

ALASKA'S MINERAL INDUSTRY 1982

Alaska Office of Mineral Development
Alaska Division of Geological & Geophysical Surveys
SPECIAL REPORT 31



Front Cover —

U.S. Borax Quartz Hill miners at face of Quartz Hill Adit.
Airlift of Construction Equipment for Blossom River Road.

ALASKA'S MINERAL INDUSTRY 1982

By

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Special Report 31

College, Alaska

1983

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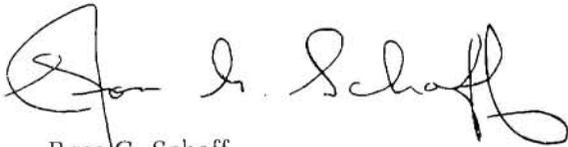
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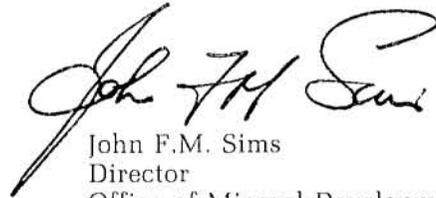
FOREWORD

This is the second annual report, produced jointly by the Department of Commerce and Economic Development, Office of Mineral Development and Department of Natural Resources, Division of Geological and Geophysical Surveys, detailing the activities of the mineral industry in Alaska. Our objective is to supply information in a timely manner that will assist the mining industry and foster a better understanding of its importance in the private sector and government. The completeness of the report is dependent on the cooperation of individuals and companies that supplied basic information, and they and the team of contributors are to be congratulated.

Although mineral-exploration activities in Alaska declined during 1982, strong prices for precious metals and a positive attitude by government toward mining as a means to diversify the state's economy are encouraging. Projections based on the potential development of recently discovered ore deposits suggest that mineral development can create several thousand jobs and become a major economic factor in Alaska.



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Executive Summary

This report summarizes exploration, development, production, and drilling activities of the Alaskan mineral industry during 1982 (excluding oil and gas). Total value of 1982 mineral production was \$196.4 million, up about 4 percent from an adjusted 1981 level of \$188.6 million. Gold production, up 30 percent in volume from 1981, was responsible for virtually all of this increase. Available information indicates that at least 174,900 ounces of gold were recovered from several hundred small and a few medium-sized placer and lode operations in the 49th state.

Development expenditures increased 68 percent to \$41.6 million in 1982, but exploration expenditures dropped 41 percent to \$45.0 million, down from \$76.0 million in 1981. Total 1982 expenditures for all segments of the mineral industry — exploration-development-production — were \$283.0 million, down from an adjusted \$291.0 million in 1981 (fig. 1). As predicted in the 1981 mineral resource review, the effects of a severe economic recession have caused mining companies to curtail or reduce exploration activities in the state.

Significant actions or events affecting the Alaskan mineral industry include:

1. State and federal government leaders are supportive of mineral development in Alaska. The Sheffield administration is looking to statewide mining development to provide new jobs and economic

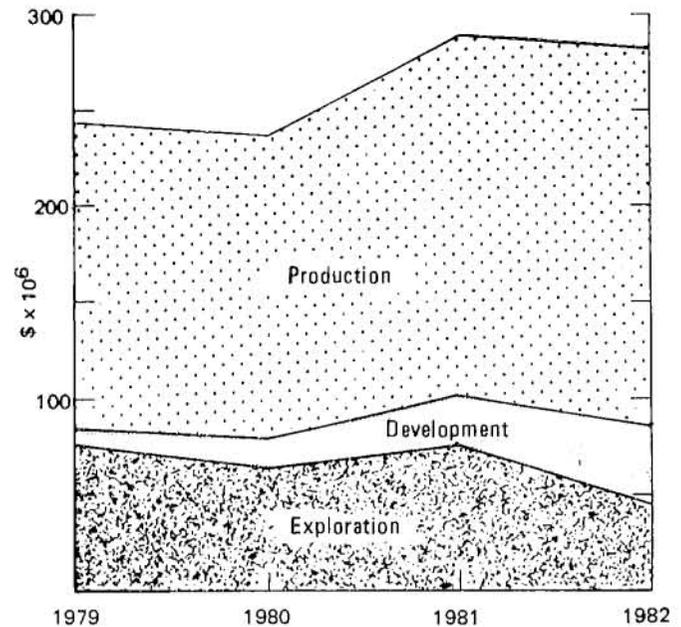


Figure 1. Value of mineral activity in Alaska, 1979-82.

diversification. Secretary of the Interior James Watt and Assistant Secretary of the Interior for Energy and Minerals Dan Miller visited the state in 1982 and expressed the support of the U.S. Department of the Interior for mineral development.

Table 1
Projected Alaskan producers, 1990
(from the 1982 Alaskan Miners Association Convention and Office of Mineral Development,
Alaska Department of Commerce and Economic Development)

Mine	Greens Creek	Quartz Hill	Chuitna	Alaska Asbestos	Red Dog
Production date	1987	1987-88	1988	1989-90	1986-88
Location	Southeastern	Southeastern	South-central	Eastern Interior	Northern
Mineralization	12 oz/ton Ag 0.16 oz/ton Au 10% Zn + Pb + Cu	0.136% Mo	Coal	5-6% fiber	17.1% Zn 5% Pb 2.4 oz/ton Ag Barite
Reserves (million tons)	3.4	1500	400	65	85
Mine life (yr)	15-17	70	30	30	40
Employees	315	850	450	500	300
Production rate (tons/day)	800	60,000	40,000	5,500	2,500
Mining method	Underground	Open pit	Strip	Open pit/ underground	Open pit

2. In a study estimating future tonnages of mineral freight, the Alaska Miners Association Railroad Committee forecast that with strong metal prices, a healthy investment climate, and new infrastructure, the hard-rock mining industry could create as many as 6,000 jobs, infuse \$3 billion annually into the state's economy, and provide several hundred million dollars annually in government revenues by the 1990's. Although such modeling cannot supply specific forecasts for individual mines, the broad picture is consistent with results of other studies, including the Stanford Research Institute (1978) report. The Office of Mineral Development recently summarized economic parameters for five potential Alaskan mines in 1990 (table 1).
3. Various Native corporations are increasingly supportive of mineral-resource development. The NANA Corporation is examining the feasibility of developing the Red Dog lead-zinc-silver deposit in northern Alaska as a means of providing long-term local jobs for its shareholders, while minimizing cultural and environmental disruption. Recently the Chugach Natives, Inc., (CNI) invited mining companies to examine a manganese deposit discovered by the U.S. Bureau of Mines on lands selected by CNI in the Prince William Sound Region, and a joint-venture project to develop the Bering River coal field with the Korean Alaska Development Corporation (KADCO) is ongoing. The Doyon Regional Corporation and GCO Minerals are working on a major asbestos deposit in eastern interior Alaska.
4. A study commissioned by the Office of Mineral Development reported favorably on the economic benefits of placer mining in the state.
5. For the first time in the history of the state, development-project expenditures approached the expenditures for exploration. This is not only due to a drop in exploration levels due to the recession; but it also reflects decisions by major companies to proceed toward production of specific mineral deposits.
6. The price of gold recovered from \$300 per ounce in the spring, when seasonal production began, to \$480 per ounce by the end of the year when much of the production was sold.
7. Interest in Alaska's coal resources remained strong throughout 1982. In 1983, the state proposes to make available for lease state tracts with moderate to high coal potential in the Beluga area, and will begin processing existing applications for coal-prospecting permits. The Alaska Surface Mining Reclamation and Control Act was passed by the Alaska Legislature in June 1982. Transportation and marketing, key factors in developing the state's large but relatively unexplored coal resources, continue to be studied by industry and state agencies. The Pacific Rim nations offer the principal potential for the sale of south-central Alaskan coal. Initial

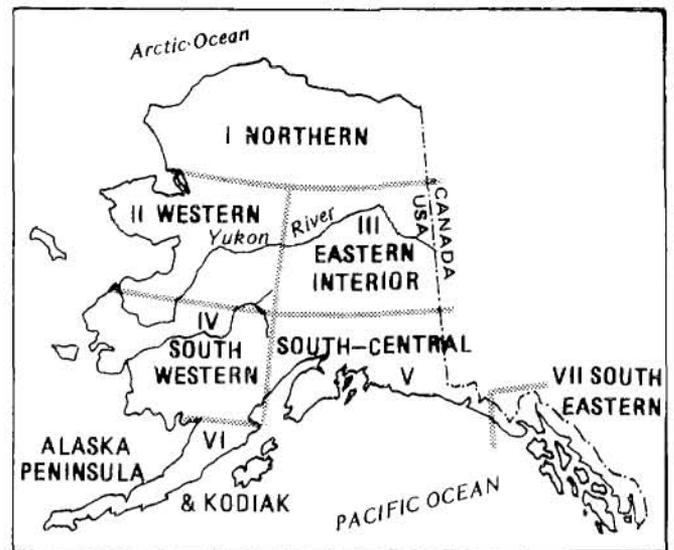


Figure 2. Regions of mineral activity in Alaska (modified from Eakins and Daniels, 1980a).

8. Results of the DGGs questionnaires and other information show that many mining companies that reported large exploration expenditures in previous years managed only limited assessment work on claim blocks in 1982. The recent drop in mineral production in Canada's Yukon Territory also caused concern in some mining circles. Some companies, including Phillips Minerals, Union Carbide, and Inspiration Development, have curtailed their activities in the state. It is clear that the future of major mineral developments in Alaska is linked to a worldwide economic recovery aided by appropriate state and federal policies on key issues.

The balance of this report examines levels of exploration, development, production, and drilling in Alaska. For this purpose, the state has been divided into seven major regions (fig. 2) as used in surveys by Eakins and Daniels (1980a, b) and Bundtzen and others (1982). Principal commodities examined include various metal groups, industrial and structural materials, coal, and peat. Appendixes A, B, and D are compilations of major claim blocks, active firms, and mineral deposits and prospects in Alaska, respectively. The ability to explore, develop and produce minerals on private land and the public domain involves complex interactions with federal and state agencies, local municipalities, and private interest groups. Hence, appendix C is included to summarize the addresses and functions of various public and private groups involved in mineral development in the state.

Acknowledgments

As in 1982, this report is a joint publication of the Department of Natural Resources, Division of Geological and Geophysical Surveys and the Department of Commerce and Economic Development, Office of Mineral Development. The success of this publication is dependent on information provided by the private sector. We would like to thank Alaskan miners, industry personnel, and various consultants for their excellent cooperation. We acknowledge D.R. Carnes and T.L. Pittman (U.S. Bureau of Mines) for providing selected statistics on industrial minerals. R.B. Sanders of Diamond Alaska Coal Company provided coal-quality statistics (table 9). Carole Stevenson and Sandra Garbowski (DGGS) assisted in defining the complicated permitting and agency interaction procedures for the appendixes, and J.G. Clough and K.M. Goff (DGGS) compiled a listing of major claim

blocks for the 1981 and 1982 summaries. G.R. Eakins and T.K. Bundtzen (DGGS) summarized the exploration section. Bundtzen wrote the executive summary and production sections and compiled production statistics. M.S. Robinson (DGGS) and Bundtzen compiled a listing of major deposits and wrote the chapter on development. R.D. Reger (DGGS) supplied information on sand and gravel activities in south-central Alaska. K.H. Clautice, D.A. Coleman, and M.A. Albanese (DGGS) compiled statistics for exploration and development, and Clautice organized much of the text. D.N. Solie (DGGS) and Coleman organized the mailing and receiving of DGGS questionnaires. Charles Green (OMD) designed the report format and wrote the section on drilling. Jim Deagen (OMD) coordinated the design and printing of the report. Bundtzen, C.L. Daniels (DGGS), Green, and J.F.M. Sims (OMD) edited the report.

