

**10-27-10
Energy
Require-
ments for
Proposed
Mines**

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Proposed Mines</subject><comm>HENE26</comm></target>

**Alaska Legislature
House Special Committee on Energy**



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AGENDA

Wednesday, October 27, 2010

11:00 a.m.

Anchorage LIO (#220)

TOPIC: Energy Requirements for Proposed Mines in Alaska

- 1) Status of the Mining Industry in Alaska
Lorna Shaw, Executive Director, Council of Alaska Producers
- 2) James Fueg, Donlin Creek Mine
- 3) John Shively, The Pebble Project
- 4) Dan Graham, Chuitna Coal Project
- 5) Karl Hanneman, Livengood Project
- 6) Lorali Carter, Wishbone Hill Mine (Usibelli)

*Invited testimony only
Meeting will be Teleconferenced*

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The Energy Needs of Alaska's Metal Mining Industry

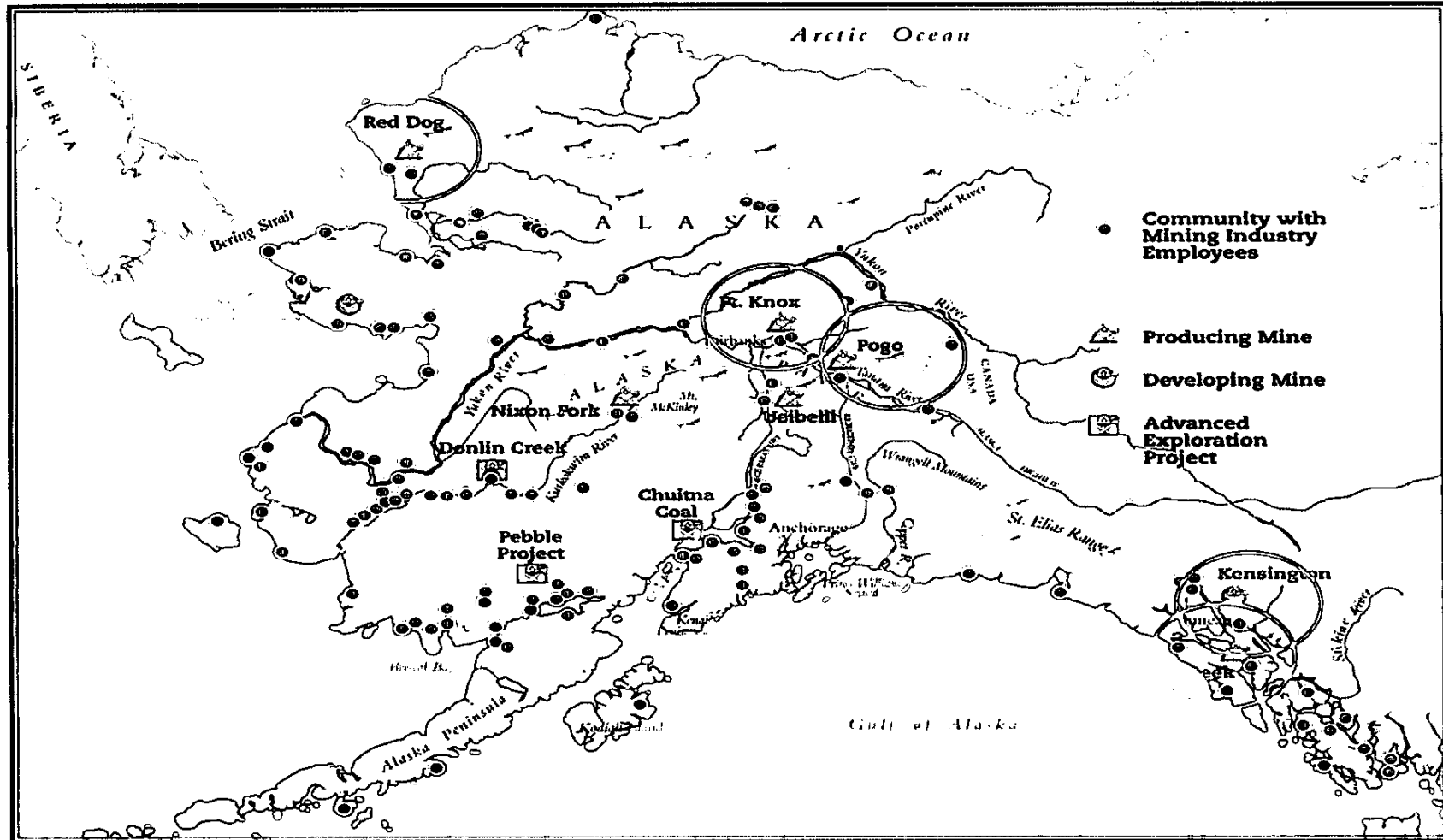
Lorna Shaw, Executive Director
Council of Alaska Producers

