

NANA



REGIONAL CORPORATION, INC.



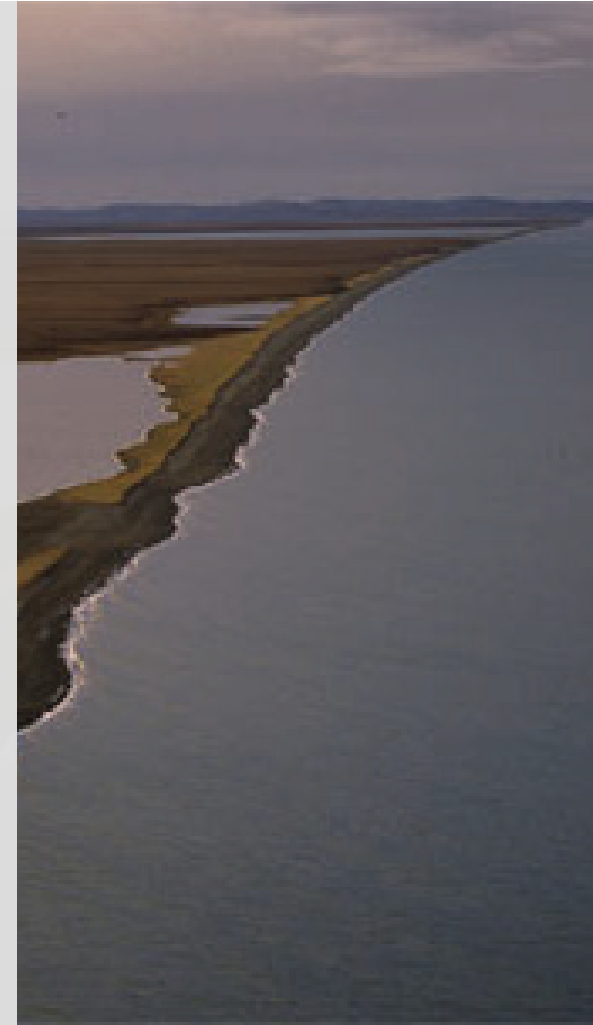




Overview of Region

- 35,989 square miles
- 11 villages
- 7,400 (pop. 2008)
- 82.5 % Alaska Native
- More than 12,000 NANA shareholders
- 48 % more expensive than Anchorage

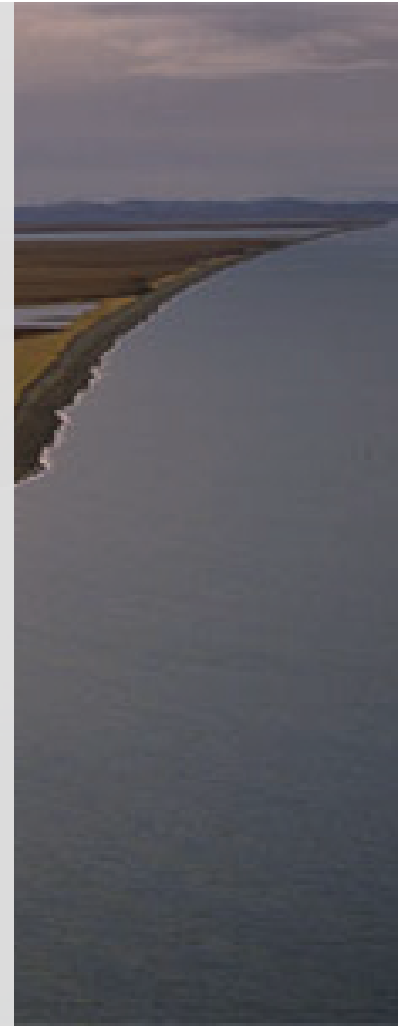
Source: Alaska Economic Trends, August 2009





Cost of Energy

- 55.4% of households received energy assistance last winter (2008)
 - Gasoline – \$6.68 per gallon (average)
 - Stove oil – \$630 per winter month (average)
 - Electricity – \$ 294 per month (average)





Opportunities

- Alternative and traditional energy sources
- Public/private partnerships
- Willingness of the people
- Unexplored potential
- Job creation





NANA Strategic Energy Plan (SEP)

- Energy Options Analysis completed
- Regional Energy Plan Completed (www.nana.com)
- Regional Energy Summit
- Energy Surveys Completed
- Secured funding in the amount of \$16 million (WHPacific and NANA Pacific)

