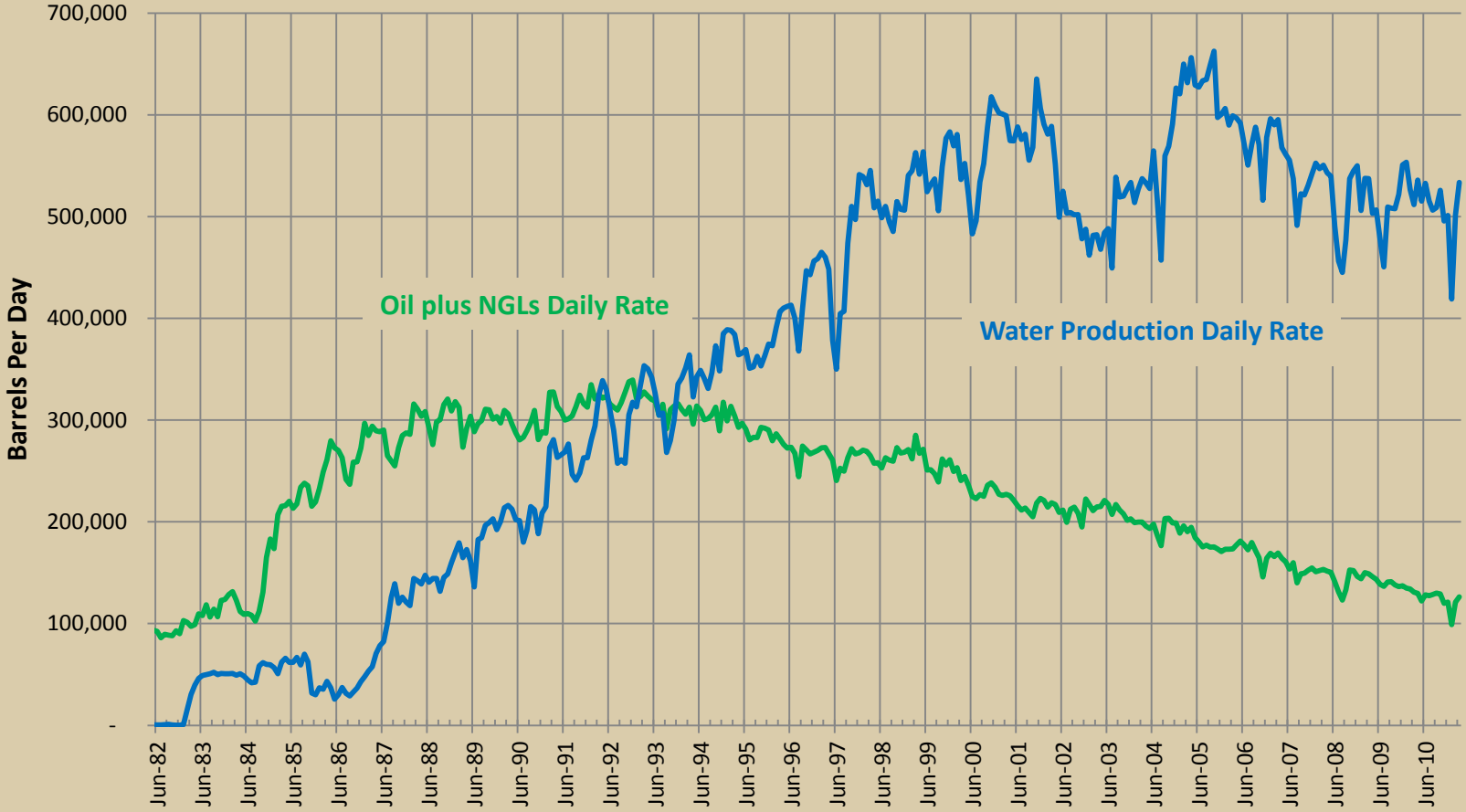