October 27, 2010



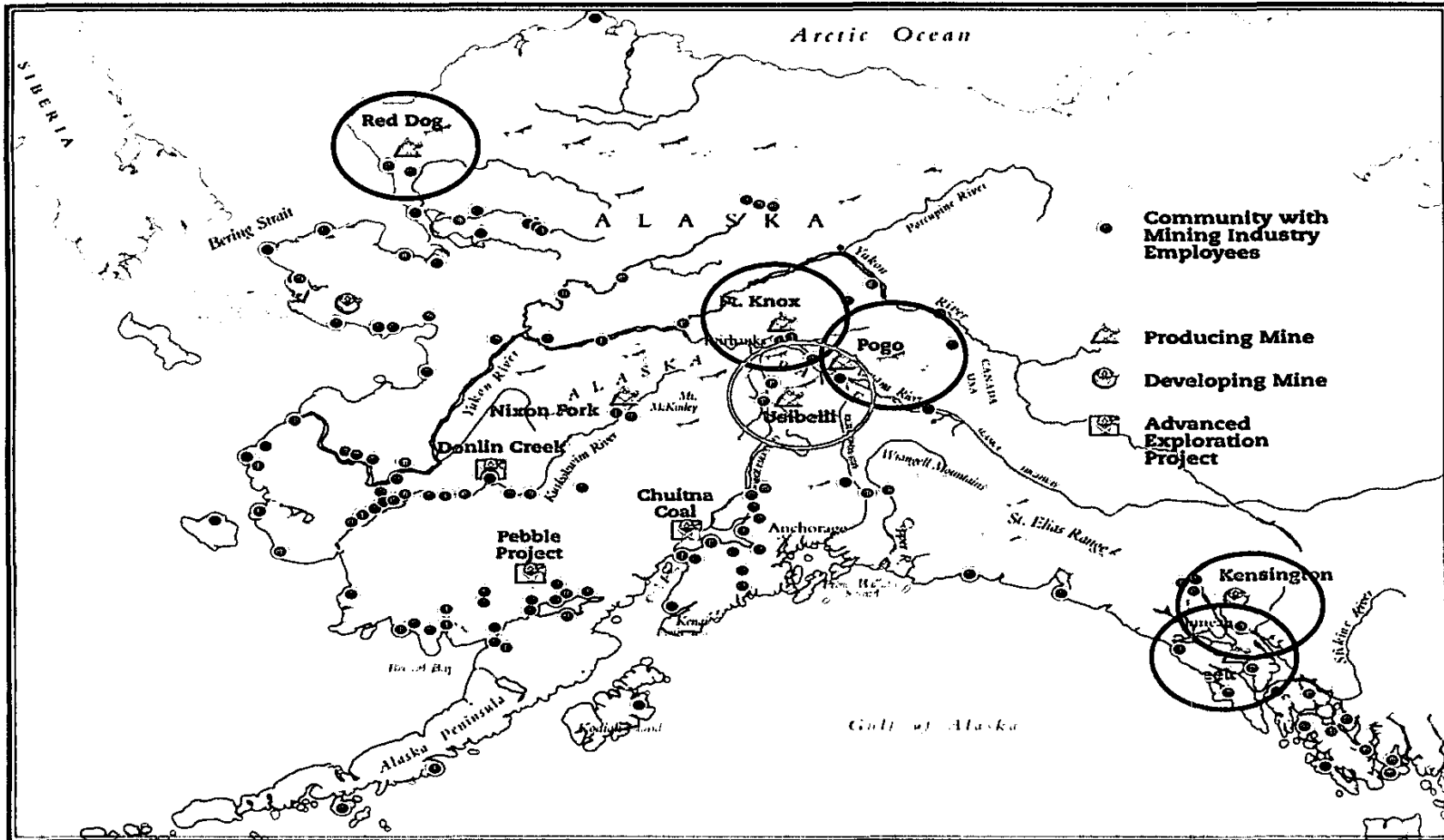
Council of
Alaska Producers

Five operating large metal mines



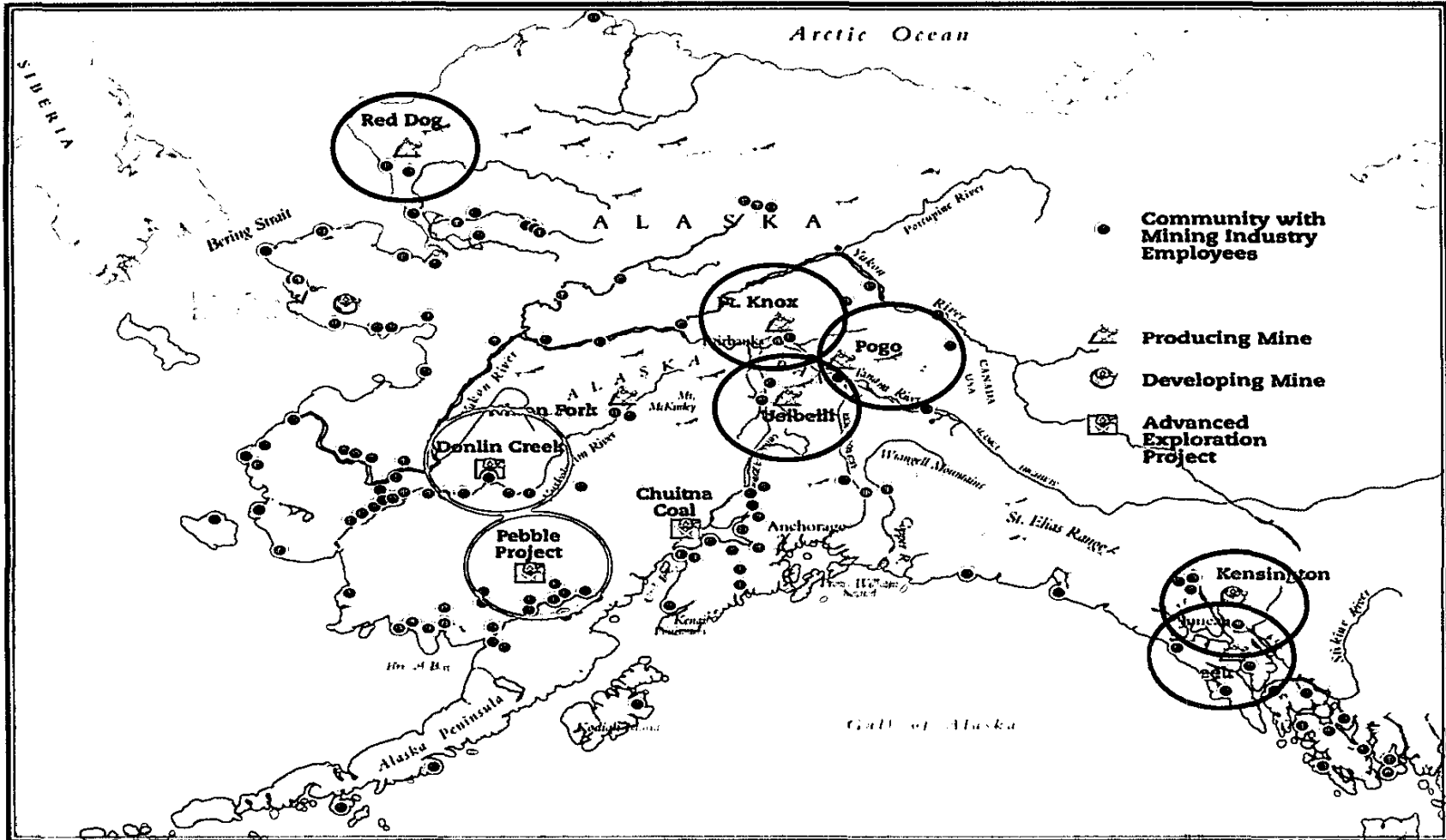
Council of
Alaska Producers

One operating coal mine



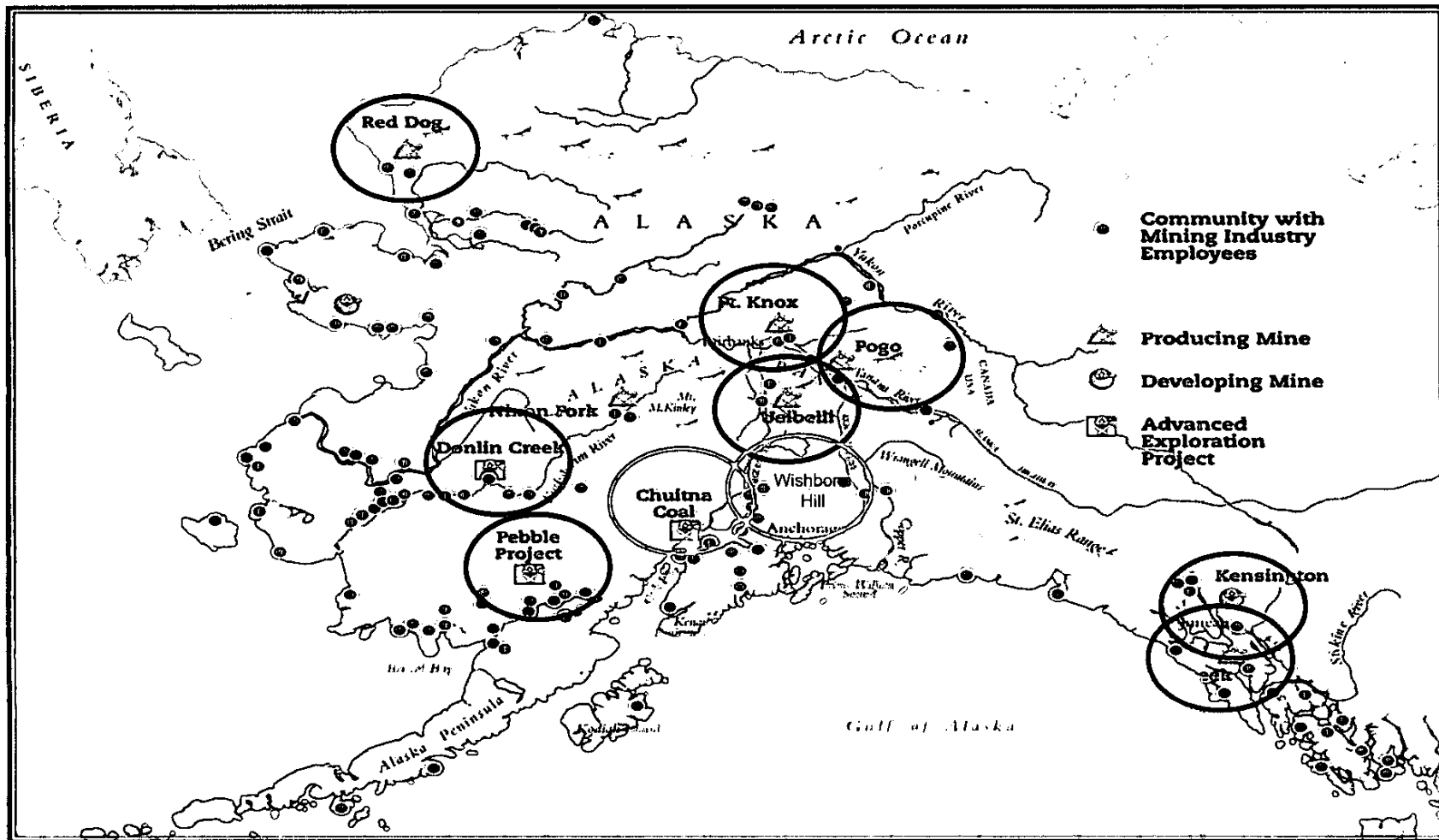
Council of
Alaska Producers

Two advanced exploration metal projects



Council of
Alaska Producers

Two advanced exploration coal projects



Council of
Alaska Producers

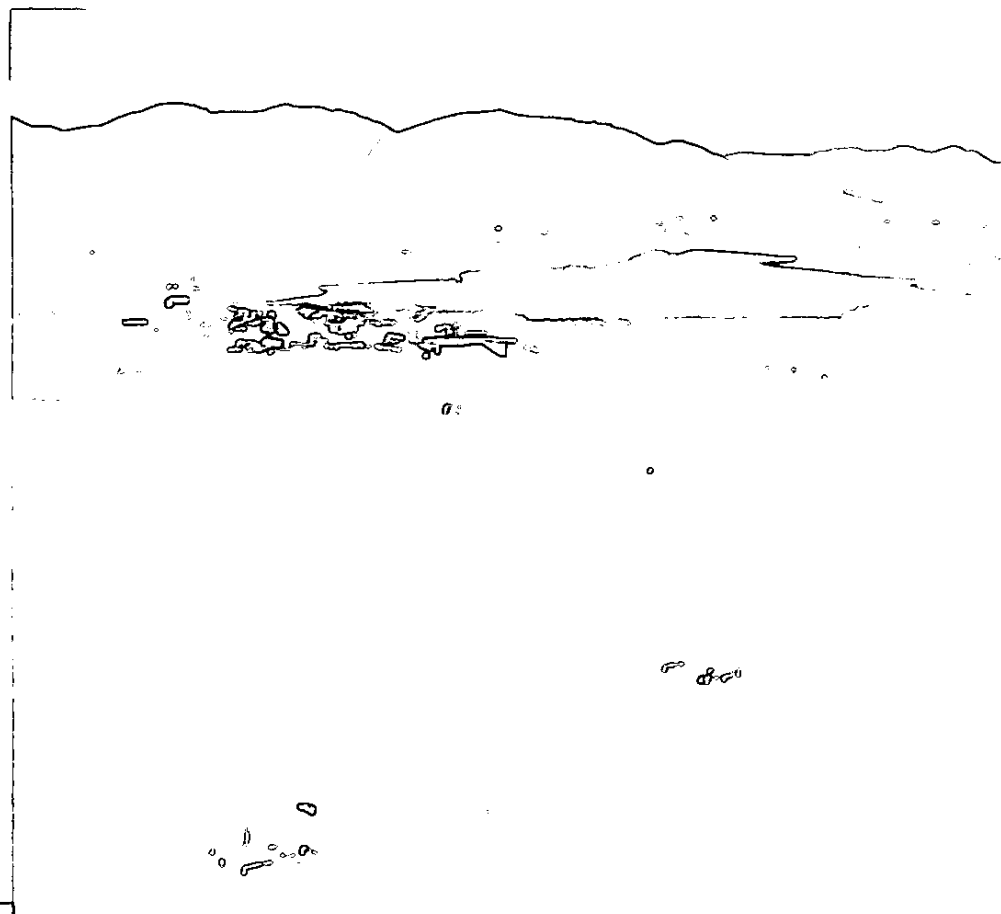
Red Dog



cap

Council of
Alaska Producers

Red Dog Mine and Port: One of the world's top Lead and Zinc producers



Power

- 43MW power generation on-site
- 15.5 M gallons fuel annually
- Waste heat provides space heating

Mine Ops/Port Haul

- 1.4 M gallons fuel annually
- 0.15 M gallons jet fuel annually



Council of
Alaska Producers



Fort Knox



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Alaska Producers

Fort Knox:

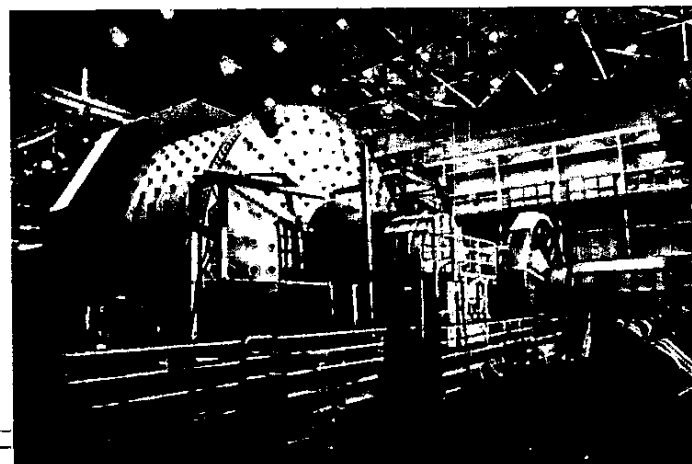
Producing Gold in Alaska's Golden Heart

Power

- 33.5 MW from GVEA
- 250 MW consumed annually

Mine Ops

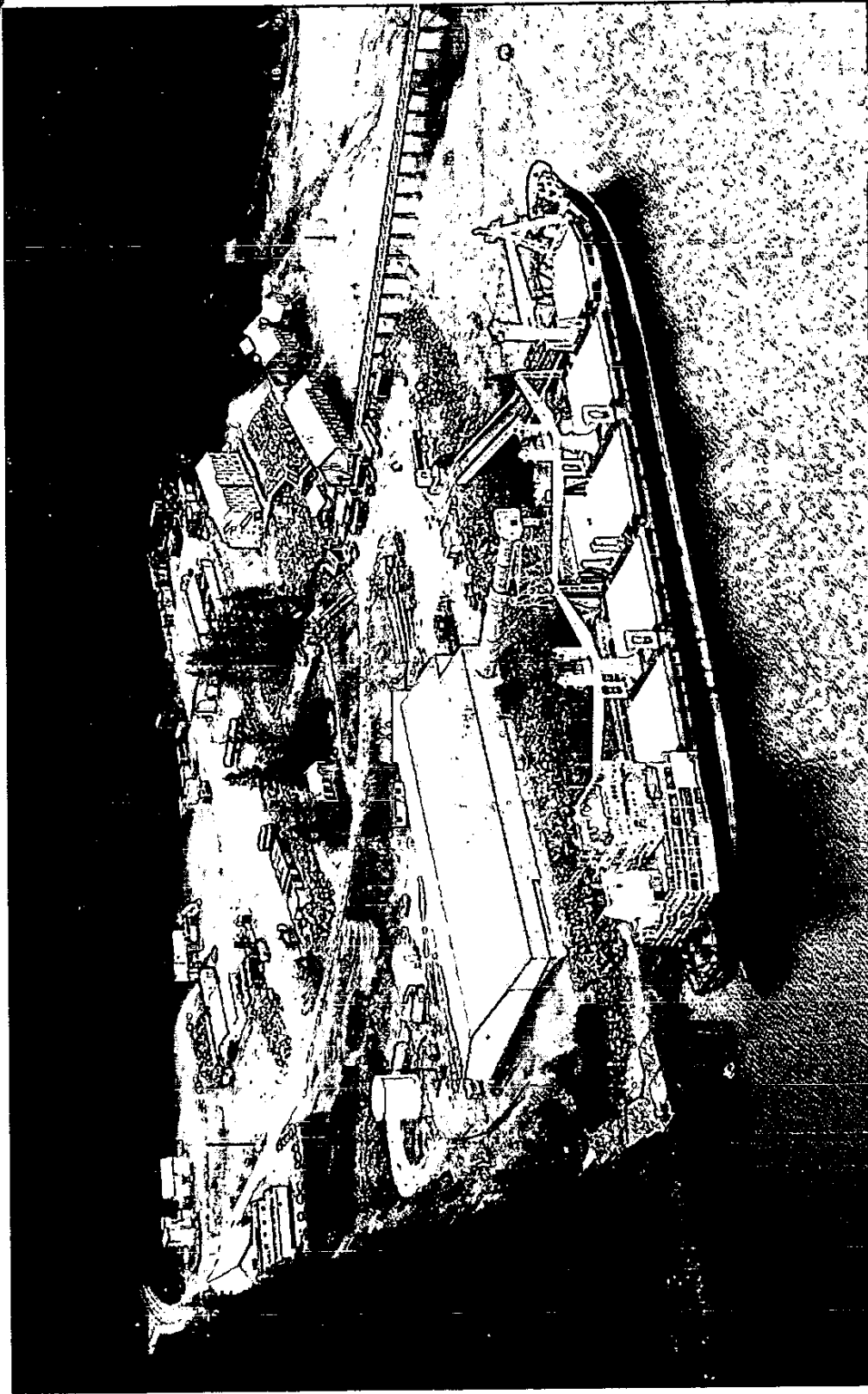
- 10.5 M gallons fuel annually



Cap

Council of
Alaska Producers

Greens Creek



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Council of
Alaska Producers

Greens Creek:

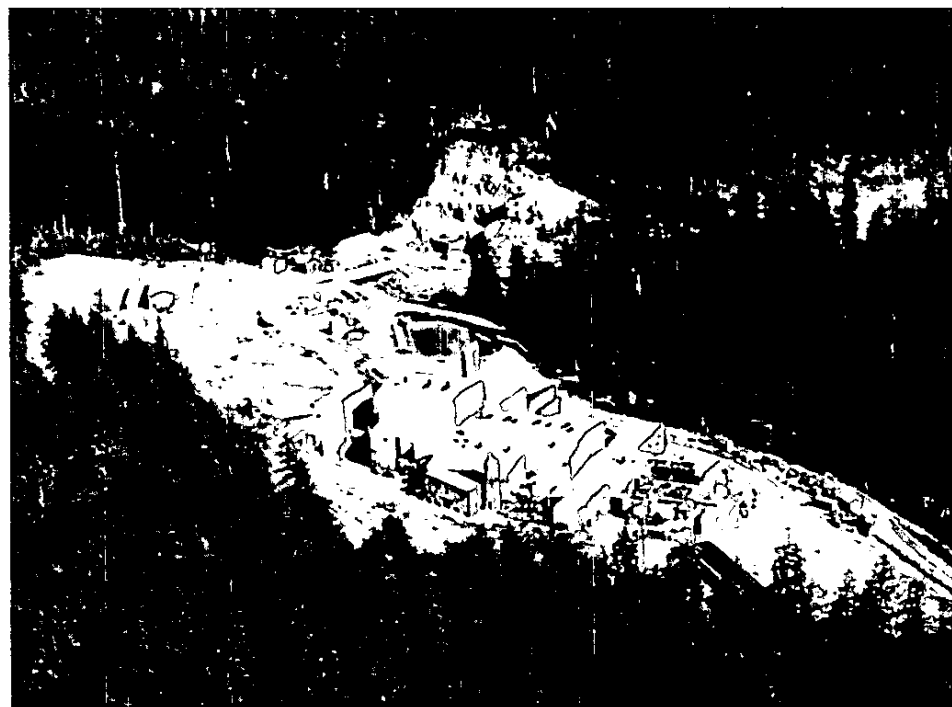
Alaska's source for Lead, Zinc, Silver and Gold

Power

- On-site diesel generation until 2006
- SE AEL&P Intertie provides hydro-power
- 9/09 Dorothy Lake Project
- 95% power from AEL&P
- 7.5 MW consumed