Exploration Activity in 1982

Introduction

While expenditures for grass-roots Alaskan exploration during 1982 declined and several prominent firms moved out of the state, most companies maintained reduced exploration programs, continuing claim assessment work and evaluation of previous discoveries.

Prior to the 1970s exploration was largely targeted at Southeastern Alaska and the Seward Peninsula, both recognized as highly mineralized regions. In response to important new discoveries in the Brooks Range, interior, and western Alaska; exploration programs have been broadly expanded throughout the state. Exploration results have shown that stratiform massive-sulfide deposits in the Alaska Range resemble the large base-metal deposits in the Ambler district in the Brooks Range. Southwestern Alaska, which has previously seen little activity, is currently seeing high levels of exploration and claim-staking. Interest in tungsten and precious metals in the Yukon-Tanana Upland is presently very high, and efforts to determine the coal resource statewide by both government and industry continued.

Total reported expenditures for mineral exploration in the state during 1982 were \$45.6 million, or 59 percent of that reported for 1981 (fig. 3). Exploration expenditures (by commodity) are shown in table 2, and expenditures by region and commodity appear in table 3. A

tabulation of the number of claims held by most major corporations actively exploring and developing those claims is shown in table 4, and active claim holdings of major companies are summarized in appendix A. A total of 62,988 man-days were reported for exploration activities during 1982.

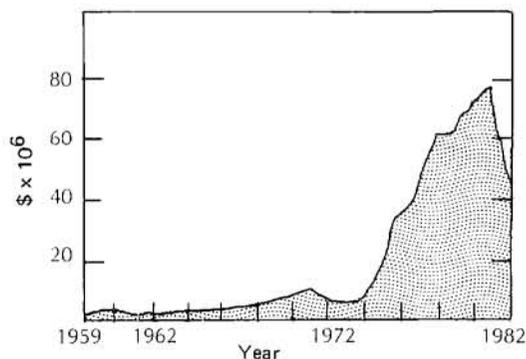


Figure 3. Mineral-exploration expenditures in Alaska, 1959-82.

Other indicators of the level of mineral activity are the amount of assessment work reported each year and the number of new claims staked. These are illustrated in figures 4 and 5, respectively. A list of the principal operators and their general areas of activities are shown in figure 6.

Table 2
Exploration expenditures in Alaska by commodity grouping*, 1979-82,

	1979	1980	1981	1982
Base metals	\$10,277,966	\$ 6,775,000	\$28,262,200	\$31,757,900
Precious metals	4,612,400	5,086,500	35,273,200	10,944,100
Industrial and structural materials	150,000	1,250,000	10,300,000	NR
Coal and peat	200,000	125,000	2,341,000	2,900,000
Miscellaneous**	250,000	NR	127,000	15,300
Unspecified	61,000,000	52,000,000	NR	NR
TOTAL	\$76,490,366	\$65,236,500	\$76,303,400	\$45,617,300

* 1978-80 estimates from reconnaissance canvass surveys

** Uranium, gemstones, etc.

NR Not reported

Table 3
Reported exploration expenditures and employment in Alaska by region and commodity, 1982

Commodity	Region							No region specified
	Northern	Western	Eastern Interior	South-western	South-central	South-eastern	Alaska Peninsula	
Base metals	\$14,892,000	\$4,725,000	\$5,278,500	\$ 800,500	\$2,483,900	\$1,353,300	\$1,200,000	\$1,040,000
Precious metals								
Placer	37,000	825,000	1,318,000	9,200	140,500	NR	NR	NR
Lode	NR	NR	2,884,000	3,000,000	612,400	168,000	1,200,000	750,000
Coal	NR	NR	NR	NR	2,900,000	NR	NR	NR
Total	14,929,000	5,550,000	9,480,500	3,809,700	6,136,800	1,521,300	2,400,000	1,790,000
Employment (man-days)	13,516e	11,074	16,529	1,902	14,453	2,874	2,640	NR

NR Not reported

e Estimated

Table 4
Active claim holdings of major firms, December 1982.

AMAX Exploration, Inc.	30	Houston International Minerals Corp.	1974
Anaconda Minerals Co.	6048	Hunt Oil Co. (Minerals).....	385
Bear Creek Mining Co.	851	Mapco, Inc.....	890
C.C. Hawley & Associates.....	151	Mohawk Resources Alaska, Inc.	151
Cominco American, Inc.....	8253	NANA Regional Crop.....	23
Cook Inlet Regional Corp.	104	Noranda Exploration, Inc.	2120
Duval Corporation	133	Phillips Petroleum Co.....	437
Enserch Exploration, Inc.....	93	Placid Oil.....	502
Exxon Minerals Co.....	511	Resource Associates of Alaska, Inc.	2910
GCO Minerals Co.	5099	Sunshine Mining Co.....	661
Geneva Pacific Corp.	508	Texas Gulf, Inc.	82
Getty Minerals	906	U.S. Borax.....	1077
Greatland Exploration	1451	WGM, Inc.	525
		TOTAL	35,875

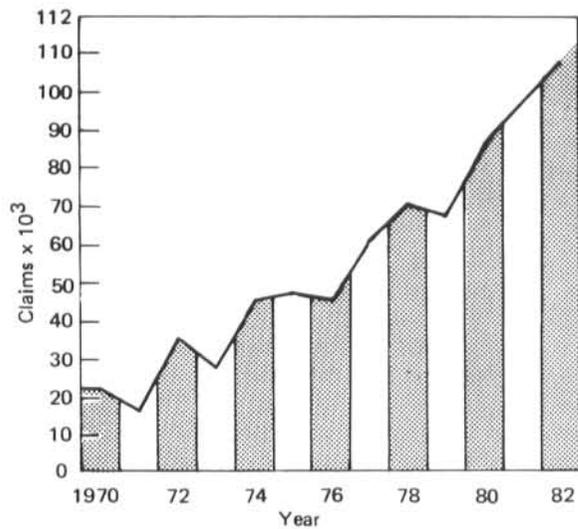


Figure 4. Assessment work filed in Alaska, 1970-82.

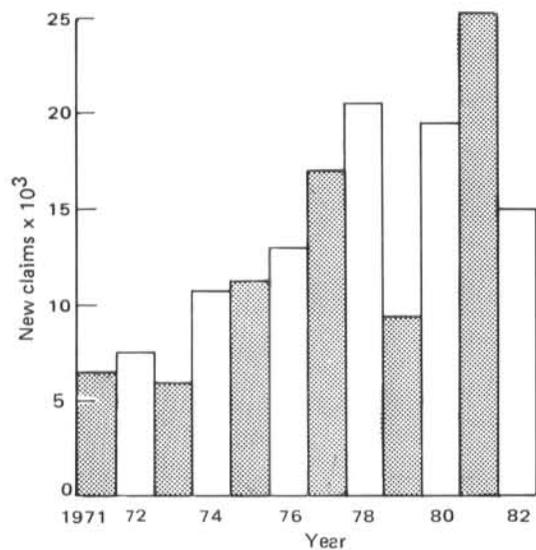


Figure 5. New claims filed in Alaska, 1970-82.

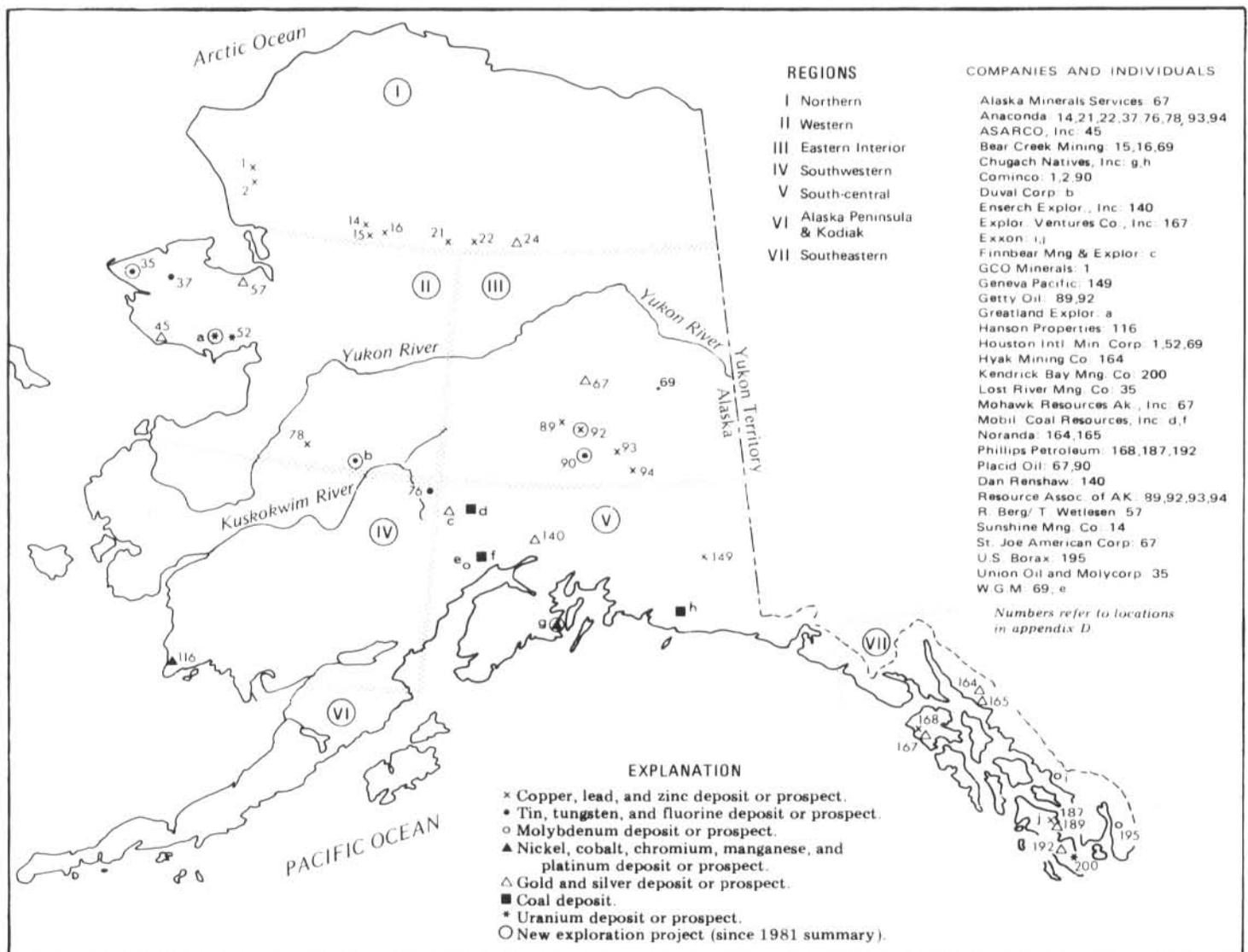


Figure 6. Selected mineral-exploration projects in Alaska, 1982.

