



Logistics of Mineral Exploration in Alaska

By

Paul Metz, Professor of Geological
Engineering,
University of Alaska Fairbanks

Major Issues for Logistics in Support of Mineral Exploration

- Large geographic region
- Complex land status - large areas of restricted access
- Remote locations
- Variable topography
- Variable climatic conditions
- Environmental challenges
- Limited infrastructure
- Large number of known mineral occurrences and high mineral potential

Who Owns/Manages Alaska?



Russian traders arrived in Alaska in the mid-1700's and established small, scattered trading posts and settlements. Alaska Natives (the Eskimo, Indian, and Aleut peoples) continued as the primary landowners during this period of Russian occupation. On October 18, 1867, Russia sold Alaska to the United States government. As a result, the federal government owned the Alaska Territory, approximately 373 million acres - about one-fifth the size of the rest of the U.S.



Under the terms of the Alaska Statehood Act of 1958, the federal government granted the new state 25% (one-fifth) of its total area. Approximately 23,350,000 acres were to be ceded under three types of grants:

- 1) Community - 400,000 acres
- 2) National Forest Community - 400,000 acres
- 3) National - 187,500,000 acres

Additional federal grants for schools, universities and mental health treatment totaling 1.2 million acres were confirmed with statehood.

All grants combined gave the State of Alaska approximately 105 million acres. To date, 89.8 million acres has been granted, with the balance expected to be granted by 2005.

ANCSA Native Corporation (Private) 39.3 million acres

On December 18, 1971, P.L. 91-609, the Alaska Native Claims Settlement Act, was signed into law. The purpose of ANCSA was to settle the claims of 22 of the Alaska Native village groups. This claim had been unresolved for more than 100 years since the United States purchased Alaska from Russia in 1867.

Native lands are private lands. ANCSA mandated the creation of regional village lands. Each village is to manage 44 million acres and prevent one billion dollars. Twelve regional corporations were created for the distribution of ANCSA lands and money. Twelve of those shared in selection of 12 million acres. The village corporation, based in Seattle, received a total settlement of only 274 village corporations of 25 or more residents, about 26 million acres. The remaining acres which include national sales and existing national forests were 100,000 acres of public lands and small villages of less than 25 people. To date, 39.3 million acres have been allocated to ANCSA corporations.

Non-ANCSA Private & Local Government - 5.9 million acres

Private ownership, either that of Native corporations or lands from the private sector of the local land in Alaska, is not at the forefront of development around Alaska's communities, or will be, primarily owned. This is due to development needs people's needs providing classes for the work, trap and recreation. Also provides a law base for cities and communities to help support its citizens.

Because local governments in Alaska have individual methods of transferring land from private ownership, and currently owned by them to provide the public's collection.

Alaska is one-fifth the size of the conterminous 48 states.



Bureau of Land Management - 82.5 million acres

In Alaska, BLM's focus is on managing, and planning the management of, the public lands. BLM works in partnership with the state and other federal agencies with oversight responsibilities of the "Land Alaska Plan", and responding to the public demand for use of the land, by the state.

U.S. Fish & Wildlife Service - 78.8 million acres

The USFWS manages 8 wildlife refuges in Alaska. The two largest are the Yukon Delta National Wildlife Refuge and the St. Lawrence National Wildlife Refuge (ANILCA), both of which are approximately 5 million acres.

National Park Service - 52.4 million acres

There are eight national parks in Alaska, including the three best in the national park system.

- Denali National Park & Preserve - 1,111,000 acres
- Carson National Park & Preserve - 8,477,000 acres
- Denali National Park & Preserve - 1,111,000 acres
- Katmai National Park & Preserve - 1,000,000 acres
- Lake Clark National Park & Preserve - 4,282,000 acres

