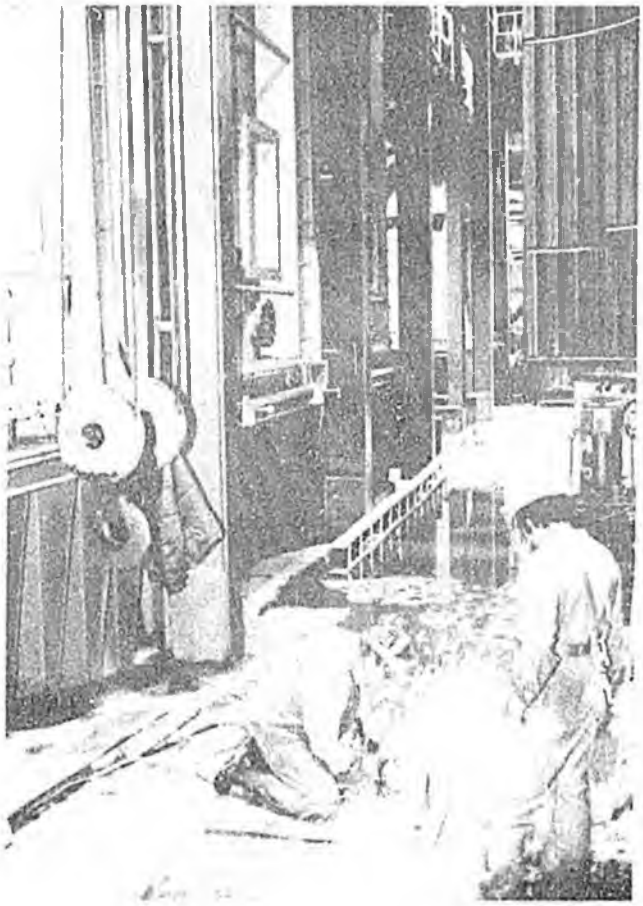
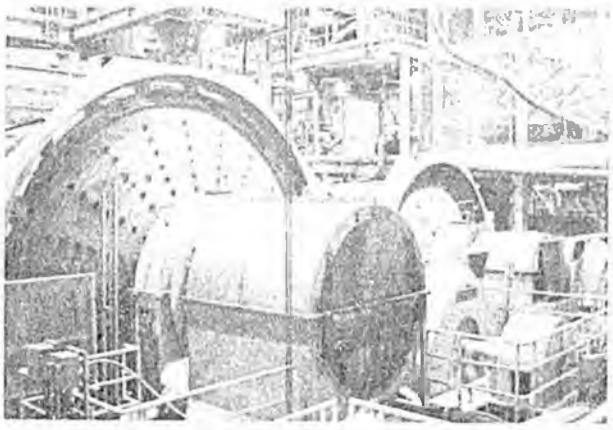
Alaska Minerals Commission

Report of the

Alaska Minerals Commission





JANUARY 1990

Report of the

ALASKA MINERALS COMMISSION

to

Governor Steve Cowper

and the

Alaska Legislature

January 1990

FOREWORD

The Alaska Minerals Commission was created by the 14th Legislature and signed into law on June 6, 1986, through the enactment of Chapter 98 of the 1986 Session Laws of Alaska.

The enabling legislation instructs the Commission to make recommendations to the Governor and Legislature on ways to mitigate the constraints, including governmental constraints, on the development of minerals, including coal, in the state. The Commission's Statement of Purpose can be found in Appendix A.

The Commission presented its initial report to the Governor and the Legislature in January 1987, presented its interim report in January 1988, and was charged with making a final report to the first session of the 16th Legislature in January 1989 after which the Commission was to expire. However, during the second session of the 15th Legislature, House Bill 561 was enacted. The bill amended the enabling legislation by extending the Commission's charter through January 1994 and by providing that one member reside in a rural community (Appendix B).

Commission members are appointed by the Governor, the President of the Senate, and the Speaker of the House. The current members include representatives of the placer, hard rock and coal mining industries and come from diverse areas of the state. Administrative and staff support to the Commission is provided by the Division of Business Development, Department of Commerce and Economic Development.

On behalf of the members of the Commission and its staff from the Department of Commerce and Economic Development, I express our appreciation to those members of the public, to Tim Bradner, of Alaska Economic Report, the Alaska Miners Association and State Agencies who have provided their comments and worked on committees for their contributions in preparing this report. The Commission members thank Governor Cowper and the Alaska Legislature for the support they have provided the Commission and for their positive action that has been taken on some recommendations previously made.

The Commission members are hopeful that the recommendations made in this January 1990 report will be implemented by the Governor and/or Legislature as appropriate for the benefit of Alaska, its people and the state's mining industry. Please do not hesitate to contact the Commission if you have any questions or if you desire additional specific detail.

Earl H. Beistline
Chairman

ALASKA MINERALS COMMISSION

December 1989

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Alaska Minerals Commission

1990 Report to the Governor and Alaska State Legislature

Contents

Executive Summary

Mining is undergoing a healthy renaissance in Alaska, after years of prolonged slump. Many small to medium-sized mines are working, and two major new mines, Greens Creek and Red Dog, went into production in 1989, adding hundreds of new jobs, and several other projects are in advanced stages of exploration and development planning. What's propelling the industry's growth is not only improved world markets for precious and base metals, but also new technology and innovative approaches to mining that lower high costs in Alaska. Mining has more near-term potential for expansion than any other Alaska resource industry. New mining projects today result from earlier public policies that made land available for exploration. But now, vast parts of Alaska are closed to new exploration.

Significant progress has been made on some public policy issues affecting mining, including the legislature's action last year in resolving the complex "6i," (of the Statehood act) litigation and reactivation of a state offshore mineral leasing program.

But there are other problems: Restrictive new wetlands policies, uncertainties over possible new land reclamation and bonding requirements, potential new local taxes on mines, and inflexible labor requirements imposed on remote site development.

The Alaska Minerals Commission's recommendations to the Governor and State Legislature could help insure a strong, growing mineral industry. In 1990, the Commission has concerns in three major areas:

Land availability: Over half of Alaska's lands, or 210 million acres, are closed to exploration, much of it by ANILCA in 1980, and mostly without prior mineral assessment. Many state lands remain closed by administrative order, contrary to the original intent of multiple use management.

Stability of state policy: Alaska should approach new reclamation and bonding requirements with caution, and should discourage municipalities from enacting special taxes on new mining projects. State agency permitting procedures are still lengthy and complex despite years of effort toward "regulatory reform." Lack of predictability in state policy is an impediment to new investment.

Education and research: New technology is the major driving force behind Alaska's mining renaissance; institutions like the University of Alaska's School of Mineral Engineering and Mineral Industry Research Laboratory need support for ongoing applied research; State resource agencies need support for basic mapping and mineral reconnaissance studies; mining education and training programs need support if Alaskans are to fully participate in the rebirth of this industry.

INTRODUCTION

The effective development of a healthy mining industry requires three basic components;

A) Availability of as much land as possible for exploration, and a guarantee of access to any mineral deposits found. Detailed geological and geophysical maps provide a data base for the state for mineral development, and enhance the chance of success of exploration programs.

B) Stability of state policy toward developing and enhancing the mining industry in all facets of projects from exploration through production and transportation, including regulations, taxation and working conditions.

C) Ongoing education, research and development to provide for a qualified workforce, monitored by educated agencies, directed by a knowledgeable administration and Legislature. To compensate for climatic and geographic location handicaps, the Alaskan mining industry must be on the cutting edge of technological innovation to remain competitive.

Dealing with each of these three broad areas in turn, the Alaska Minerals Commission finds it necessary to make specific recommendations to enhance the health and competitiveness on a world market of the mineral industry in Alaska.

RECOMMENDATIONS OF THE ALASKA MINERALS COMMISSION

A) IN ORDER TO MAXIMIZE THE AVAILABILITY OF LAND FOR MINERAL EXPLORATION AND DEVELOPMENT, THE ALASKA MINERALS COMMISSION MAKES THE FOLLOWING COMMENTS AND RECOMMENDATIONS:

Considerable land in Alaska has been withdrawn from mineral entry as depicted in Figure 1. Of the 254 significant mineral occurrences identified by a Northwest Mining Association study in 1978, 208 were encompassed by Conservation System Units (CSU's) by ANILCA in 1980, and on the vast majority of these lands no assessments of the mineral potential were made prior to the withdrawals.

Wilderness studies continue on many of the CSU's, and de facto withdrawals of land from mineral entry continue by use of management policies such as Areas of Critical Environmental Concern (ACEC's). These withdrawals are seldom preceded by mineral assessments sufficiently detailed to make informed decisions.

1 **In conformity with sections 101d and 1326b of the Alaska National Interest Lands Conservation Act (ANILCA), no more federal land in Alaska should be withdrawn from mineral entry either by wilderness designation or by de facto withdrawals such as the Areas of Critical Environmental Concern without prior and thorough mineral assessments.**

2 **The Governor should make clear to the U.S. Congress and Federal Administration that further restrictions or withdrawals of federal land from multiple-use designation are not acceptable and assure that regulations be enacted to implement the provisions of the Alaska National Interest Lands Conservation Act to protect the "prior existing rights and exemptions" allowed in that act;**

In addition to the mineral closures in National Parks, Refuges and Forests, development of all kinds in the remaining lowland areas is now threatened by a proposed National policy of "No net loss of wetlands." These "wetlands" in Alaska occupy about 75 percent of the lowland areas of the state, or about 170 million acres, and are often caused by the underlying permafrost. Assessment of the mineral potential of such areas is difficult and requires sophisticated surveys.

3 **Alaska should be exempted from a strict application of the proposed nationwide policy of "no net loss of wetlands" until a suitable policy can be formulated specifically for the state, which recognizes that Alaskan wetlands are unique in kind, size and cause.**

Options for overland access to mineralized areas in Alaska must be maintained, especially in light of the relatively unexplored status of much of the state. Revised Statute 2477, (RS2477), is an 1867 congressional grant of rights-of-way across unreserved federal lands for public highways. RS2477 corridors may be the only feasible access into more remote areas of the state.

4 **The State of Alaska should expedite the ongoing program of inventorying the possible RS2477 access routes, and aggressively assert the state's rights to these corridors of commerce, especially across otherwise inaccessible areas.**

The mining law of 1872 has served the nation well on federal lands, but is under attack. Proposed changes would severely inhibit mineral exploration, development and production on federal land.

5 **The state should transmit opposition to proposed changes in the 1872 Mining Law which would be damaging to the mining industry.**

Ongoing regional land plans on state lands, and local expansion of coastal zone management plans to encompass areas remote from the coastline restrict development and generally omit assessments of subsurface resources such as minerals, coal and industrial minerals in the process. Because development of natural resources is so often precluded in the planning process, the availability of state land to mineral entry is diminished.

6 **The Governor should establish that mineral development is a priority in the best interest of the state, consistent with Section 1 of Article 8 of the State Constitution, that must be recognized in most state land management actions.**

7 **The Legislature and Governor should support Senate Bill 34, (an act relating to state land withdrawn from mineral location and mining), and Senate Bill 35, (an act relating to multiple use of state land and water), submitted in the first session of the 16th Legislature. (See Appendix D.)**

Less that 5% of Alaska has been geologically mapped at a scale suitable for mineral exploration. As a comparison, many of the third-world nations have more complete geophysical data than Alaska. A continued lack of funding for such surveys perpetuates the problem of developing a data base.

8 **Detailed geologic and geophysical mapping of the state must be continued at an increased pace to provide a data base for the state to inventory its coal, metalliferous and industrial mineral resources as a basis for informed land planning, and to advertise the state's interest in mining as a valued component of the economic base. An annual $5 million supplemental appropriation for this purpose would be comparable to the advertising budgets of other sectors of the state's economy.**

9 **Mineral assessments should be required in conjunction with surveys of competing values before any mineral closures are instituted.**

10 **The Governor and Legislature should support the conclusions and recommendations of the Land Use Council's Nonrenewable Resource Report dated November 6, 1989, and transmit their support via the congressional delegation to Secretary of the Interior, Manuel Lujan. This report is available from the Division of Business Development.**

B) IN ORDER TO PROVIDE A STABLE ENVIRONMENT FOR MINERAL DEVELOPMENT THE ALASKA MINERALS COMMISSION MAKES THE FOLLOWING COMMENTS AND RECOMMENDATIONS:

After continued availability of land for a mineral development base, the Alaska Minerals Commission considers that the second most important issue facing the industry is stability of State Policy in the areas of regulation, taxation and working conditions.

State policy regarding mineral development is formulated through the Resource Cabinet. The cabinet is a triumvirate composed of representatives of the Alaska Department of Fish and Game (ADF&G), the Alaska Department of Environmental Conservation (DEC) and the Alaska Department of Natural Resources (DNR). The Division of Governmental Coordination (DGC) assists the Resource Cabinet in reaching a consensus on various resource issues.

DEC and ADF&G have rather narrow legislative mandates that allow them to take strong advocacy positions in defense of their interests. Commonly, the responsibility of ADF&G, particularly the Habitat Division, is generally coincidental with the interests of the DEC, and these agencies tend to view development as a concern, rather than as a potential benefit. On the other hand, because DNR has a very broad mandate, including parks and recreation and all surface management, it is often unable to take a strong advocacy role in favor of development. Consequently, the state policies formulated through the Resource Cabinet are often made without a fair hearing of the issues. A strong advocate for development is needed on the Resource Cabinet.

11 **The Department of Commerce and Economic Development should be a member of the Resource Cabinet.**

The Alaska Minerals Commission is also concerned about stability in the area of taxation. According to the 1989 report, "Impact of State Taxation on the Mining Industry, a study of eighteen states" prepared for the State of Alaska and other clients by Whitney and Whitney Inc., the Alaska tax rate exceeds that of Nevada, where a recent increase in taxation has threatened the viability of some operating mines. Pursuant to recent court decisions regarding section 6(i) of the Statehood Act, an additional 3% production royalty will be required on the net profits of all mines operating on state lands.

12 **The 3% production royalty required by recent interpretation of section 6(i) of the Statehood Act should be administered as a deductible mining expense allowed under sections 120 or 125 of chapter 65, (Mining License Tax), of Title 15 of the Alaska Administrative Code.**

Local municipalities in Alaska presently have the right to tax in-situ ore reserves, though definition of what is a "reserve" versus a "resource" can often not be determined until a mine has closed. Ore reserves are estimates of the mineral resource and their accuracy depends on the quality and density of the data. It is impossible to standardize or rigorously define

classes of reserves that can be readily applied from one deposit to another. Taxation of ore reserves discourages exploration and the delineation of mineral resources ahead of the actual mining process. As such, it is a disincentive to the long range mine planning necessary for the efficient and thorough development of the mineral resource. Such taxation can also discourage development of marginally economic deposits.