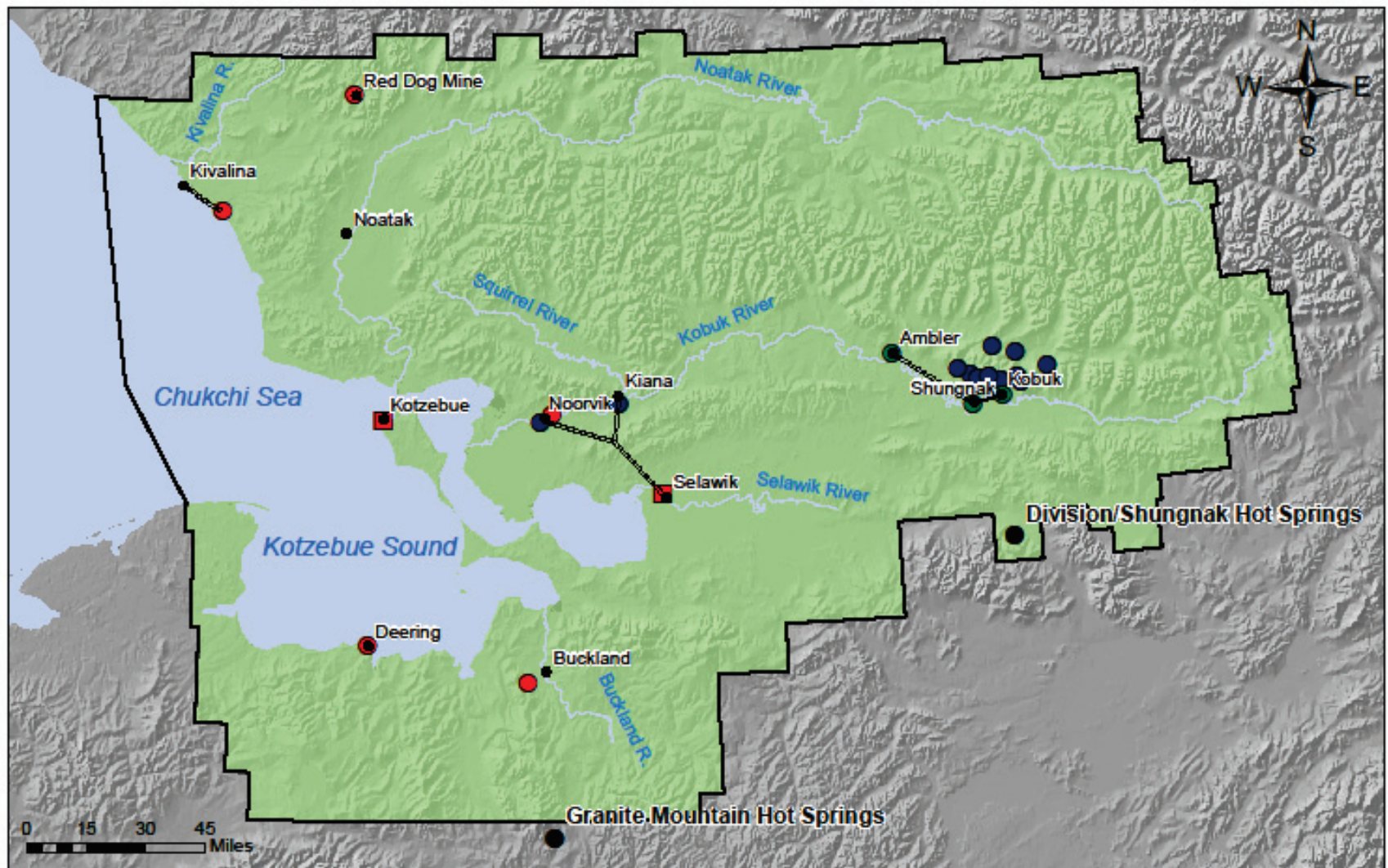




Regional Projects

- Wind diesel development
- Hydroelectric feasibility
- Biomass development
- Solar/Photovoltaic
- Energy efficiency & conservation
- Fossil Fuel





Legend

- | | |
|--|---|
| Proposed/Under Investigation Powerline | Proposed/Under Investigation Hydro Site |
| Existing Powerline | Proposed/Under Investigation Wind Site |
| Proposed/Under Investigation Biomass Site | Existing Wind Site |
| Proposed/Under Investigation Geothermal Site | NANA Region |



NANA Regional Corporation Renewable Energy Sources



Date: 03/24/2009

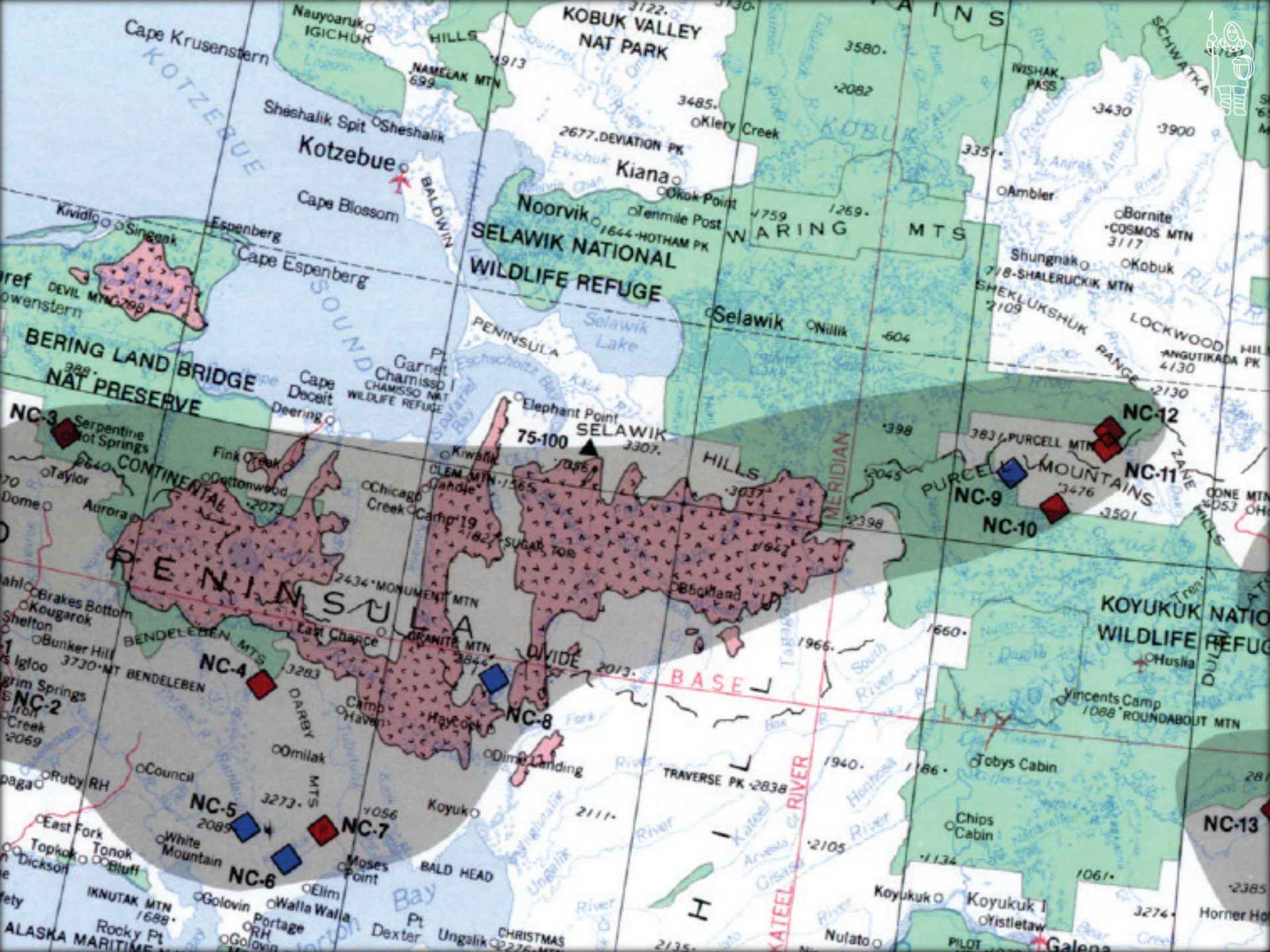
Projection: Alaska State Plane Zone 7 NAD 27



NANA Wind Resource Assessment Program (WRAP)

- Wind data collection
- New turbines
 - Noorvik, Deering, Buckland
- Erecting met towers
 - Noatak, Red Dog, Ambler
- Exploring public/private partnerships