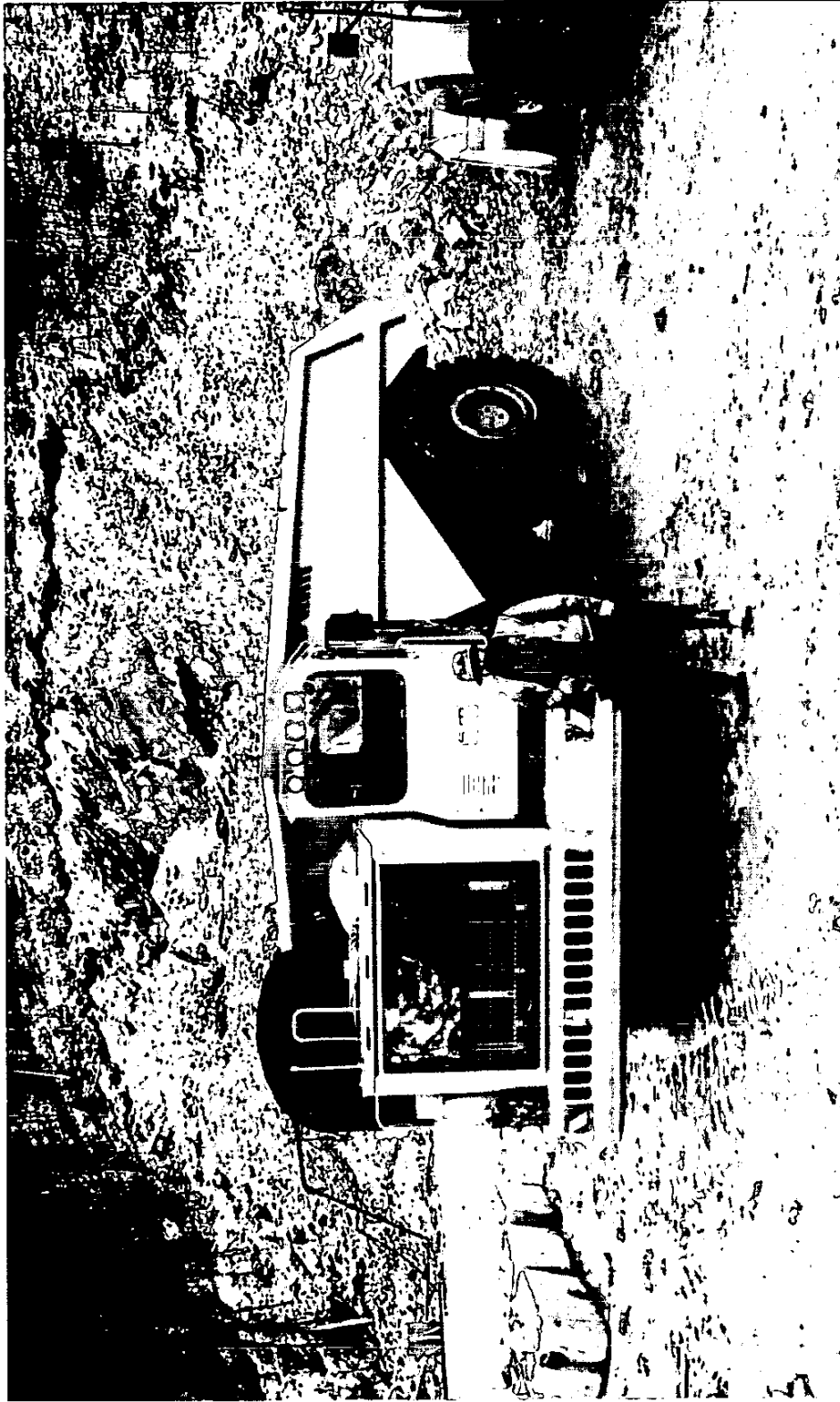
Fuel

- 6M gallons fuel annually when producing 100% of power



Council of
Alaska Producers

Pogo



cap

Council of
Alaska Producers

Pogo: Alaska's top Gold producer



Power

- 10MW from GVEA
- 50 mile line

Mine Ops

- 1.94M gallons diesel
- 1.0M gallons propane (winter use only) for heat



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Alaska Producers

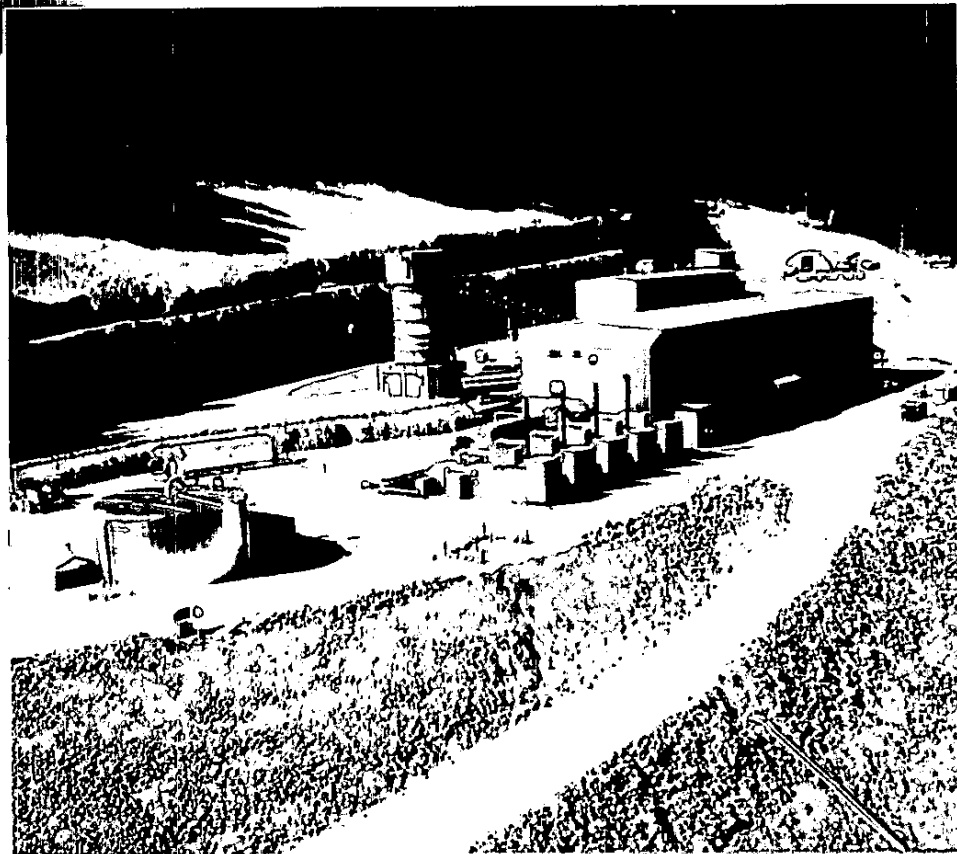
Kensington



Alaska Producers

Kensington:

Alaska's newest gold mining operation



Power

- Six 1.2 MW gensets
- Five currently in place

Mine Ops

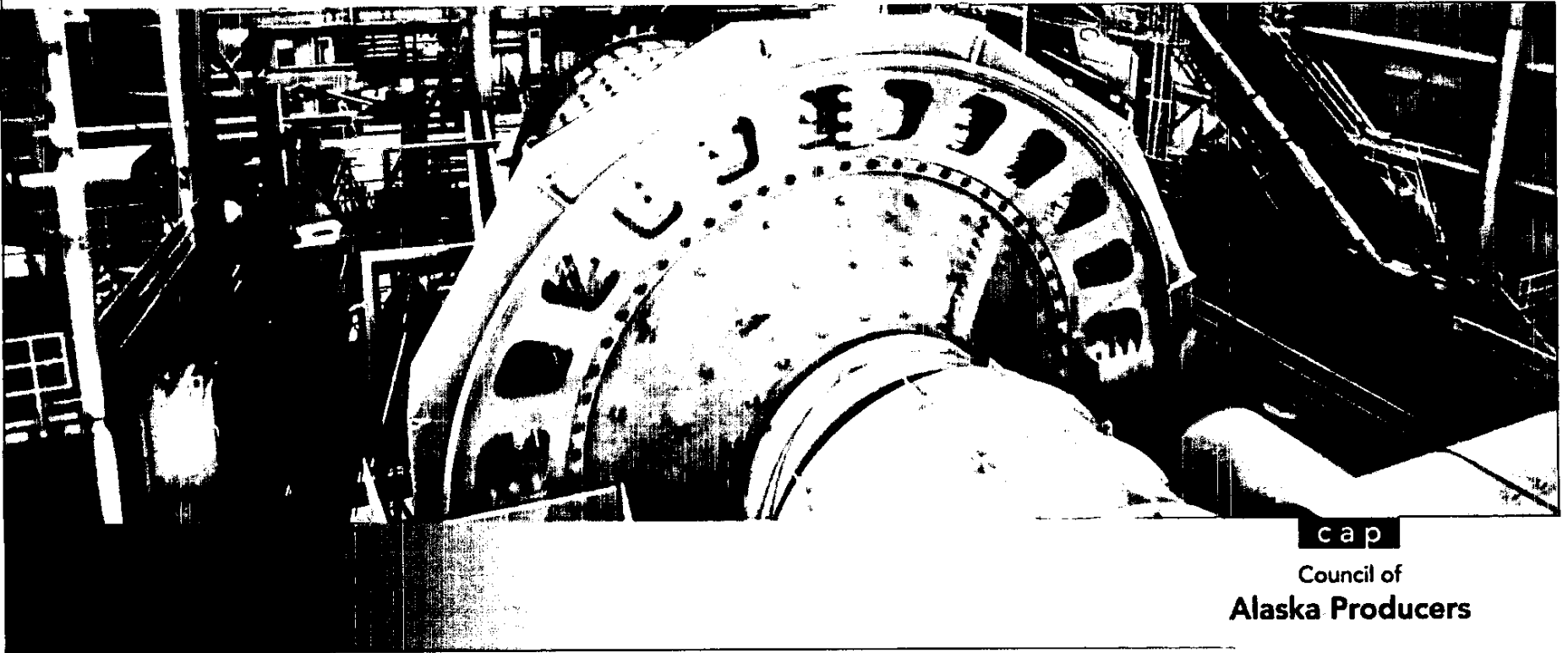
- Currently use approximately 0.9M gallons fuel
- Estimated use for operations is approximately 3M gallons annually



Council of
Alaska Producers

Powering Alaska's Mines

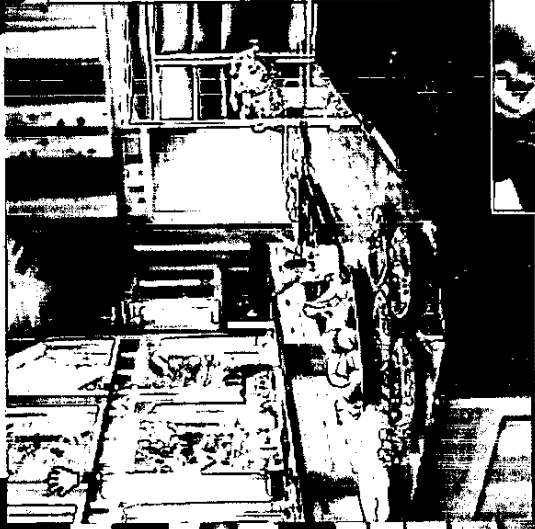
- Energy intensive operations
- Power unavailable in many areas of the state
- Affordable power is critical to build a mine



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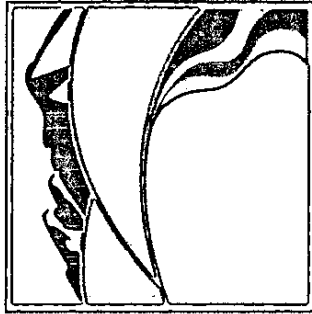
Council of
Alaska Producers

Alaska's Mining Industry



**Providing the Building Blocks
for Modern Life**

*House Energy Committee
Hearing on Energy Requirements
for Proposed Mines
October 27th, 2010*