13 **The Administration and Legislature should support CSSB 181 and the identical House bill SSHB 159, (See Appendix D), both titled "An Act relating to an exemption from municipal taxation for natural resources in place; and providing for an effective date." The exemption from municipal taxation granted to the oil and gas industry for in-situ reserves should be extended to the mining industry for ore reserves.**

Alaska has enormous resources of clean coal that can provide a virtually limitless source of low-cost energy for Alaska and supply a growing export market for low-sulfur coal while providing jobs and income for Alaskans. The U.S. Department of Energy and the U.S. Department of Commerce have recognized that the enormous resources of low-sulfur Alaska coal, combined with innovative combustion technologies, could make Alaska a leader in the export of clean energy resources and technologies.

14 **The Legislature should repeal the state's unitary tax on coal which has the effect of limiting foreign capital investment in Alaska's resources, and review Alaska's current coal industry tax structure, including rents and royalties, to determine if Alaska's coal tax structure adequately balances the public interest and the competitiveness of Alaska's coal industry.**

15 **The Legislature should initiate a review of coal development issues to establish a state coal policy that will provide direction for the domestic energy supply and for the expansion of international coal exports.**

16 **The Division of Mining should create an advisory board consisting of coal industry representatives, state agency personnel involved in the permitting of coal mining activities and representatives of the Office of Surface Mining to periodically review the Alaska Surface Coal Mining Regulations and make recommendations for changes needed to account for Alaska conditions and changing technologies. The Chairs of both the Senate and House Resource Committees should be ex-officio members of the advisory board.**

17 **It is imperative that the Alaska Railroad (ARR) be responsive to the needs and concerns of its industry clients by providing quality professional service at competitive rates.**

Another area where state policy can affect the viability of mining is in inflexiblity in regulations. Each mine site has a unique blend of physical conditions such as the slope of a stream, narrowness of a valley, amount and kind of overburden and grade or size of the mineral deposit. These factors must be taken into consideration when mining plans and permits are considered, and when reclamation is proposed.

18 **Enough site-specific flexibility should be included in legislation and regulation to allow for local conditions, and the programs should be based on performance standards rather than design standards. Programs should not be retroactive, and bonding should be avoided if possible.**

19 **The Bureau of Land Management (BLM) 3809 regulations should be used as a guide for the state programs, so duplication or conflict with these regulations on federal lands is avoided.**

Passage of legislation addressing both a flexible work week and extending working hours is particularly important for mines in remote locations or where employees must reside in locations distant from the work site. The flexibility that would result from these legislative revisions would allow employers and employees to jointly determine work schedules that would provide for more efficient labor use and more desirable time-off patterns for employees.

20 **Legislation should allow work schedules to be set on the basis of project specific considerations which will permit more efficent use of labor and provide more desirable time off patterns for employees. This will be particularly significant for mines in remote locations with employees who reside in communities distant from the work site.**

21 **Legislation is required to amend current statutes limiting underground shifts from the current maximum of eight hours to a maximum of 12 hours. The antiquated statute presently in effect does not recognize the implementation of modern safety programs and penalizes mine efficiency and employee time-off schedules on remote mining projects.**

C) IN ORDER TO CONTINUE AND TO EXPAND EDUCATION, RESEARCH AND DEVELOPMENT PROGRAMS, THE ALASKA MINERALS COMMISSION MAKES THE FOLLOWING COMMENTS AND RECOMMENDATIONS.

By all measures the Alaskan mineral industry is entering a new and exciting phase of growth, (Fig. 2), and by the end of 1990 the gross value of minerals mined in the state should exceed the value of tourism, timber and fish, second only, (by an order of magnitude), to oil and gas. This production phase follows decades of exploration, evaluation and development, and if some of the newly-discovered gold deposits prove to be economically feasible, they could double the historic production of the state.

At this critical juncture it is essential that Alaskans be trained to take full advantage of the employment opportunities that these developments can offer. From the Alaska Minerals and Energy Resource Education Fund (AMEREF) program in K-12, through the Mining and Petroleum Training Service (MAPTS) and University degree programs there must be continuing emphasis on training Alaskans.

22 **The Department of Education should be granted additional funding to evenly match the contribution by industry in funding the AMEREF program.**

23 **At least $250,000 funding should be allocated to MAPTS to provide for the rapidly increasing number of jobs expected underground in Southeast Alaska in the near future.**

24 **Basic support should be continued for other education programs such as the Mine Safety and Health Administration (MSHA) training required for all mine workers.**

25 **Funding should be continued or increased for the School of Mineral Engineering at the University of Alaska Fairbanks so that new methods of ore processing can be adapted to the unique circumstances of Alaska.**

Concurrent with training there must be continuing research into innovative methods of extraction and refining of mineral products, in new or existing transportation, and in new uses or technology to beneficiate Alaska products to the point where they are competitive in world markets.

Only about one-tenth of one percent of the nearly $2 billion annual revenue from oil and mineral development activities is dedicated to the funding of mineral research. This situation must change substantially to foster increasing mineral development.

26 The Governor and the Legislature should support state organizations that are working to advance the development of new coal burning and processing technologies, including the research programs of the Alaska Science Foundation, the University of Alaska Mineral Industry Research Laboratory, and the development activities and projects of the Department of Commerce and Economic Development.

On December 21, 1989, the Healy Cogeneration Project (HCP) was selected by the U.S. Department of Energy under its Clean Coal Technology program to receive a matching grant of $92.3 million for the design, construction and operation of a 50 megawatt coal-fired power plant at Healy. The Clean Coal Technology program was created by the U.S. Congress in 1985 to provide matching financial grants to stimulate accelerated research and development of coal utilization and clean coal burning technologies.

The HCP project will utilize state-of-the-art design; will produce electricity at an estimated cost of $0.045 per kilowatt hour to satisfy increasing railbelt demand; will demonstrate innovative coal burning technologies; and will be designed to allow for future use of process heat for the drying of high-moisture Alaska coals. The combination of new combustion technology and low-sulfur Alaska coal is expected to result in HCP being the cleanest coal-burning plant in the world.

The estimated total cost of the project is $192 million. Under the Clean Coal Technology Program, the Department of Energy may fund up to 50 percent of the costs, and has assigned $92.3 million for the project. The balance of the project cost must be financed by the project's owner, the Alaska Industrial Development and Export Authority, (AIDEA).

In 1989, the Alaska Legislature made a reserve appropriation of $30 million from the Railbelt Energy Fund for HCP contingent upon selection of the project by the Department of Energy, the preparation of a draft power sales agreement, and the preparation of an acceptable financial plan by AIDEA. The commitment of these funds will reduce the amount of the project costs that must be financed through revenue bonds and, therefore, reduce the ultimate cost of power to Alaska railbelt consumers.

27 The Legislature should appropriate to AIDEA the $30 million reserved in the Railbelt energy fund for the Healy Cogeneration Project to secure the federal match, and the Governor should encourage such action.

ALASKA'S MINING INDUSTRY

AN OVERVIEW

INTRODUCTION

Hundreds of new permanent jobs were added to Alaska's workforce in 1989 as two world class mines, representing several hundred millions of dollars in new investment, went into production. Startup of the new Greens Creek Mine in Southeast Alaska and Red Dog Mine in the Northwest puts Alaska clearly on the way to re-establishing a pre-World War II reputation as a major world minerals province. Today, Red Dog is the world's largest zinc and lead mine and the second largest such deposit ever discovered. Greens Creek is the first new Alaska underground mine developed in half a century, and it is now the nation's largest silver producer. Red Dog and Greens Creek have captured most of the public attention, but there's been an encouraging upswing in mining activity all across Alaska. At Nome, the world's largest offshore bucket-line dredge has completed its third season working on offshore gold placer deposits. It is the nation's first large-scale offshore mining project. Onshore near Nome, gold dredging has been expanded. In Fairbanks, mining operators have restarted underground and surface mining of lode gold ore, as distinct from placer gold, the first such mining in years. In Juneau, several mines, that were once substantial gold producers, are in advanced stages of development study, that may lead to their reopening.

Today mining has the capability for more near-term expansion than any other Alaska resource industry. But to realize that potential, the growth of smaller and medium-sized mining projects should be encouraged to diversify the industry beyond a handful of larger mines. Without this secondary growth, Alaska could be, in a few years, a land of parks and a few major projects.

Alaska mining: A perspective of history

Why did mining cease to be a major industry in Alaska? From 1900 to the outbreak of World War II, Alaska was internationally famous for its large, highly efficient gold and copper mines. The Treadwell and AJ Mines in Juneau pioneered the technology of high-volume, lower-grade gold ore production, techniques that were later used in many other parts of the world. Much of downtown Juneau is built on a rock foundation of waste rock from mining operations. Interestingly, the sandy beaches, now popular recreation areas, at Douglas and Thane, near Juneau, were the fine tailings left from mining.

The Kennecott Mine in the Wrangell Mountains was one of the richest copper mines in the world; profits from Kennecott financed exploration and development of the large, open-pit copper mines of the U.S. Southwest. Large-scale gold dredging in Fairbanks and Nome established Alaska as one of the primary producers of placer gold in the world.

Mining provided the foundation of many of Alaska's present cities, including Fairbanks, Juneau, and Nome, as well as smaller communities scattered across the state. It also led to the creation of much of our present transportation infrastructure: The Richardson, Elliot, Steese, Taylor and other highways were all originally built to serve mining communities. The Alaska Railroad itself was authorized by Congress to reach Fairbanks, and by way of Nenana, communities along the navigable rivers of the Yukon and its tributaries. The railroad was possible because of substantial coalfields known in the Matanuska Valley and at Healy. But high post-war labor costs and low gold prices made the reopening of many of Alaska's larger gold mines uneconomic. The war had shifted Alaska's labor costs to a high level, with wages largely set by a well-paying construction industry. Alaska's smaller seasonal placer mines, most of them family operations, were able to continue, as well as, for a period of time, larger-scale dredging in the Nome and Fairbanks areas. But the first chapter of mining's history in Alaska had been concluded. Thanks now to improving prices and new technology, another chapter is opening.

Better markets; improved technology; the benefits of earlier public policy

What's propelling the renaissance of Alaska mining are higher metals and commodity prices on world markets and improved technology and innovative approaches to mining, which make previously uneconomic mining projects more viable. But today's successes in mining are also the result of much hard work, intense lobbying and exceptionally large and rich properties. Greens Creek and Red Dog, for example, were discovered in the early 1970s and have been 15 years in costly exploration, planning and environmental studies, and development. These discoveries resulted directly from federal and state policies that encouraged exploration on public lands. These projects, and the huge Quartz Hill molybdenum deposit, required special congressional action to prevent their inclusion into federal parks and wilderness areas. Today vast parts of Alaska are still unexplored, but most federal public lands are now closed to exploration. If policies today had been in effect 20 years ago, Greens Creek, Red Dog and Quartz Hill would never have been discovered, or if discovered, not developed.

This is unfortunate, because Alaska has tremendous potential for development of a variety of mineral commodities, including precious and base metals, coal, strategic and rare earth minerals, and industrial minerals.

Good potential, but politics creates pessimism

Many mining companies feel that from a geologic perspective, Alaska is the most attractive area of North America for major new discoveries. For example, many exploration firms have been pleasantly surprised at how quickly 'grass roots' or long-range exploration programs are converted to specific drill targets in mineralized areas, using only superficial exploration methods.

But there are those who are also pessimistic, mainly because of Alaska's political climate. Despite the geologic potential, there are many that doubt that very much of Alaska, other than private lands, will ultimately be available for exploration.

Even if discoveries are made on available lands, many in the industry are skeptical that Alaska's state government can effectively resolve internal inter-agency conflicts over permits. Such agency stalemates often result in the imposition of costly environmental stipulations.

The skeptics also doubt that political constituencies in Alaska who are unsupportive of mining will change their positions, despite the urgent need with oil revenues declining, to diversify the state's economy.

One bright spot, however, is the millions of acres of Alaska lands now privately owned by Alaska Native corporations. Exploration is proceeding on many of these lands with the active support of landowners who not only have a stake in the success of exploration, but who are equally concerned with the protection of wildlife and care of the land.

Thousands of new jobs, permanent tax base

Modern-day mining will be no on-again, off-again industry for Alaska. Mining has the promise of creating thousands of virtually permanent, year-around new jobs in many parts of the state. Long-term economic potential is difficult to gauge, but one estimate developed in 1982 by the Alaska Miners Association using a scenario of ten world-scale precious or base-metals mines and not including potential coal projects, forecast 6,000 new jobs, mostly year-around, $3 billion annually added to the state's economy in wages, goods and services, and $450 million yearly in new state and federal tax revenues.

More recently, Juneau's economic planners forecast some 900 direct new jobs and a $40 million annual payroll for that Southeast community, based on three projects in the immediate vicinity. Total direct and indirect new jobs would be 1,800. Mining will help stabilize Juneau's employment. It has already helped restore local confidence in the community's economic future.

Mining can be long-term

Mining can be stable and long-term. Many of the new jobs now being added are long-term, because of the size of ore reserves in the mines involved and the efficiencies of new techologies. Significantly, many of Alaska's new mines are large enough, and are using sophisticated new mining techniques, so that they have become low-cost producers able to ride out the inevitable swings in world minerals prices.

Previously, mines with high operating costs -- those in the Yukon Territory are an example -- would suffer temporary closures, and layoffs, when minerals prices dipped below fixed operating costs.

The Red Dog Mine in Northwest Alaska, for example, has at least 50 years of proven reserves. Exploration of adjacent known ore deposits may extend the operating life of this mine. At Nome, offshore gold dredging is seasonal but there are reserves sufficient for decades of operations, as is also the case with long-established onshore gold dredging. At Healy, where Alaska's only producing coal mine is located, there are reserves sufficient for 100 years at current producing rates.

Juneau's Greens Creek Mine has an expected mine life of ten years based on current reserves, but geologists are confident that new exploration in the existing Greens Creek mining claims will increase those reserves.