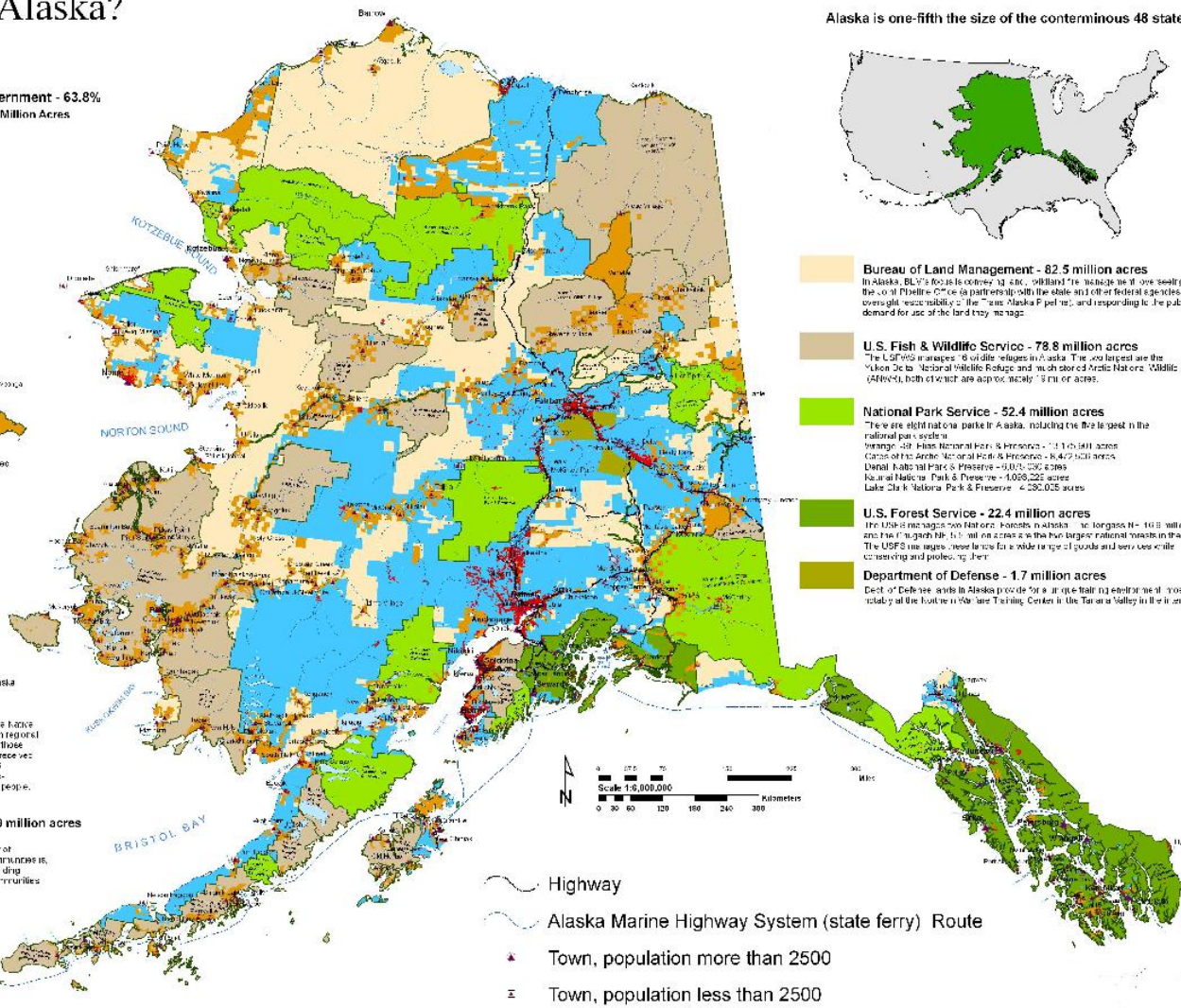
U.S. Forest Service - 22.4 million acres

The USFS manages two National Forests in Alaska - the Tongass - 10.8 million acres, and the Chugach National Forest - 11.6 million acres - the two largest National Forests in the US.

The USFS manages these lands for a wide range of goods and services while protecting and protecting them.

Department of Defense - 1.7 million acres

Dept of Defense units in Alaska provide for a wide range of military and non-military activities. The Alaska Air National Guard is the largest of these units.