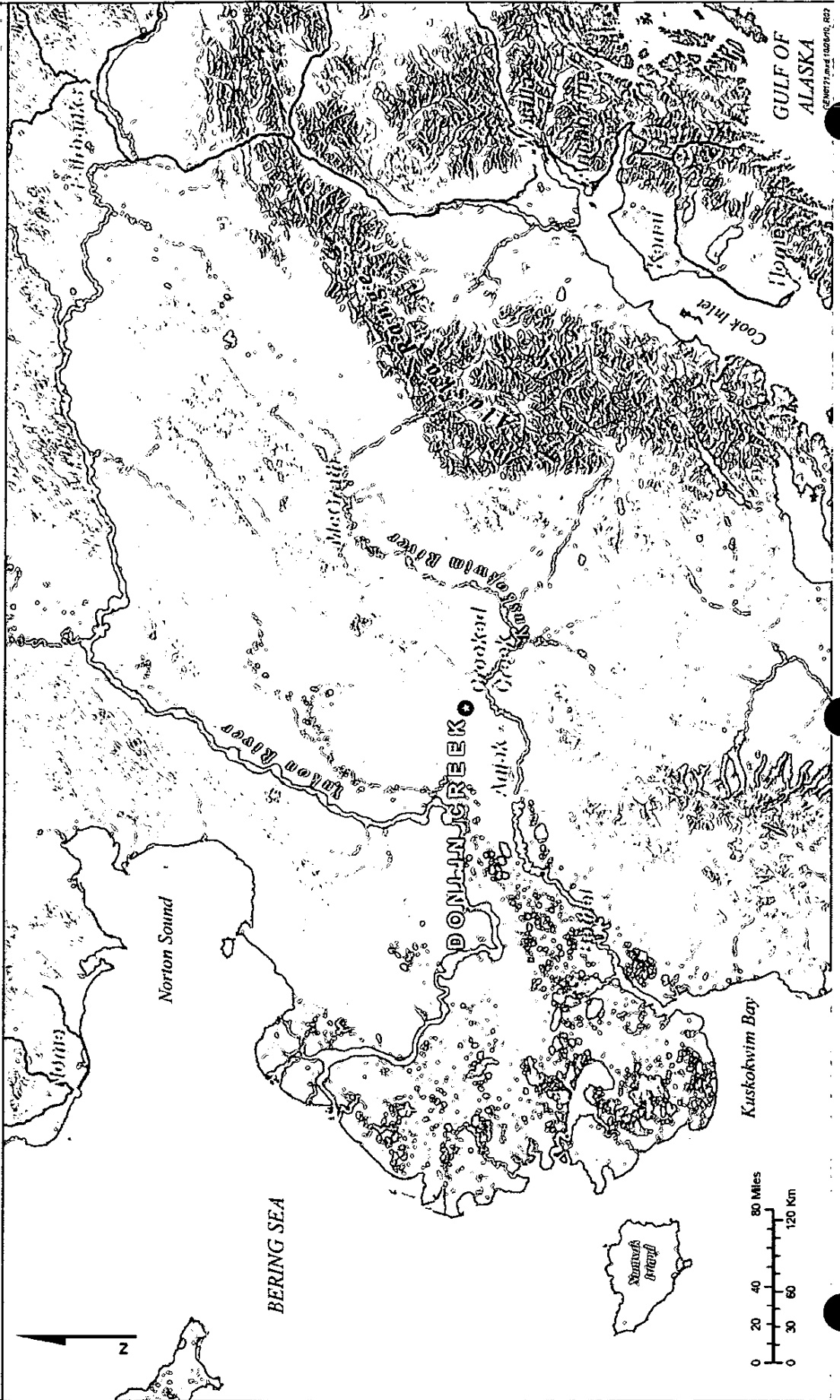
DONLIN CREEK
A BARRICK/NOVAGOLD COMPANY

James Fueg, Technical Manager

Donlin Creek - Location



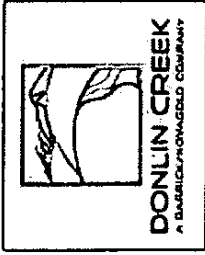
DONLIN CREEK
A BARBER-NICHOLS COMPANY



GULF OF ALASKA

ENR71 and 10060, 807

Donlin Creek Project



- Partnership between Barrick Gold and NovaGold
 - Lease agreement with Calista Corp.
 - Surface use agreement with The Kuskokwim Corp.
- Large gold resource of more than 30 million oz.
- Potential mine life of more than 25 years
- Could produce significant regional infrastructure
- Employment potential
 - Up to 3,000 jobs during construction
 - Up to 800 during operations

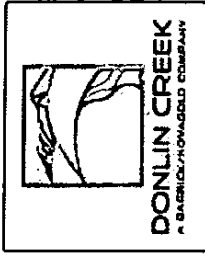
Project Energy Requirements



DONLIN CREEK
A BARRICK/HOVARLD COMPANY

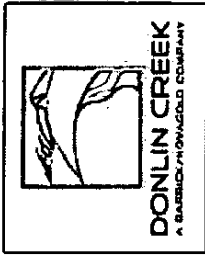
- Multi-stage process will require significant amounts of reliable power
- Total electrical load
 - Average running load ~130 Mw (similar to Fairbanks)
 - Peak load ~152Mw
- Additional diesel requirements for fleet fuel

Energy Options Evaluated



- Diesel based generation supplemented by wind
- Electrical intertie to Nenana
- Peat, hydro, nuclear, coal, biomass
- Gas pipeline

Gas Pipeline Option

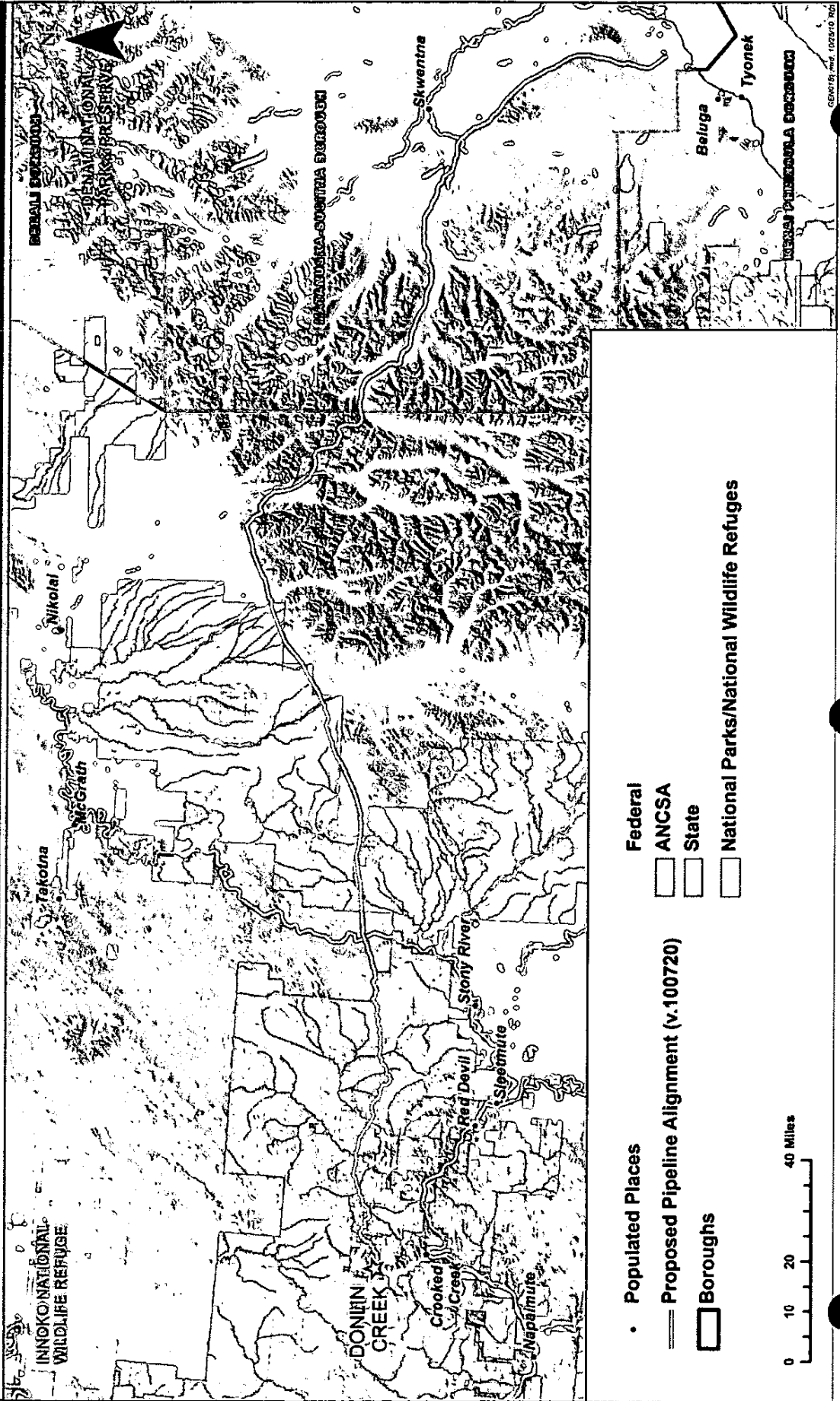


- Gas pipeline route from Cook Inlet
- Route totals 325 miles with no infrastructure
- Buried 12 inch steel gas only pipeline
- Aim is to construct using temporary access

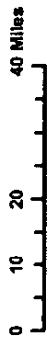
Pipeline Route



DONLIN CREEK
A GAMBEL/PROVINCIAL COMPANY

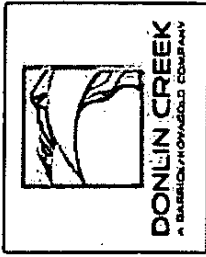


- Populated Places
- Proposed Pipeline Alignment (v.100720)
- Boroughs
- Federal
 - ANCSA
 - State
 - National Parks/National Wildlife Refuges



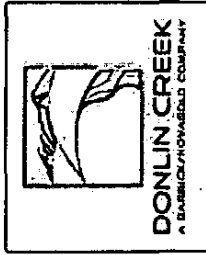
GEN018; rev. 1025/0701

Gas Requirements



- Project would require ~ 25 million cubic feet of gas/day
 - Demand may increase if gas is used to offset other energy requirements
 - Approximately 10% of Cook Inlet demand (without industrial users)
 - Constant year round load (no seasonal variation)
- Exploring multiple options for sourcing gas

Project Schedule



- Evaluate project feasibility
 - Major field program completed fall 2010
 - Updated feasibility study completed mid 2011
- If economically viable and subject to partners approval, project goes to permitting fall of 2011
 - Mine and pipeline permitted as a single project
 - Anticipate a multiyear NEPA review (EIS)
- If permits are granted, construction begins
 - Anticipate three to four years for project construction



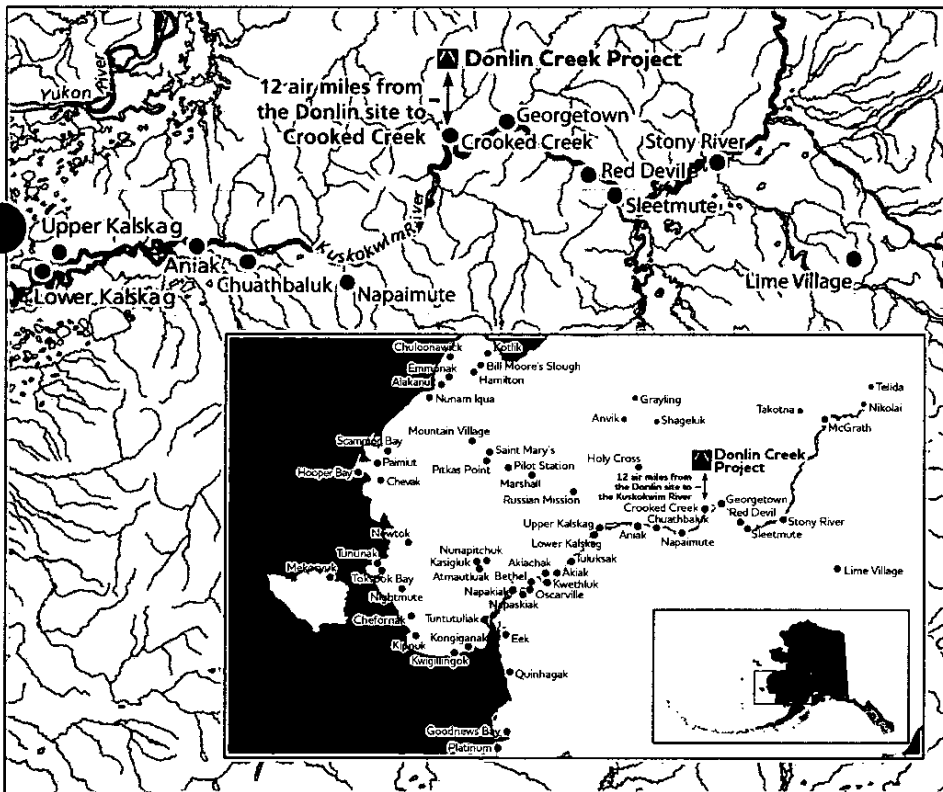
DONLIN CREEK LLC

A BARRICK/NOVAGOLD COMPANY

EXECUTIVE SUMMARY

THE DONLIN CREEK DEPOSIT

The Donlin Creek project is a large, undeveloped gold deposit located in the historic Kuskokwim Gold Belt of southwestern Alaska. Current estimates based on extensive exploration drilling approximate the deposit at about 30 million ounces of in-place resources. The property is under lease from Calista Corporation and the Kuskokwim Corporation, two Native Alaskan Corporations, and is located 12 miles north of the community of Crooked Creek, Alaska.



PROJECT HIGHLIGHTS:

- Estimated 25-year mine life, producing approximately 1.3 million ounces of gold annually
- During the three-year mine construction period it is estimated up to 3,000 jobs would be created
- While the mine is involved in production operations, it is estimated 600 to 800 jobs would be created
- DCLLC places a high value on local hire and doing business with Alaska-based companies
- Development means local employment and training opportunities

DONLIN CREEK LLC

The Donlin Creek LLC (DCLLC) is a 50-50 venture owned equally by Nova Gold Resources, Inc. and Barrick Gold U.S., Inc. It oversees the development and operation of the project.

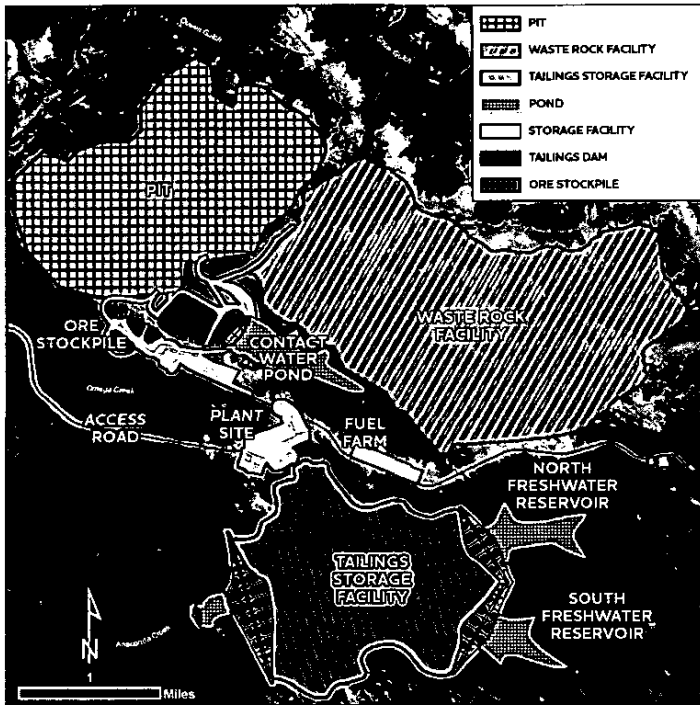
Many Calista shareholders and descendants are employed at Donlin Creek, and DCLLC relies on Calista businesses to support the project. In addition, DCLLC contributes to Calista scholarship funds and supports Calista charitable events. DCLLC also has a land payments agreement with the Kuskokwim Corporation.