Other substantial new mining projects in advanced stages of exploration and development, such as the AJ and Kensington mines near Juneau, the new Fort Knox prospect near Fairbanks, and what could be a major gold lode discovery north of Nome, could operate for decades, once they get into production. The Quartz Hill molybdenum discovery near Ketchikan is one of the world's largest deposits of this important mineral. Once market conditions improve and the mine is developed, this mine could produce for 55 or more years, employing hundreds of Alaskans in the Ketchikan area.

Given support by Alaskans, mining will create stable new employment for many communities across the state. Mining can't replace oil in its contribution of revenue to the state treasury, but its direct contribution in taxes and royalties to state and local governments in Alaska will not be insignificant, nor will the indirect public revenues created by new jobs and businesses.

This potential may remain just that. Despite recent progress with many state policies affecting mining, problems do remain.

Progress on mining policy problems

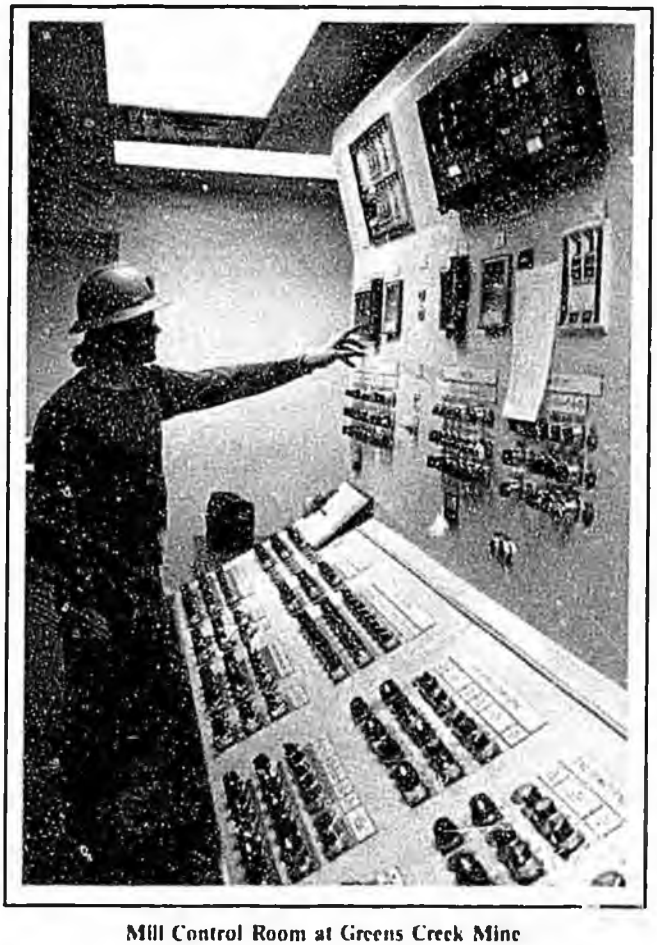
There has been significant progress in resolving Alaska public policy issues affecting mining over the last two or three years.

Resolution of '6i' litigation

The most important accomplishment was the state legislature's resolution of the complex '6i' litigation over mining claims on state lands, and the establishment of a legally-sound Alaska mineral leasing and royalty law.

New state offshore mineral leasing

Secondly, the State of Alaska has reactivated a long-dormant offshore mineral leasing program. The State Department of Natural Resources successfully held Alaska's first minerals lease sale in state waters offshore the Seward Peninsula, offering submerged lands with potential for offshore gold placer



Mill Control Room at Greens Creek Mine

discoveries. A second state offshore lease sale is also planned near Goodnews Bay, where there is potential for offshore placer deposits of platinum, a high-value strategic mineral.

Minerals Policy Act

There have been other accomplishments: The State of Alaska adopted a Minerals Policy Act in 1988, explicitly stating Alaska's support for mining development; the process of administrative closures of state lands to exploration was significantly slowed, although large amounts of state land remain closed by administrative order.

Innovative infrastructure financing

Finally, the benefits of innovative strategies in financing basic mining-related infrastructure, steps taken in 1985 with the Seward coal terminal and the Red Dog road and port, are now being realized. Alaska will enjoy a handsome return for a modest investment in both projects.

Problems remain:

Land restrictions

Yet problems remain: The new Alaska Minerals Policy Act, for example, will be meaningless without action by state officials to carry out its intent. Land closures still threaten large amounts of federal acreage, particularly in highly-mineralized Southeast Alaska.

Federal actions on tailings disposal, wetlands

Federal environmental agencies have adopted policies that will inhibit development of new mines. Examples of these are restrictions on marine disposal of tailings in Southeast Alaska, and new federal 'no net loss' wetlands policies, which threaten development of any lowland onshore discoveries, as well as much non-mining Alaska development, by requiring costly off-site mitigation.

Many in the industry feel the State of Alaska has not taken a sufficiently active position on many of these federal policies. The state's 'low-profile' on many federal issues may even have been interpreted by federal officials as implicit encouragement.

Geologists Mapping in Tok District

Recently, however, Governor Cowper has been active in opposing the restrictive new wetlands policy.

State land closures

Also on the state level, while there have been no large new closures of state lands, little has been done to review the status or to release large amounts of acreage that are closed. State lands should be closed only where clear and documented incompatible use is proven, and only when preceded by a mineral assessment. The Commissioner of Natural Resources, under AS 38.05.300, has authority to reclassify lands.

Multiple use interpretation

Many of those state lands are closed by administrative order through an interpretation of existing law, which prohibits any closure to multiple use of state land over 640 acres, unless authorized by the state legislature. Administrative closures are based on an interpretation of statute that land management is "mutiple use" as long as more than one use is permitted. For example, recreation and wildlife habitat can be designated as uses, and others, such as mineral exploration, can be excluded.

Many believe this is contrary to the intent of the original law. Legislation has been introduced to clarify the statute, (Senate Bill 35) in the 16th State Legislature. Multiple use should be interpreted to allow all land uses, rather than allocating or selectively denying uses. (see discussion section, commission recommendations, Pg. 2).

State reclamation requirements
Uncertainty also remains over new state land reclamation requirements that will be imposed on state lands. As one of the requirements of the '6i' mineral leasing legislation enacted by Alaska's legislature last year, the legislature required a new approach to mining reclamation on state lands.

The 1990 legislature may take up reclamation again this year. Alternatively, if the legislature does not act, state agencies will draft new regulations under existing laws. To be workable, a reclamation program must provide for site-specific flexibility based on 'performance' standards, which would allow an agency field officer and operator to work out the best method to achieve desired results, rather than a rigid 'design' standard that would specify specific measures, ignoring actual field conditions.

Any bonding requirement in a reclamation program should be carefully analyzed. It could have potentially disasterous consequences for small operators. The mining industry supports practical rehabilitation efforts, which can restore land to usable conditions, recognizing the impossibility of restoration to its pristine form.

Remote site labor requirements need flexibility
Another problem Alaskan operators face, with major new underground mines coming into operation, are state labor laws that limit time at the working face underground to eight hours a day. In remote settings, a flexible work schedule might suit workers and management better, with no safety compromise.

Flexible labor practices have been employed for years at remote sites in Canada. At the Lupin Mine, for example, workers have a two-week on, two-week off schedule working 12 hours a day. This schedule provides for continuous mining and milling, reduces commuting time, allows employees more time at home with their families, and has been proven to be a safe and efficient labor practice. (See commission recommendation on page 5.

Water quality regulations
For many years, the Alaskan placer mining industry has been subject to increasingly restrictive and in some cases unattainable regulations. In 1987, a joint industry/ADEC Water Quality Task Force on placer mining identified six areas as having the potential to increase regulatory flexibility while complying with the federal Clean Water Act and protecting downstream users. These included the use of mixing zones and startup variances, the reclassification of drainages, the restructuring of water uses, the revision of water quality criteria and state assumption of administration of the federal EPA NPDES permit program.

In September, 1988, ADEC promulgated new mixing zone regulations. Yet to date, there has been no policy developed for meaningful implementation of those regulations. Although the industry has made very substantial progress toward improving water quality, the lack of progress on the regulatory side means that although user conflicts have been substantially eliminated, and streams such as the Chatanika, Fortymile, Tolovana, Birch Creek and others have seen major improvement, the lack of meaningful progress by state agencies leaves these improved operations still exposed to unrealistic turbidity standards.

Complexity in state permit procedures
Many in the industry feel there is confusion and overlapping authority among state agencies that issue permits for development, and that this problem is getting worse instead of better, despite years of effort at 'regulatory reform.'

Alaska lacks a 'lead agency' with authority to steer permits through many state laws and regulations. The Office of Governmental Coordination, a part of the governor's office that is charged with coordinating permits, has little authority in actually resolving conflicts among state agencies over permit conditions. The result, when conflicts arise, is a stalemate in which the agencies proposing the most restrictive permit conditions usually prevail. Unfortunately, this process particularly affects smaller projects, which cannot support the costly burden of extensive, lengthy permitting procedures. Only large projects can afford the staff to cope with this complex process.

Environmental restrictions: New challenges
Finally, new technologies can lower costs in Alaska, new environmental requirements also impose higher costs and present new challenges. One example is in the project to reopen the AJ, where Echo Bay first proposed a $6 million marine tailings disposal plan for the mine. Federal agencies rejected this, with the alternative a costly $17 million onshore disposal plan that has now become controversial with local community groups.

Healthy growth in the industry

Despite continuing problems, mineral exploration and development has continued a healthy growth in 1989, a trend that began some two years ago following several years of severe slump. The industry's improvement can be attributed mainly to improving prices for precious and base metals on world markets, and to development of new mining technology that has lowered costs in Alaska.

Rebirth of 'hardrock' mining
One encouraging trend is the opening or reopening of lode gold mining operations, either by surface or underground methods. Underground 'hardrock' mines were once the backbone of the state's mining industry, but since the closure of underground mines during World War II, Alaska's mining industry has consisted essentially of small and medium-sized placer gold operations, many of them family-owned and operated.

These new hardrock mines are important for Alaska in a number of ways. Underground or surface lode mines can operate year-around, whereas most placer mines are seasonal because they require water to wash silt and clay to extract gold. But today, even some placer operations are being adapted to working year-around. Innovations at the Valdez Creek Mine on the Denali Highway, for example, allowed this large project to operate through the winter. It closed temporarily in late 1989, due to low gold prices and high costs, but may reopen in mid-1990.

Year-around operations
Most underground mines, for example Greens Creek, can operate year-around, since protected from the weather.

Large open-pit mines, like Red Dog, can also operate year-around, limited only by the ability of people and machinery to operate during extreme weather conditions. Also, underground and larger open-pit hardrock mines usually, but not always, have a longer economic life than most placer mines. Many of Alaska's small and medium-sized placer mines working now are relatively high grade deposits with limited reserves. But there are also exceptions: Larger placer operations, such as those both offshore and onshore at Nome, have many years of reserves. Also, there are substantial reserves left at the Valdez Creek Mine.

Mining's renaissance based on new technologies

New mining technologies, improving markets and economies of scale are propelling the rebirth of mining in Alaska. Continued economic growth and prosperity in the world, particularly among developing nations, auger well in the longer-term for minerals markets. Prices will always be uncertain, subject to cycles in demand and supply. But it is the continued development of new technology that has the most significance, since it can make Alaska projects more efficient and help insulate them from cyclical downturns in prices.

Some examples:

- Near Fairbanks, new advances in adapting heap leaching to northern climates may make it viable to mine ore deposits that were uneconomic by conventional means. At Ester Dome, Citigold has pioneered the use of heap leaching in a northern climate. Used widely in the continental U.S., this process involves treating stacked, crushed ore reserves with a chemical process to extract gold.

- New advances in development of metallurgical refining techniques under development at the University of Alaska's Mineral Industry Research Laboratory, may allow development of customized processes to extract ore at the mine site. These could reduce the need for the tremendous capital investment in transportation facilities to ship concentrates, and would improve the economics of many remote mineral deposits.

As it is now, a deposit must be either near tidewater or an existing road or rail link, or be a world-class deposit, like Red Dog, to support costly new transportation infrastructure.

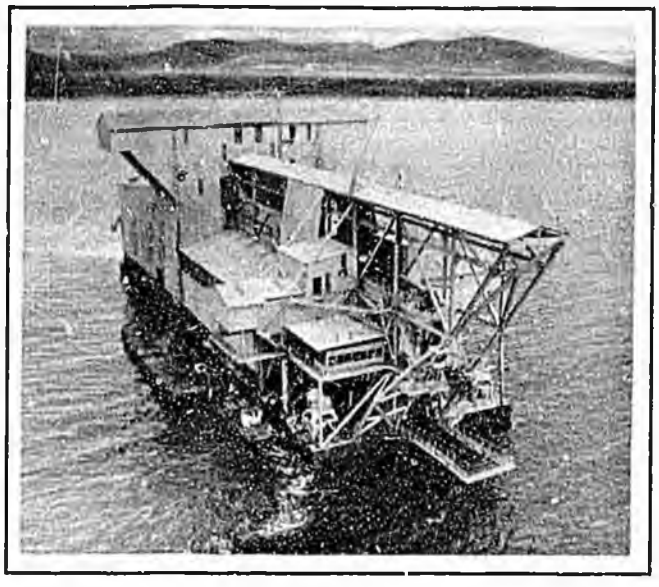
- In another development, experimental work in the underground mining of deep placer gold deposits underway at the university's MIRL and in Canada may find applications in Alaska.

  Many underground placer gold mines existed in Fairbanks in the earlier years, until rising costs made them uneconomic. Even today, most placer gold is concentrated deep, within a few feet of bedrock. The amount of overburden to be removed adversely affects the economics of mining this gold. If mining of these deep Alaska placers can again be economic, large quantities of gold-bearing frozen gravels could be produced.

- There are other advances: New geochemical, geophysical and remote sensing techniques enhance the industry's ability to detect mineralization. New geochemical prospecting methods, for example, led to the discoveries at Greens Creek and Quartz Hill in Southeast Alaska. Geochemical techniques are used where there are outcrops of ore, such as Greens Creek, Quartz Hill and Red Dog, but new geophysical techniques will help discover deeper deposits hidden by overburden. In coal, new processes for removing moisture from Alaska's subbituminous coals will sharply upgrade the quality and value of these coals, significantly widening export market opportunities. The University of Alaska is also active in this research.

- New techniques in drilling, core sampling and computer-aided evaluation of ore bodies have led to the discovery of large new reserves in several historic Alaskan underground mines.