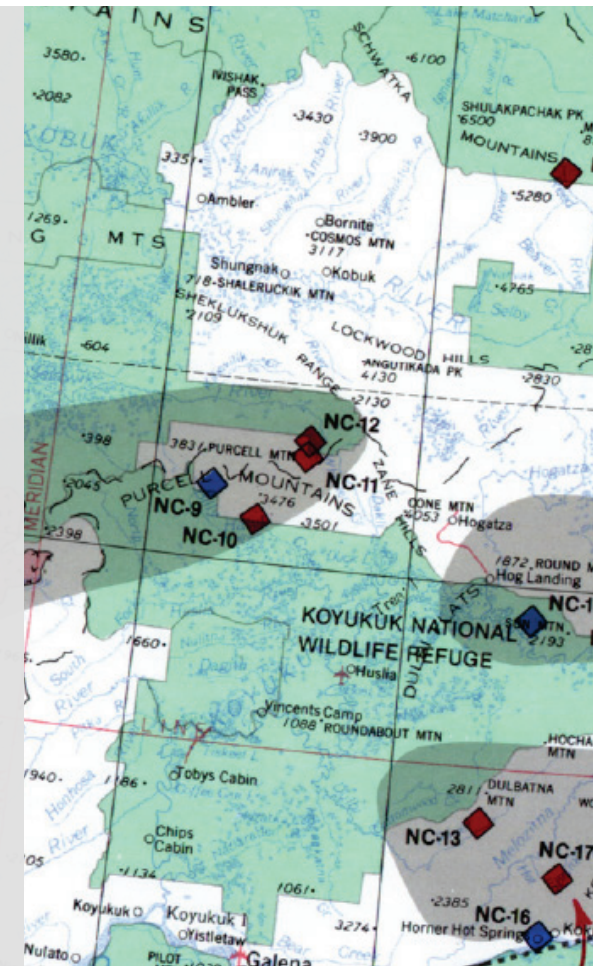






NANA Geothermal Assessment Program (GAP)

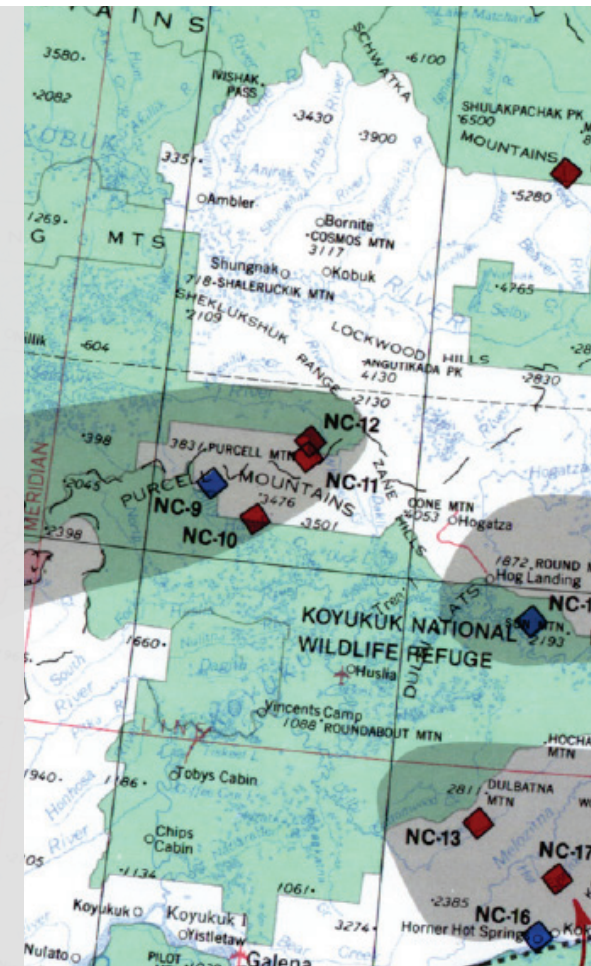
- Report completed –site identification (www.nana.com)
- Seven hot springs in the NANA region
- Mapped hot springs are 40 miles or more from NANA region communities
- Collaboration with the University of Alaska, Fairbanks (Alaska Center for Energy & Power)





Biomass, Hydro, Solar

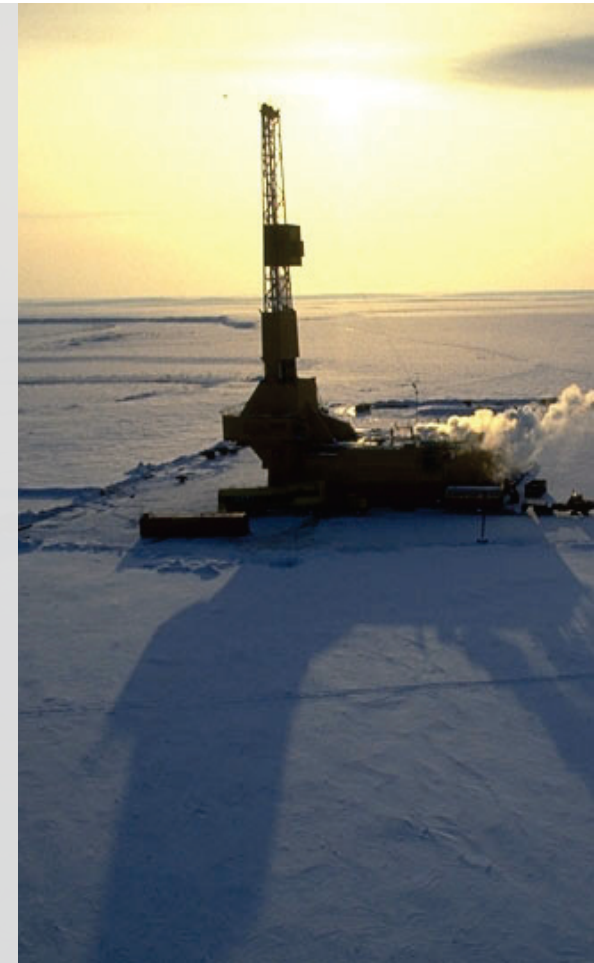
- Biomass resource assessment for upper Kobuk (Partner: NIHA)
- Hydro feasibility study (AVEC)
- Solar (AVEC)





Natural Gas & Oil Exploration

- Partnered with Trio
- One of the largest unexplored areas in North America
- 3 on-shore potential drill locations
 - Kobuk Delta, the Baldwin Peninsula, and Cape Espenburg
- Village outreach
- Currently working on permits to perform drilling operations





Energy Efficiency and Conservation Block Grant

- Department of Energy (DOE) and Denali Commission
- Funds projects that:
 - Reduce energy use
 - Reduce fossil fuel emissions
 - Improve in energy efficiency.
- 9 of 11 villages elected to participate
- Tribes decide on grant use





Constraints & Concerns

- Government
 - Streamline funding process
 - Uncertain permit requirements
 - Not eligible for AEA grants
- Immediate concerns
 - Fuel crisis in 4 villages
 - Fuel providers
 - Lack of choice