COMMITTED TO STEWARDSHIP.

PROPOSED MINE LAYOUT

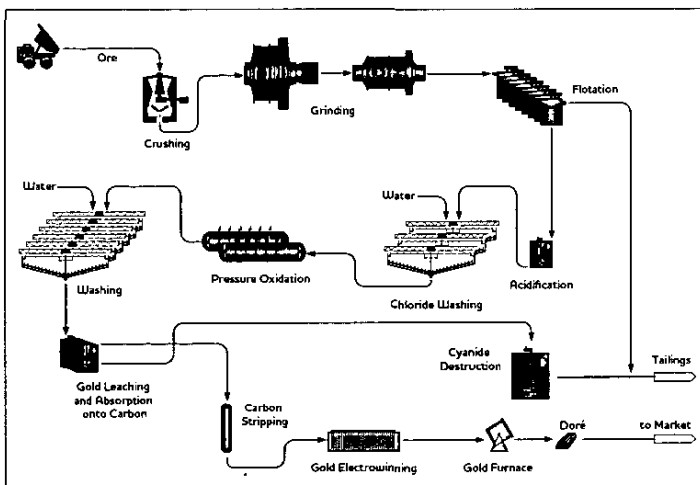
Donlin Creek would be an open pit gold mine. The operation would be a conventional truck and shovel mining site, processing approximately 50,000 to 60,000 metric tons of ore per day. A new airstrip and on-site housing would be built, along with a port on the Kuskokwim River, an on-site power generation plant, a wind turbine farm, conveyor systems, a mill, water treatment plant, truck shop, labs, sewage treatment plant, offices, warehouses and on-site access roads.

Assuming that all the needed permits and approvals are received, it would take about three years to construct the infrastructure and facilities required for this project.



SIMPLIFIED MILLING PROCESS FLOW CHART

The mineralized rock at Donlin Creek requires processing to extract the gold.



ENVIRONMENTAL STEWARDSHIP

Numerous studies of the Kuskokwim River have been done and are continuing, so that the effects of additional activity required to construct and operate the mine can be evaluated.

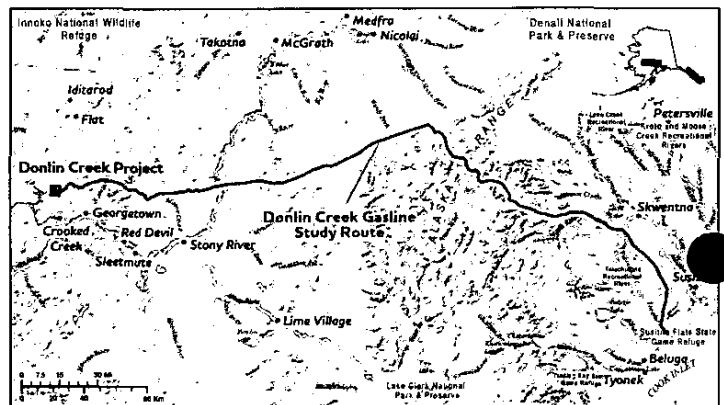
Studies include:

- fishing activity and river use surveys from Georgetown to Kuskokwim Bay
- erosion studies
- barge wake impact studies
- sediment and water sampling
- noise observations
- wildlife observations

CURRENT WORK AT THE PROJECT

A key challenge facing the project is energy. The operating mine will require a power plant and a fleet of heavy equipment. Studies are currently underway to investigate the possibility of a 325-mile, 12-inch buried pipeline to bring natural gas to the site for producing the needed electricity to power the mine.

PIPELINE STUDY ROUTE



NEXT STEPS

DCLLC is working to complete a feasibility study for the project, which will provide an estimate of the costs to build the mine and the target dates for construction and production. Ecological data collection and baseline studies are being completed. These are requirements for mine permitting if a decision to go forward is made in the future.

ECONOMIC POTENTIAL

If Donlin Creek is developed, it would be among the world's largest gold mines and a major employer in the Yukon-Kuskokwim region of southwest Alaska. Currently the area is one of the state's most economically depressed areas.

DCLLC will continue to work closely with regulators, its Alaskan Native partners and local communities to ensure all stakeholders are informed as the project advances. For more about the Donlin Creek project contact Donlin Creek LLC:

4720 Business Park BLVD, Suite G25, Anchorage, AK 99503
(907) 273-0200, info@donlincreek.com

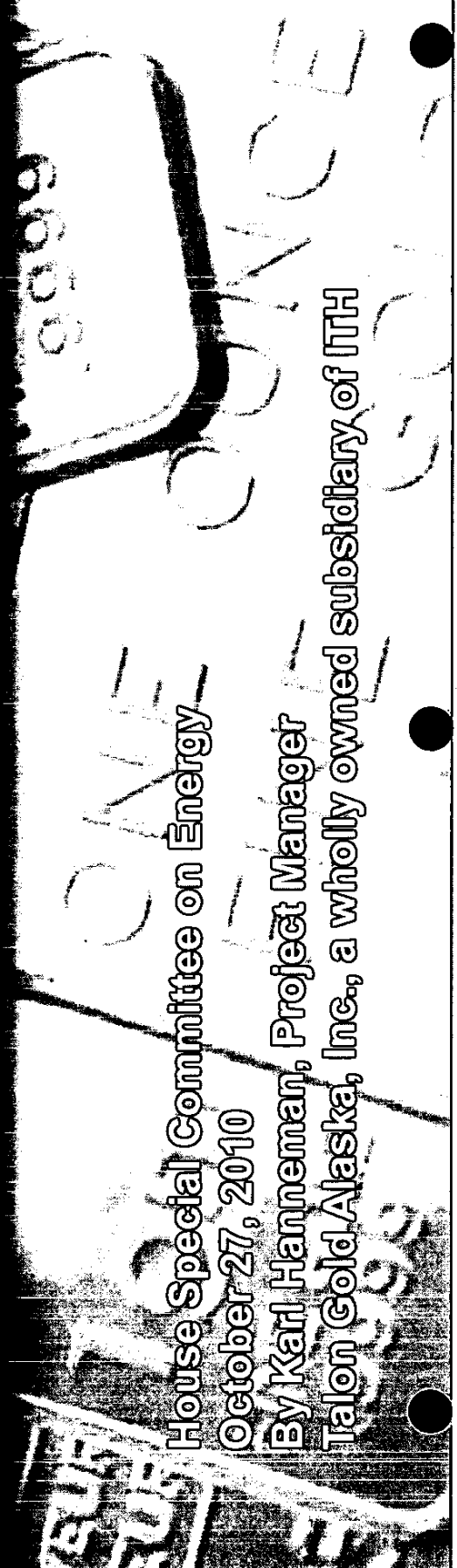
www.donlincreek.com

Money Knob Gold Project Livengood, Alaska Future Energy Needs



INTERNATIONAL
TOWER
- HILL -
MINES LTD

House Special Committee on Energy
October 27, 2010
By Karl Hanneman, Project Manager
Talon Gold Alaska, Inc., a wholly owned subsidiary of ITH





Forward-Looking & Cautionary Statements

Certain of the statements contained in this presentation, including, without limitation, statements regarding the anticipated content, commencement and cost of exploration programs, anticipated exploration program results, the discovery and delineation of mineral deposits/resources/reserves, the anticipated preparation and timing of an updated 43-101 resource estimate and an initial preliminary economic assessment at Livengood, the potential for a significant expansion of the Livengood resource, the economic outlook for the gold mining industry, the Company's expectations regarding gold prices and production, the commencement of commercial operations on the Company's properties, potential mining scenarios at the Company's properties and its future liquidity and capital resources and planned expenditures, are forward-looking statements. Information concerning mineral resource estimates may also be deemed to constitute forward-looking statements in that it reflects a prediction of mineralization that would be encountered if a mineral deposit were to be developed and mined. Although the Company believes that such statements are reasonable, it can give no assurance that such expectations will prove to be correct.

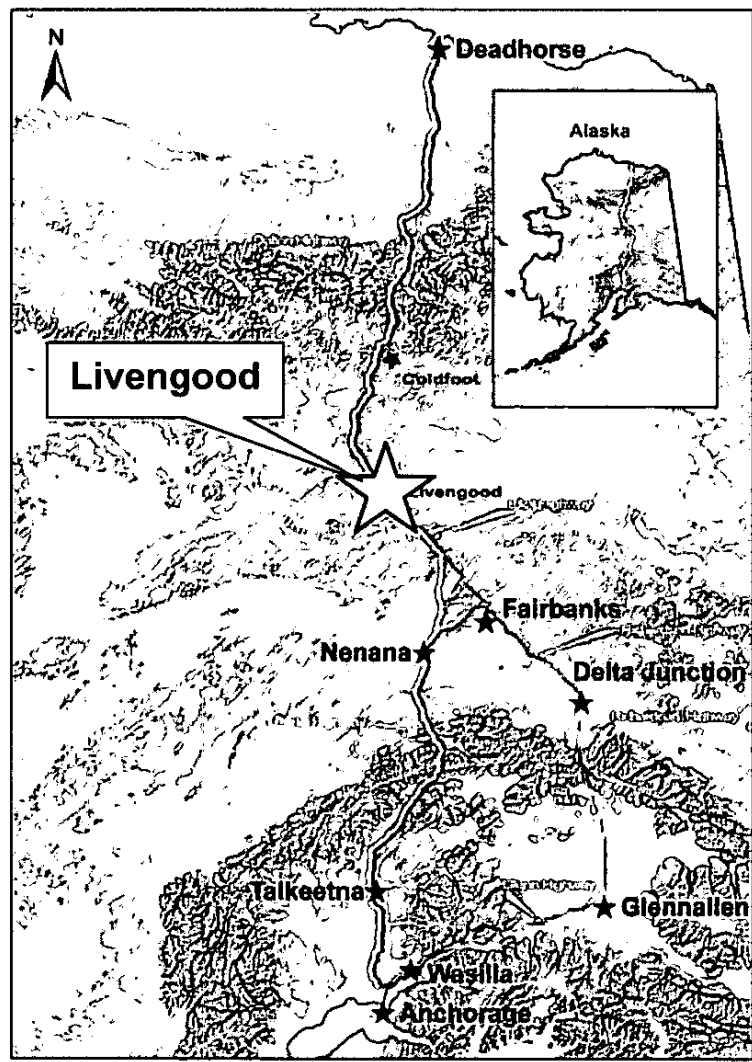
Accordingly, the Company cautions that any forward-looking statements are not guarantees of future results or performance, and that actual results may differ materially from those set out in the forward-looking statements as a result of, among other factors, variations in the nature, quality and quantity of any mineral deposits that may be located, the Company's inability to obtain any necessary permits, consents or authorizations required for its activities, material adverse changes in economic and market conditions, changes in the regulatory environment and other government actions, fluctuations in commodity prices and exchange rates, the inability of the Company to raise the necessary capital for its ongoing operations, and business and operational risks normal in the mineral exploration, development and mining industries, as well as the risks and uncertainties disclosed in the Company's most recent Annual Information Form filed with certain provincial securities commissions in Canada and in the Company's most recent Form 20F filed with the United States Securities and Exchange Commission, available at www.sedar.com and www.sec.gov, respectively. The Company undertakes no obligation to update publicly or release any revisions to these forward-looking statements to reflect events or circumstances after the date of this presentation or to reflect the occurrence of unanticipated events. All subsequent written or oral forward-looking statements attributable to the Company or any person acting on its behalf are qualified by the cautionary statements herein.

Scientific or technical information contained herein is derived from the Company's technical reports which include more detailed information with respect to the Company's properties, including the dates of such reports and the estimates included therein, details of quality and grade of each resource, details of the key assumptions, methods and parameters used in the resource estimates, a general discussion of the extent to which the resource estimates and the other estimates and projections included in the reports may be materially affected by any known environmental, permitting, legal, taxation, socio-political, marketing, or other relevant issues. **The company's preliminary economic assessment (PEA) discussed herein is preliminary in nature, includes inferred mineral resources that are considered too speculative geologically to have economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the preliminary assessment will be realized. Mineral resources that are not mineral reserves do not have any demonstrated economic viability.**

The Company uses certain terms in this presentation, such as "resources," "indicated" and "inferred" that the SEC's guidelines strictly prohibit U.S. registered companies from including in their filings with the SEC. Accordingly, the Company's disclosures regarding mineralization may not be comparable to similar information disclosed by US registered companies. You are urged to consider closely the disclosure in the Company's latest Form 20-F annual report, which may be secured from the Company, or from the SEC's website at www.sec.gov.

Note: All monetary values are USD unless otherwise stated.

Money Knob Gold Project Highlights



Significant and Expanding Gold Deposit

Indicated Resources of 10.9Moz @ 0.83 g/t Au
and Inferred Resources of 2.4Moz @ 0.79 g/t
Au (0.5 g/t cutoff). (June 2010)

Compelling economic assessment

Deposit geometry supports low-cost bulk tonnage
mining and processing

Favorable infrastructure

Historic mining district with local trail network

Accessible via all weather paved highway, 70 road
miles north of Fairbanks

Adjacent to potential natural gas transportation
routes

Project Status

Experienced development team moving through
pre-feasibility phase in advance of permitting.