Exploration and development at the old Chichagof and Hirst/Chichagof Mines near Sitka, the Golden Zone Mine near Cantwell and the Big Hurrah Mine near Nome, offer examples of medium-sized older properties where new drilling, sampling and computer-modelling techniques have allowed modern-day explorers to find richer veins and ore bodies missed by the early-day miners.



WestGold's BIMA Offshore Nome

AJ Mine: New methods

The most dramatic example of new technology applied to the reopening of a historic mine is that being developed by Echo Bay Mines for the A-J Mine in Juneau, once the world's largest and most sophisticated underground gold mine.

Echo Bay has developed a mining plan that will produce twice as much ore per day as in its earlier operation, but with a quarter of the workforce.

WestGold: Technical innovation

WestGold's offshore project at Nome offers yet another illustration of how new technology has made a long-known mineral resource economically viable. The presence of placer gold in the prehistoric beach lines in shallow waters off Nome has long been known. Miners have been interested in finding ways to produce it since 1900. Several attempts to dredge offshore deposits were made over the years, with small to medium-sized vessels and even shore-based equipment. Each attempt was defeated. It wasn't until Inspiration Mines (later WestGold) became active in the area that the resources of a larger mining company were committed to solving these technological challenges. In 1986, Inspiration purchased and con-

verted the Bima, an Indonesian tin dredge and the world's largest active bucketline mining vessel. The Bima required several innovative adapations, not only to mine gold in shallow waters but also to the northern climate.

WestGold also achieved several other technological firsts, including application of state-of-the geophysics, sampling and evaluation methods of offshore placer deposits.

Innovations in small-scale placer mining

Alaska's small placer miners have also gone through a period of technological innovation. Under the pressure of new federal and state water quality regulations, miners were challenged to upgrade a technology that has, in its fundamentals, changed little since the gold rush. New systems and equipment were developed to reduce the amount of water used in placer gold recovery, and also to increase the efficiency of gold recovery.

One state government program that assisted small miners was a modest technology grant program related to improved gold recovery and more efficient water processing systems. Several innovations in equipment and mining procedures were developed with these grants.

Mining today: How projects benefit Alaska's economy

Southeast Alaska: Greens Creek, AJ Mine, Kensington, Jualin, Quartz Hill

New mining projects in Southeast have given a powerful boost to the confidence of local people in the regional economy, particularly in Juneau. With Greens Creek now producing, local government planners in Juneau foresee, if reopening of the AJ and the Kensington Mines move ahead, a permanent new mining workforce of 900, creating a total of 1,800 jobs, including indirect and service employment, and a direct and indirect new payroll of $60 million.

Greens Creek:

The Greens Creek Mine on the northern end of Admiralty Island 18 miles from Juneau, started production in February, 1989. Its 210 employees are housed in Juneau, commuting daily to the mine, bringing some $10 million annually in direct new payroll to Juneau's economy. The total employment effect of Green Creek is about 400 new jobs, including direct as well as the support and service jobs created indirectly. Based on current proven reserves, Greens Creek has an anticipated mine life of 10 years, but company geologists are confident that further exploration will extend those reserves.

AJ Mine

If the AJ is reopened, Echo Bay would have a permanent workforce of 450 with another 540 jobs being eventually created in Juneau's support and services sectors, jobs in stores, banks, transportation companies, schools, local and state government. The total contribution will be 990 new jobs. Echo Bay has spent $9 million in rehabilitating old tunnels and passageways in the mine, drilling core samples, mining bulk samples and performing other studies.

Development of the mine will require a $200 million capital investment, including a new access tunnel. In an innovative development plan, most milling equipment would be constructed underground, including ore crushing and grinding, flotation and gravity-separation facilities.

New jobs in the AJ Mine would produce a payroll impact of $21 million annually, and a total contribution of $33.5 million, including both direct as well as indirect support and service employment. AJ Mine operations will also generate substantial new revenue to the City and Borough of Juneau, in the form of both taxes and royalties, since the mine is located on land owned by the local government. The City and Borough of Juneau will earn $4.3 million in new revenue during the year the mine opens, increasing to $6.2 million annually by the fifth year of operations.

Kensington, Jualin Mines

The Kensington Mine, another historic old property near Berner's Bay some 45 miles north of Juneau, is also in an advanced state of exploration. Echo Bay is also involved in Kensington, along with a partner, Coeur D'Alene Mines. This deposit, mined until 1916, lay idle until 1980, when exploration resumed.

If development goes ahead, Kensington would require some $150 million in new capital investment. The mine would produce some 4,000 tons of ore daily and would employ 340 workers. Although Kensington is too far for daily commuting by workers, unlike Greens Creek and AJ, the project would still bring new payroll into the Juneau area, and some $2 million in new tax revenues to the City and Borough of Juneau.

Another new project at the Jualin Mine, by International Curator Resources and Placer Dome, could sustain a production rate of 500 tons of ore daily if development proceeds, employing between 50 and 90.

Mining now offers the promise of growing private-sector employment in Juneau, a healthy diversification of the community's employment base away from dependence on state and federal employment.

Quartz Hill: Major world molybdenum discovery

Development of the Quartz Hill molybdenum deposit 45 miles east of Ketchikan, one of the largest of its kind in the world, awaits improvement of molybdenum prices in world markets. In the meantime, its developer, U.S. Borax, has continued with permit activity. The Final Environmental Impact Statement on the project has been issued, although an appeal of the FEIS is underway.

The deposit was discovered by 1974 by U.S. Borax geologists in an area east of Ketchikan that was, in 1980, included in the Misty Fjords National Monument. A 152,610-acre exclusion to the wilderness designation of Misty Fjords was included in the Alaska National Interest Lands Conservation Act, which will allow Quartz Hill to be developed.

Quartz Hill has an estimated 1.5 billion tons of ore reserves averaging 0.135% molybdenum, which amounts to about 11% of the world's known supply of this mineral. The deposit is large enough to allow large-scale, low cost open-pit mining, with reserves sufficient for 55 years. U.S. Borax has invested over $100 million over eight years of planning and studies in the project, about 25% of which has been spent on environmental studies and other work related to preparation of the federal Environmental Impact Statement.

Quartz Hill would require between 800 and 1,000 workers when in operation. Most would be housed in nearby Ketchikan, commuting to the mine.

Western Alaska: Red Dog

The Red Dog Mine in northwest Alaska is the second largest zinc deposit ever discovered and is now the world's largest producing zinc mine. On average, two hundred workers will be employed year-around, most of them residents of northwest Alaska.

Red Dog will inject about $100 millon yearly into the Alaska economy. Some $20 million will be paid in wages, $15 million spent in services and supplies, $20 million in transportation services, $15 million in state and local government taxes, and $30 million in royalties to the landowner, NANA Regional Corporation, 70% of which maybe paid out to other Native regional corporations under the revenue-sharing requirements of the Alaska Native Claims Settlement Act.

Placer Operation at Livengood

A more indirect economic benefit is the effect of the mine in reducing unemployment and the need for state-financed assistance programs in northwest Alaska, previously an economically depressed region. Reduced human services needs will lessen pressure on a state budget already hard pressed by declines in state oil revenues. Construction of the mine, a 60-mile access road and port facility on the Chukchi Sea was completed in November, 1989. Mine development costs had originally been estimated at $250

million by its developer, Cominco Alaska, Inc., but actually will amount to some $235 million, a result of good project management.

While it was being built, construction manpower at the mine, port and road projects peaked at almost a thousand workers. The project, involving both union and nonunion contractors, was one of the few bright spots for Alaska's depressed construction industry during 1988 and 1989.

Red Dog has been determined to contain proven reserves of 85 million tons of ore containing 17% zinc, 5% lead, with approximately 2.4 ounces of silver per ton, sufficient for 50 years of production at an annual rate of about two million tons. There are probable additional reserves, unexplored at this point, near the main body of Red Dog's proven resource base. Based on this second ore body, as well as other known zinc/lead deposits in the area, it's quite likely that mining will be underway at Red Dog far longer than 50 years.

Seward Peninsula:
WestGold, Alaska Gold and Placer/Aspen

Nome's economy has been strengthened and diversified by a number of substantial new mining projects in the area. While Alaska Gold Co. has operated seasonally for many years at Nome, and recently expanded its operations, the new WestGold offshore mining project has added a substantial boost to local activity.

There are also new projects that have major potential: Placer Dome and Aspen Exploration are involved in exploration drilling on 17,500 acres in the Rock Creek area about 10 miles north of Nome, where an important gold discovery has been made. This could be the upland source for many of Nome's placer gold deposits, and it could result in major new year-round mining developments.

Also, the state's recent leasing of 97,000 acres of submerged lands near Nome, and a planned federal offshore minerals lease sale, could lead to more discoveries of offshore placer gold and new dredging operations of the WestGold type.

There are other smaller and medium-sized projects in different stages of exploration and development. An example is the Big Hurrah Mine 40 miles east of Nome, which could be soon reopened.

WestGold's offshore mining

WestGold seasonally employs about 100, on average, with more than half of these jobs filled by Seward Peninsula residents, and over 80% hired within the state. The operation contributes about $600,000 a month to the economy of the local region. Some $8.3 million yearly is contributed to the state's economy, $4.6 million of this in wages and salaries, and $3.7 million in various supplies, services, rent and miscelleous expenses. Most of this is spent in the Nome area.

WestGold has now had three successful seasons working with the Bima, producing over 35,000 ounces of fine gold each year. In 1989, the Bima was joined by a smaller dredge vessel in an experimental program to work near-shore waters too shallow for the large Bima. The results of this are still being evaluated. But even with the larger dredge, WestGold has reserves sufficient for many years of operations.

New offshore exploration

Potential economic benefits of expanded offshore placer gold exploration and production, both in the state's recently-issued minerals leases and the pending federal sale area, are hard to assess, but studies conducted as part of the state's impact assessment estimated near-term employment impacts from expanded activity at up to 124 people.

Based on the WestGold experience, this could add some $8 million to the local economy, about half in payroll and half spent for goods and services. Studies have shown placer mining to have an indirect 'multiplier' effect of 1.25, which would result in as additional 155 indirect service and support jobs.

The longer-term potential, based on the assumption of three dredge vessels in operation, could see as many as 700 direct new jobs added in the Nome area. The maximum potential, considering cumulative increased demand for transportation, housing and public services, could see an overall 13% increase in Nome's population, according the state's assessment

of the impact of increasing activity.

Alaska Range: The Valdez Creek Mine

The Valdez Creek placer gold mine, off the Denali Highway 215 miles north of Anchorage and 60 miles east of Cantwell, is the largest open-pit placer gold mine in North America. Valdez Creek achieved a first in becoming the first large-scale placer gold mine to work year-around, with two shifts of workers on a 24-hour operation. Mining was temporarily suspended, as of September 1989, but may resume in 1990. Discovered first in 1903 and mined intermittantly since, present-day large-scale mining started in 1984 when Valdez Creek Mining Co., a partnership of three Canadian firms, took over the property. In all of its earlier phases of production, some 35,000 ounces of gold were produced, but from 1984 through September 1989, Valdez Creek Mining produced 179,417 ounces.

Stripping and mining is carried out at Valdez Creek by truck and shovel methods. A number of technical challenges presented themselves, not the least a very high stripping-ratio, or the amount of overburden that must be removed to get at the gold-bearing ore, and a high water content of both the overburden and the ore, which requires the drilling of costly dewatering wells to drain the gravels ahead of the mining operation. Much of this overburden is frozen and requires blasting to loosen before its removal. Once removed, gold ore is washed and separated in a recovery plant.

One problem the company faces now is that its gold-bearing ore reserves extend under the present channel of Valdez Creek. If mining is to proceed, a $5 million project will be [illegible] ert the creek around the mining project.

Valdez Creek made considerable progress in improving efficiencies at its Denali project, but it still remains a high cost mine, mainly due to the high stripping ratio. In its last twelve months of operations, Valdez Creek paid $8.8 million in wages to some 170 employees and spent about $15 million for services, supplies and materials, much of this purchased in the local Matanuska-Susitna Borough area.

Fairbanks: Tri-Con, Citigold, Fairbanks Gold

Fairbanks, a historic center of gold production, has seen a burst of new activity in recent years. If recently discovered large reserves of low-grade gold ore can be mined economically, Fairbanks could see a significant revival of the mining industry.

In the last two years, the first lode gold mines to operate in many years have been reactivated at Ester Dome, west of Fairbanks. Tri-Con Mining, operator for Silverado Mines, successfully reopened the Grant Mine and other prospects.

Also in the same area, Citigold began surface lode mining operations in the Ryan Lode, a mineralized deposit known for many years.

Both Tri-Con and Citigold are medium-sized seasonal operations employing a limited number of people. But both projects involve modern mining methods to work deposits previously considered uneconomic.

A recent discovery of a large low-grade gold reserve 15 miles northeast of Fairbanks, known as the Fort Knox prospect, may develop into a major new mine that could operate year-around, with potential for employing some 200.

Operating Drag Line at Usibelli Coal Mine

Alaska's Smaller Placer Miners: Troubled times, but some progress

Newly-enforced federal and state water quality regulations, as well as the closure of national park lands to mining, have taken a major toll among Alaska's many small and medium-sized gold placer miners.