Next Steps

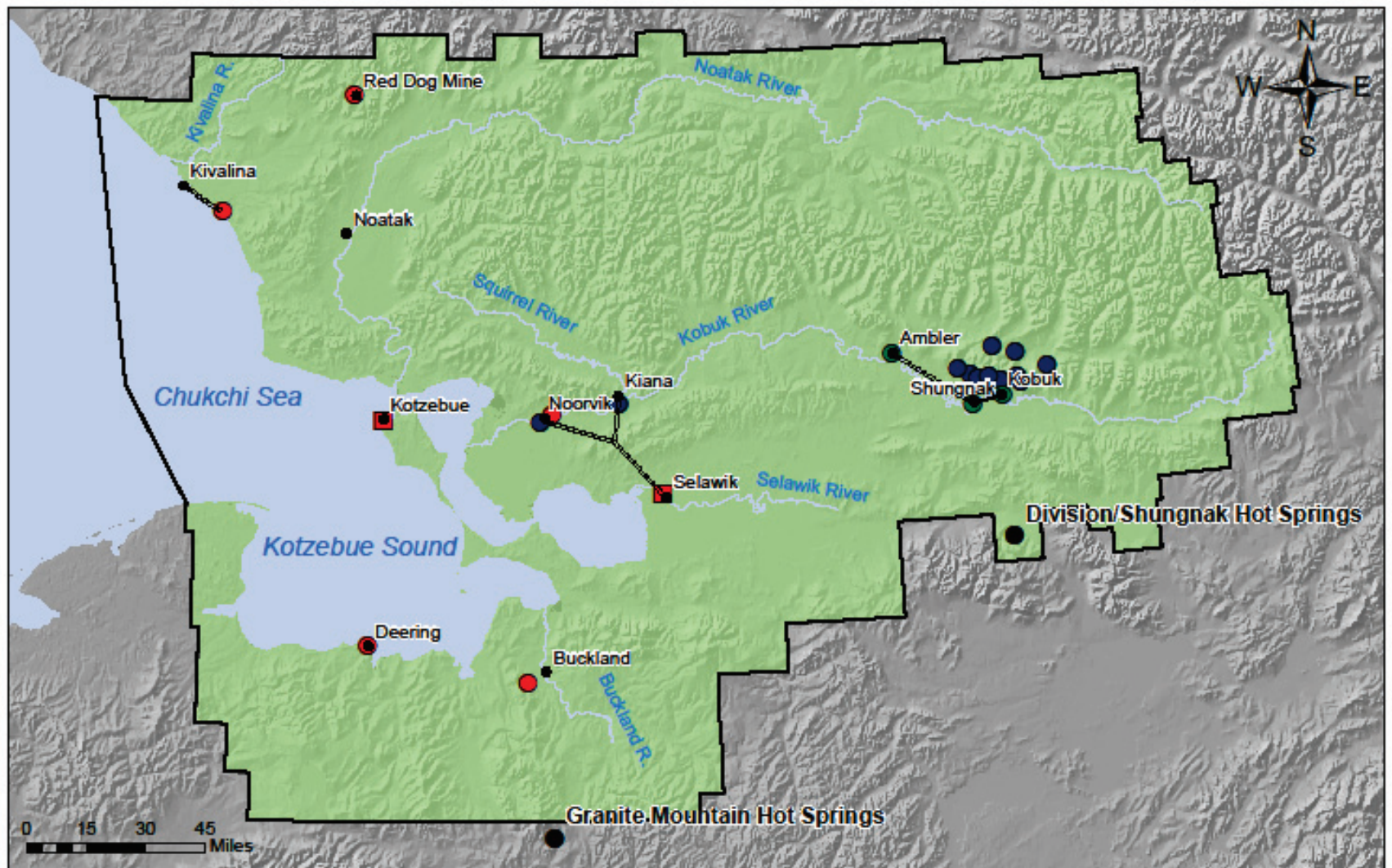
- Update Strategic Energy & Energy Options plan
- Continue collaborations
- Identify potential demonstration and research opportunities
- Monitor Funding Opportunities
 - Federal Department of Energy
 - AEA
- Develop “bankable” regional energy projects





Wind Energy in NW AK/NANA Region





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NANA Regional Corporation Renewable Energy Sources



Date: 03/24/2009

Projection: Alaska State Plane Zone 7 NAD 27

Existing Wind Power in NANA Region

Need to improve penetration level

- Kotzebue – Utility, KEA
 - Class 4 to 5 wind resource
 - Ten AOC 15/50 (65 kW) wind turbines
 - One NW100 (100 kW) wind turbine
 - One Vestas V15 (65 kW) wind turbine
 - Since 1997
- Selawik – Utility, AVEC
 - Class 2 to 3 wind resource
 - Four AOC 15/50 (65 kW) wind turbines
 - Since 2001