Money Knob Gold Deposit

Money Knob

Outcropping Deposit Dipping shallowly into the photo

1 Km

2.5 Km

Aerial view looking southeast at Money Knob Deposit

Livengood Hardrock History



1914 Placer Gold discovered in Livengood valley

1914-1950's small scale prospecting by old times located small veins and dikes with gold – local hill named “Money Knob”

1976 Homestake

6 bore holes

 1981 Occidental

6 bore holes

1991 AMAX

3 bore holes

1996 Placer Dome

9 bore holes

1999 Cambior

soil geochemistry

2003-2005 Anglo Gold Ashanti

12 bore holes

2006 to present – ITH

450 RC boreholes

85 core boreholes

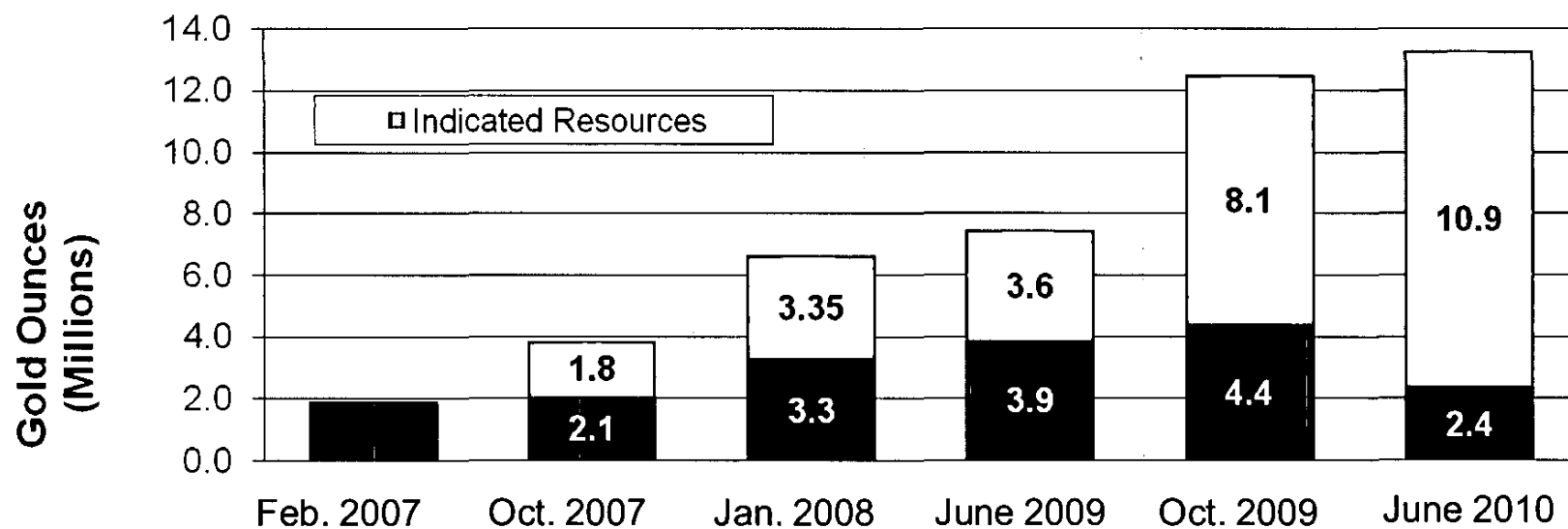


Note that it was almost 2 decades after State geologists helped the Alaska Mental Health Trust select the Livengood area for its mineral potential before a major hardrock gold resource was identified

Livengood Resource Growth

Livengood Independent Resource, June 2010

Classification	Gold Cutoff (g/t)	Tonnes (millions)	Gold (g/t)	Million Ounces Gold
Indicated	0.30	789	0.62	15.7
Inferred	0.30	229	0.55	4.0
At 0.50 g/t Au Cut-off				
Indicated	0.50	409	0.83	10.9
Inferred	0.50	94	0.79	2.4
At 0.70 g/t Au Cut-off				
Indicated	0.70	202	1.07	6.9
Inferred	0.70	40	1.06	1.4



Project Phases



Underway
to be completed December 2011

1. **Pre-Feasibility**
2. **Pre-permit application consultation**
 1. **Agency and public interaction**
 2. **Project optimization**
3. **Permit Application**
4. **Permitting and Feasibility Study**
5. **Construction**
6. **Operation**
7. **Reclamation and Closure**

Money Knob

Potential Energy Needs



- **Project in early stage**
 - **Resource still being defined**
 - **project not yet designed**
- **Conceptual energy requirements**
 - **If heap leach only (10-15MW)**
 - **If large mill and heap leach (70-80MW)**
 - **Low-sulfur diesel for mobile equipment**

Money Knob

Potential Power Needs



- **Will evaluate purchased power (GVEA) vs. local self generation**
 - **Railbelt energy has better reliability**
 - **Railbelt energy offers source diversity with improved supply and price stability (oil, gas, coal, hydro, wind?)**
 - **If installed capacity is part of railbelt grid, it can benefit Alaskans after mine life**

State Efforts can Make a Difference



- **Share environmental baseline studies already completed along Fairbanks-Livengood utility corridor in order to avoid wasteful duplication of effort and save time in advance of permitting of potential transmission line to Livengood**

State Efforts can Make a Difference



- **Support low cost power on railbelt grid**
 - **benefits all Alaska**
 - **encourage utility consolidation**
 - **encourage long term planning for low cost power**
 - **Susitna?**
 - **Support efforts to commercialize gas**
 - **ROW assistance for small pipeline to Fbks?**
- **Support efforts to produce low-sulfur diesel**



Thank You

TALONGOLD
Alaska Inc. A SUBSIDIARY OF ITH



Creating Value Through Discovery





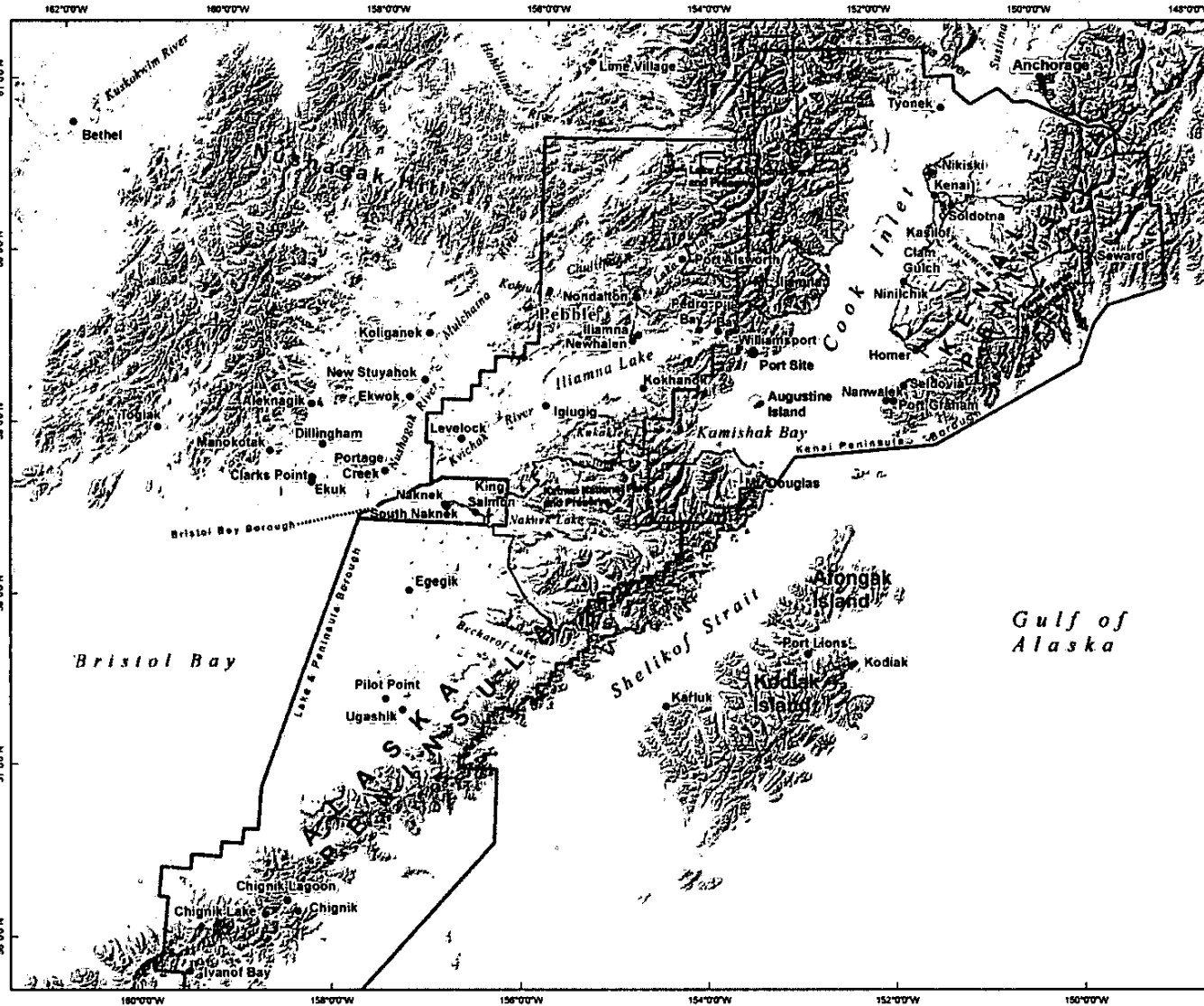
Pebble Prospect
John Shively

OCT 2010





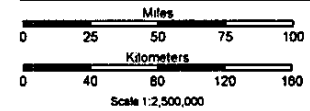
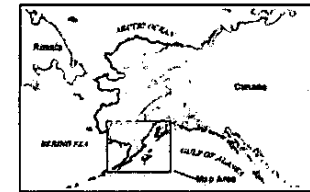
Prospect Location



Regional Map

Legend

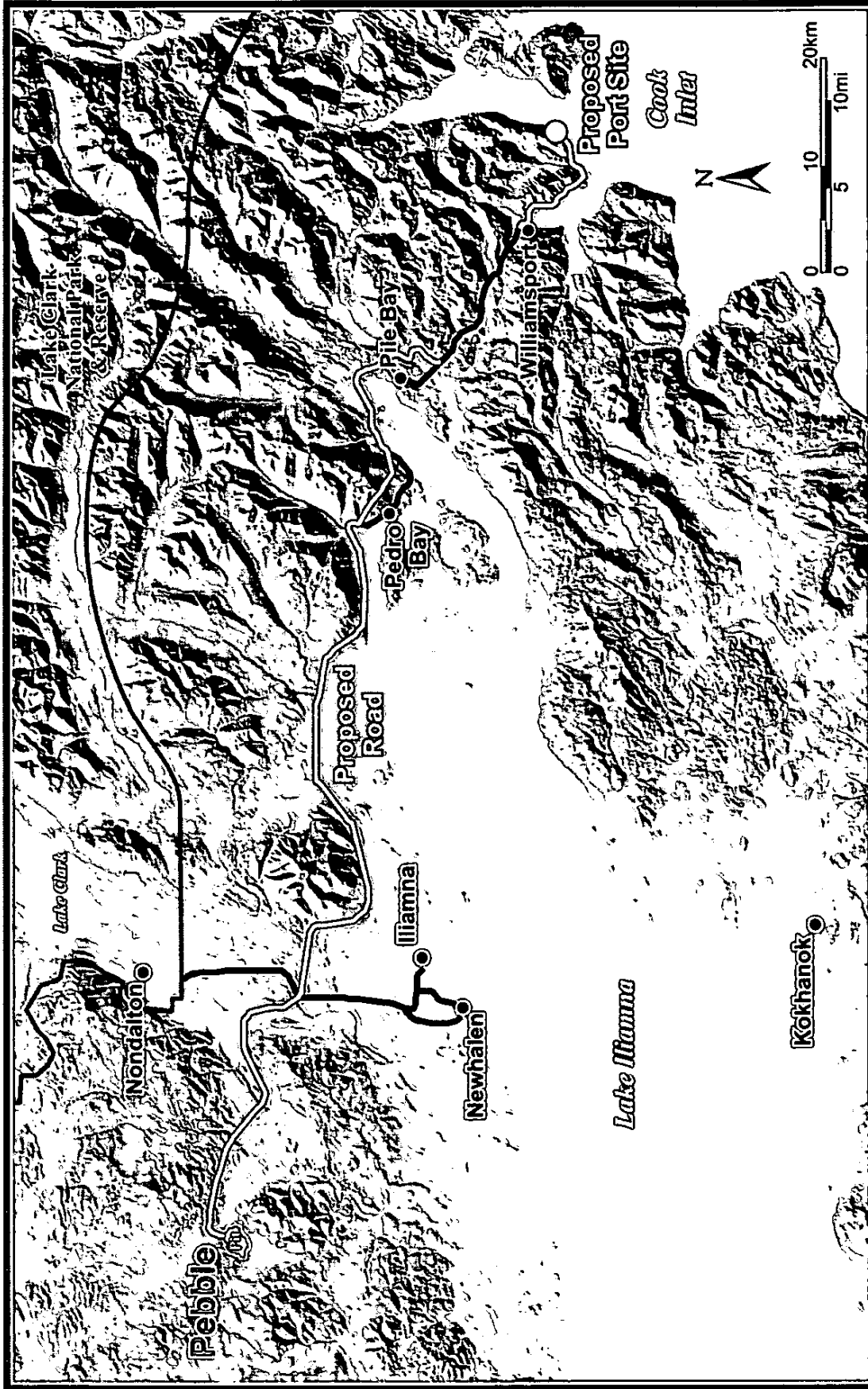
- Communities
- Possible Port Site
- ADOT&PF Road Study Corridor
- Existing Roads
- ◊ Deposit Site
- ⊕ National Park
- ⊕ National Preserve
- Borough Boundary