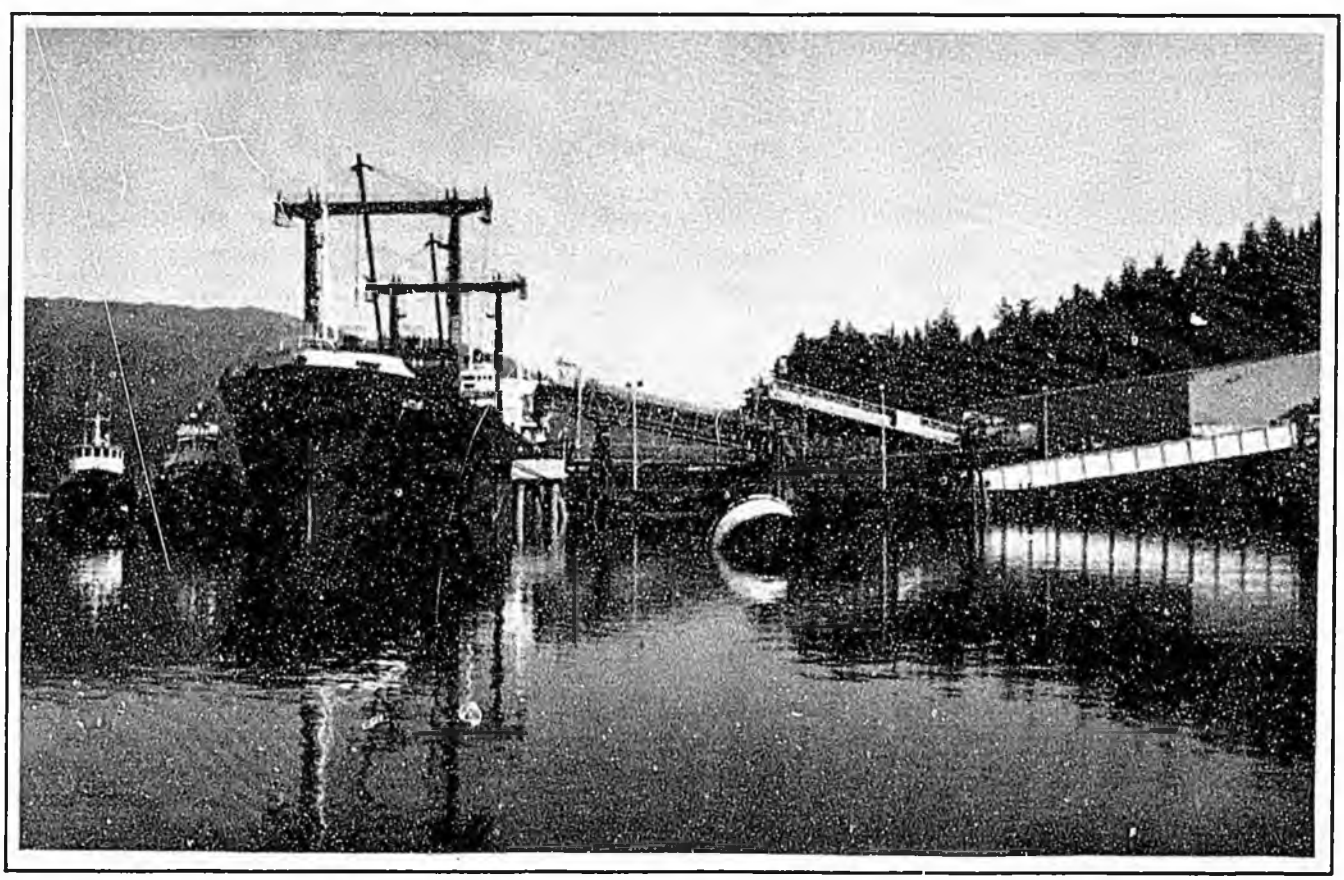
Most placer mines are family operations working seasonally, typically with six to 10 people involved in an operation. Many are economically marginal, and are essentially a way of life for many mining families, allowing them to make an acceptable living in rural parts of Alaska.

Small placer miners have been able to survive because mining these deposits required simpler, less costly technology than is involved in more capital intensive mining of lode, or hardrock, deposits.

Placer gold results from natural erosion of hard rock vein deposits. The gold washes downstream, mixed in prehistoric gravels in stream beds, rivers or other areas that once held substantial flows of water.

Unlike hardrock gold mining, where the metal is trapped in veins in the rock and requires crushing and processing for its removal, placer gold exists in a free state, and can be recovered using fairly simple technology, such as pumps, screens, conveyors, earthmoving equipment and well-designed sluice boxes.

The numbers of small placer mines have flucuated over the years, but a sharp increase in gold prices in the 1970s saw a rapid expansion of activity. Unfortunately, increasing activity also brought complaints from communities, environmental and recreation groups, prompting federal and state agencies to begin enforcing water quality regulations.



Greens Creek Concentrates Being Loaded for Shipment at Hawk Inlet

Complaints about poor mining practices put federal and state agencies under pressure to enforce requirements of the federal Clean Water Act, which had been adopted by Congress in 1972.

Facing these stiff new environmental requirements, as well as the closure of National Park units to mining, the number of placer miners dropped sharply, to around 200 in 1988, or about half the number working two years previously.

The operations that remain are those that are fortunate enough to have site-specific conditions and operating margins sufficient to enable them to absorb the costs of new mining techniques. However, the good faith effort put out by these operators to use the best technology available is not good enough to attain unreasonable turbidity standards. Although the federal Environmental Protection Agency reported that almost all of the 85 placer mines surveyed in 1988 met federal standards, few of these same operations met the state turbidity standard. Thus, even though the water quality of impacted streams has been greatly improved and user conflicts substantially eliminated, many operators are still not legal and must rely on the discretionary enforcement 'grace' of the regulating agencies.

Also, placer miners inside National Park units remain shut down. Although the Park Service has now almost completed the necessary Environmental Impact Statement on mining on park lands, the prior lack of which stimulated litigation from environmental groups, there are new procedural requirements which make it unlikely that very many of the mines formerly operating will be able to resume production.

Small mines make substantial contribution

Even at reduced levels of activity, small and medium-sized placer mines make a substantial contribution to Alaska's economy. The most recent economic assessment of the contribution of small placer mines was in 1985, a year in which there were 410 active placer mines.

That year some 2,226 people were involved in the industry on at least a part-time basis, invelving about 10,000 person-months of employment. With indirect effects added, total employment increases to 20,136 person-months, or the equivilent of 1,678 year-around jobs.

Placer mining is an economic mainstay in some small rural communities, such as McGrath, Manley, Central, Chicken, Ruby and Nome. It also forms a significant base for rural air taxi operators and fuel distributors, and for heavy equipment dealers and other industrial supply firms in Fairbanks and Anchorage.

In 1985, the placer mining industry had $63.4 million in direct statewide expenditures, which included some $33 million in direct wages and salaries, combined with wages paid to an estimated 841 people working in industries supporting placer mining. Of $75 million in total 1985 expenditures, $63.4 million were made within Alaska, about 36% of these in the Fairbanks area, where 31% of employees in the industry also reside.

Significantly, 34% of the industry's workforce comes from smaller rural Alaska communities, and 18% of total expenditues are made in small communities. About 15% of expenditures and 19% of the workforce comes from out-of-state, mostly Washington state.

Small miners face an uncertain future

Many in the mining community are pessimistic about the future of small family placer gold mines in Alaska, mainly because smaller mines have limited financial margins to absorb the costs of new mining methods, to comply with water quality or reclamation regulations, and for the legal costs needed to maintain mining rights

On the brighter side, the unregulated mining practices of the past are now gone. Field experience has shown that placer mining and clean water can coexist. Whether or not there will continue to be a placer mining industry in Alaska depends on whether environmental issues like water quality requirements and land reclamation are implemented in a reasonable manner.

Coal: Alaska the 'Saudi Arabia' of coal?

Alaska has an estimated 5.5 trillion tons of coal, over two thirds of the nation's total coal resource and about one-sixth of the world's resource. Four trillion tons of this is on Alaska's North Slope, where its development may await better prices or breakthroughs in new technology. A small pilot project to develop coal for regional use in Northwest Alaska, sponsored by Arctic Slope Regional Corporation and the North Slope Borough, is underway on Alaska's northwest Chukchi Sea coast.

Interior, Southcentral Alaska

But there are impressive coal resources, some 160 billion tons in estimated reserves, even near tidewater and established transportation facilities in Southcentral and Interior Alaska.

Much of this, particularly in the large Beluga coalfields across Cook Inlet from Anchorage, must await improvements in Pacific coal markets, but important progress is been made by Usibelli Coal Mines, the South Korea shipping company Sun Eel Alaska, and more recently by Idemitsu Alaska, in establishing Alaska as a coal supplier to fast-growing Pacific Rim markets.

Alaska's coal has an advantage in its extremely low sulfur content, much of which is below 0.2%, with the latest three-year average of coals produced by Usibelli Mines at 0.17%. But it also has major disadvantages in its high moisture content and its classification as sub-bituminous coal, reflecting a relatively low heating value.

Korean export contract in fifth year

Despite the disadvantages, Usibelli and Sun Eel, working together, have done well with initiatives to export coal. Despite sharp swings in currency values, the two companies have continued in a coal export contract with Korea Electric Power Co. (KEPCO) that began in 1986.

Since the KEPCO contract was first signed, the appreciation of the dollar against international currencies had has the effect of making Alaska coal more expensive in Pacific rim markets, much more so, in fact, than competing coals from Australia, British Columbia and even South Africa. Despite this, the Korean utility, KEPCO, has stuck with its Alaska contract in annual renewals. In 1988 KEPCO took almost its entire contract entitlement of 800,000 metric tons.

Usibelli and Suneel's export contract has resulted in an estimated $119 million in new money brought into the Alaska economy in the three years since it began, a substantial benefit for the relatively modest $6 million state investment in harbor dredging in Seward and construction of a new dock facility.

This includes new capital investments by Sun Eel at the Seward port, as well as local wages, salaries, goods and services purchased in Seward, new employment and tariffs paid to the Alaska Railroad, coal purchases from Usibelli Mines, and new coal royalties and taxes paid to the State of Alaska.

Coal shipments have also amounted to 30-40% of the Alaska Railroad's freight revenues, and have effectively made the difference between the railroad making a profit in recent years, despite an economic downturn in the Southcentral and Interior Alaska economies.

Improving Alaska's competitiveness in coal

Two things could improve Alaska's competitiveness in Pacific coal markets in the short-term. First, more coal being exported would lower transportation unit costs within Alaska. These now work to Alaska's disadvantage because the relatively small amount of coal now being exported results in high costs for the Alaska Railroad and at the Seward coal-loading terminal, which is now being used at only one-third its capacity. Startup of a proposed new coal mine at Wishbone Hill north of Palmer would help improve transportation economies, particularly at the Seward terminal. In fact, it would more than double Alaska's coal exports.

Secondly, the export value of Alaska's subbituminous coal could be sharply improved if its high moisture content could be reduced. Currently, the 25% moisture content of Alaska coal means, in effect,

that one fourth of the volume of coal shipped is actually water.

Reducing this through some technological process, such as a coal-drying technique Usibelli has proposed, would remove much of this water and upgrade this sub-bituminous coal to a higher quality, near-bituminous standard. This will substantially increase the value of Alaska's coal and widen its market potential in the Pacific.

New technology moisture-removal, power generation projects

Usibelli has an initiative underway with the Alaska Industrial Development and Export Authority to attract federal research funds in building a new technology, fluidized-bed power plant that could provide power to local electric utilities and burn waste coal not now utilitized. It would also generate waste heat to an adjacent coal-drying facility that would reduce the high moisture content of sub-bituminous coal destined for export markets. These projects could allow Usibelli to almost double its current 1.5 million tons/year production rate and to double its present workforce, creating about 150 new jobs.

Wishbone Hill could double Alaska's coal exports

The Wishbone Hill project 10 miles north of Palmer will also substantially boost Alaska's presence in Pacific coal markets if it moves ahead. Permit applications have now been filed for the project by Idemitsu Alaska, a subsidiary of the major Japanese energy company, Idemistu Kosan. While Wishbone Hill would be a small mine by world standards, its significance to Alaska is that it would produce a higher quality bituminous coal, and its one million-ton annual production rate would more than double Alaska's coal exports. This will improve transportation economies of scale for both the Alaska Railroad and the Seward coal terminal.

Most significantly, Wishbone Hill is being developed by a major Japanese company and represents the first entry by Alaska into Japan's coal market.

Beluga: Permitting complete, waiting on markets

Work is also continuing on two other projects proposed in the Beluga coal field near Anchorage, as well as longer-range continuing exploration in the Bering River coalfield near the Gulf of Alaska coast east of Cordova.

Diamond Alaska Coal Co. is continuing marketing efforts for its proposed ten million ton/year mine at Beluga. This $200 million project will require a substantial 'front-end' capital investment, but once operating, would employ some 800 workers, most living in nearby Anchorage and Kenai.

Nearby, Placer Dome is continuing work on what could begin as a smaller-scale project. Placer has the advantage of an existing dock facility and road, which will reduces its initial 'front-end' capital cost. The company has been actively working on marketing, and this smaller project could actually become the first Beluga field mine to be developed, paving the way, as markets develop, for later development of the larger Diamond Alaska project.

Bering River: High quality coal

Chugach Alaska Corp., with a major landholding position in the Bering River coal field, has also planned a 500,000-1 million ton/year mine that would see bituminous coal trucked 27 miles to a port site at Katalla. The project is awaiting improvements in market conditions. Chugach formed a joint-venture with South Korean firms, and is proceeding with engineering and marketing studies.

Arctic Slope: Test project underway

A small-scale pilot project for a coal mine near Cape Beaufort, on the Chukchi Sea coast in Northwest Alaska, could supply coal to communities in the region, including fuel for power generation in Nome and Kotzebue.

Since 1984, Arctic Slope Regional Corp. and the North Slope Borough have been working on the project, with assistance from the State of Alaska. A first phase now planned could begin production of about 30,000 tons/year, expanding to a 50,000 ton/year

phase two. The coal is of higher bituminous quality.

Although North Slope coal has been known since 1826, and small coal mines for local use existed in early years, this would be the first commercial mining of the North Slope's vast coal reserves, an important feasibility demonstration for potential buyers in the Far East, who are interested in the North Slope for long-term energy needs.

The North Slope has vast, good-quality coal beds extending for hundreds of miles along the northern flanks of the Brooks Range.

Red Dog : Case study of government, community, industry cooperation

The Red Dog Mine in Northwest Alaska offers a case study of cooperative work between local residents, in this case shareholders of the NANA Regional Corporation, government agencies and the mining industry local residents, in virtually every phase of exploration, discovery and development of one of the world's largest base metals mines. Red Dog might have never been discovered, or once discovered, not developed, were it not for sheer luck, the assistance of federal and state agencies, participation by NANA, timely action by Congress and Alaska's legislature, and public land policies that at the time encouraged mining.

History of the project

Since the 1950s and 1960s, local residents reported reddish stains on Red Dog Creek, 90 miles north of Kotzebue, to the U.S. Geological Survey. U.S.G.S. geologists investigated the area and issued an open file report in 1970.

The lands around Red Dog were withdrawn from entry as a part of the 1971 Native claims act, but the report lay open to the public until 1975, when the U.S. Bureau of Mines, doing a resource inventory on lands proposed for inclusion in proposed new parks and refuges, issued a press release on the Red Dog mineralized area. Cominco and other companies became interested and sent teams of geologists to the area.