Copper, Lead, and Zinc

Northern Region

Approximately \$14.8 million was spent on exploration for base metals in the northern region in 1982, the largest amount reported for any single region (fig. 7). Much of this amount is attributed to work on lead-zinc-silver lodes in the Noatak district.



Figure 7. Drill rig at prospect south of Ernie Lake, Brooks Range, Alaska. Photo by Greg Fernetto, WGM, Inc., summer 1982.

Cominco Alaska had exploration teams working in the Noatak and Ambler districts with major emphasis on the Red Dog deposit. Two camps in the Noatak area, one on the Wulik River and one at Red Dog, serviced the northwest projects. The Red Dog deposit, located 90 miles north of Kotzebue, is a major zinc-lead deposit owned by NANA Regional Corporation and operated by Cominco Alaska. During 1980, preliminary geological, geophysical, and geochemical surveys were conducted and nine drill holes were completed to test the potential of the deposit. In 1981, a larger drill program of 39 holes (14,700 feet) was completed and included large diameter core used for metallurgical tests. This drilling showed the deposit is estimated to contain 85 million tons of 17.1 percent zinc, 5.0 percent lead, and 2.4 ounces per ton silver. In 1982, further geological and geophysical surveys were conducted and 38 holes (18,400 feet) were completed. In addition, a 4,200-foot airstrip was roughed out, a 6,400-foot temporary service road constructed, and a 60-man temporary camp completed. During 1981 and continuing in 1982, extensive baseline environmental data collection was conducted in preparation for the EIS document. Design support data for the mine, mill, transportation routes, and port sites was obtained and will continue in 1983. The lead Federal agency for the EIS

process (which began January 1983) will be the Environmental Protection Agency. At present, the schedule calls for preparation of a draft EIS by September 1983, with a final EIS document by March 1984. The permit process is currently on schedule, and the project can be considered in the development stage.

Sunshine Mining Company, one of the principal companies with interests in the Ambler district in the Brooks Range, conducted a reduced program in the area during 1982. A five-man crew evaluated claims using diamond drilling and geochemical and geophysical surveys.

GCO Minerals Company (GCO) and Houston International Minerals Corporation (HIMCO) continued work on the Lik deposit, and Cominco explored the Sue deposit in the De Long Mountains.

Anaconda Minerals Company (Anaconda) continued their northern Alaska base- and precious-metal exploration program in the Ambler district and the Baird Mountains, Wiseman, and Chandalar Quadrangles. They had 20 people in the field for two months and evaluated prospects and large claim blocks using geologic mapping, geochemistry, geophysics, and drilling.

Bear Creek Mining Company, also a principal claim holder in the extensive Ambler district, continued assessment work and exploration on several major copper-zinc-lead-silver deposits in the region. Their holdings include the Arctic, Ruby Creek (Bornite), and other deposits. Published reserves of the Arctic deposit are 40 million tons averaging 4 percent copper, 5.5 percent zinc, 1 percent lead, 1.6 ounces per ton silver, and 0.02 ounces per ton gold. Exploration during 1982 consisted of geologic mapping, geochemical and EM surveys, claim surveying, and diamond drilling on various properties.

During 1982, a colored 1:125,000-scale geologic map of the Ambler district was published by DGS (Hitzman and others, 1982). This project is the result of a cooperative effort between DGS and Anaconda.

Eastern Interior Region

Approximately \$5.3 million was expended for mineral exploration in the eastern interior region — not including gold and silver exploration. Resource Associates of Alaska, Inc., (RAA) as operator in a joint venture with Anaconda, continued an exploration and drilling program in the Delta district in the eastern Alaska Range (Mt. Hayes and Tanacross Quadrangles). At least 35 prospects have been identified in this district and over \$10 million spent on their evaluation. The stratiform massive-sulfide ores contain copper, lead, zinc, gold, and silver. RAA also drilled for base and precious metals further west in the Healy and Fairbanks Quadrangles on the north flank of the Alaska Range (fig. 8).

Getty Minerals and their partner Phelps-Dodge Corporation continued their evaluation of claims in the north-central Alaska Range. A five-man crew spent 2 weeks conducting geochemical, geophysical, and geological surveys. Metals of interest include copper, lead, silver, and gold.

Exploration in this region has been aided by recent detailed geologic and mine mapping by DGS in the Fairbanks and Livengood (Tolovana) mining districts.

South-central Region

Geneva Pacific Corporation, a Borden subsidiary headquartered in Glenview, Illinois, has conducted exploration in the McCarthy district in the Wrangell Mountains since 1969. Last season their 21-man crew continued drilling, mapping, and geophysical exploration in the area. Claims include the Binocular copper-silver prospect located on a precipitous mountain slope. Plans include continuation of exploration for gold, silver, and copper next summer.

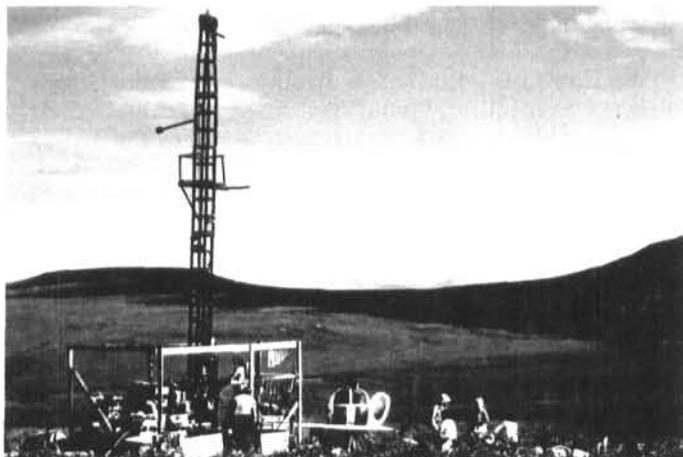


Figure 8. Longyear 38 drilling prospect, north flank, Alaska Range. Photo by D.R. Gaard, Resource Associates Alaska, Inc., summer 1982.

Western and Southwestern Regions

Anaconda has been one of the most active firms statewide and is engaged in exploration for all types of metals. Their broad exploration program in southwestern Alaska included evaluation of large claim blocks, drilling, and claim staking. They are prospecting for base and precious metals, tin, and tungsten. One of their principal areas of interest is the Farewell silver-tungsten base-metal province in the southern Alaska Range, where work in 1982 included diamond drilling of promising prospects near Farewell on lands selected by the Cook Inlet Region, Inc.

Alaska Peninsula

RAA is evaluating Aleut Native Corporation lands in the Port Moller, Cold Bay, and False Pass Quadrangles for lead, zinc, and precious metals.

Southeastern Region

Phillips Petroleum Company (Phillips) conducted a large exploration program consisting primarily of claim evaluations that included drilling and geologic reconnaissance on Prince of Wales, Chichagof, and Baranof Islands. However, Phillips announced they were discontinuing their metals programs and closed their Anchorage office December 31, 1982.

Exxon Minerals Company's Northwest Base Metals Division reported claim-staking, mapping, geochemical, geophysical, and drilling activity on Prince of Wales Island, with some staking in the Wrangell area.

Duval Corporation explored in the Ketchikan Quadrangle, and AMOCO was active in Southeastern, but details are not available.

Tin and Tungsten

Interest remained high in exploring for deposits of tin, tungsten, and related minerals in Alaska during 1982. Although expenditures for grass-roots prospecting programs appear to have declined during 1982, expenditures on site-specific projects remained at a moderate to high level. Principal areas of interest for these commodities include the Seward Peninsula and the interior, south-central, and southwestern regions of the state.

Western Region

Union Oil and Molycorp operated a three-man crew on the Seward Peninsula and in the Tofty and Central districts to look for yttrium in xenotime associated with tin occurrences. Anaconda, Placid Oil Company (Placid), and Lost River Mining Company actively explored for deposits of tin and tungsten on the western Seward Peninsula. Evaluation of a significant discovery at Kougarok Mountain is continuing, and a greisen system west of Kougarok was explored during 1982. Anaconda employed 70 people in the region for 3 months. Omega Energy Corporation (Lancaster, Ohio) sent a party of six to the field for a week on the Seward Peninsula looking for precious, base, and strategic minerals.

Duval Corporation explored, staked, and evaluated claims in the Medfra Quadrangle utilizing geochemistry, geophysics, and geologic mapping.

Eastern Interior Region

RAA, Bear Creek Mining, Anaconda, W.G.M., Inc. (WGM), and HIMCO explored for deposits containing tin, tungsten, and associated elements in the eastern interior region of the state. Evaluation of scheelite-bearing deposits near the north fork of the Salcha River continued. Several tungsten-gold deposits near Fairbanks are undergoing detailed examination, and evaluation of a tin-bearing massive-sulfide deposit at Sheep Creek in the Alaska Range continued during 1982. Cominco reported a joint tungsten exploration program with Mankomen Exploration in the Mt. Hayes A-6 Quadrangle where the latter holds a block of claims.

Southwestern Region

Duval, WGM, AMAX Exploration, and Anaconda explored for tin and tungsten in southwest Alaska, but results of these programs remain confidential.

South-central Region

Several companies are currently exploring for tin and tungsten in the south-central part of the state. Exploration in the Chulitna district and in the Lime Hills Quadrangle has been reported.

Molybdenum

Southeastern Region

The discovery of a world-class molybdenum deposit by U.S. Borax at Quartz Hill focused attention on this

metal. Additional molybdenum prospects north of Quartz Hill in the Southeastern region have been located, but specific details are not available. The Quartz Hill operation is discussed in the development section of this report. A molybdenum stockwork system with grades of up to 0.14 percent MoS_2 has been recently evaluated by WGM near Trimble Glacier west of Anchorage (Fernette and Cleveland, 1983).

Nickel, Cobalt, Chromium, Manganese, and Platinum-group Metals

Northern Region

Anaconda indicated that their northern Alaska program includes evaluation of chromium and platinum-group-metals (PGM) potential in this region.

Southwestern Region

The Goodnews Bay platinum placer is described in the development chapter of this report. JFM and Associates conducted some small-scale exploration of placer ground in the southwestern region for gold, platinum, and ilmenite.

South-central Region

The Chugach Natives, Inc., recently invited mining companies to examine a deposit of 'commercial grade' manganese discovered by the U.S. Bureau of Mines during the summer of 1981 on Chenega Island in Prince William Sound. The deposit was reported as a 6-ft by 50-ft exposure averaging 30 percent manganese.

Southeastern Region

Assessment work was completed for Aleco, Inc., on the Mirror Harbor nickel-copper-cobalt lode on Chichagof Island. The nearby Yakobi Island deposits are discussed in the development section.

Gold and Silver

Northern Region

Precious metals are associated with the large copper-lead-zinc deposits in the Brooks Range, Ambler district, and De Long Mountains, and once production is established, gold and silver could be important byproducts.

Several placer-gold operators reported exploration expenditures in the Wiseman and Chandalar Quadrangles.

Western and Southwestern Regions

Sporadic exploration of offshore gold placers near Nome has been performed by various companies for several years. ASARCO, Inc., has an interest in these deposits, but no information on grade or plans for development have been released.

Rhinehart Berg and partner Thor Wetlesen, veteran Seward Peninsula miners, conducted churn- and diamond-drilling programs last summer to test placer claims on Candle Creek. They expect to operate several washing plants next summer.