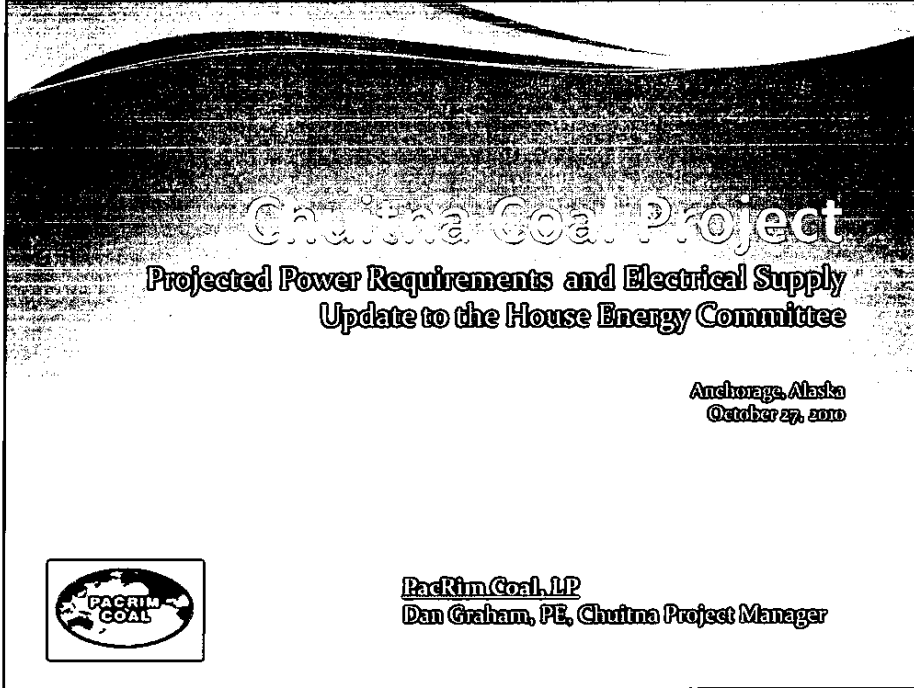


Alaska State Plane Zone 6 (units feet)
1983 North American Datum

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Version: 9	Author: RDI-DWR, MRA


Road Corridor & Port Site



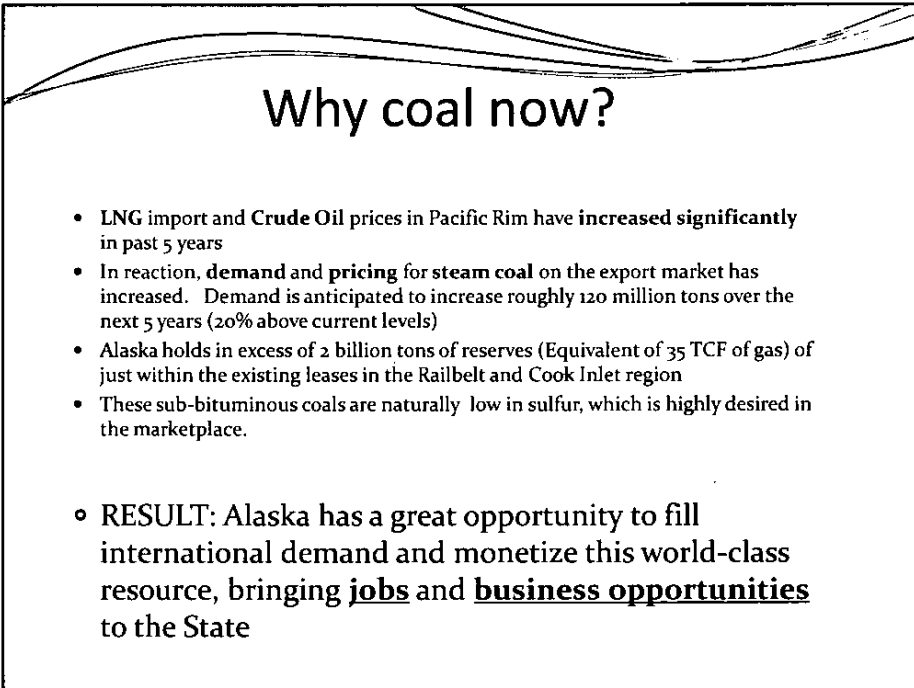


Chaitna Coal Project
Projected Power Requirements and Electrical Supply
Update to the House Energy Committee

Anchorage, Alaska
October 27, 2010



PacRim Coal, LP
Dan Graham, PE, Chaitna Project Manager



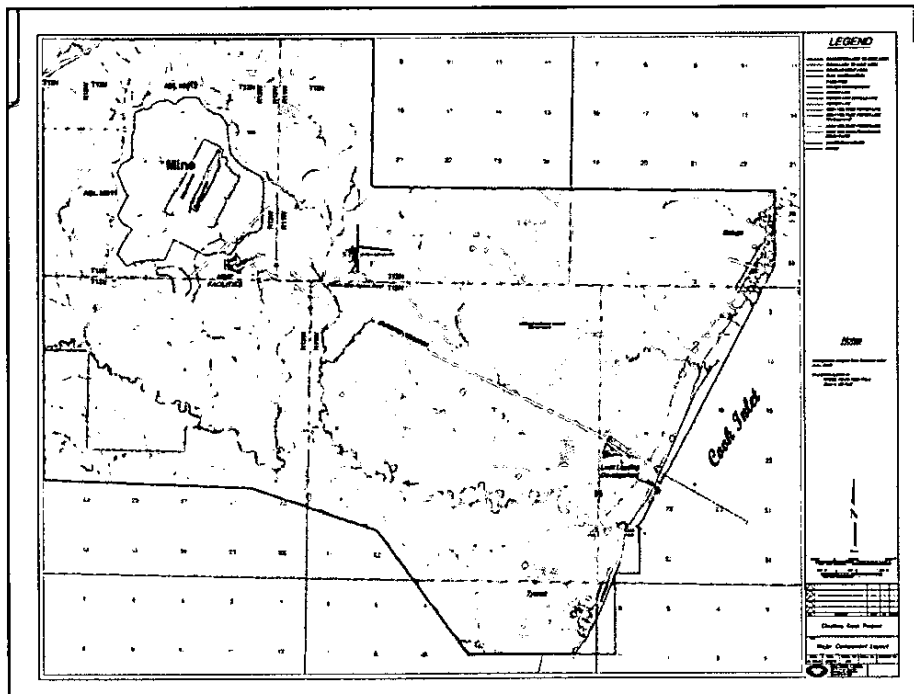
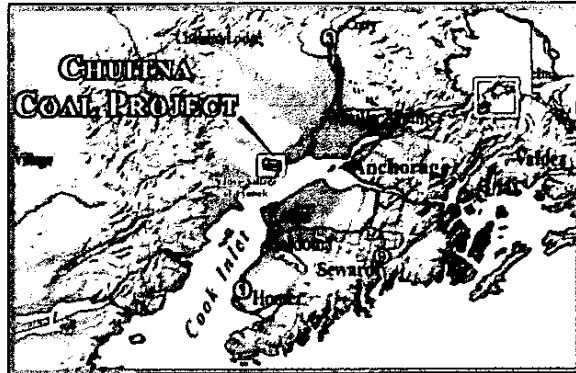
Why coal now?

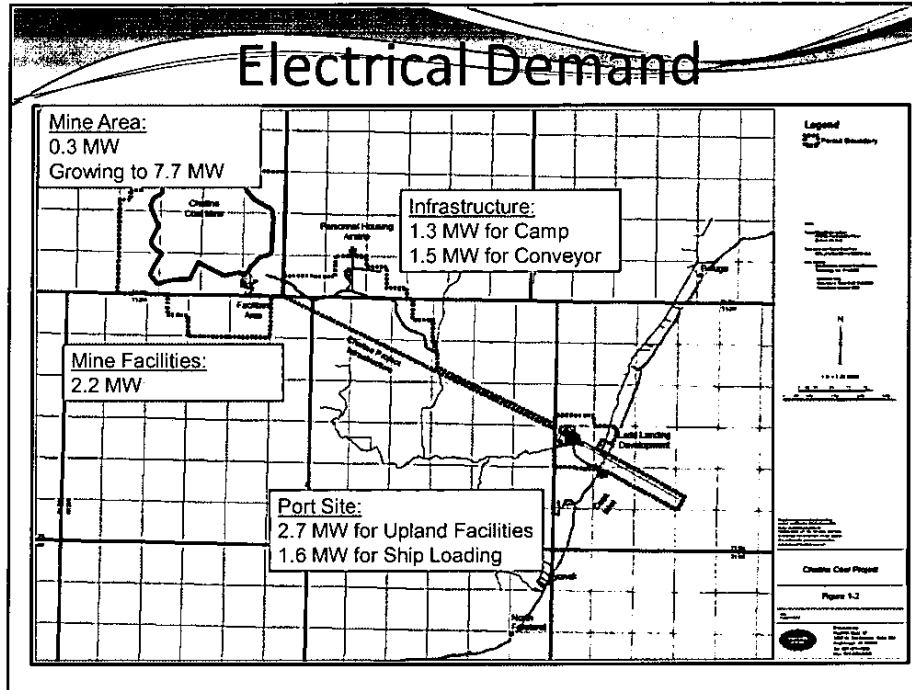
- LNG import and **Crude Oil** prices in Pacific Rim have **increased significantly** in past 5 years
- In reaction, **demand** and **pricing** for **steam coal** on the export market has increased. Demand is anticipated to increase roughly 120 million tons over the next 5 years (20% above current levels)
- Alaska holds in excess of 2 billion tons of reserves (Equivalent of 35 TCF of gas) of just within the existing leases in the Railbelt and Cook Inlet region
- These sub-bituminous coals are naturally low in sulfur, which is highly desired in the marketplace.

- **RESULT:** Alaska has a great opportunity to fill international demand and monetize this world-class resource, bringing **jobs** and **business opportunities** to the State

Project Overview

- Export Coal Project
- 300 Million ton reserve in proposed permit area
- 25 year design life
- Camp facility for mine workers
- Port facilities for vessel loading



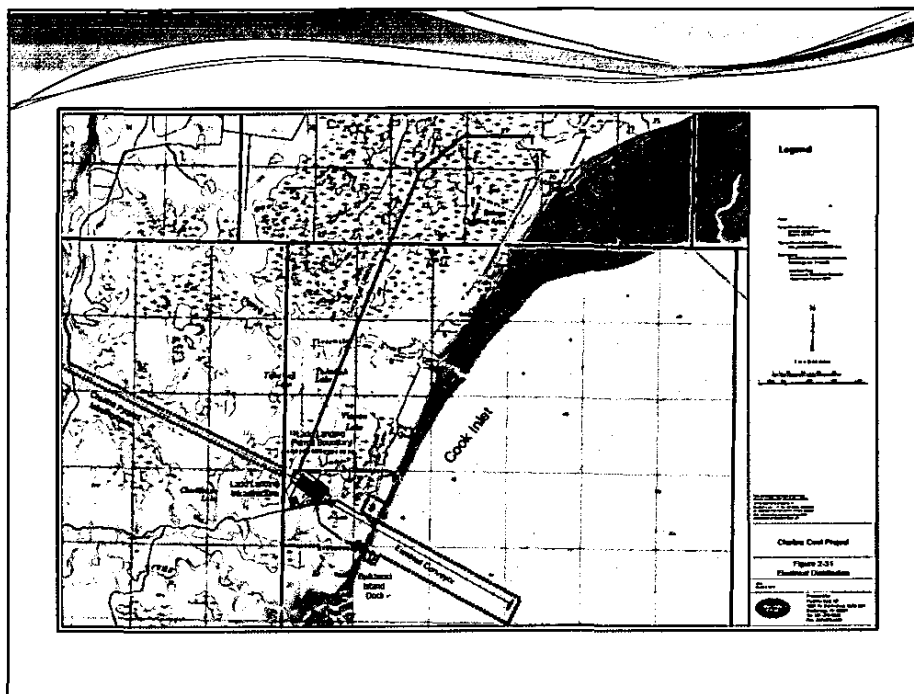


Total Electrical Demand:

- Up to 10 MW demand during construction and initial years of production
- Expanding to between 17 and 20 MW peak demand following addition of dragline

Electrical Supply Source:

- Existing 24.9 kV line passes through Port site – source of construction power for port and temporary camp
- Mine site construction power supplied by temporary generator sets
- Permanent power to be supplied by new 6 mile long 138 kV line from Chugach Electric's Beluga Power Station (open switch available)
- Chugach has requested that the mine supply power line be tied to existing power line at our facility to provide redundancy in the distribution system, benefiting the local area with improved reliability



Project Schedule

- Submit updated SEIS documents and ASMCRA applications (in progress)
- Complete NEPA process (SEIS) and prepare various permit submittals for review
- Permit Decisions Rendered (following completion of NEPA process)

Construction to begin after permits are issued and assuming market conditions continue to support development

Usibelli Coal Mine, Inc.