Red Dog might well have wound up in one of the closed national parks or refuges had not the Bureau of Mines been allowed to do its assessment, which led to the reclassification of Red Dog's land status, opening it to mineral exploration and ultimately selection by the NANA Regional Corp. as part of its Native land claims entitlement.

However, Red Dog was still blocked from access by a road link to the sea, which would have to cross the closed Cape (Krusenstern) National Monument. Fortunately, Nana was able to get congressional permission for a special right-of-way corridor across the monument for the Red Dog road.

That Red Dog was discovered almost accidentally makes the point that other major mineral deposits lay undiscovered in the millions of acres of Alaska given only a very preliminary resource assessments before being included in parks, refuges and other conservation units. Geologists suspect that many base metals deposits similar to Red Dog exist in the highly-mineralized region. Had a more thorough exploration program been permitted, many more might have been discovered.

Red Dog also illustrates the critical role of the federal government's resource agencies, the U.S. Geological Survey and the U.S. Bureau of Mines in Alaska minerals exploration. Without them, and particularly the resource assessment work of the U.S. Bureau of Mines, Red Dog would have been included in a federal wilderness area closed to development.

Innovative state infrastructure financing

Red Dog also offers an example of successful financial collaboration between the State of Alaska and a private company, Cominco, in project development that will help open an entire mineral region to development. In 1985, the Alaska legislature authorized the Alaska Industrial Development and Export Authority to create the DeLong Mountains Transportation System, a $150 million port and road facility that, while initially serving Red Dog, could facilitate the development of other projects in the area.

The Western Brooks Range many hold several such deposits like Red Dog. Some have already been identified in the National Petroleum Reserve - Alaska, in areas near Red Dog. Construction of a road and port, eventually to be paid for by the Red Dog Mine, is a critical piece of infrastructure that will help make development of those deposits economic. The State of Alaska will not only receive a handsome return on its limited investment, but an important public policy goal in providing public infrastructure for new development was accomplished.

Market timing: Red Dog may win the gamble

Red Dog also offers an example of unique problems faced by mineral developers in Alaska, even with a mine that is the world's largest for its particular mineral. Red Dog is entering its production phase when the price of zinc is at a high level, 85 cents/lb. as this is written. But in 1985, at the time decisions to proceed with the project were made, zinc prices were much lower. around 32 cents/lb. At those prices, Red Dog was not economically viable as a stand-alone project, also paying for the construction of its own transportation system.

Cominco was, of course, optimistic about the future. An upward swing in zinc and lead prices had been predicted by the company's forecasters. But it was a bold decision for Cominco's board to proceed with a project requiring several hundred million dollars in capital investment based on forecasts of market conditions years in the future. Also, Cominco, like many other major mining companies at the time, had suffered severe losses in depressed prices and was not in the best of financial conditions. Had the State of Alaska not stepped in to help finance the port and road project, Cominco would very likely not have been able to proceed with the project.

Things are better, but not what they could be

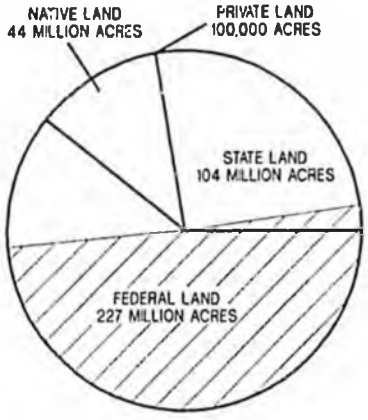
Things are better for Alaska mining, but the industry still pales by comparison with the mature, vigorous mining industries of British Columbia and Yukon Territory, Alaska's neighbors who share similar geology. In theory, there is no reason why the success of mining in British Columbia and Yukon couldn't be duplicated in Alaska.

Mining could easily be once again a major foundation to Alaska's economy, perhaps not the dominant industry, but very significant. But for this to happen, exploration must be allowed to proceed and public policies must be adopted to encourage mining as a healthy diversification of an economy grown too dependent on the spending of short-term public petroleum revenues.

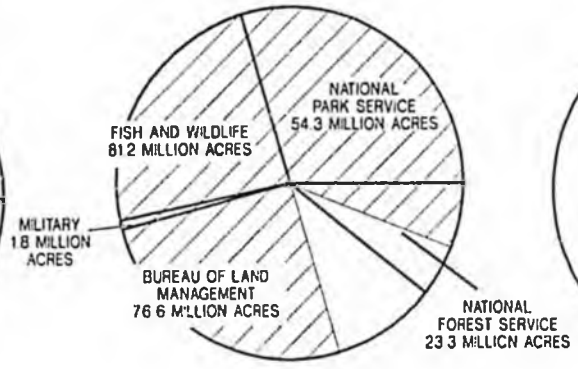
Recommendations of the Alaska Minerals Commission, directed toward action by the governor and the state legislature on state and federal issues, could help insure a strong and dynamic Alaska mining industry, benefiting the state and nation as a whole.

LAND AVAILABILITY

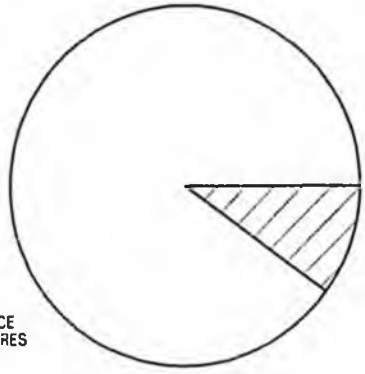
ALL LAND
375 MILLION ACRES



FEDERAL LANDS
227 MILLION ACRES



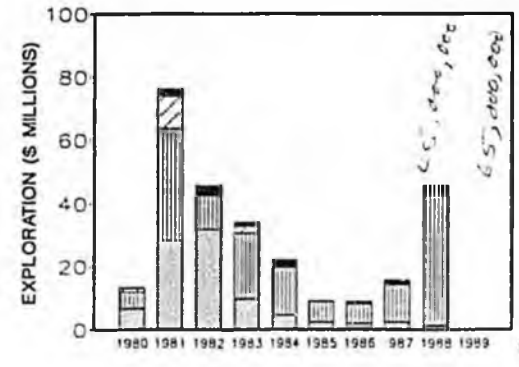
STATE LANDS
104 MILLION ACRES

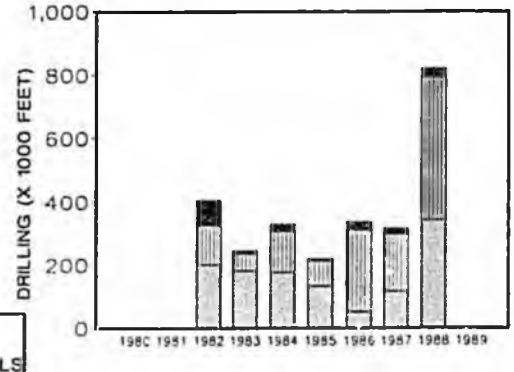


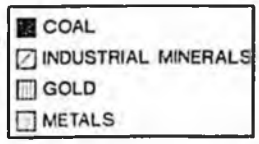
OPEN TO MINERAL ENTRY

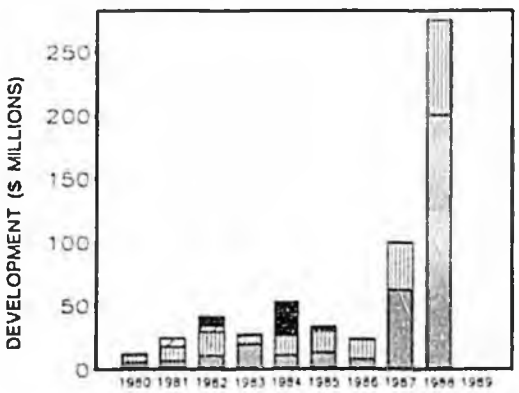
CLOSED OR RESTRICTED TO MINERAL ENTRY

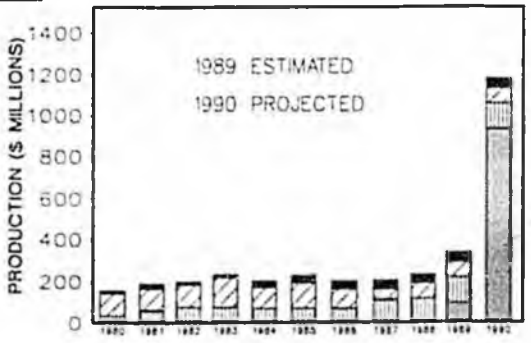
MINERAL INDUSTRY TRENDS











APPENDICES

A. Alaska Minerals Commission Statement of Purpose

B. Statute Authorizing Commission

C. Minerals Policy Act

D. Current Pending Legislation Referenced in This Report

1. SB 34
2. SB 35
3. SB 181 (identical to HB 159)

RDC - 70 million acres wetlands
30,000 acres developed

APPENDIX A

ALASKA MINERALS COMMISSION
STATEMENT OF PURPOSE

The Alaska Minerals Commission was created by the 14th Legislature in Chapter 98 of the Session Laws of 1986 and was established to make recommendations to the Governor and to the Legislature on ways to mitigate constraints on the development of minerals in the State.

The minerals industry offers the greatest potential of any Alaska industry for expanding and diversifying the State's economic base; for increasing Statewide employment; and for generating new wealth to create businesses and provide revenues for State and local governments.

However, Alaska has a complex pattern of land ownership and management; has overlapping and uncertain regulatory requirements; has unique geographic, geologic and climatic conditions; and has an underdeveloped transportation system.

To attract the capital necessary for the exploration and development of new mines; to ensure that mines can be developed feasibly and in timely fashion; and to ensure that producing mines remain viable—constraints on the industry must be mitigated.

The Alaska Minerals Commission will prepare reports for the First and Second Sessions of the 15th Legislature, and the First Session of the 16th Legislature, recommending to the Governor and to the Legislature the adoption of legislation and the implementation of administrative policy that will best accomplish the statement of policy found in Article VIII, of the Constitution of Alaska:

> "It is the policy of the State to encourage the settlement of its land and development of its resources by making them available for maximum use consistent with the public interest."

and the statement of policy found in the President's National Materials and Minerals Report to Congress of April 5, 1982:

> "It is the policy of this Administration to decrease America's mineral vulnerability by taking positive action that will promote our national security, help ensure a healthy and vigorous economy, create American jobs, and protect America's national resources and environment."

The goals of the recommendations of the Alaska Minerals Commission are to assure that the Legislature and the state administration encourage and promote development of a viable mining industry in the state.

APPENDIX B

Chapter 98
Session Laws of Alaska, 1986
As Amended by
Chapter 71
Session Laws of Alaska, 1988

AN ACT

Relating to the Alaska minerals commission; and providing for an effective date.

Section 1. (a) The legislature finds that the minerals industries, including metallic minerals, industrial minerals, and hydrocarbons, have been traditionally and continue to be the major source of wealth and income in the state.

(b) The legislature further finds that there are major constraints on the continued development of a diverse mineral industry in the state, including the Environmental Protection Agency's effluent guidelines, state water quality standards and improperly classified streams and rivers, restrictions on surface access, complex and numerous permitting requirements, and limited access to minerals through mineral closing orders and restrictions on multiple use through state and federal land use plans.

Sec. 2. ALASKA MINERALS COMMISSION ESTABLISHED. (a) The Alaska Minerals Commission is established in the Department of Commerce and Economic Development.

(b) The commission is composed of 11 members. The commission shall be composed of individuals who have at least five years' experience in the various aspects of the minerals industries in the state. The governor shall appoint five members of the commission, one of whom must reside in a rural community. The President of the Senate shall appoint three members of the commission. The speaker of the House of Representatives shall appoint three members of the commission. Each member serves at the pleasure of the appointing authority.

(c) The commission shall make recommendations to the governor and to the legislature on ways to mitigate the constraints, including governmental constraints, on development of minerals, including coal, in the state.

(d) The commission shall report its recommendations each year to the governor and the legislature during the first 10 days of the regular session of the legislature.

Sec. 3. This Act is repealed February 1, 1994.

Sec. 4. This Act takes effect immediately in accordance with AS 01.10.070(c).

APPENDIX C

MINERAL POLICY ACT

Sec. 44.99.110. Declaration of state mineral policy. The legislature, acting under art. VIII, sec. 1 of the Constitution of the State of Alaska, in an effort to further the economic development of the state, to maintain a sound economy and stable employment, and to encourage responsible economic development within the state for the benefit of present and future generations through the proper conservation and development of the abundant mineral resources within the state, including metals, industrial minerals, and coal, declares as the mineral policy of the state that

(1) mineral exploration and development be given fair and equitable consideration with other resource uses in the multiple use management of state land;

(2) mineral development be encouraged through reasonable and consistent nonduplicative regulations and administrative stipulations;

(3) mineral development and the entry into the market place of mineral products be considered in developing a statewide transportation infrastructure system;

(4) mineral development be encouraged through appropriate public information and education, scientific research, technical studies, and University of Alaska pogram involvement;

(5) economic development with respect to the state mineral industry be encouraged with Pacific Rim nations. (§ 1 ch 138 SLA 1988)

APPENDIX D

PENDING LEGISLATION REFERENCED IN REPORT

Introduced: 1/9/89 6-0296A
Referred: Resources and Finance

IN THE SENATE BY COGHILL, PEARCE AND FRANK

SENATE BILL NO. 34

IN THE LEGISLATURE OF THE STATE OF ALASKA

SIXTEENTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act relating to state land withdrawn from mineral location or mining."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. AS 38.05.185 is amended by adding new subsections to read:

(d) The commissioner shall submit a report to the legislature and to the governor within the first 10 days of the convening of each regular session of the legislature detailing the state land closed to mineral location and mining during the previous calendar year. The report shall include

(1) the known resource values of the area;

(2) the reason for the closure;

(3) the effective date of the closure; and

(4) the legal description of the land involved in the closure.

(e) Each area closed under (a) of this section remains closed to mineral location and mining until the commissioner issues an order altering the status of the land or until the closure is disapproved by act of the legislature. In addition to an act of the legislature disapproving a closure by the commissioner, the legislature may by resolution make recommendations to the commissioner on future management of the area involved.

(f) Each report prepared under (d) of this section that reports on an area of more than 5,120 acres shall include a mineral assessment report for the area.

(g) Every 10 years, the commissioner shall submit a report to the governor and the legislature concerning state land that is at that time withdrawn from mineral location or mining, including state land withdrawn from multiple use by the legislature. The commissioner may make recommendations in each report regarding existing closures of state land.