Several major companies, including Anaconda, Noranda, and Placid, have ongoing exploration and claim-staking programs in western and southwestern Alaska, but because these programs are in the early stages of exploration and claim staking, details are not available.

Eastern Interior Region

Exploration of known placer deposits in historical placer-gold districts in the eastern interior has been conducted regularly in an effort to define the pay streaks ahead of the mining operations. Improved drilling equipment and magnetometer surveys are proving useful for this purpose.

Evaluation of gold lodes in the Fairbanks-Cleary district is continuing. Placid continued to evaluate their large claim block in the Cleary area north of Fairbanks by drilling and underground sampling. A Fairbanks partnership, Alaska Mineral Services, drilled lode-gold claims on Cleary Summit. Mohawk Resources Alaska, Inc., headquartered in Fairbanks, prospected and staked in the Cleary area north of Fairbanks with a nine-man crew.

A 35-man crew from RAA, in a joint venture with Teton Exploration, drilled and explored a copper, gold, and silver skarn at Zackly in the Mt. Hayes Quadrangle in the Alaska Range. The firm also reported precious metals programs in the Fairbanks district and in the Livengood and Big Delta Quadrangles.

Over the past few years, St. Joe American Corporation conducted drilling and attempted to drive a decline on the Ryan gold lode on Ester Dome near Fairbanks. Because of poor ground conditions, the work was suspended. The company used a sonic drill in 1982 to evaluate the potential of an open-pit operation.

South-central Region

Enserch Exploration, Inc., (Enserch) explored property near Chunilna Creek, an area of placer-mining interest prior to 1900, in the Talkeetna Mountains C-6 Quadrangle. Enserch and partners also continued efforts to put the Independence Gold Mine in the Willow Creek district in production, but operations were suspended temporarily in late 1982.

Interest in the district was also indicated by exploratory work in the Gold Cord Mine (owned by Dan Renshaw), including surface geological mapping, trenching, and core drilling.

Finnbear Mining and Exploration reported occurrences of copper, silver, and several strategic metals in the southern Alaska Range.

Alaska Peninsula

A 12-man crew from RAA explored for precious metals on the Aleut Regional Corporation and Bristol Bay Native Corporation lands on the Alaska Peninsula. Caldera structures are of considerable interest in this region.

Southeastern Region

Southeastern Alaska is historically a major gold-producing region, especially the Juneau gold belt and the

Chichagof mines. Exploration for precious and base metals has continued at a steady pace over the past two decades, and numerous companies continue exploration and property-evaluation programs in the region.

Occidental Minerals Corporation entered a joint venture with Noranda as operator in a study of the old gold mines on Douglas Island. A six-man crew from RAA explored Admiralty and Kuiu Islands, and WGM conducted property examinations regionwide. Exploration Ventures Company, Inc., of Spokane, Washington, initiated environmental studies and conducted a sampling and exploration program at the old gold-silver Chichagof Mine at Klag Bay on Chichagof Island. They predicted continuation of work on the property next season. Hyak Mining Company of Juneau evaluated 100 claims for gold, silver, lead, and zinc in the Berners Bay area, and announced reserved of 100,000 tons averaging 0.25 ounces per ton gold and a possible resource of 12 million tons averaging 0.10 ounces per ton gold.

AMAX Exploration, Inc., explored for precious metals in several quadrangles in southeastern Alaska.

Industrial Minerals

Minor exploration activity was reported for industrial minerals statewide, but no expenditures were reported. A private firm continued to assess the Hoodoos limestone south of Paxson as a possible source of mineral fertilizer for the Delta barley-farming industry. A Native corporation is continuing plans to develop the King River limestone deposit (north of Palmer), which could supply an in-state cement plant with needed raw materials. Chugach Natives, Inc., reported exploration for sand and gravel in conjunction with coal exploration near Cordova. Alaska Gravel Sales, Inc., a new firm, reported exploratory work for aggregate in the Anchorage metropolitan area, which is chronically short of this important commodity. A California firm began a limited assessment in portions of Southeastern Alaska for the expanding industrial quality almandine-garnet industry; beach placers appear to be the principal target. Over 1,200 tons of garnet were recently purchased by North Slope oil producers for water-filtration applications.

Coal

Northern Region

DGGS and the Alaska Power Authority are investigating the coal resources of northwest Alaska and St. Lawrence Island to determine if it is practical for some communities, especially Kotzebue, to convert from oil to coal for heat and power.

South-central Region

Mobil Coal Resources, Inc., drilled approximately 25,000 feet and conducted geologic mapping to evaluate their coal leases in the Yentna and Beluga coal fields. They had a large crew in the field for 85 days.

The Chugach Natives, Inc., with their Korean partner, KADCO, conducted a second year of exploration and drilling in the Bering River coal field located near

tidewater (fig. 9). Reserves of high-rank coal are conservatively reported at 62 million tons, and a contract has been let for engineering studies on transportation corridors and port facilities.



Figure 9. Drill rig at Carbon Mountain ridge, Bering River coal field, Alaska. Photo by Chugach Natives, Inc., July 1982.

Utah Mines, Ltd., of Vancouver, British Columbia, conducted a reconnaissance for coal in conjunction with their exploration for metals. Rocky Mountain Energy announced they are investigating opportunities for development of Alaskan coals.

Uranium

Exploration for uranium in Alaska, as in the entire United States, has come to a virtual standstill because of an oversupply and drastic drop in uranium prices during the last two years. Uranium prospects were drilled for three seasons in the Darby Mountains on the Seward Peninsula by HIMCO, and it is said that fairly high-grade sedimentary-type ores were encountered. Sizable blocks of claims with uranium potential on the eastern Seward Peninsula are held by Greatland Exploration. Other areas drilled during the period of high interest in uranium include the Healy area in the Alaska Range, the Mt. Prindle area 60 miles north of Fairbanks, and the Selawik Hills area in the easternmost part of the Seward Peninsula. Urangesellschaft USA, Inc.'s uranium exploration in the Healy coal-bearing unit has been summarized by Dickson (1982).

Standard Metals Corporation, operator for Kendrick Bay Mining Company, developed additional reserves at the Ross-Adams Uranium Mine at Bokan Mountain on Prince of Wales Island, but because of low uranium prices, mining has not resumed. Standard Metals, however, conducted some additional exploration on the claims during 1982.

Mineral Development in 1982

Introduction

While statewide exploration expenditures decreased about 41 percent, development expenditures increased 69 percent, from \$24.7 million in 1981 to \$41.6 million in 1982 (table 5). Despite the effects of the recession on metal prices, mining companies continue to invest capital in engineering, environmental, and feasibility studies with the intention of producing coal, molybdenum, gold, silver, asbestos, copper, lead, and zinc. Preliminary output is occurring in gold-development projects. Of the 15 projects described below, ten were described last year. Two 1981 development projects were postponed in 1982.

While several of the projects described in this section may not fit a narrow definition of 'development,' they were included because plans for development or expansion were reported or had been publicized. Some projects are notably absent, reflecting the description and categorization of activities as reported on the DGGS survey questionnaires.

leach and flotation circuits. The redesigned mill was in operation during 1981 with a capacity of 125 tons per day. During 1982, a scaled-down effort at the Mikado vein system included operation of the mill for 38 days.

Alaska Gold Company Dredges, Nome and Hogatza,

Western Region

(locs. 2, 3; fig. 10)

Alaska Gold Company and its predecessor, the U.S. Smelting, Refining, & Mining Company (USSR&M) or the Fairbanks Exploration (FE) Company have operated 13 large bucket-line stacker dredges in four Alaskan mining districts since 1924 (Boswell, 1979). Prior to statehood, the USSR&M Company was considered one of the most successful and technologically innovative dredge operators in the world. A continuous 59-year gold-production history has been sustained by the company.

In the Nome area, the principal gold deposits are developed on a series of five Pleistocene strandlines.

Table 5
Mineral-development expenditures in Alaska by commodity, 1979-82.

	1979	1980	1981	1982
Base metals	\$3,600,000	\$ 5,000,000	\$ 5,945,000	\$10,270,000
Precious metals	3,140,000	5,750,000	11,400,000	19,320,000
Industrial and structural materials	1,000,000	1,200,000	7,000,000	4,251,000
Coal and peat	NR	NR	345,000	7,750,000
Total	\$7,740,000	\$11,950,000	\$24,690,000	\$41,591,000

NR Not reported

Little Squaw Mining Company, Mikado Vein System,

Northern Region

(loc. 1, fig. 10)

Hard-rock gold lodes have been intermittently developed by several companies since their discovery in 1909 near the head of Tobin Creek, Chandalar district. The lodes consist of four northwest-trending vein systems that intrude metamorphic terrain; the Mikado vein has been the most promising to date. In the late 1960s, Chandalar Gold Mining and Milling Company optioned the property, built a new mill, and mined the lode intermittently for several years until the untimely death of Frank Birch, company president. In the later 1970s, Meadowlark Mining Company, lode operators for Little Squaw Mining Company, resumed development and production of gold from the Mikado vein system. Jan Drew Holding, Ltd., of Alberta, Canada is the current operator of the adjacent placer ground for Little Squaw Mining Company.

During 1981, 40 to 50 persons were employed on the property, and the mill was redesigned to include cyanide-

Alaska Gold Company operates dredges 5 and 6 in the Nome field, and a third dredge at Hogatza near Hughes. Dredges 5 and 6 are 9-cubic-foot, Yuba bucket-line stacker dredges; dredge 6 has a rebuilt composite wood and steel hull and dredge 5 is conventional steel construction. Dredges 5 and 6 have displacements of 3,400 and 2,060 tons respectively, and total connected loads for both exceeds 1,500 kw. At maximum daily production rates of 9,000 and 7,000 cubic yards for dredges 5 and 6 respectively, 2.5 million yards could be processed in a 160-day season. These levels of production have not been achieved because of lack of thawed ground.

In 1982, cold-water thawing continued ahead of the dredge on a 1,200-acre block of frozen ground that is estimated to contain up to 1 million ounces of gold. According to W.R. Kastelic (personal commun., 1983), both dredges were in production in 1982. Future production increases depend on successful ground thawing and other factors.

The Hogatza dredge in the Koyukuk region was reactivated in 1981, and was in production in 1982. Development-level activities continued with ground evaluation for production potential.