- Highway
- Alaska Marine Highway System (state ferry) Route
- Town, population more than 2500
- Town, population less than 2500

Remote Locations



Variable Topography



Variable Climatic Conditions Temperate Rain Forest



Variable Climatic Conditions Arctic Tundra



Environmental Challenges



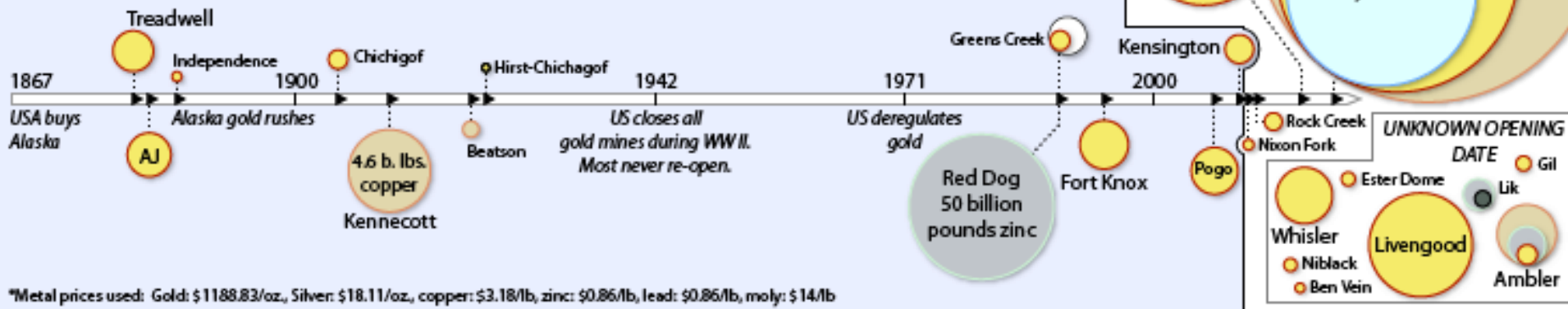


Alaska hardrock mines through time
 Each circle represents the value of metal in the deposit.