* Sec. 2. Notwithstanding the 10-year interval required under AS 38.05.185(g), as enacted by sec. 1 of this Act, the first report to the governor and legislature under that subsection shall be delivered to the legislature five years after the effective date of this Act.

Introduced: 1/9/89 6-0295A
Referred: Resources and Finance

IN THE SENATE BY COGHILL, KELLY, PEARCE AND FRANK

SENATE BILL NO. 35

IN THE LEGISLATURE OF THE STATE OF ALASKA

SIXTEENTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act relating to multiple use of state land and water."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. AS 38.04.910(5) is amended to read:

(5) "multiple use"

(A) means the management of state land and its various resource values so that it is used in the combination that will best meet the present and future needs of the people of Alaska, making the most judicious use of the land for [SOME OR] all of the [THESE] resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions;

(B) [IT] includes

(i) [(A)] the use of the [SOME] land for less than all of the resources but does not exclude compatible competing uses; [,] and

(ii) [(B)] a combination of balanced and diverse resource uses that takes into account the short-term and long-term needs of present and future generations for renewable and nonrenewable resources, including, but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific, and historic values;

* Sec. 2. AS 38.05.300(a) is amended to read:

(a) The commissioner shall, where considered necessary and proper, classify land for surface use [CLASSIFY FOR SURFACE USE LAND IN AREAS CONSIDERED NECESSARY AND PROPER]. This section does not prevent reclassification of land where the public interest warrants reclassification, nor does it preclude multiple [PURPOSE] use of land whenever different uses are compatible. An area of state [STATE] land, water, or land and water [AREA] may not, except by act of the state legislature, be closed to multiple [PURPOSE] use if the area involved contains more than 640 acres.

Offered: 3/6/89 6-0725E
Referred: Resources and Finance

Original sponsor: Adams

IN THE SENATE THE COMMUNITY AND REGIONAL AFFAIRS COMMITTEE

CS FOR SENATE BILL NO. 181 (C&RA)

IN THE LEGISLATURE OF THE STATE OF ALASKA

SIXTEENTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act relating to an exemption from municipal property taxation for natural resources in place; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. TEMPORARY TAX EXEMPTION. Natural resources in place, including proven or unproven mineral and other deposits of valuable materials and timber stumpage, are exempt from property taxation by a municipality.

* Sec. 2. STUDY AND REPORT. (a) The Department of Community and Regional Affairs shall study and compare the potential effects of various natural resource taxation options including

(1) total exemption from municipal property taxation for natural resources in place;

(2) partial exemption from municipal property taxation for natural resources in place;

(3) no exemption from municipal property taxation for natural resources in place;

(4) total or partial exemption from municipal property taxation for natural resources in place at the option of each municipality.

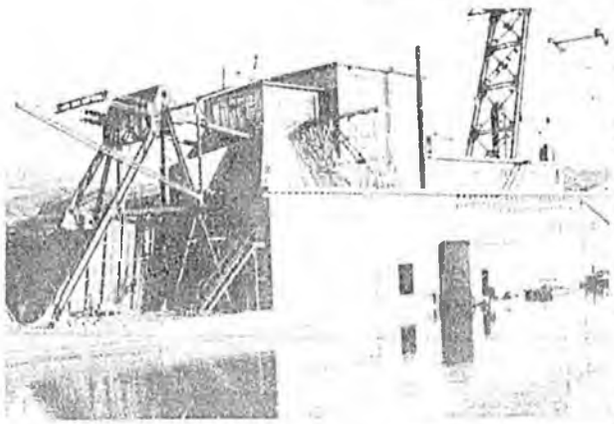
(b) In conducting the study under (a) of this section, the Department of Community and Regional Affairs shall consult with the Department of Revenue and with the Alaska Municipal League. By January 15, 1991, the Department of Community and Regional Affairs shall report to the legislature its findings and recommendations regarding municipal property taxation

of natural resources in place.

* Sec. 3. This Act is repealed July 1, 1991.

* Sec. 4. This Act takes effect immediately under AS 01.10.070(c).

House Bill SSHB 159 is identical to this Bill - CSSB 181 as of January, 1990



ALASKA MINERALS COMMISSION
P.O. Box 80148
Fairbanks, Ak. 99708

Senator Bettye Fahrenkamp
P.O. Box V
Juneau, Ak. 99811

January 26, 1990

Dear Bettye:

On behalf of the Alaska Minerals Commission I thank you and the Senate Resources Committee for the time given on January 17, 1990 for a meeting with Commission members. The resulting discussions were appreciated and stimulating. Comments by the Resources Committee members hit the nail on the head, especially for Commission recommendations #8, 9 and 10 pertaining to the importance and need for a continuing geologic mapping program. Such a program will produce mineral potential areas and thereby stimulate mining companies to become involved in exploration that hopefully will lead to development and then production.

Upon returning to Fairbanks, the Minerals Commission members, Karl Hanneman, Earl Beistline and mining specialist Department of Commerce, Dick Swainbank, met with State Geologist and Director, Dept. Geology and Geophysics (DGGS) Robert B. Forbes and DGGS Geologist Tom Smith, to discuss a state geologic mapping program. Accordingly, the Alaska Minerals Commission requested Dr. Forbes to prepare a work plan that would implement a recommendation (# 8) of the Commission.

The result was that such a plan was prepared and is herewith respectfully sent to you and the Senate Resources Committee along with the letter of transmittal from Dr. Forbes. The enclosure is entitled "Alaska Mineral Assessment Program: A Schedule of Studies". The plan is geared initially to a five year program but geologic mapping should continue until Alaska lands are adequately mapped to allow mineral resources including industrial minerals to be identified for potential development.

The plan developed is concise and is directed toward the following points:

1. Why these studies are needed
2. Proposed program
3. Areas needing both detailed geological mapping and geophysical survey
4. Areas needing detailed geophysical surveying to compliment existing detailed geologic maps

From the Commissions' viewpoint it appears that such a program could be initiated during the coming season if additional supplemental funding can be obtained through appropriate means best known to you and the Resource Committee--perhaps a resource bill or through additions in budget adjustments.

Also enclosed is a draft format of a resolution containing key points showing the availability and status of current geologic mapping and airborne geophysical surveys importance of geological mapping as an asset toward mineral development and the expected benefit to the states economy by a single large discovery such as Cominco's Red Dog discovery. The draft (Therefore be it ...) shows the monetary benefit that would result from such a discovery if a ten year mapping program was in place. The resolution format is given for you to use in an appropriate way for presenting the merits of the program.

Bettye, if you or members of the Commission have questions and/or comments or desire additional information about the proposed mapping program, please do not hesitate to let the Commission know as well as any other assistance that the Commission may offer.

Also, Bettye, the Commission would appreciate any suggestions and action that you and the Senate Resources Committee could take on other recommendations of the Commission for the benefit of the mining industry, communities, Alaska, the Nation and their people.

As we say, the best defense for maintaining a strong economy and good social standards is a fast offense. So we have to go for it!

Best personal regards.

Sincerely,

Earl

Earl H. Beistline, Chairman
ALASKA MINERALS COMMISSION

EHB:ob

Enc: Joint Resolution
Cover letter - Forbes
Alaska Mineral Assessment Program

STATE OF ALASKA

DEPARTMENT OF NATURAL RESOURCES

DIVISION OF GEOLOGICAL & GEOPHYSICAL SURVEYS

STEVE COWPER, GOVERNOR

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FAIRBANKS, ALASKA 99709-4609
PHONE (907) 451-2760, 474-7147

☐ P O BOX 772116
EAGLE RIVER, ALASKA 99577-2116
PHONE (907) 696-0070

☐ 3601 "C" STREET, SUITE 1236
P O BOX 107005
ANCHORAGE, ALASKA 99510-7005
PHONE (907) 762-2356

☐ 400 WILLOUGHBY AVENUE, 3RD FLOOR
JUNEAU, ALASKA 99801
PHONE (907) 465-2520

Dr. Earl H. Beistline
Chairman, Alaska Minerals Commission
P.O. Box 80148
Fairbanks, Alaska 99708

January 25, 1990

Dear Dr. Beistline

Pursuant to your request of January 19, 1990, that the DGGS develop a work plan to implement a recommendation of the Alaska Minerals Commission to the State Legislature and the Governor, we are pleased to transmit the following document entitled "*Alaska Mineral Assessment Program: A Schedule of Studies*"

As we understand your request, the Commission contemplates a five-year commitment by the State in order to make Alaska's geological and geophysical survey database competetive in a global context and to provide data for informed land-planning; the studies outlined in our document are designed to provide that database.

Because of time constraints we have identified only the immediate needs, and could certainly expand and refine the proposed program plan as required in future weeks.

Sincerely,

Robert B. Forbes / BF
Robert B. Forbes
State Geologist and Director DGGS

Joint Resolution re. Supplemental Appropriation for geological mapping and airborne geophysical surveys

WHEREAS: Less than 10 percent of Alaska has been geologically mapped in sufficient detail for use in mineral exploration; and

WHEREAS: There is virtually no detailed airborne geophysical information in Alaska, even though many of the next generation of mineral deposits will probably be discovered by such methods; and

WHEREAS: The availability of detailed geological and geophysical information is vital for informed land planning by government agencies and for the development of mineral exploration programs by private industry; and

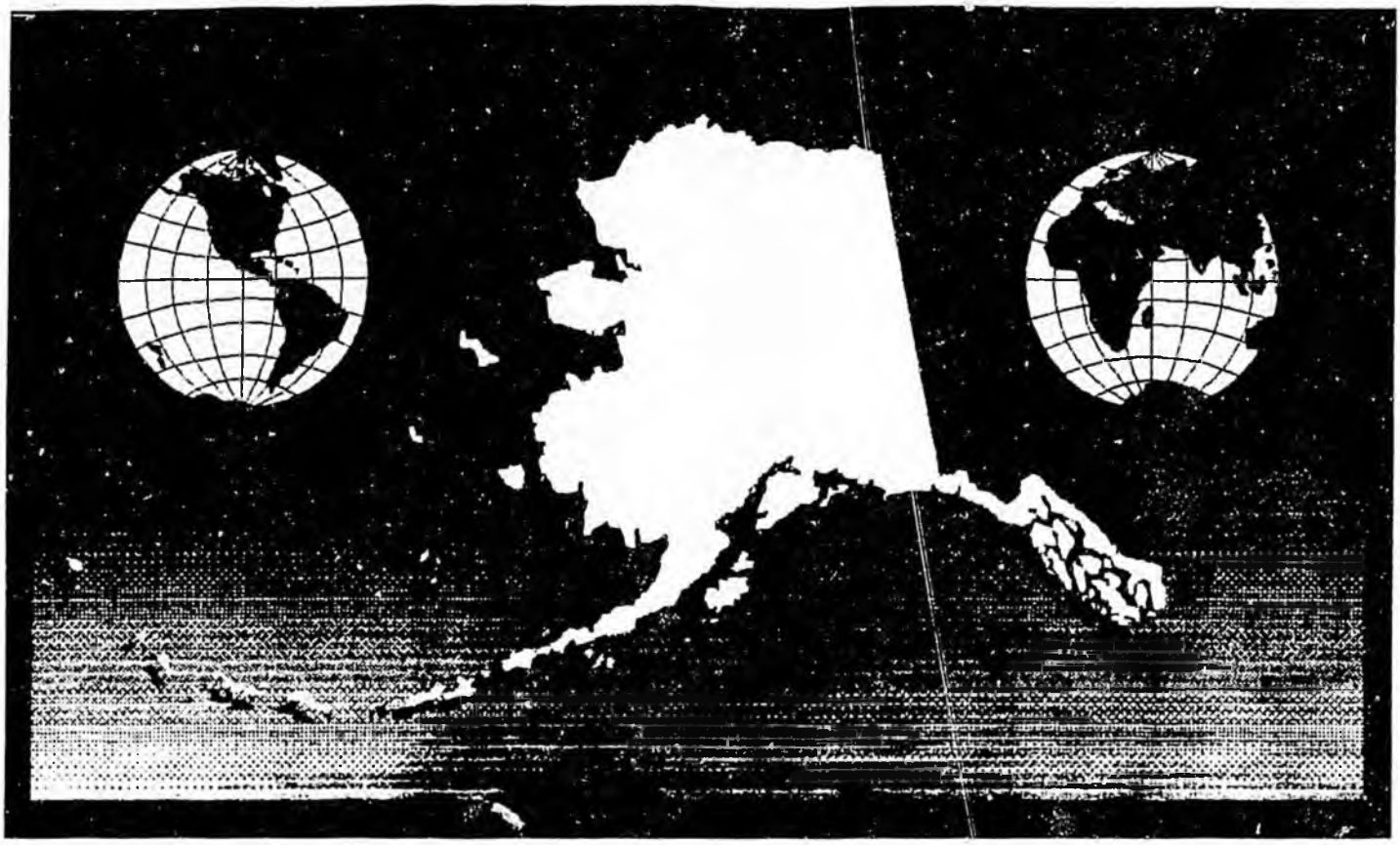
WHEREAS: Mineral exploration funds are invested worldwide on the basis of economic factors including the availability of land, the existence of transportation and infrastructure, the cost of living, public regulatory and fiscal policies and climatic considerations; and

WHEREAS: An adequate database of geological and geophysical maps can counterbalance the many natural economic disadvantages of Alaska, and advertise the state's interest and commitment to mineral resource development; and

WHEREAS: A single new discovery the size of Red Dog would repay a multi-year investment of $50 million a hundred-fold:

THEREFORE BE IT RESOLVED THAT THE STATE OF ALASKA COMMITS TO AN INVESTMENT FOR DETAILED GEOLOGICAL AND GEOPHYSICAL MAPPING DURING THE NEXT DECADE OF $5 MILLION ANNUALLY TO BE ADMINISTERED BY THE STATE DIVISION OF GEOLOGICAL AND GEOPHYSICAL SURVEYS IN THE MOST EFFICIENT MANNER POSSIBLE. THIS INVESTMENT WILL SERVE TO INVENTORY THE STATE'S SURFACE AND SUBSURFACE MINERAL RESOURCES, AND ADVERTISE THE STATE'S COMMITMENT TO MINERAL DEVELOPMENT AS A VALUED COMPONENT OF THE ECONOMY CO-EQUAL WITH OTHER SECTORS.