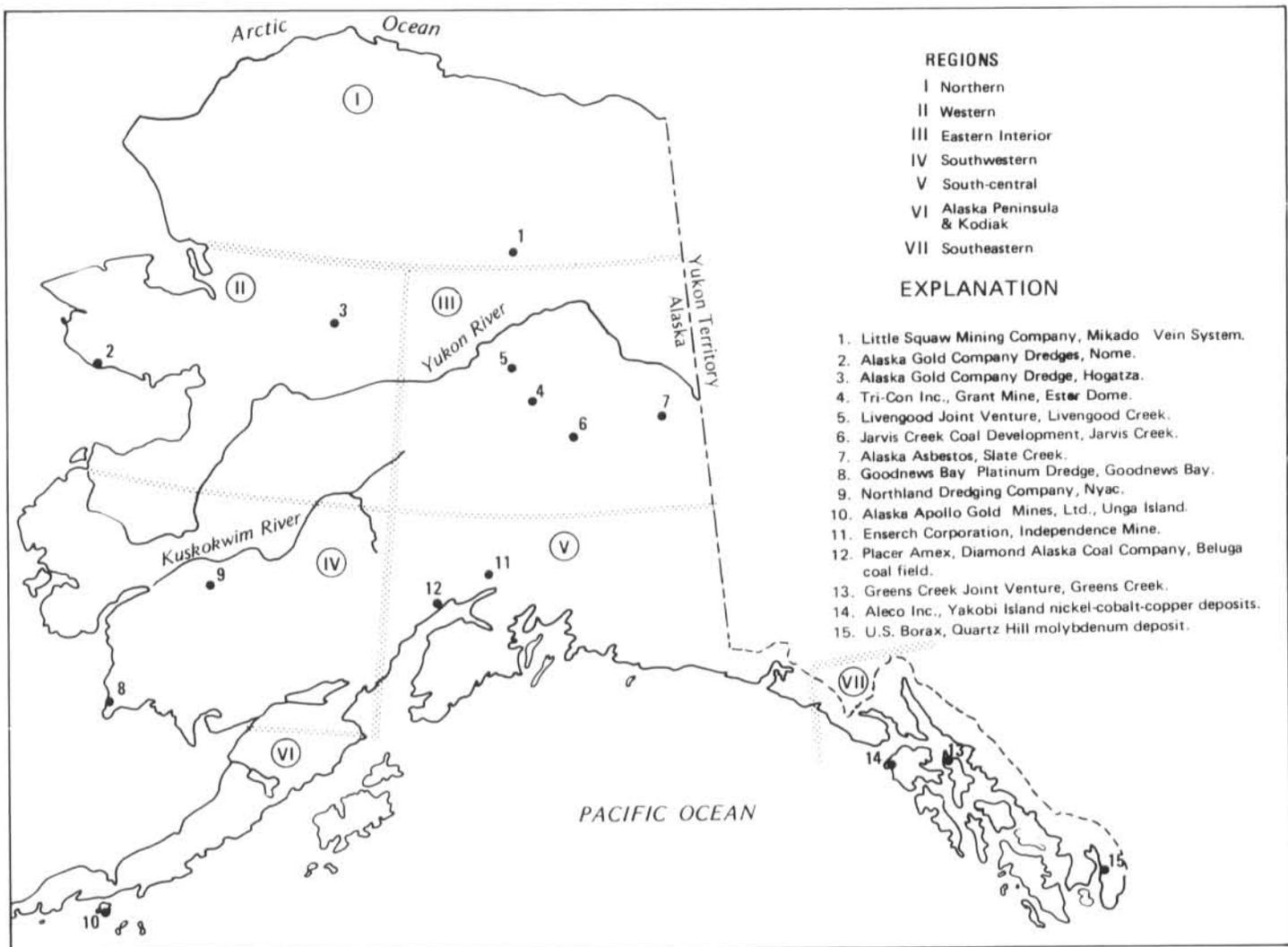


Figure 10. Selected mineral-development projects in Alaska, 1982.

**Grant Mine, Ester Dome,
Eastern Interior Region**

(loc. 4, fig. 10)

The Grant Mine on Ester Dome near Fairbanks was idle during 1982. Tri-Con, Inc., operator for Silverado Mines, Ltd., of Vancouver, British Columbia, was engaged in an aggressive exploration and development program from 1979 through 1981, and a moderate amount of ore was milled during 1980 and 1981. Financing for the property is ongoing, and the mine could reopen during 1983. Improved mill design is a top priority of this project.

**Livengood Joint Venture,
Eastern Interior Region**

(loc. 5, fig. 10)

Livengood Joint Venture (LJV) a consortium of Asamera Minerals, Stanford Mines of Canada, and the

current operator, Canadian Natural Resources (CNR), continued to work a large placer deposit on Livengood Creek, approximately 60 miles northwest of Fairbanks. Gold on the Livengood bench, which occupies the right limit of Livengood Creek, was discovered in 1914. However, the deposit lies beneath a layer of frozen silt and barren gravel as much as 100 feet thick. During the winter of 1981, Doyon, Ltd., was contracted by LJV to strip overburden near the southern end of the Livengood bench and use the spoil material to construct a large settling pond across the valley of Livengood Creek. This undertaking was accomplished using several large pieces of machinery — including a Caterpillar D-10 dozer — one of the first used in Alaska.

With the settling pond in place and overburden stripping complete, LJV began sluicing in early June 1982. By season's end, over 200,000 cubic yards of gravel had been washed. Plans for the 1983 season include overburden stripping and sluicing.

Jarvis Creek Coal Development, Eastern Interior Region

(loc. 6, fig. 10)

A Fairbanks group formed a corporation to develop a 2,560-acre federal lease in the Jarvis Creek coal field about 30 miles south of Delta Junction, and plans to market coal in the Delta area for power generation and grain drying. A production permit has been granted, but no date has been set to begin mining operations. Production of 30,000 tons of coal per year is planned.

Alaska Asbestos, Slate Creek, Eastern Interior Region

(loc. 7, fig. 10)

Alaska Asbestos is a joint-venture project between Tanana Asbestos Corporation, a wholly owned subsidiary of the Doyon Regional Corporation (Doyon) and GCO Minerals Company, a subsidiary of International Paper Company. The joint venture was organized to explore, evaluate, and develop an asbestos deposit near Eagle on lands owned by Doyon. In 1968, the U.S. Geological Survey released a report summarizing the discovery of chrysotile asbestos in the Yukon-Tanana Upland about 35 miles southwest of Eagle. Doyon gained selection rights to about 110,000 acres of land in the Eagle area, and an interim title conveyance was granted to Doyon by the federal government for approximately 20,000 acres that included the asbestos deposits. Four known asbestos deposits occur on these lands. Recently revised drill estimates indicate reserves for three deposits are 61 million tons of ore averaging 5 to 6 percent asbestos fiber, and the potential exists for additional large tonnages of similar grade ore. The fiber quality ranges from 4A through 7D, Quebec Standard Specification.

During 1982, extensive development drilling utilizing large-diameter drilling techniques (12 inch) was undertaken to provide both core samples for laboratory testing and additional data to support an indicated reserve classification (fig. 11).

Approximately \$14 million has been expended for exploration and development. According to Pratt (1982), estimates of the capital required to bring the deposits to production range from \$120 million to \$150 million, depending on the development scenario. WGM has been retained to operate the project for the joint venture.

Goodnews Bay Platinum Dredge, Southwestern Region

(loc. 8, fig. 10)

The Goodnews Bay platinum dredge, operated by the Goodnews Bay Mining Company from 1937-75, was the largest producer of platinum metals in the United States, accounting for at least 545,000 ounces of PGM. Several years ago, Hanson Properties purchased the equipment, campsite, and 3,300 acres of claims from an option holder of Goodnews Bay Mining. Since that time, Hanson Properties has refurbished camps, machinery, and the dredge. The 8-cubic-foot, Yuba bucket-line stacker

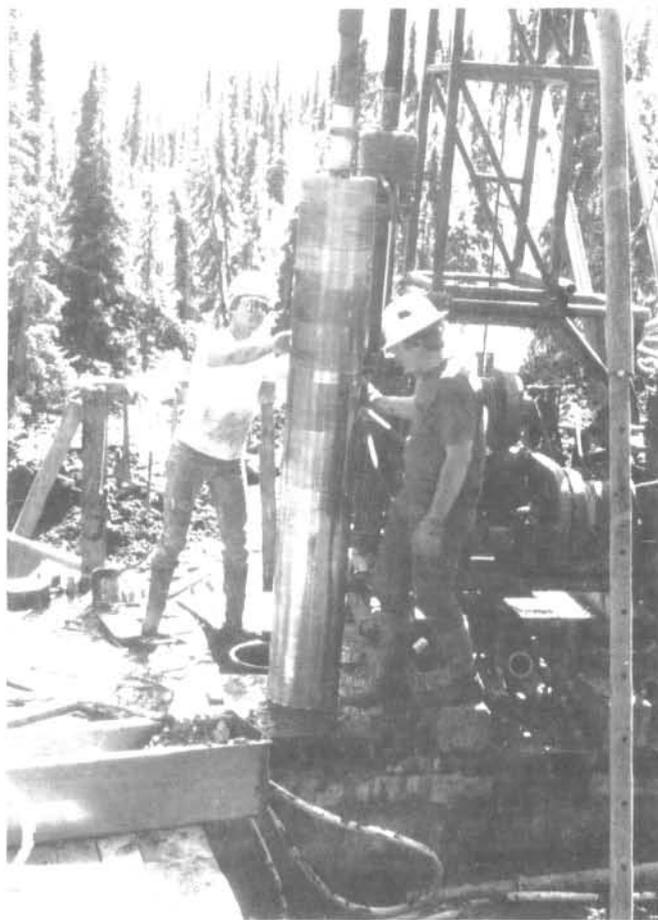


Figure 11. Pulling 12-inch core barrel during bulk sampling at Alaska Asbestos deposit. Photo by Robert Rogers, July 1981.

dredge has a digging capacity of 7,000 cubic yards daily or about 1.12 million cubic yards in a 160-day season (fig. 12). The relatively shallow 60-foot digging draft of the dredge necessitates overburden removal with a dragline. The principal reserves remaining are 1) clay-rich portions of tailings in which past platinum recovery was considered low, and 2) deep ground in the lower Salmon River drainage. Principal development efforts hinge on the success of producing platinum from these sources. Expectations are for production of 10,000 ounces of PGM annually, about 1 percent of U.S. consumption.

Modest production of platinum has occurred during the last 3 years of development. In the spring of 1982, the dredge sank in its pond. The company refloated the dredge by summer, and some platinum was produced late in the season.

Northland Dredging Company, Nyac, Southwestern Region

(loc. 9, fig. 10)

The Northland Dredging Company dredge (described in the 1981 report) went into full production during the 1982 field season after a rehabilitation-reactivation phase in 1980 and 1981 (fig. 13). The 6-cubic-foot unit is powered by a small hydroelectric power plant that also

supplies power for the nearby Tuluksak Dredging Company's 3-cubic-foot dredge. A 10-year reserve is said to exist on the property.



Figure 12. Bucket line of dredge at the Goodnews Bay Platinum Mine. Photo by Dennis Southworth, summer 1982.

Alaska Apollo Gold Mines, Ltd., Alaska Peninsula Region

(loc. 10, fig. 10)

The Apollo and Sitka lode systems, a joint development project located on Unga Island 550 miles southwest of Anchorage, is the most westerly gold mine in North America. The Apollo and Sitka veins were discovered in about 1891 and mined from 1894 until 1906, when approximately 500,000 tons of ore averaging about 0.22 ounces of gold per ton were removed. Minor intermittent activity occurred after 1906. The deposits consist of crosscutting shears and veins that are associated with Tertiary volcanism in the Alaska-Aleutian volcanic arc.

The current owner of the property is Alaska Apollo Gold Mines, Ltd., formerly Catalina Energy and Resources, Ltd., which is headquartered in Vancouver, British Columbia.

During the winter of 1981-82, the Sitka Mine was dewatered to the 250-foot level and the Apollo No. 1 shaft was dewatered to the 450-foot level. With the shafts dewatered and several levels cleaned out, an intensive



program of geological mapping and sampling was undertaken to substantiate an inferred reserve estimate of 2.2 million tons of ore. Preliminary underground diamond drilling results from the 150-foot level of the Sitka Mine indicate metal values on the order of 0.03 to 0.66 ounces per ton gold over vein widths in the range of 2.0 and 3.5 feet. Copper concentrations of 2.3 to 4.5 percent, lead concentrations of 5.9 to 35.6 percent, and zinc concentrations of about 9 percent have also been reported. Silver values in the range of 0.5 to 8.6 ounces per ton were obtained from assays of drill cores. Feasibility studies are currently underway.