Predicted Wind Resource in NANA Region Villages



One Year data

Buckland- class 3

Noorvik- Existing class 2-3

Deering- class 6

Kivalina- class 6-7

Under Assessment

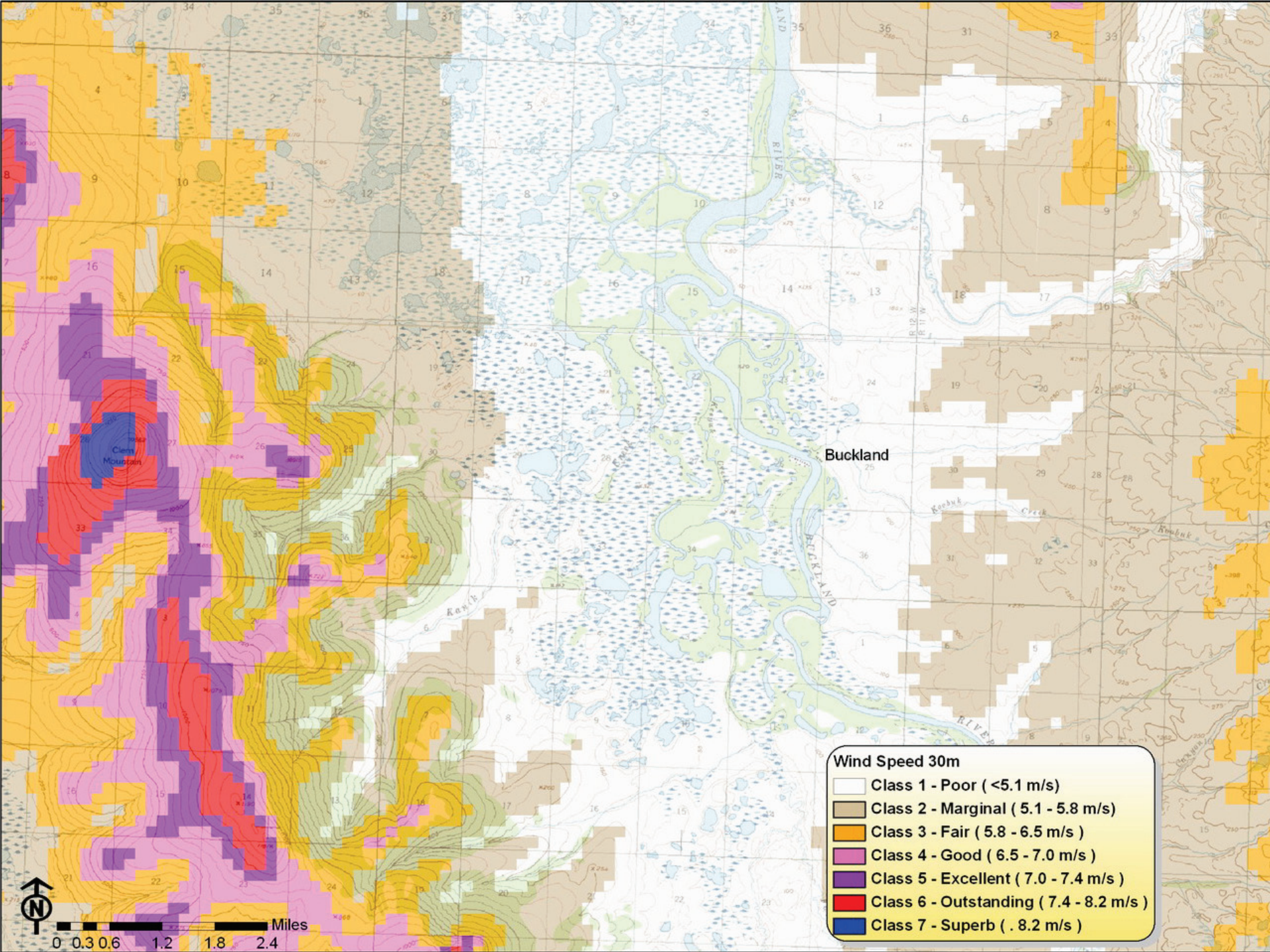
Ambler- 4 months of data

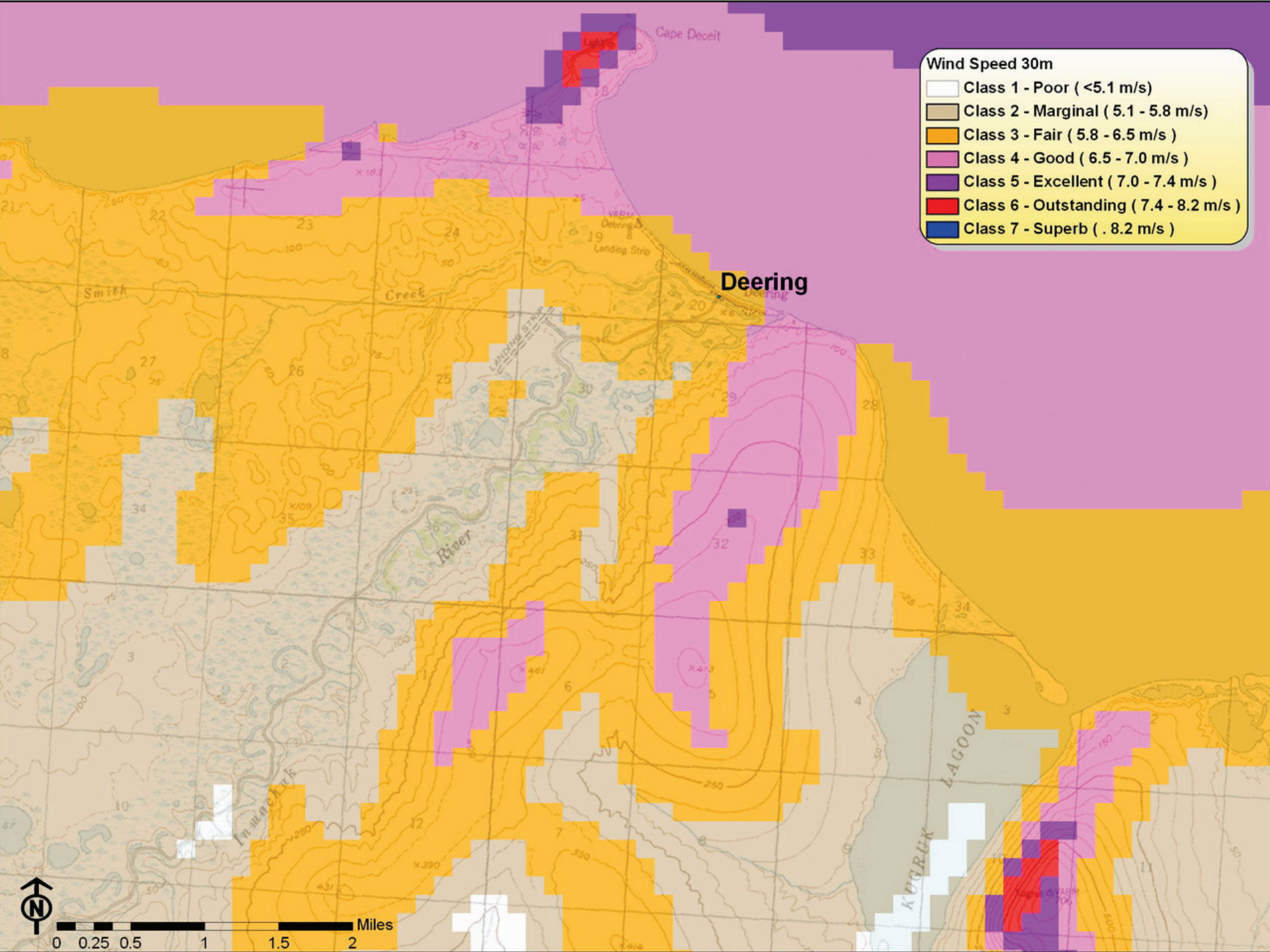
Kiana

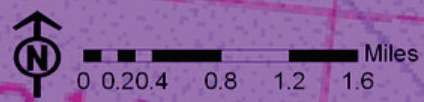
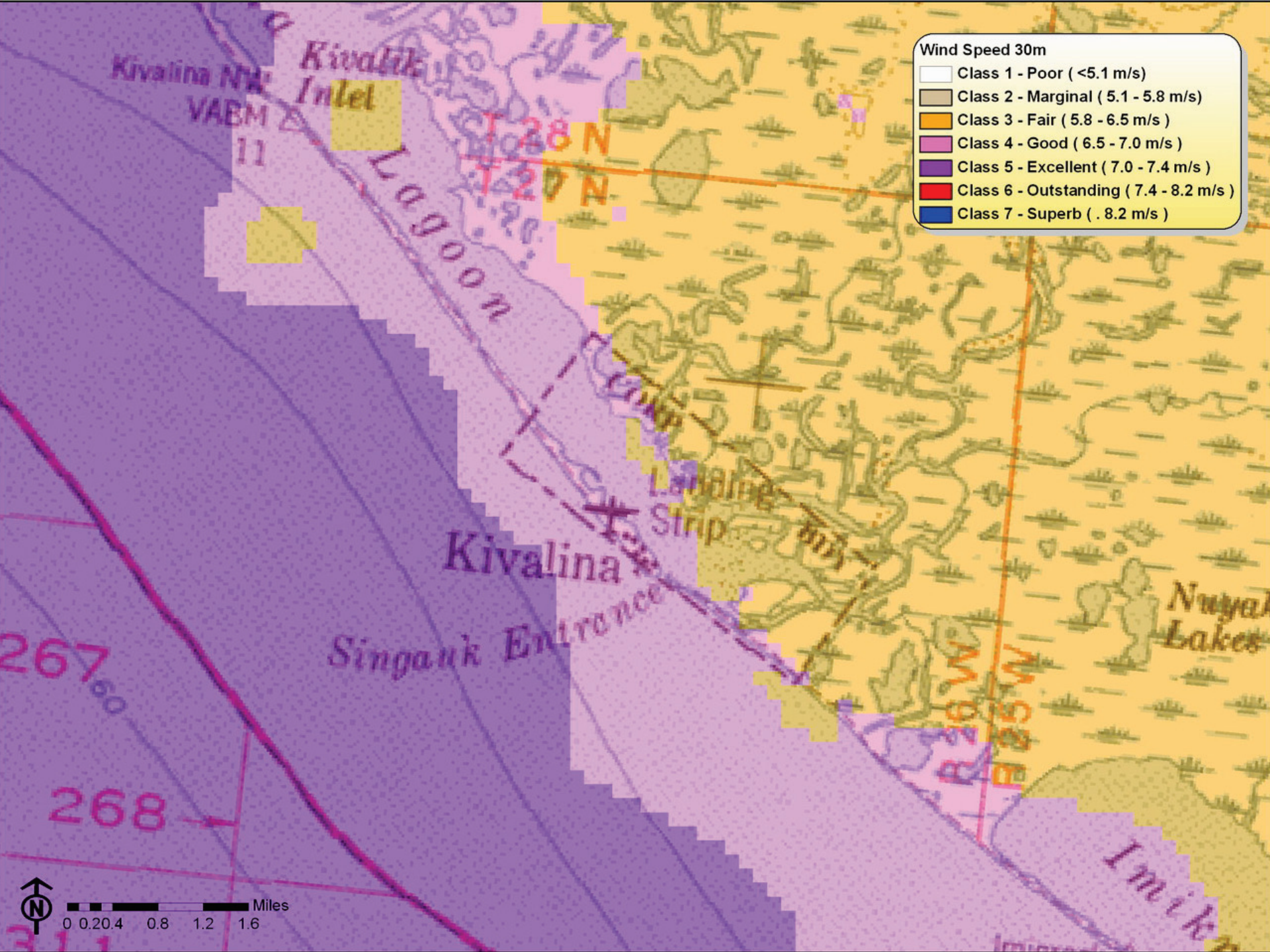
Bornite/NOVA Gold- could benefit

Upper Kobuk