Wishbone Hill Project Overview

October 27, 2010

Lorali Carter
External Affairs Manager
Wishbone Hill Project

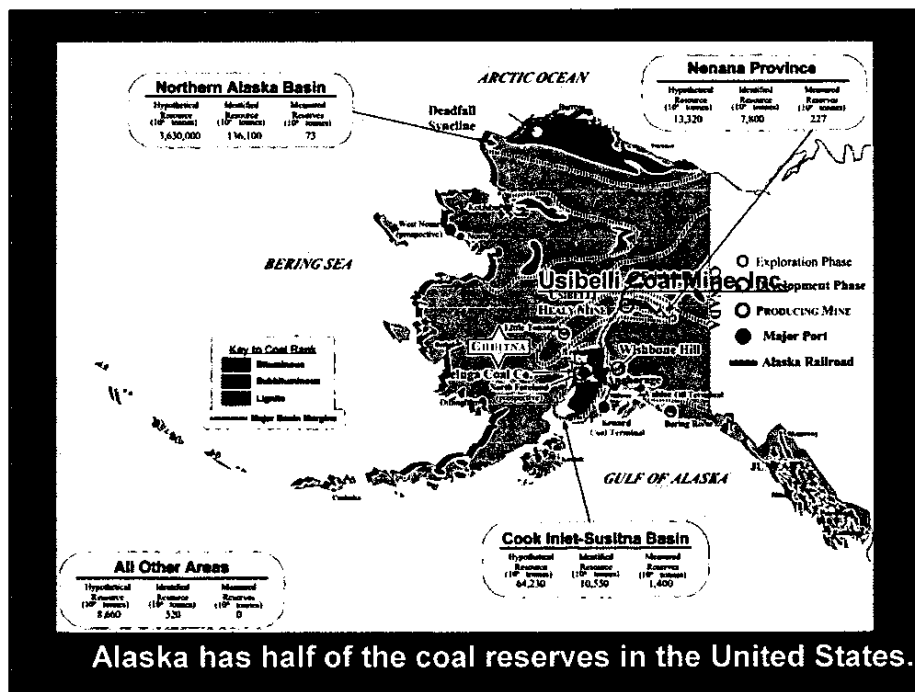
Usibelli Coal Mine

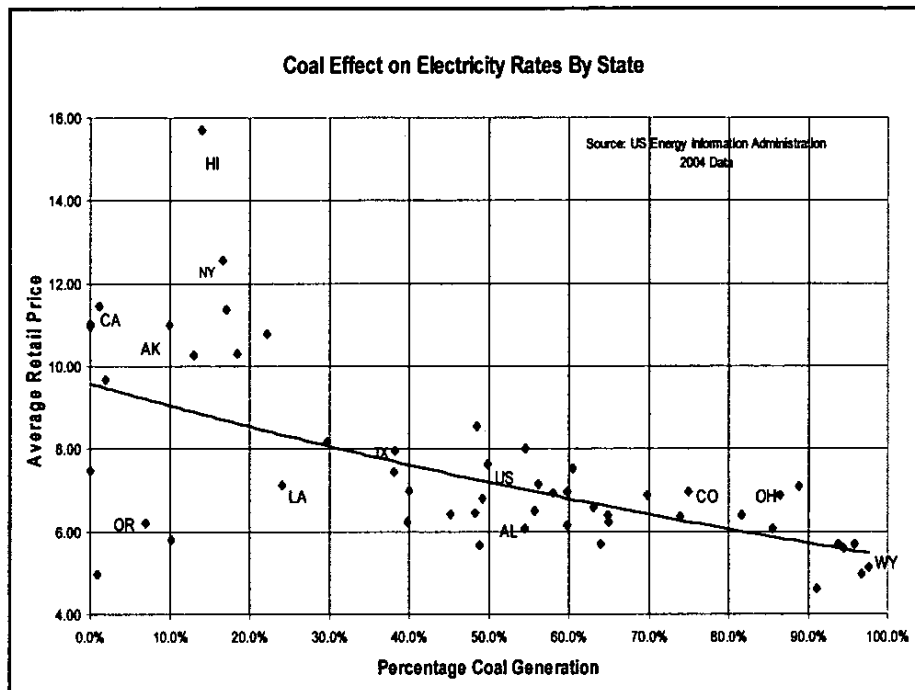
- 4th generation family owned Alaska company
- Founded in 1943 by Emil Usibelli
- 1.5 to 1.8 million tons of coal mined from Healy annually
- Sell to 6 customers in Interior Alaska as well as export
- Over 500 million tons proven reserves



Coal Facts

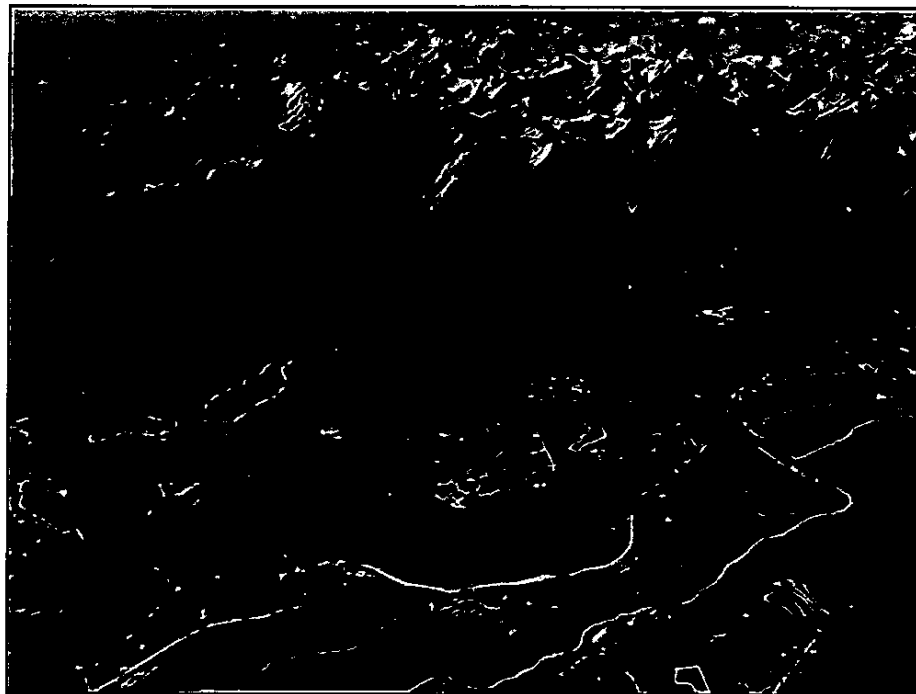
- The U.S. has 27% of the world's coal reserves.
- Alaska has 50% of the U.S. coal reserves.
- Railbelt: >1,000 years reserve at current consumption.





Wishbone Hill History

- Early mining: 1916-1962
- 7 million tons mined from 18 mines
- By 1992 all permits for Wishbone Hill mine were obtained
- 14 million tons of surface mineable coal identified
- The only bituminous coal deposit on the Alaska road system



Wishbone Hill Project

- *Where are we today?*

■ **Feasibility Study**

- Estimated year-long process
- Based on 6 million tons total; 500,000 tons annually, for 12 years
- Exploration program
- Analyze transportation options
- Update permits
- Engineering

Getting the Coal to Market

■ Transportation Options

- Truck to Port MacKenzie
- Truck to Railroad then to Seward Port
- Rail extension to mine site



Wishbone Hill Economic Impact

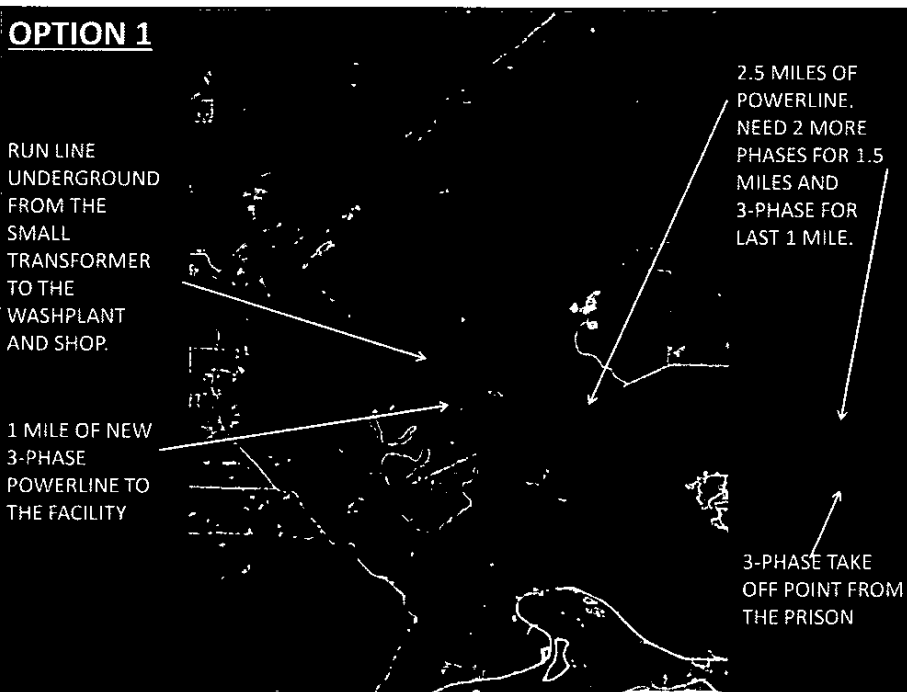
■ Jobs & Income

- 75 to 125 mine jobs at full production
- High-paying, stable jobs
- Money that stays here in Alaska's economy



Wishbone Hill Energy Needs

- Anticipate 600 kilowatts per hour
- Feasibility study:
 - Option 1: New line from nearby existing 3-Phase
 - Option 2: Insert transformer at existing 120kV line



OPTION 2

RUN LINE
UNDERGROUND
FROM THE
SMALL
TRANSFORMER
TO THE
WASHPLANT
AND SHOP.

1 MILE OF NEW
3-PHASE
POWERLINE TO
THE FACILITY

TRANSFORMER
120 kV to 12kV



**Usibelli Coal Mine Inc.
Wishbone Hill Project**

Questions?

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ALASKA MINERS ASSOCIATION, INC.

Infrastructure for Mines

September 2010

By Steve Borell

Most people assume that the basic infrastructure required for Alaska mines is provided by the state or federal government. By basic infrastructure I refer to electrical power, roads, railroads, airfields, and ports.

I first researched the topic several years ago when I was asked to speak at an Alaska session in Tacoma, Washington. My assigned topic was to describe the infrastructure that the state will have to build to service various prospective mining projects. However, as I began to research the topic, I realized that most of the basic infrastructure used by Alaska's large mining operations was not built by the state or federal government but rather by the mines themselves.

Infrastructure is a major cost item wherever it occurs, and especially in remote parts of the state. Furthermore, the infrastructure is often needed long before the mine has a positive cash flow from operations because infrastructure is needed before the mine can even be built. It is needed to bring in the supplies and equipment that are used to build the mine. Infrastructure costs have a huge adverse financial impact on the project's rate of return because of the time value of money which must be spent long before there is any return.

The table titled "Infrastructure for Alaska Mines" is a list of Alaska's large mines and major projects showing how their infrastructure was funded. The six large operating mines have a total of 18 items of infrastructure. Twelve of those items, shown with an (*), were paid for entirely by the mines. Three items were existing infrastructure. Two items, indicated by (+), were paid by a government "authority" and the cost recovered by charging the mine a user fee. One item, indicated by (*+), was constructed by the mine with a partial payment by the State.

Infrastructure for Alaska Mines

<u>Mine/Project</u>	<u>Power</u>	<u>Road</u>	<u>Airfield</u>	<u>Port</u>
<u>Major mines now in operation</u>				
Usibelli Coal	On grid	On road & RR		
Greens Creek	*Diesel, now on grid	*7 mi		*Yes
Red Dog	*Diesel	+55 mi	*4500 ft	+Yes
Fort Knox	*24 mi to grid	*4 mi		
Pogo	*55 mi to grid	*55 mi	*3000 ft	
Kensington	*Diesel	*+6 mi		*Yes
<u>Major mines now in idle status</u>				
Nixon Fork	*Diesel		*4500 ft	
Rock Creek	*6 mi to grid	3mi by State		
<u>New large projects in permitting or advanced exploration</u>				
Chuitna Coal	*10 mi to grid	*13 mi	*3000 ft	*Yes
Donlin Creek	*Diesel & wind	*23 mi	*5000 ft	*Yes
Pebble	*105 mi to grid	*~80 mi		*Yes

- * Constructed by the mine
- + Reimbursed by mine based on throughput
- *+ Combination of mine and State funding

The mines in idle status have a total of four items of infrastructure. Three of the four were constructed by the mines and one item, a three-mile road, was part of the "Roads to Resources" program and was constructed by the State. For the three advanced projects – if these projects can get through the permitting process, all 11 items of infrastructure required will be constructed by the mines.

To summarize the numbers – 88% (30 of 34 items) of the items of infrastructure required by the major mines and advanced projects has been paid (or will be) by the mines.

The situation is very different in other states and countries. In the lower 48 states and much of Canada, only the final few miles of road or powerline will be paid by the mine. It is a rare case where the mine is isolated from the road system or must build its own power plant, airfield, or port. Throughout Canada, the roads, railroads, and powerlines are typically built by the government.

In some countries the governments will provide much of the infrastructure. I recall hearing a few years ago that a project in Inner Mongolia of northern China was going to need a road. This need was expressed to the government officials. Within a year a 200 km road was under construction; two years later it was complete.

I often hear that the State of Alaska built the road and port facilities for the Red Dog Mine. That is correct. The Alaska Industrial Development & Export Authority (AIDEA) paid for construction of the road and port known as the Delong Mountains Transportation System (DMTS). But Red Dog makes annual payments to AIDEA based on throughput of concentrates that are shipped. If the mine does not meet a certain level of throughput each year, Red Dog must still pay a guaranteed minimum amount to AIDEA. That has not yet happened because every year since the mine began operating in 1989 the throughput has been more than the minimum. The initial construction of DMTS was \$180 million with a subsequent upgrade of \$85 million for a total cost of \$265 million. Thus far the state has received \$312 million of interest and principle on its investment. That says nothing about the jobs and other benefits to the region and the entire state.

There are numerous other roads and other infrastructure throughout Alaska that was built by the mining industry. Electrical power generation in Juneau is a case of particular note. Juneau has the lowest power cost in the state because of the mining industry. There are five hydroelectric generating plants in Juneau. Three of these were built by the mining industry and a fourth was built because of mining guarantees. The three plants built by the mines are Gold Creek (1893), Salmon Creek (1913) and Annex Creek (1915). When the A-J mine closed these plants were sold to Alaska Electric Light & Power (AEL&P). Salmon Creek was upgraded in 1984 with a new generator but the others still operate with the original equipment.

A fourth hydroelectric power plant, Dorothy Lake (2009), was built because the Greens Creek mine signed a contract guaranteeing that it would take any power not required by the city. The result was that AEL&P was able to obtain funding for the plant.

As I previously mentioned, most people assume that the basic infrastructure required for Alaska mines would be provided by the state or federal government. Those people would be wrong and the facts clearly show that the basic infrastructure requirements are most often constructed by the mines themselves.