EXISTING AND PAST MINES

2010 POSSIBLE FUTURE MINES

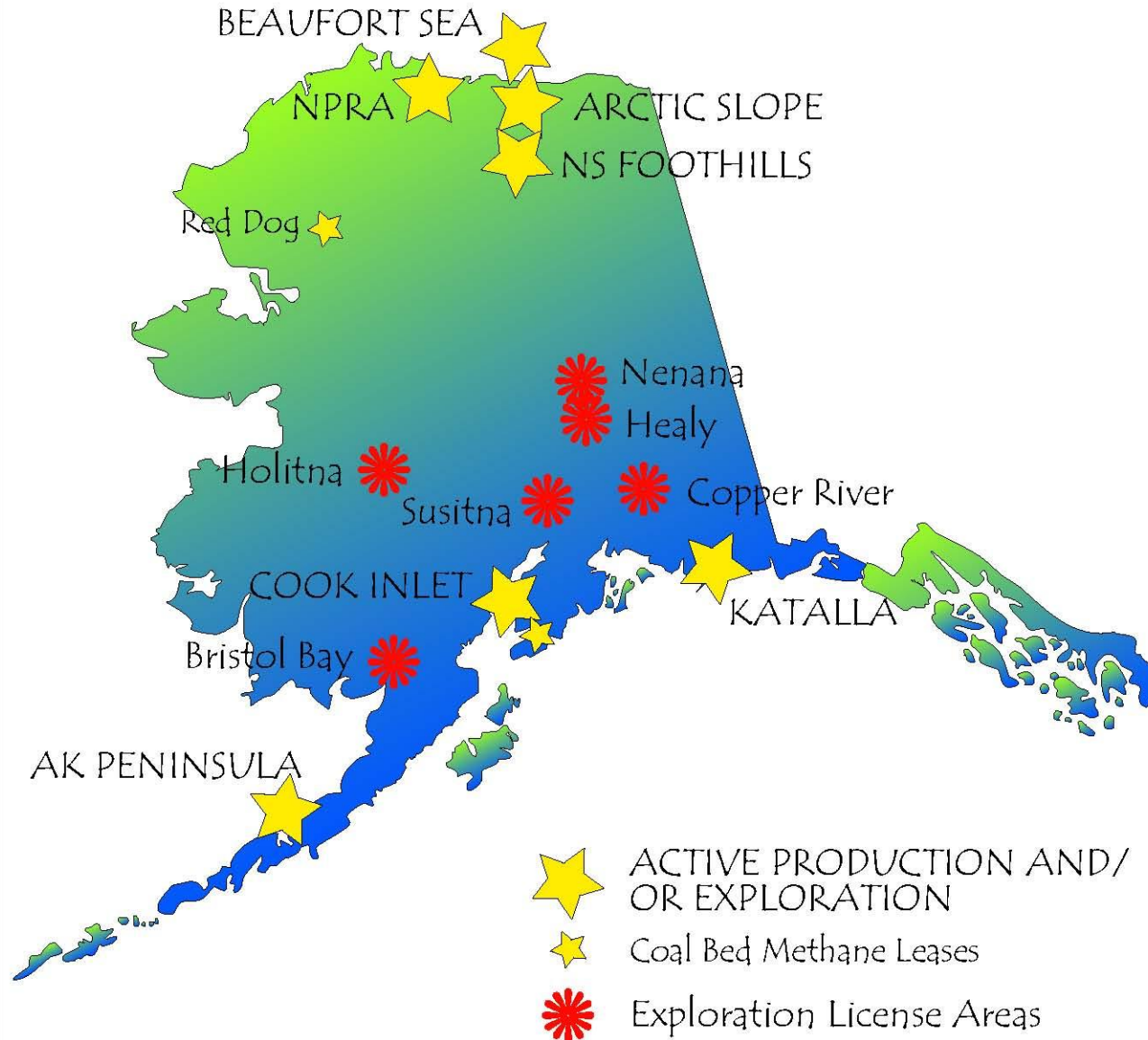


*Metal prices used: Gold: \$1188.83/oz., Silver: \$18.11/oz., copper: \$3.18/lb, zinc: \$0.86/lb, lead: \$0.86/lb, moly: \$14/lb

Investment in Mineral Exploration and Development in Alaska and First Market Value of Production 2001-2010 (\$ millions)

Year	Exploration	Development	Market Value
2001	23.8	81.2	917.3
2002	26.5	34.0	1,012.8
2003	27.6	39.1	1,000.7
2004	70.8	209.1	1,338.7
2005	103.9	347.9	1,401.6
2006	178.9	495.7	2,858.2
2007	329.1	318.8	3,367.0
2008	347.3	396.2	2,427.1
2009	180.0	330.8	2,455.6
2010	264.4	293.3	3,126.8