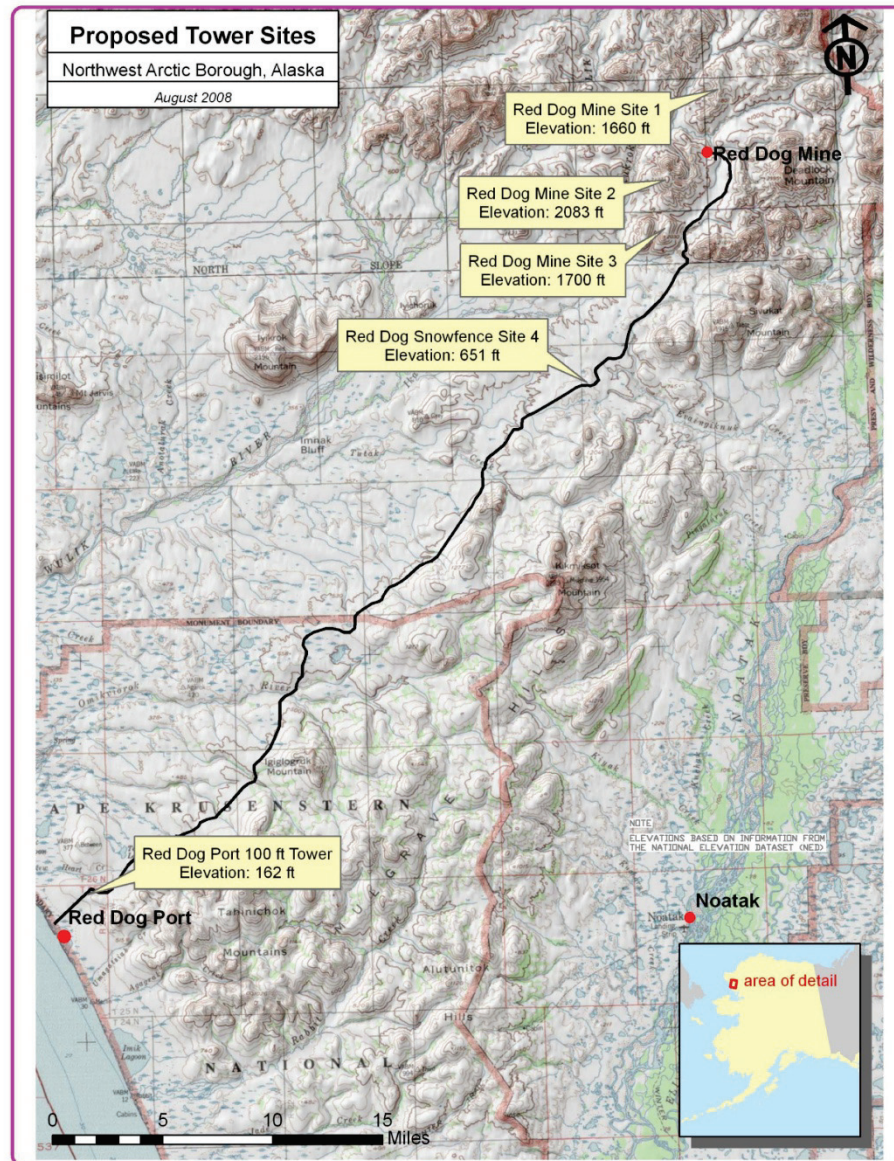








Teck Alaska Renewable Energy Public Private Partnership





NANA Region Wind Program- Next Steps

- Support on-going efforts- AVEC, KEA, & Teck
- Conceptualize small (10 kw and less) deployment for certain applications
- Conceptualize regional remote monitoring controls/strategy
- Further expand work-force development in the region
- Identify opportunities for technology