Independence Mine, South-central Region

(loc. 11, fig. 10)

The Independence Gold Mine, located approximately 70 miles north of Anchorage, was first discovered in 1907. Until its closure in 1950, it produced in excess of 165,500 ounces of gold. In 1979, Starkey Wilson obtained an option on the property and, in 1981, Enserch Corporation of Dallas, Texas, became a 50-percent partner; Coronado Mining became the mine operator for the partners. During 1981, extensive underground exploration and development was conducted, and 3,000 tons of ore grading 0.5 ounces per ton was stockpiled. The ore occurs in quartz veins that occupy north-northwest-trending shear zones along the southern border of the Talkeetna Batholith. The veins contain pyrite, arsenopyrite, molybdenite, galena, tetrahedrite, and free gold. Stockpiled ore has been treated in a 150-ton-per-day mill near the mine site. The mill contains jig and flotation circuits and a batch-cyanide system.

The mine and mill facility were dedicated in August 1982. In November, Coronado suspended operations for an undisclosed period, citing problems with recovery in the mill as the reason for closure. This recent closure is expected to be short lived.

Beluga Coal Field, South-central Region

(loc. 12, fig. 10)

Diamond Alaska Coal Company, operator for the Diamond Shamrock Chuitna Coal Joint Venture in the



Figure 13. Northland Dredging Company dredge before (a) and after (b) rehabilitation phase. Photos by Joe Fisher, summer 1981.

Beluga area west of Anchorage, completed a multi-million-dollar drilling program in 1982. Environmental and engineering studies, using a minimum production rate of 6 million tons per year as a basis, will be continued next summer.

Placer-Amex, Inc., has been actively exploring the Beluga coal field for 14 years and estimates their reserves at over 500 million tons (fig. 14). Placer-Amex and the Cook Inlet Region, Inc., submitted an application for a Beluga coal-to-methanol project to the U.S. Synthetic Fuels Corporation. Although the application was not successful in the second round of solicitations examined by the U.S. Synthetic Fuels Corporation, the project has been resubmitted. An alternate plan involves the export of coal to Pacific Rim countries. Placer-Amex is also reexamining holdings in the Matanuska coal field.

Greens Creek Joint Venture, Southeastern Region

(loc. 13, fig. 10)

During 1973, Pan Sound Joint Ventures, a group composed of Marietta Resources International, Exalas Resources Corporation, Texas Gulf Resources Corpora-

tion, and Noranda began mineral exploration activities in Southeastern Alaska. From 1974-76, grass roots exploration indicated the presence of high base-metal concentrations on Admiralty Island in the upper Greens Creek area. Claims were staked and site-specific exploration began. In 1977, Pan Sound Joint Ventures announced the discovery of significant base metal-precious metal deposits at Greens Creek, about 18 miles southwest of Juneau. Initial drilling results indicated the presence of exceptionally high-grade, apparently stratiform massive-sulfide ore bodies in volcano-sedimentary rocks of Devonian age. By 1978, in-place reserves of 2.1 million tons grading 10 percent combined copper, lead, and zinc, about 9 ounces per ton silver, and 0.10 ounces per ton gold had been announced. Revised 1982 reserve estimates have increased to 3.5 million tons grading 10 percent combined zinc, lead, and copper, 12 ounces per ton silver, and 0.16 ounces per ton gold.

In 1978, the Greens Creek claims were placed in a development category and Pan Sound Joint Ventures was dissolved. Its successor, Greens Creek Joint Venture, including the four original companies plus Bristol Resources, Inc., a subsidiary of the Bristol Bay Regional Native Corporation, was formed to develop the property.



Figure 14. Loading ship with bulk coal samples from Placer Amex. Photo by Benno Patsch, fall 1981.

In 1980, a 4,224-foot adit was completed to provide access for the underground diamond drilling and possible bulk sampling of the ore body. Access to the ore body was achieved by a 424-foot crosscut from the existing adit into the ore zone. Environmental baseline work included investigations of existing water quality, wildlife, fishery resources, marine resources, air quality, archaeological resources, and meteorology and a review of socioeconomic factors. Transportation to and from the site has been entirely by helicopter.

On November 20, 1980, the U.S. Forest Service determined that Noranda had valid mineral discoveries on seven lode mining claims at Greens Creek. The passage of the Alaska National Interest Lands Conservation Act (ANILCA) in December 1980 allowed for the Greens Creek Joint Venture to mine the deposit, which is in a nonwilderness area of the Admiralty Island National Monument.

In January 1981, Noranda was assigned the position of operator of the property, and an announcement was made to proceed with development of the ore body. The proposed mine plan incorporates a mining rate of 800 tons per day by underground cut-and-fill methods, and will employ an estimated 350 workers by the planned 1987 startup date. The calculated life of the mine is 15 to 20 years at a capital cost in excess of \$100 million. The federal EIS permitting process for the mine development was completed in January 1983. The U.S. Forest Service, lead agency in the EIS, recommended a development plan very similar to the plan proposed by Noranda.

Yakobi Island Nickel-Cobalt-Copper Deposits Southeastern Region

(loc. 14, fig. 10)

The nickel-copper-cobalt ores on Yakobi Island and nearby Mirror Harbor occur in lopolithic (funnel-shaped), layered norite gabbro bodies. The main Takanis ore body is a steeply dipping, tabular mineralized unit containing disseminated and massive-sulfide zones up to 50 feet thick. In particular, the deposits in the Bohemia Basin of Yakobi Island contain one of the few proven reserves of sulfide nickel mineralization in the United States.

Seven known mineralized areas on the island have been in various stages of exploration and development since 1971. The deposits on Yakobi Island contain 160 million pounds of nickel, 80 million pounds of copper, and 8 million pounds of cobalt in 20 million tons of drilled reserves. Two deposits, the Basin and Takanis ore bodies, have proven open-pit reserves of 15.1 million tons grading 0.37 percent nickel, 0.22 percent copper, and 0.02 percent cobalt with a 2.5:1 stripping ratio. Credits of PGM and gold have also been identified.

A recent 1982 economic evaluation of the Basin deposit indicates a positive value of nearly \$10 million and a discounted cash-flow rate of about 28.5 percent (Thornberry and DeWilliam, 1982). This model assumes the ore body would be mined at a rate of 1.8 million tons per year with 85 percent recovery of nickel, 92 percent

recovery of copper, and 60 percent recovery of cobalt. Because the currently depressed metal prices were used in this analysis, commodity-price increases may enhance the economics of the project.

In 1972, property owner, Aleco, Inc., optioned the property to Inspiration Development, Inc., who returned the property to Aleco, Inc., on August 12, 1982, citing adverse economic conditions. Aleco, Inc., is currently seeking financial backing for the project.

U.S. Borax, Quartz Hill Molybdenum Deposit, Southeastern Region

(loc. 15, fig. 10)

In 1971, U.S. Borax initiated a grass-roots mineral-exploration program in southeastern Alaska. In the fall of 1974, follow-up work on molybdenum stream-sediment anomalies led to the discovery of molybdenite-bearing outcrops at what is now known as Quartz Hill, approximately 45 miles east of Ketchikan. Subsequent work outlined one of the largest known molybdenum deposits in the world.

Based on more than 250,000 feet of diamond core drilling through 1982, U.S. Borax estimates a mineral deposit in excess of 1.5 billion tons of mineable ore grading 0.136 percent molybdenite. This figure includes 300 million tons of near-surface ore grading better than 0.2 percent molybdenite.

During the 1981 field season, U.S. Borax diamond core drilled over 60,000 feet and built about 8,000 feet of road connecting two adits and the camp. In addition, 3,840 feet of drift was driven in preparation for bulk sampling (fig. 15). Core drilling in 1982 amounted to 20,000 feet. The number of employees on the project averaged 40 during the year but reached 100 at certain periods. U.S. Borax estimates total project expenditures through 1982 at approximately \$62 million.

Quartz Hill is located in the Tongass National Forest. In December 1978, when the Misty Fjords National Monument was established — and proposed as a wilderness area — Quartz Hill was included. In 1980, with passage of ANILCA, a 149,000-acre exclusion area surrounding Quartz Hill was granted to allow the project to proceed. Since 1975, data on meteorology, snow, hydrology, water quality, vegetation, wildlife, coastal and marine biology, physical and chemical oceanography, archaeology, and socioeconomic have been collected. U.S. Borax estimates the cost of these studies through 1982 has exceeded \$10 million.

In July 1982, a final environmental-impact statement for access-road construction and bulk sampling of the ore body was issued by the U.S. Forest Service. In August, construction began on the 9.5-mile-long access road needed to move a 5,000-ton sample for metallurgical testing from the Quartz Hill mine site to tidewater at Wilson Arm. South Coast, Inc., a Ketchikan firm, is constructing the road, which by mid-November was approximately one-third complete.

The current timetable calls for commencement of production in 1987-88. Preliminary design studies by Bechtel



Figure 15. Adit at Quartz Hill molybdenum deposit, Southeastern Alaska. Photo by N. Dupree, summer 1982.

Civil and Minerals, Inc., of San Francisco are underway. Capital costs to develop the project were estimated at \$870 million in 1981 dollars. Over 1,000 people will be employed during construction of the mine, and operation of the mine will employ over 850 people with an annual payroll in excess of \$25 million.

The company has announced a preferred development plan for the project that centers on the concentrator be-

ing located at low elevation in Tunnel Creek. Ore will be fed to a primary crusher at the mine site, and then conveyed through a 4-mile-long tunnel to the concentrator. Tailings from the concentrator will be conveyed through a 6-mile-long tunnel to Boca de Quadra, the likely site for submarine disposal. This preferred plan should have considerable appeal to environmental critics of the project.

Mineral Production in 1982

Introduction

The value of 1982 mineral production in Alaska — excluding petroleum — is estimated at \$196.42 million, which represents an increase of 4 percent from 1981 adjusted levels (table 6). Leading the list is sand and gravel, \$91 million; gold, \$69.9 million; coal, \$18.0 million; building stone, \$15.6 million; and a reported \$1.6 million for platinum, silver, jade, tin, and mercury. The largest

increases in production occurred with tin and gold, which jumped 80 percent and 30 percent respectively, over 1981 estimates. Sand and gravel extraction increased in value by about 3 percent, but building-stone production plummeted nearly 40 percent. Platinum production declined and the reported output of lead, tungsten, antimony, and copper decreased to zero because of very poor metal prices. Coal, peat, jade, soapstone, and mercury production remained near 1981 levels.