Areas of Oil & Gas Activity in Alaska





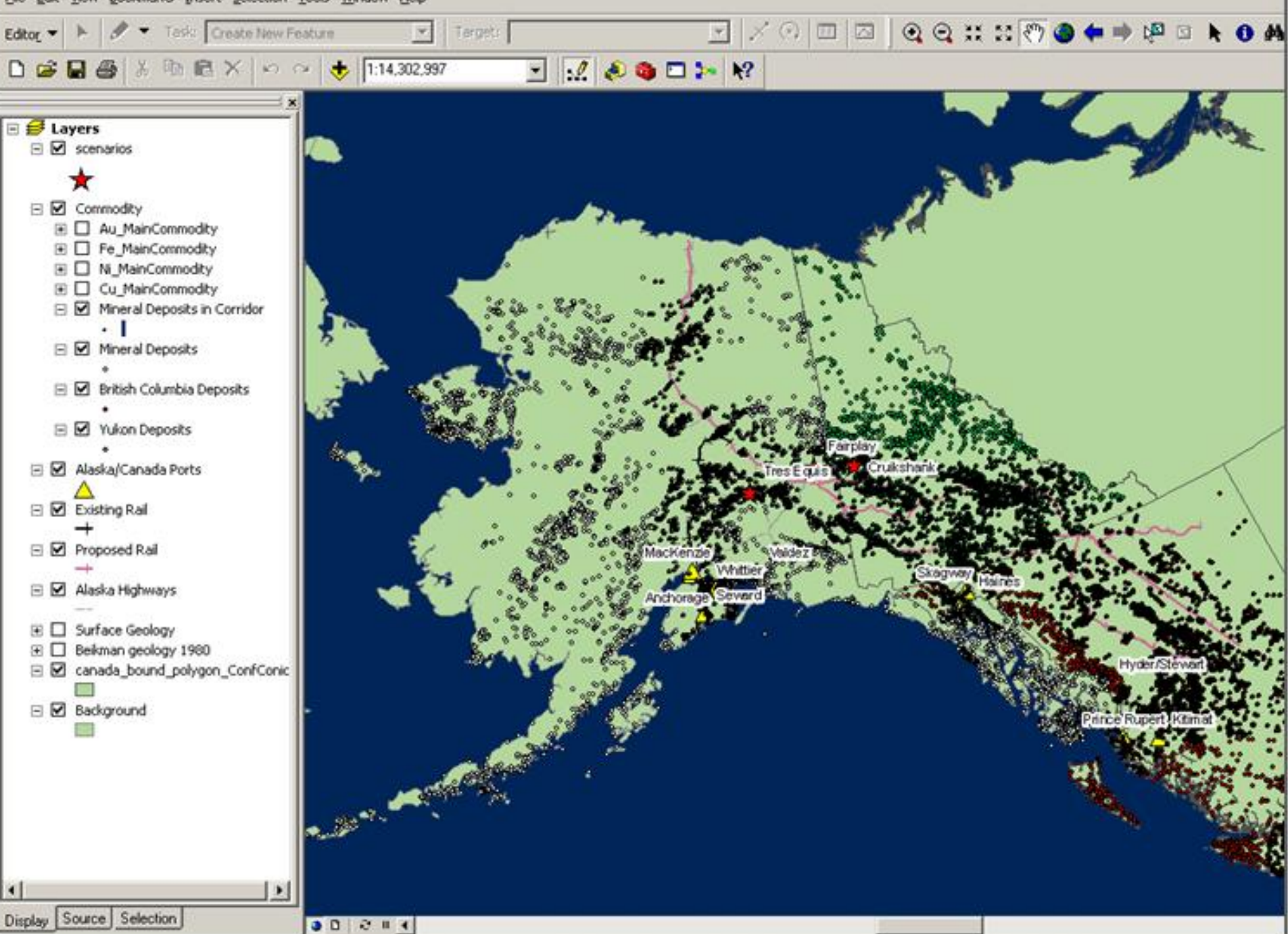
A steel drilling caisson ship in the Beaufort Sea—
photo by Challenger Geomatics Ltd.