Geothermal Assessment Program

- Initial enthusiasm with geothermal potential
- Limited data and analysis
- Development of NANA GAP Report
- Identified 7 hot springs
- Granite Mountain & Division Hot Springs- higher likelihood of development





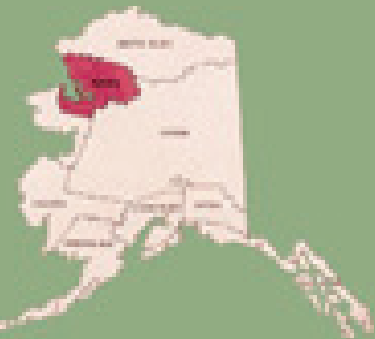
THE NANA REGION

Selawik & Kotzebue Basins province

Yukon-Koyukuk province

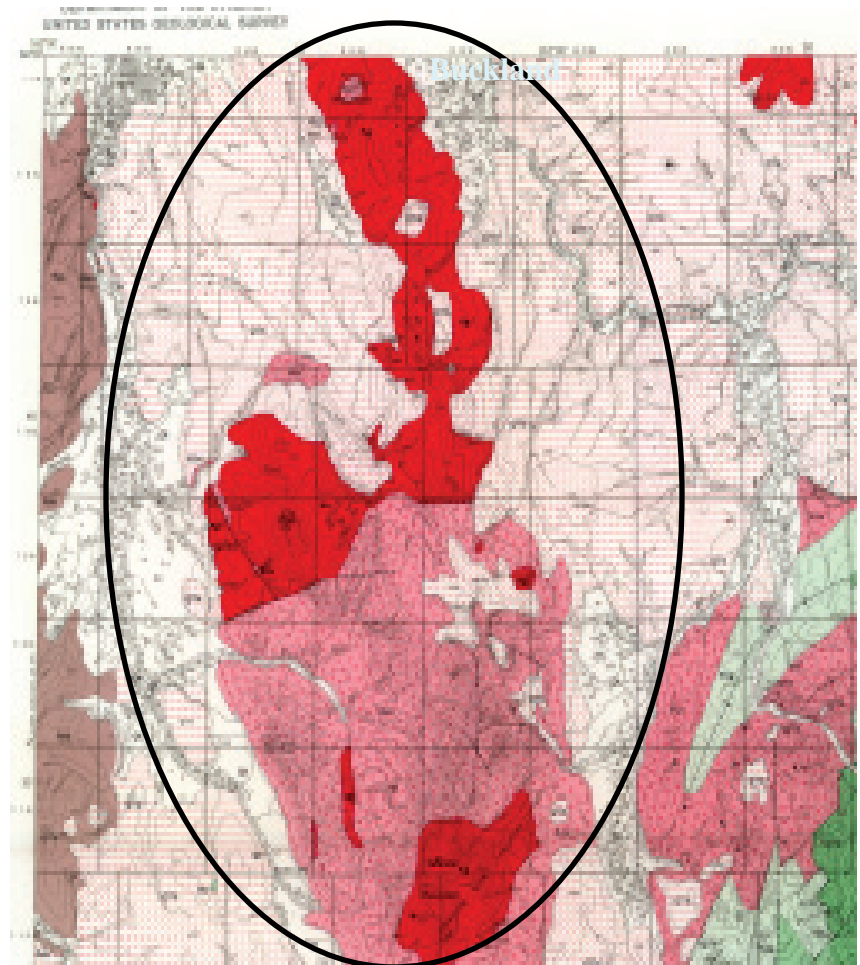
Seward Peninsula province

30 miles



Geologic map of the Buckland region

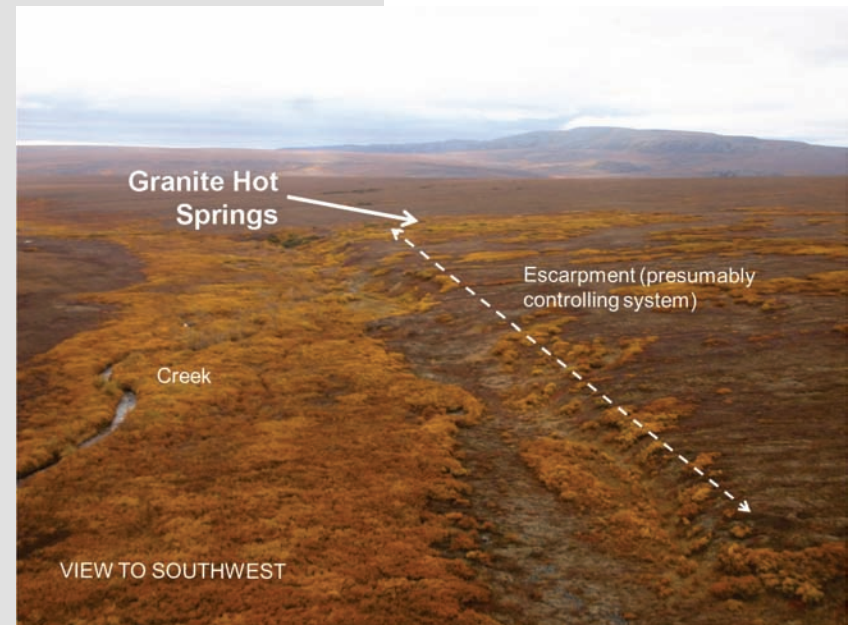
- Buckland/Deering Geologic map
 - Red = granitic rocks, which are favorable host rocks for geothermal resources;
 - all others = which are probably not good host rocks for geothermal resources.
 - Strong Possibility that geothermal resources could extend northward as well. Geothermal exploration should focus on the circled area.