ALASKA MINERAL ASSESSMENT PROGRAM



A Schedule of Studies Prepared At The Request of

THE ALASKA MINERALS COMMISSION

January 1990

ALASKA MINERAL ASSESSMENT PROGRAM:
DETAILED GEOLOGICAL MAPPING AND GEOPHYSICAL SURVEYING

WHY THESE STUDIES ARE NEEDED

The Red Dog mine went into production in 1989, about twenty years after the initial discovery, and it is expected to inject $100 million a year for the next 50 years into the Alaskan economy. This Red Dog ore deposit, and most others under development today, are exposed at the surface. The next generation of mines is likely to come from deposits that are more obscure at the surface or covered by tens or hundreds of feet of unmineralized rock. Most of these discoveries will be made through detailed geological mapping and geophysical surveys. To attract national and international high-risk exploration capital to search for such obscure and "blind" mineral deposits, the state must invest in a long-term project to increase its geological and geophysical survey database. This investment will also advertise Alaska's commitment to development of its mineral resources.

Since statehood mineral exploration firms have invested more than $600 million in exploration and about $550 million in mineral development throughout all regions of Alaska. Levels of expenditures have fluctuated due to complex economic conditions. An individual mineral company exploration budget is commonly in the $1 million range, and represents outside money invested in Alaska. Cost of developing a mine ranges from about $10 million to several hundreds of millions of dollars of outside capital. Compared to many other areas with favorable geology, Alaska is at a disadvantage in terms of the availability of land, infrastructure and transportation. The high cost of living, harsh arctic climate, and strict regulatory conditions must be counterbalanced by some favorable factors to make Alaska's mineral resources competitive.

Although industry generally requires large scale (1:63,360 and larger) geologic maps before it commits exploration dollars, less than 10 percent of Alaska has been geologically mapped at a scale suitable for design of mineral exploration programs (compared to about 80 percent of the Soviet Far East). No detailed airborne geophysical surveys exist. Reconnaissance aeromagnetic surveys conducted in Alaska in the early 1970's did locate some mineral discoveries, but the scale of those surveys is not useful for discovery of relatively small targets offered by huge deposits such as the Red Dog. A multi-year project focussing on geological and geophysical surveys of mineralized districts and zones will allow "fingerprinting" of known deposits and discovery of similar but less obvious or deeply buried deposits. An ongoing investment of $5 million (per year) would be comparable to the amount spent each year advertising tourism and fish products and should properly be viewed in the same way: as an investment. A single new discovery such as Red Dog could inject an additional $5 billion into Alaska's economy.

As well as benefiting Alaska's economy, an increased geological and geophysical survey database will make important information available for engineering and land use decisions by government and the public.

PROPOSED PROGRAM

To provide geological and geophysical survey information to the mineral industry and government, we propose a multi-phased program of detailed, integrated geological mapping and geophysical surveys in mining districts and along mineral trends within Alaska. This program will require $5 million per year for 5 years.

For each mining district and mineral trend investigated, this program will result in the publication of a folio containing:

- Detailed geological map(s) at 1:63,360 scale or greater.
- Detailed geophysical survey maps at close flight-line spacing including at least the following airborne geophysical techniques:
  - Aeromagnetics
  - Airborne electromagnetic (VLF)
  - Resistivity
  - Airborne radiometrics
- Summary of mineral resources.

Folios covering each mining district and mineral trend investigated will be published after conclusion of field work.

Other information, such as prospect examinations and local geochemical orientation surveys, will be provided where warranted.

Geological field work will be initiated during the first year of each phase; each program is estimated to last 2-3 years.

The following outlines an approach for developing exploration folios in 1) areas that do not have either geological mapping or geophysical surveys; and 2) areas that have good detailed geological mapping with no detailed geophysical surveys.

AREAS NEEDING BOTH DETAILED GEOLOGICAL MAPPING AND GEOPHYSICAL SURVEYS

The mining districts and mineral trends shown of figure 1 (next page) have not been geologically mapped or are covered by very incomplete geologic maps at a scale of 1:63,360 (1 inch = 1 mile) or larger. No suitable geophysical surveys exist for detailed mineral exploration in these areas. Geological programs in these and other mining districts and mineral trends will provide detailed geological mapping and geophysical surveys.

Field studies in Phase I areas will take place during the first, second, and (in some cases) third program year. Field studies in Phase II areas will occur during the third, fourth; and (in some cases) fifth program year. Geophysical surveys will normally be completed during the first year of each phase. During the final year, resource assessments and folios will be completed and published.

Phase I

Mining District Or Mineral Trend	Region	Commodities
Rampart - Manley	Interior	Gold, Silver, Copper
Ketchikan mining district	Southeastern	Gold, Silver, Tungsten, Molybdenum, Copper, Zinc, Lead
Nyac mining district	Southwestern	Gold, Silver, Tin
Yentna mining district	Southcentral	Gold, Silver
DeLong Mtns. / Howard Pass	Northwestern	Zinc, Lead, Silver

Mineral Assessment Programs

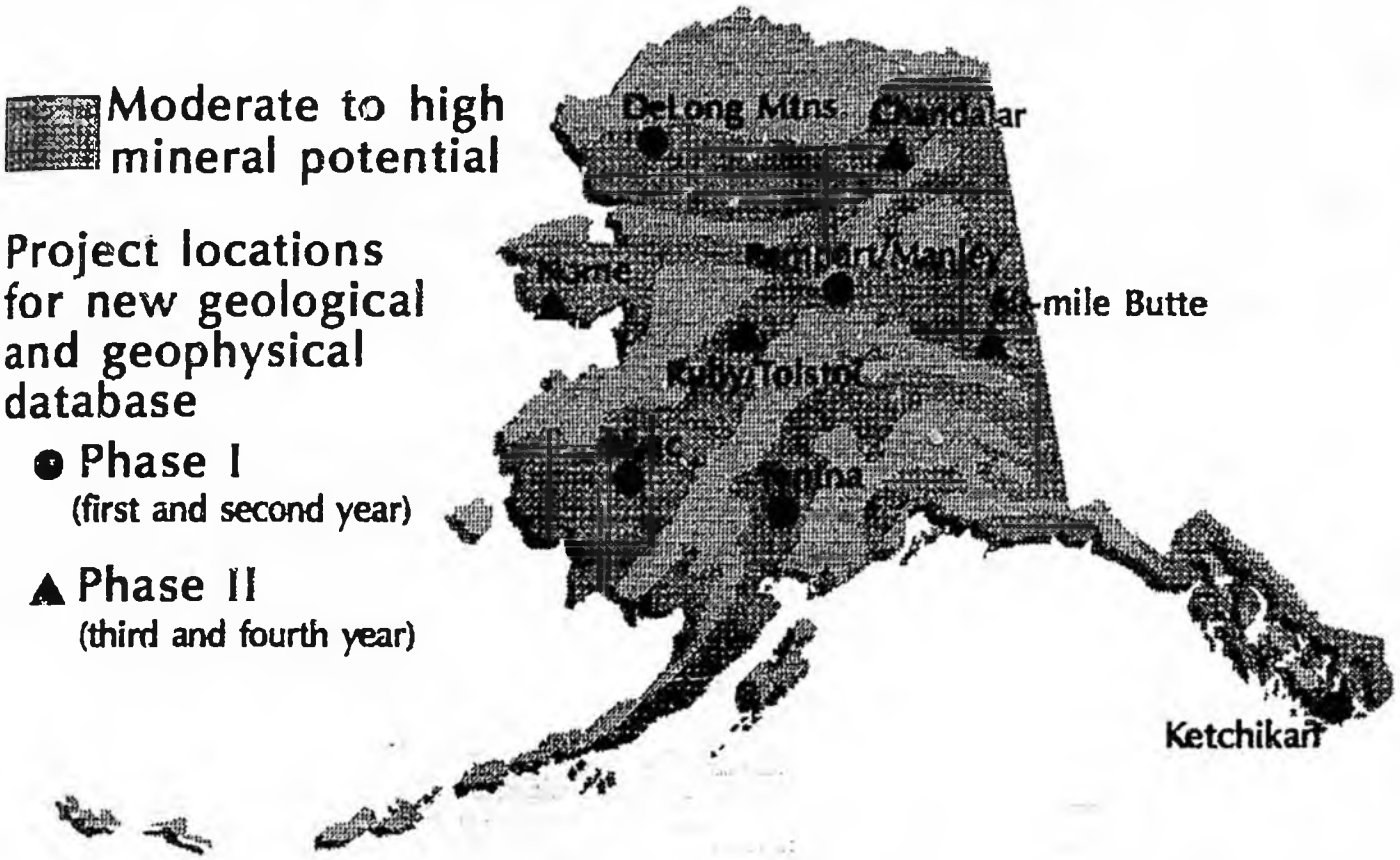


Figure 1. New geological mapping and geophysical surveys

Phase II

Mining District Or Mineral Trend	Region	Commodities
Nome / Seward Peninsula	Western	Gold, Silver, Tungsten, Tin, Zinc, Lead
Ruby - Tolstoi	Westcentral	Gold, Silver
Chandalar	Northern	Gold, Silver, Copper
60 mile Butte	Interior	Gold, Silver

AREAS NEEDING DETAILED GEOPHYSICAL SURVEYING TO COMPLEMENT EXISTING DETAILED GEOLOGIC MAPS

The mining districts and mineral trends shown on figure 2 (last page) are covered by complete or nearly complete geologic maps at a scale of 1:63,360 (1 inch = 1 mile) or larger. No suitable geophysical surveys exist for detailed mineral exploration activities in these areas. Programs in these mining districts and mineral trends will include only geophysical surveys and limited geologic work to complement existing geologic maps.

Phase I

Mining District Or Mineral Trend	Region	Commodities
Fairbanks mining district	Interior	Gold, Silver, Tungsten
Haines - Klukwan	Southeastern	Zinc, Lead, Gold, Silver, Barite
Farewell	Westcentral	Gold, Silver, Tin
Richardson mining district	Interior	Gold, Silver
Sleetmute	Southwestern	Gold, Silver, Tin, Mercury
Iditarod	Southwestern	Gold, Silver, Tin, Mercury

Phase II

Mining District Or Mineral Trend	Region	Mineral Commodities
Chichagof mining district	Southeastern	Gold, Silver
Livengood mining district	Interior	Gold, Silver, Zinc, Lead, Platinum
Upper Chena River	Interior	Zinc, Lead, Gold, Silver, Tungsten
Bonnifield mining district	Central	Gold, Silver, Zinc, Lead
Wiseman mining district	Northern	Gold, Silver
Chugach	Southcentral	Chromium, Nickel, Gold, Silver

Mineral Assessment Programs

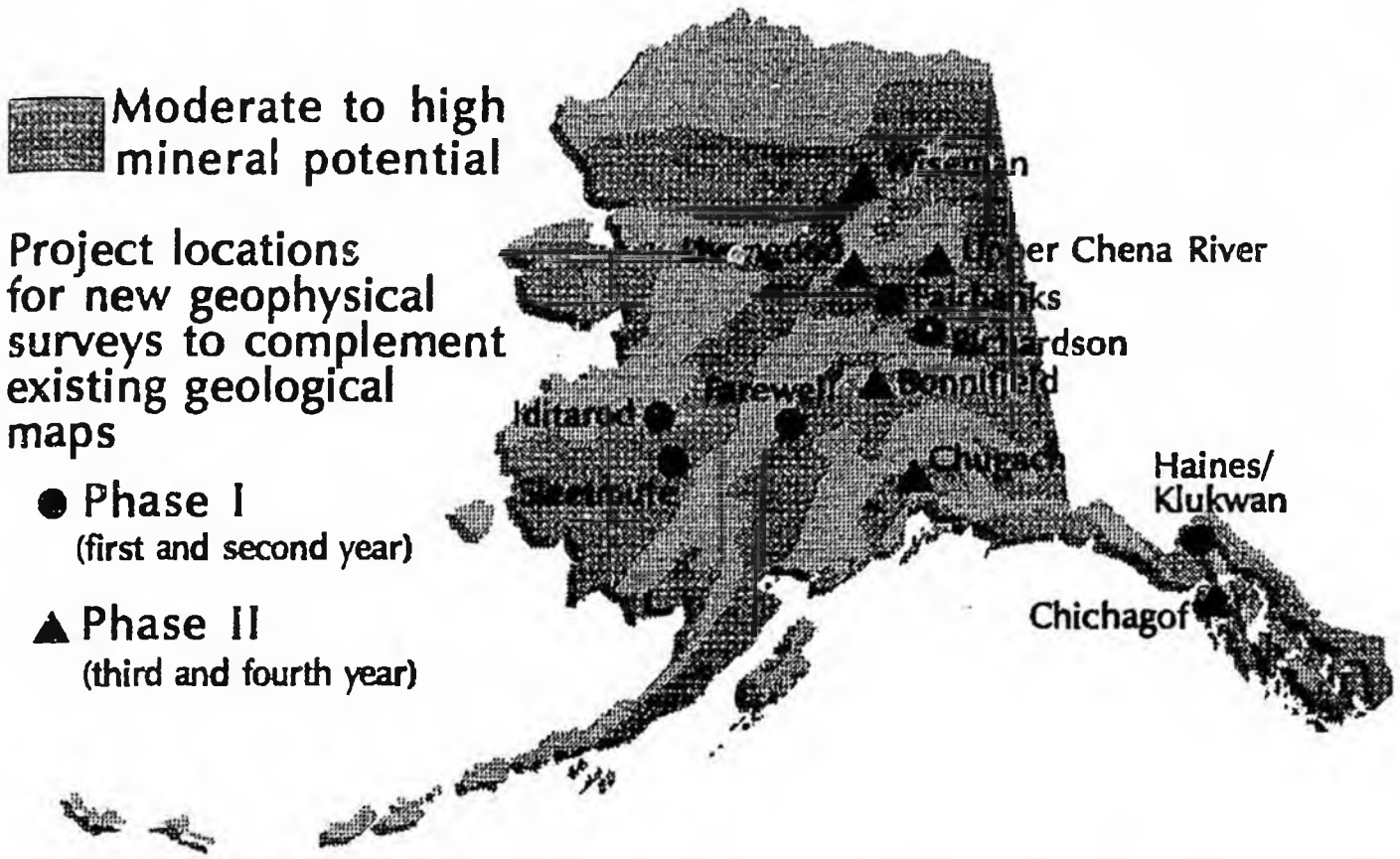


Figure 2. New geophysical surveys