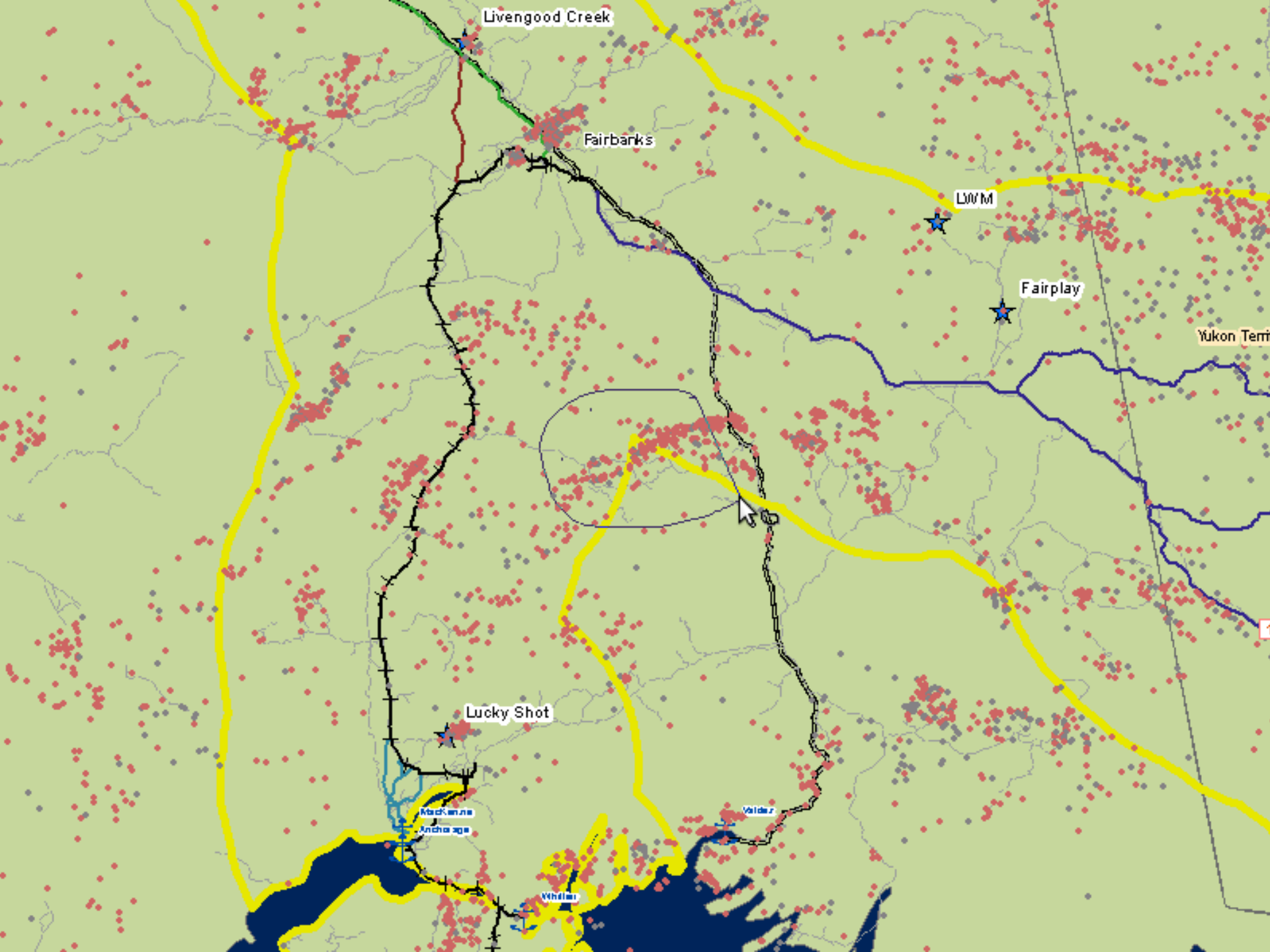
Recent Investment in Infrastructure Planning

- Road to Umiat - \$8 million
- Road to Road to Nome - \$1.25 million
- Road to Ambler - \$5.25million
- Railroad Extension from Eielson, AFB to Delta Junction EIS - \$20 million
- Railroad Extension from Port MacKenzie to Mainline EIS - \$5 million
- Skagway Port Facilities - \$10 million

Recent Investment in Infrastructure Construction

- Railroad Extension from Eielson, AFB to Delta Junction (Tanana River Bridge) -\$156 million
- Railroad Extension from Port Mackenzie to Mainline -\$150 million.





Known Metallic Mineral Occurrences in Alaska, Yukon Territory, and Northwestern British Columbia

- Alaska – 7,200
- Yukon Territory – 3,400
- Northwestern British Columbia – 13,000 +
- Estimated Expected Gross Metal Value of these known metallic mineral occurrences exceeds \$1,000,000,000,000.

Attributes of Lighter than Air Airships to Mineral Development (After Prentice and Thomson, 2009)

- Limited new infrastructure requirements
- Low utility challenges
- Flexibility
- Infrastructure scalability
- High payload capacity and over dimensional cargo capability
- Multipurpose payload configurations
- Environmentally respectful
- Year round operating capability
- Climate change risk mitigation
- Socio-economic benefits
- Reduced transportation costs (vs DC-6 and C-130)
- Economic development opportunity (currently only upper 90th percentile tonnage and grade deposits near tidewater or existing infrastructure are developed in Alaska)



Questions?

Thank You

Mineral Resources of Alaska