Mining seasonally employed at least 2,300 individuals of which approximately 300 were employed in gravel

Table 6
Mineral production in Alaska, 1980-82^a

Metals	Volume			Value (\$)		
	1980	1981	1982	1980	1981	1982
Copper (lb)	W	None	None	W	None	None
Gold (oz)	75,000	134,000	174,900	32,000,000	55,200,000	69,960,000 ^b
Lead (lb)	W	W	None	W	W	None
Mercury (lb)	None	W	W	None	W	W
Platinum (oz)	W	900	W	W	200,000	150,000
Silver (oz)	7,500	13,420	22,000	111,000	111,360	198,000
Tin (oz)	120,000	106,000	198,000	984,000	700,000	1,365,000
Tungsten (stu)	250	305	NR	37,500	56,000	NR
Subtotal				33,132,500	56,267,360	71,673,000
Industrial minerals, coal, and peat						
Barite (ton)	50,000	None	None	2,000,000	None	None
Jade and soapstone (ton)	W	W	W	60,000	200,000	NR
Sand and gravel (MT)	40.2	46.00	45.0	86,000,000	88,200,000	91,000,000
Stone (MT)	3.7	5.36 ^c	3.4	15,400,000	26,360,000 ^c	15,600,000
Subtotal				103,460,000	114,760,000	106,600,000
Coal (short tons)	750,000	800,000	830,000	16,000,000	17,600,000	18,000,000
Peat (yd ³)	W	W	10,000	W	W	150,000
Total				\$152,592,500	\$188,627,360	\$196,423,000

^aDerived from DGGS questionnaires, interviews with mine operators, USBM data, and confidential information. All values are estimates.

^bPrice of gold in 1982 assumed \$400 per ounce.

^cOriginal U.S. government figures for 1981 sand and gravel production adjusted by USBM in a July 1982 release.

MT = million short tons

W = withheld

NR = None Reported

stu = short ton units

est = estimated

and building-stone operations throughout the 49th state (fig. 16). A separate survey by Louis Berger and Associates for the Office of Mineral Development on the economic impact of placer mining in the state estimated direct employment in placer mining totalled between 1,900 and 2,000 persons in 1982.

Production statistics and other data in this report were derived from approximately 280 DGGS questionnaires returned by private companies and individuals; interviews with mine operators, the U.S. Bureau of Mines, the Alaska Railroad, and the University of Alaska Mineral Industry Research Laboratory; and private consultations with knowledgeable individuals. Historical production of gold, sand and gravel, and coal are compiled in figures 17-19. Because all information has been given voluntarily, the totals shown in tables 6 and 7 for 1982 Alaska nonfuel mineral output are probably conservative.

Gold output is the most difficult to estimate. The sources used to obtain the 1982 gold-production figures include information from a) 40 knowledgeable consultants familiar with activities in 37 mining districts in Alaska, b) production figures obtained from questionnaires and other volunteered information, c) information from 107 mechanized operators on the production of specific mine operations (which represent about one-third of the total operations), and d) estimates of total gold-silver bullion refined statewide (provided by precious-metal refiners) that are consistent with specific totals from other sources. The results are summarized in table 7, and show that in 1982, 319 mechanized operators and 20 smaller recreational ventures produced an estimated 174,900 ounces of gold and over 20,000 ounces of byproduct silver. These figures represent an apparent increase in production of about 30 percent from 1981 to 1982. However, feedback from the private sec-

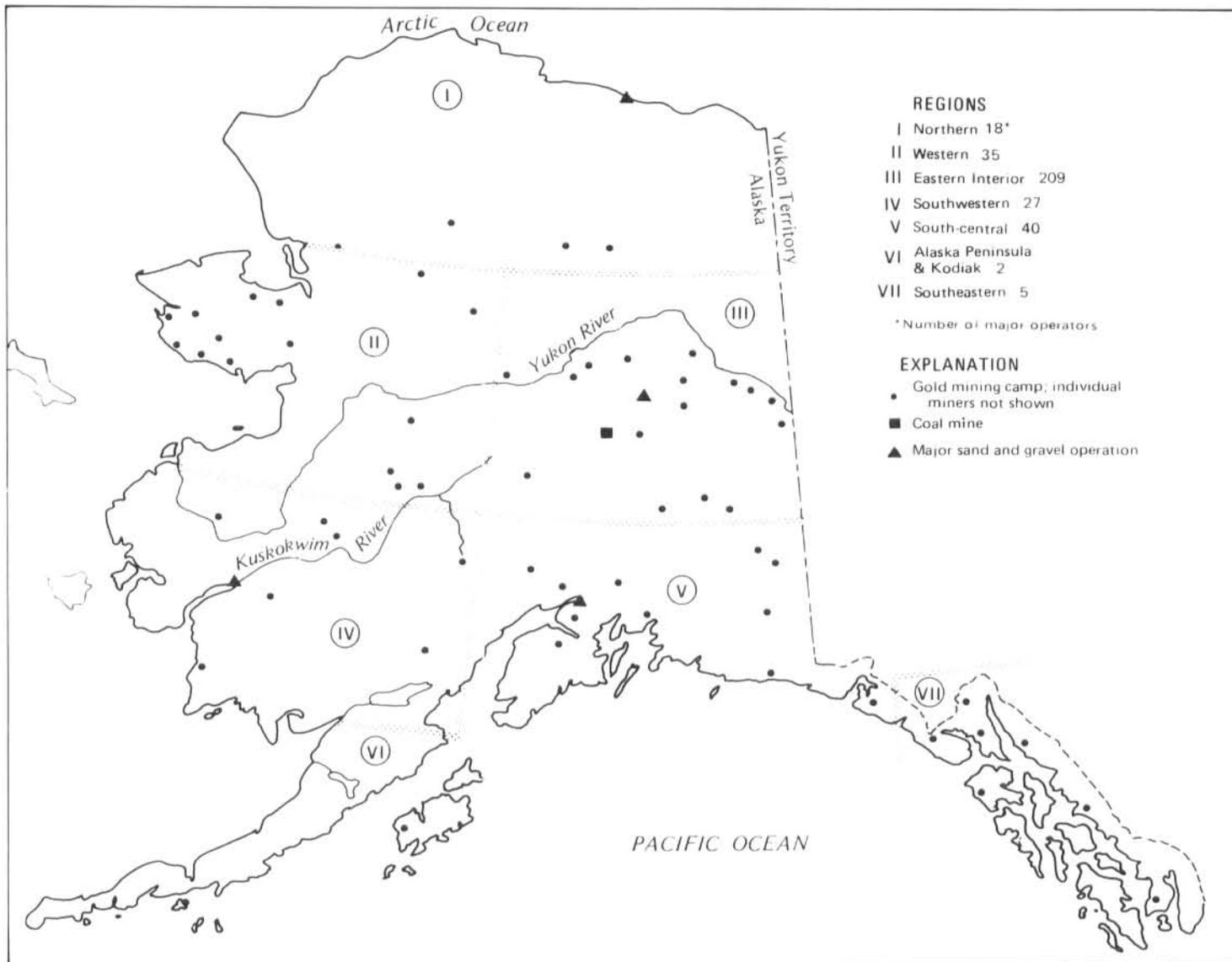


Figure 16. Producing mines and districts in Alaska, 1982.

tor suggests that the previously released 1981 figures for three districts in the eastern interior region were 10 to 20 percent lower than the actual production. Hence, the actual amount of increased production from 1981 to 1982 may be less than 30 percent.

The 1982 increase in gold production occurred despite an apparent drop in the number of mechanized operations statewide, which fell from an estimated 410 operations in 1981 to 339 in 1982. Several factors contributed to the 1982 increase in gold production. Most of the 1981 placer operations that did not function in 1982 were those with relatively poor ground or high overhead costs that could not survive '\$300 gold' at the beginning of the operating season. The aggregate total production of these operations did not significantly affect the total statewide output. The market began to improve in mid-summer, and by September, gold prices had increased nearly 40 percent to \$420 per ounce; hence, those operators who operated while prices were low were able to sell at the much higher prices. Another important factor was an

increase in production from seven floating bucket-line dredges. Finally, a 3- to 5-year learning curve seem evident for new placer-mining ventures of all sizes. Many of the operations beginning during the 1979-80 'gold rush' are now maturing and have undergone improvement in mining methods, recovery systems, and overall gold output. This has been particularly evident for several large mechanized mines in interior Alaska (fig. 20).

Silver is produced in Alaska primarily as a byproduct of placer gold and from small amounts of lead-silver ore. Therefore, the discussion on the production statistics of gold generally applies to silver.

Mercury, tin, platinum, jade, and coal production figures represent reliable estimates. Other industrial mineral commodity statistics were provided by the U.S. Bureau of Mines.

Economic uncertainties prevent the forecasting of 1983 production of most commodities. Consumption of sand, gravel, and coal will probably remain at levels similar

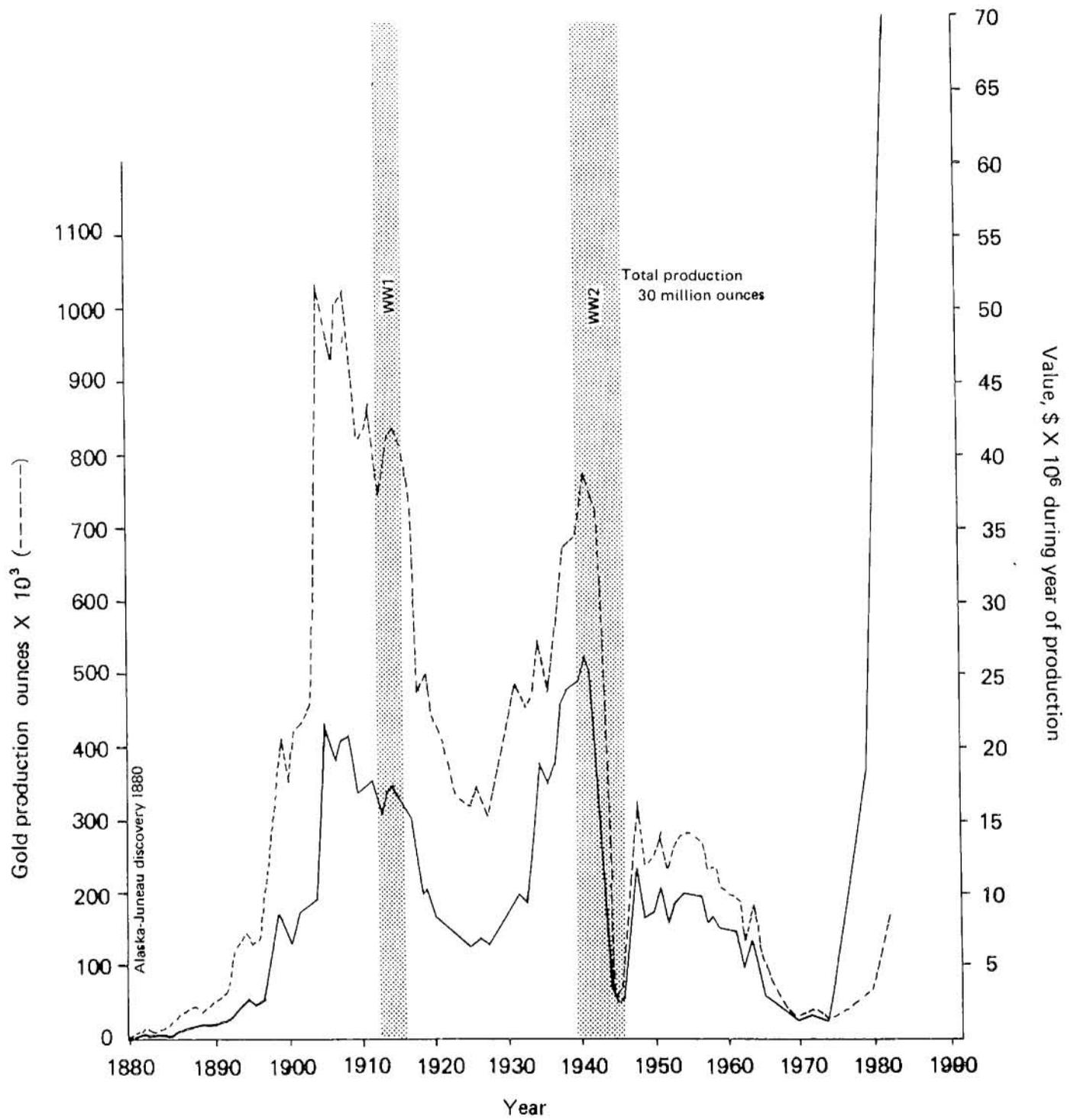


Figure 17. Gold production in Alaska, 1880-1982.