Granite Mountain Field Work-2009

- Field work activities
- Geological Assessment
- Chemistry Analysis
- Geothermometry
- Heat flow assessment

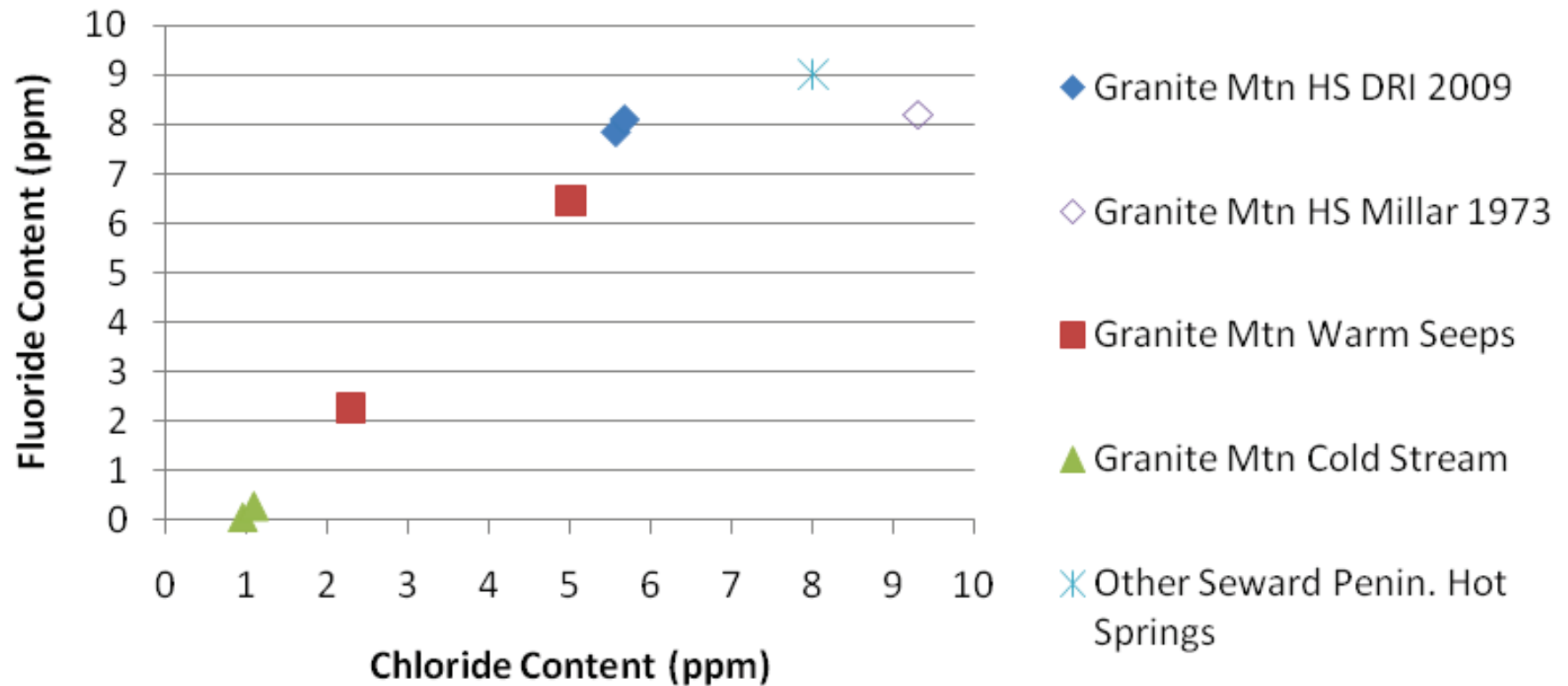




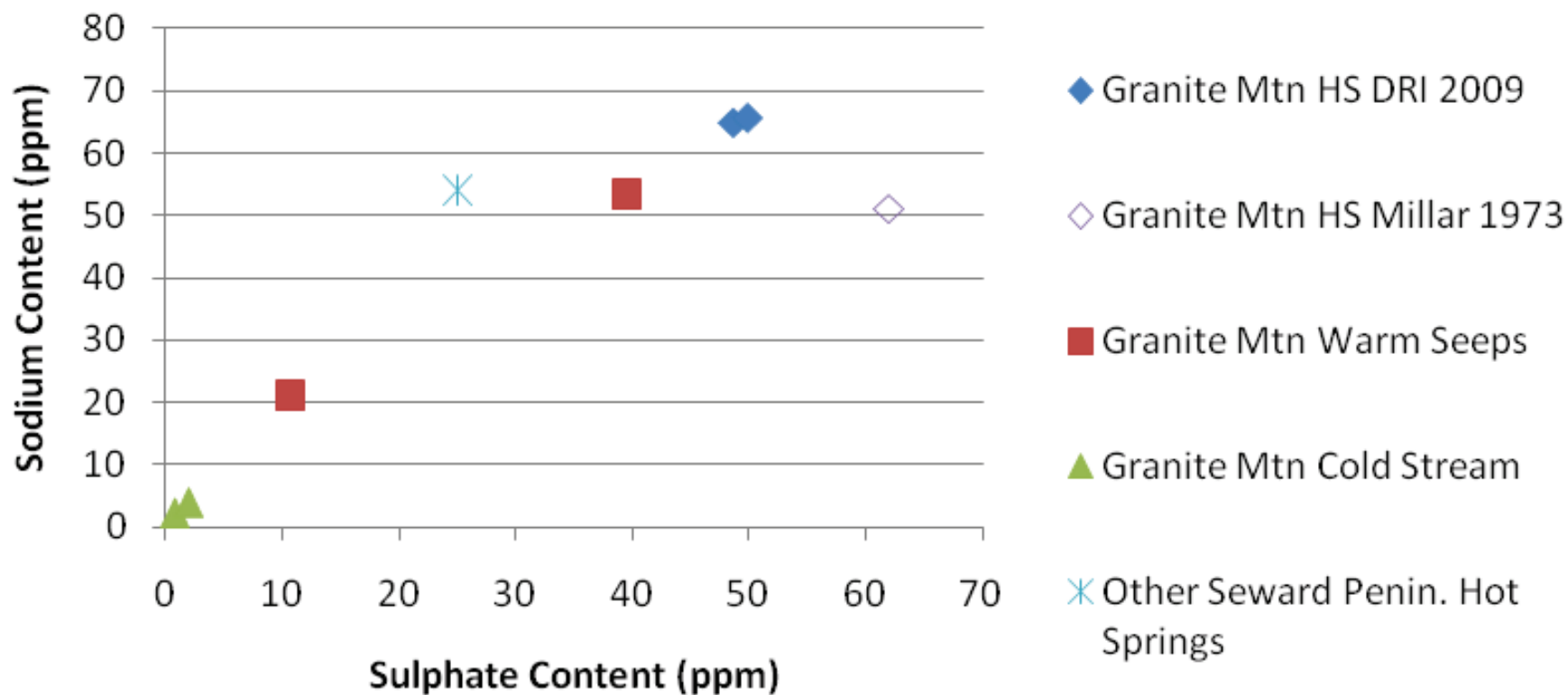




Granite Mountain Alaska F vs Cl



Granite Mountain Alaska Na vs SO4





Geothermal Development- Discussion and Next Steps

- Fairly typical of geothermal systems in the interior of Alaska.
- <1mw power production potential
- Comparable in temperature to Chena
- Isolated no infrastructure
- Significant cost to develop



Taikuu

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