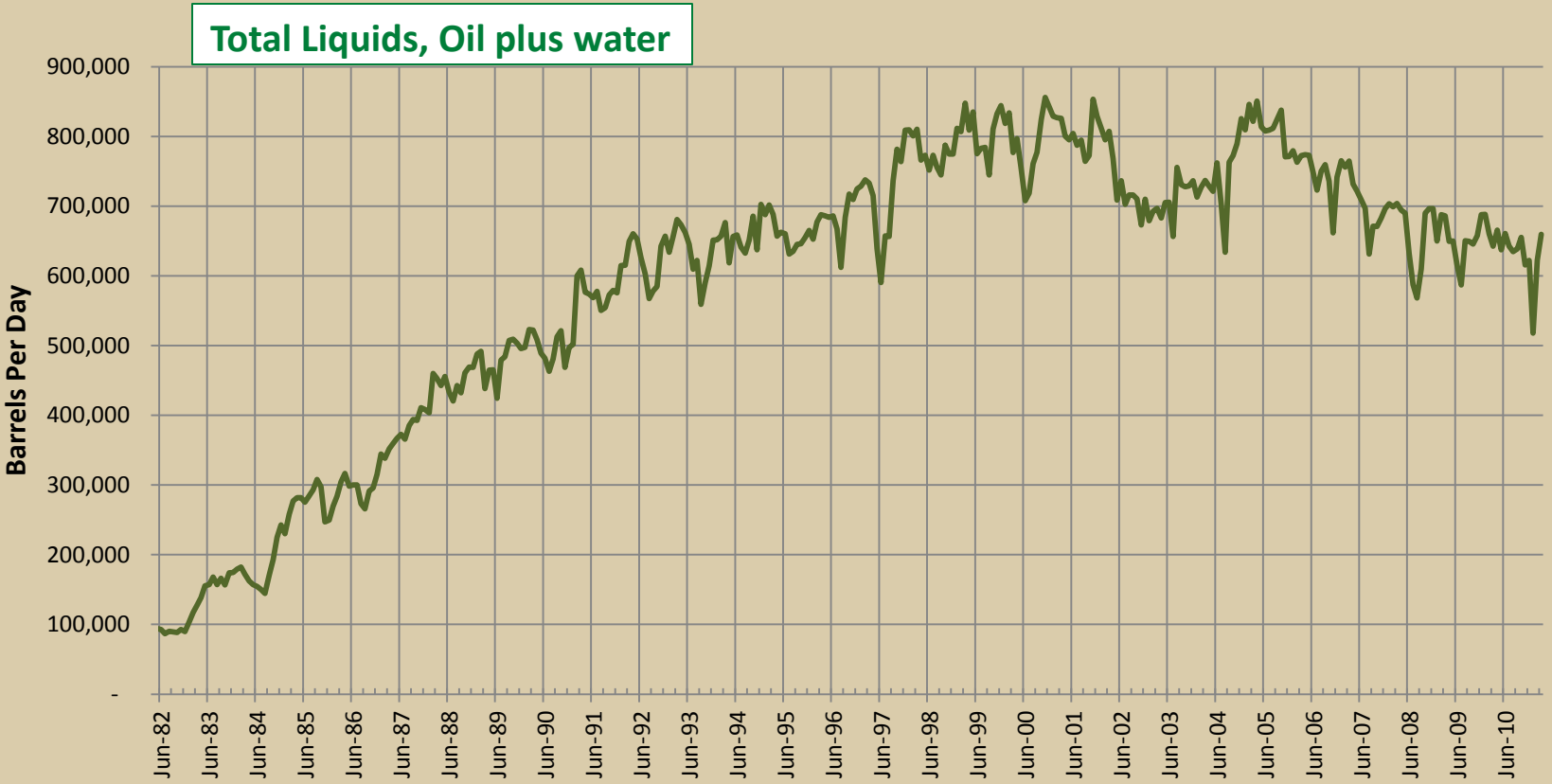
Jun-10


Prudhoe Bay Gas Oil Ratio
Mcf/Stb
30
25
20
15
10
5
0

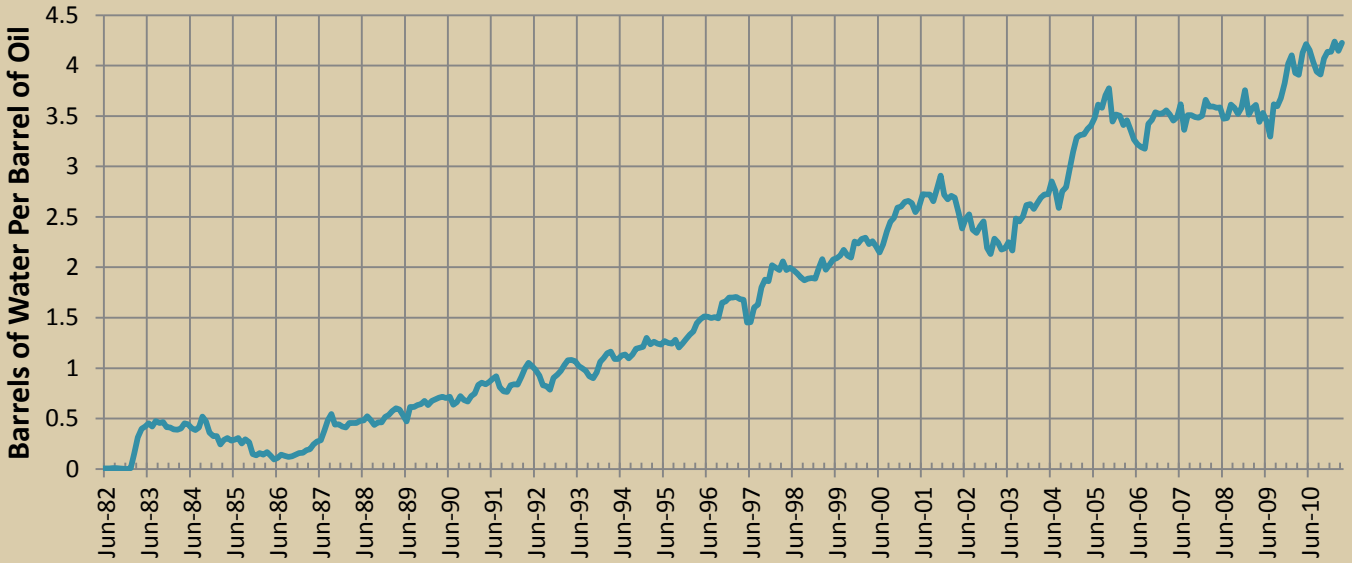
Kuparuk River, Oil and Water Production Rates



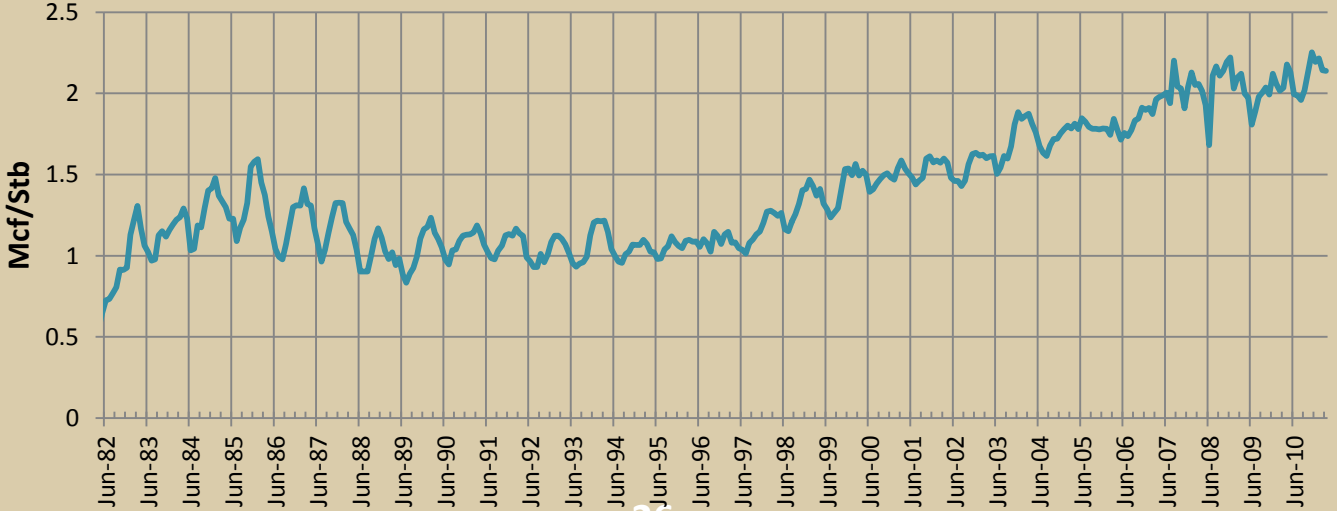
Kuparuk River,
Total Fluid Production and Water Injection Rates



Kuparuk River Water Oil Ratio



Kuparuk River Gas Oil Ratio



Unit	Oil and NGLs, standard barrels per day (stb/d)	Gas, million standard cubic feet per day (mmscfd)	Water (bwpd)	Water Injection (bwpd)	Handling Limitations, and comments	Field/Facility Startup
Badami	35,000	25	12,000	30,000	No Limits	Aug 1998
Colville River	140,000	180	100,000	140,000	We know of no limits at this time	Nov 2000, exp.in 2004 & 2005
Endicott	115,000	455	225,000	245,000	Limited gas and water	Jul 1986
Kuparuk					Limited Gas, water, & total fluid handling	
CPF-1	170,000	200	250,000	250,000	Rates currently below referenced limits	Dec 1981
CPF-2	160,000	260	250,000	300,000	Rates currently below referenced limits; may be nearing water limits	Jun 1983
CPF-3	85,000	150	100,000	220,000	Rates currently below referenced limits	Jun 1985
Milne Point	75,000	42	99,000		None known for current development	Jul 1983
Northstar	77,000	555	30,000		Limited by gas handling, water production is not at limit. Uncertain whether rated capacity is current.	Oct 2001
PBU					Limited gas, water handling - Note: cannot add up each facility to obtain total field restrictions. SI wells to maintain field limits.	
FS-1	360,000	2,800	140,000		Limited gas and water handling	Jun 1977
FS-2	360,000	1,200	650,000		Possible water handling limit	Jun 1977
FS-3	360,000	1,300	300,000		Note: FS-3 and GC-3 production can be diverted to either/both gathering center. Combined FS-3 and GC-3 at gas handling limits	Mar 1979
GC-1	330,000	2,600	180,000		High GORs - some wells not competitive at field level.	May 1977
GC-2	250,000	1,070	300,000		Limited gas and water handling	Jun 1977
GC-3		1,100	275,000		Note: FS-3 and GC-3 production can be diverted to either/both gathering center. Combined FS-3 and GC-3 at gas handling limits	Apr 1978
CGF		8,700			Limited by gas handling. Note, while "Design" capacity is 8.7 BCF/D peak, actual operating capacity around 7.5 BCFD average yearly at the plant inlet, with peaks of around 8.2 BCFD.	Jun 1977 Full Start, (NGL initial prod 1980, expansions in 1986, 1990, and 1994)
CCP		8,700			Actual Injection Peaks at 7.2-7.8 BCFD. Limited by CGF gas handling capacity	Jun 1977 Expansions in 1986, 1990, and 1994, Peak NGL Rate 97,000/day in 1996
LPC - Greater Pt. McIntyre	205,000	450	120,000		Limited gas, water, and total fluid. Some wells from Pt. McIntyre flow into GC1	Dec 1986
Oooguruk					Production to Kuparuk CPF-3. No known handling limits at Oooguruk.	Jun 2008
Nikaitchuq	40,000	unknown	120,000		No limits at this time	Jan 2011

Facilities Access Agreements

- Facility access agreements are complicated commercial agreements between multiple parties
- Facility access agreements impact
  - Reservoir management
  - Process management
  - Influence and impact PODS, which in turn has an impact on expense and capital exposure in the state

Facilities Summary

- The Prudhoe and Kuparuk units are experiencing typical reservoir depletion which requires handling and processing of increasing amounts of water and gas, decisions on facility management, effective well utilization, and complex reservoir management.
- Facilities are designed to meet a wide range of production profiles with varying water-oil and gas-oil ratios (WOR and GOR, respectively). As the reservoir matures, reservoir management and facility debottlenecking for water and gas handling, water and/or gas injection to maintain reservoir pressure, well workovers, and new infield development drilling is required.
- Pipeline capacity is available throughout most of the North Slope, thus companies with new oil discoveries will need to negotiate to share the existing transport facilities.
- Corporate culture and size of a discovery typically dictate decisions whether to build new process facilities or enter into commercial agreements to access existing facilities.