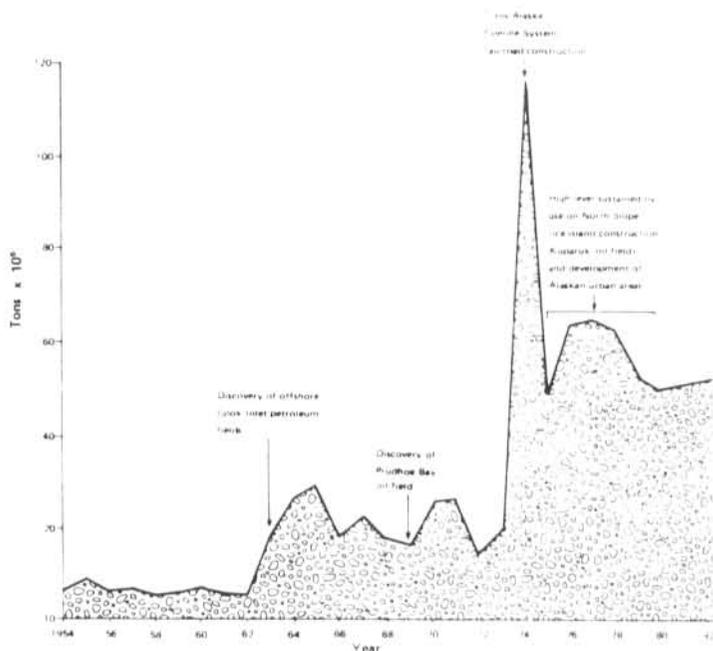


Figure 18. Sand and gravel production in Alaska, 1954-82.

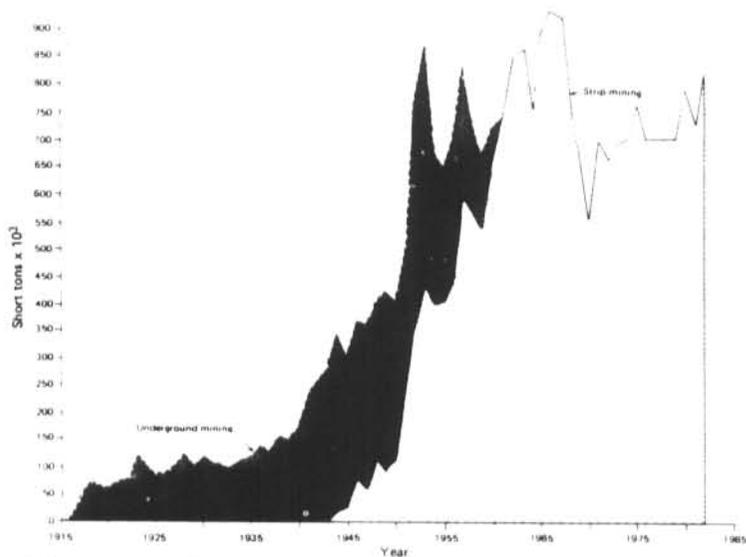


Figure 19. Coal production in Alaska, 1915-82.



Figure 20. RAA placer mine at Little Minook Creek, east-central Alaska. Photo by Tom Albanese, summer 1982.

Table 7
Gold production in Alaska by region, 1982

Region and district	Major operators	Production (troy ounces)
Northern	18	9,500
Chandalar		
Koyuk		
Noatak-Kiana		
Shungnak		
Western	34	34,550
Nome		
Kougarok		
Port Clarence		
Fairhaven		
Candle		
Ruby		
Solomon		
Koyuk		
Council		
Hughes		
Eastern Interior	201	88,500
Circle		
Livengood		
Fairbanks		
Forty-mile		
Manley-Eureka		
Rampart		
Richardson		
Bonnifield		
Kantishna		
Delta		
South-central	35	22,150
Cache Creek		
Nizina		
Chistochina		
Valdez Creek		
Kenai Peninsula		
Nelchina		
Southwestern	26	19,200
Innoko		
Tolstoi		
Iditarod		
Nixon Fork		
Nyac		
Crooked Creek		
Goodnews Bay		
Southeastern and Alaska Peninsula	5	1,000
Total	319	174,900

to those established during the last few years. On the short term, gold output is expected to remain at high levels. However, because most of the output is placer gold, some districts may begin to show depletion of reserves by 1990, according to some observers.

Metals

Northern Region

Gold and silver were the only metals produced in the northern region. At least 16 placer and one lode operation produced 9,500 ounces of gold and 900 ounces of

byproduct silver. Principal producing streams include Porcupine, Emma, Linda, Vermont, Union, Archibald, Nolan, and Mascot Creeks in the Wiseman area and Tobin Creek in the Chandalar area. Small hydraulic operators mined gold throughout the district and in the Crevice Creek and Wild Lake areas.

Wild River Ventures (WRV) operate a unique underground drift mine on a year-round-basis in the Wiseman district. The operation has remained active through use of an old but proven method of placer mining. From approximately November to April, shafts and drifts are sunk and driven in frozen river gravel; gold-bearing pay is stacked above ground with a 'Fairbanks style' self-dumping machine. From June 1 to late fall, the three-man WRV crew sluices gravel for gold recovery and operates a surface mine. WRV is probably the only year-round operational metal mine in the 49th State.

The Little Squaw lode-gold mine was reopened in late summer after a delay caused by poor bullion prices. High-grade ore was processed through a 125-ton-per-day plant during a 38-day milling period.

Small amounts of placer gold were recovered from the Noatak, Shungnak, and Kiana areas, but no production figures have been released.

Western Region

An estimated 34 placer mines of various sizes were operational in the western region. As in previous years, levels of output are difficult to estimate, but available information shows that at least 34,500 ounces of gold and 3,000 ounces of silver were recovered. The largest producer of precious metals statewide, Alaska Gold Company, operated three dredges — two 9-cubic-foot gold boats in the Nome fields and an 8-cubic-foot dredge at Hogatza on the lower Koyukuk drainage. Company officials said all three were in full production during the 1982 season, which extends from May through November; 160 seasonal and 35 full-time employees are employed by the company. Family-operated dredges continue operation on the Seward Peninsula and in western Alaska.

Lost River Mining reported an apparent increase in production of cassiterite (tin) from their placer operation at Cape Creek on the western Seward Peninsula. There was no production of silver from lode deposits in the Kaiyuh Hills, as there has been in the past.

Eastern Interior Region

In the eastern interior region, 201 placer mines accounted for 88,500 ounces of gold and 9,000 ounces of silver, which represents about 51 percent of the state's total bullion output. At least seven mines region-wide each recovered more than 4,000 ounces of placer gold, and many smaller operations recovered several hundred to several thousand ounces.

The Circle district again was the state's most active placer district. Thirty-eight large mechanized mines and as many as 120 recreational and small hydraulic units were active district-wide, about the same as last year. Four mines were depleted and shut down, but increased production from other ventures made up for losses in production.

Other important districts include Fairbanks (26 mines), Kantishna (over 13 mines), Manley-Eureka (30 mines), 40-Mile (26 mines), and Bonnifield (over 5 mines). One mine in the Rampart district was the largest single producer of gold bullion in Alaska during 1982.

Rich residual placers have been mined in the Richardson district since 1979 and are described in a 1982 study by the University of Alaska Mineral Industry Research Laboratory.

Southwestern Region

Placer mining in southwestern Alaska increased by 12 to 15 percent from previous years. Twenty-six well-established operators in the Tolstoi, Flat, Innoko, Crooked Creek, Nyac, and Dillingham areas recovered more than 19,200 ounces of gold, or about 11.5 percent of the state's total (fig. 21). The 4- and 6-cubic-foot dredges of the Tuluksak and Northland Dredging Companies respectively, were in full production near Nyac.

The Goodnews Bay platinum dredge was operational for only a short part of the season after a costly and time-consuming job to refloat the dredge, which sank in its pond in the spring.

A small amount of mercury ore was mined from a hard-rock deposit near Dillingham. There are no records of scheelite shipped from placer-gold mines near Flat and Nyac, as reported in past years.

South-central Region

Two lode and 25 placer mines in the south-central region provided 22,150 ounces of gold. Gold production significantly decreased in the Cache Creek-Collinsville, Kenai Peninsula, and Nelchina areas because of low market prices during the spring and summer. The large Hall-Yentna operation was discontinued in the Cache Creek district, and many Nelchina ventures failed. However, production increased in the eastern Alaska Range, Valdez Creek, and Willow Creek areas, which offset these decreases.

The Independence Gold Mine was officially opened in August at a production rate of 150 tons per day and produced some gold prior to its November closure.



Figure 21. Mining activities showing water-containment system. Photo by T.K. Bundtzen, summer 1981.

Ranchers Exploration and Development Corporation continued to operate their successful mine on Slate Creek in the Chistochina area, where pay zones locally exceed 100 feet in thickness.

The Wagner hard-rock gold deposit in the Valdez Creek area was developed in 1982, and a small amount of ore was mined. A few tons of selected quartz gold ore reportedly were mined in the Nuka Bay area of Prince William Sound.

Mill tailings have been sluiced from the old Cliff Gold Mine near Valdez in recent years, but there is no 1982 record of production. Likewise, Silver Star Mining (Berry Brothers) did not operate their previously productive silver property on the Kotsina River drainage of the Wrangell Mountains, citing poor metal-market conditions and finances for the lack of activity. They expect to resume work in 1983. The Dan Creek and other placer mines in Wrangell National Park and Preserve had another successful year.

Southeastern Region and the Alaska Peninsula

Metal output from these two widely separated regions is poorly known. Two placer mines in the Haines area reported development-production activities.

Gold is being won by re-treating hard-rock mill tailings in the Juneau and Chichagof districts. No production of metals was reported for the Alaska Peninsula region.

Industrial Minerals

Introduction

Industrial-mineral production amounted to \$106.6 million during 1982, a decrease of 6 percent from 1981 estimates. The value of sand and gravel increased nearly 3 percent, but building-stone output plunged nearly 40 percent (table 5) from 1981 levels.

The principal statewide uses of gravel are fill (90-92 percent); concrete aggregate and bricks (3-7 percent); asphaltic concrete (2 percent); road base and covering (2 percent); and minor snow and ice control, gunnite, and plaster (1 percent). Approximately 71 gravel pits and 45 stone quarries have been used in the last 5 years (appendix F) to meet the needs of the state road reconstruction and various private concerns.

Northern and Western Region

More than 80 percent of the sand and gravel used in Alaska was used in the North Slope petroleum fields,



Figure 22. Yutan Construction Company basalt quarry, Badger Road, Fairbanks. Photo by M.S. Robinson, summer 1981.



Figure 23. Gravel-mining operations near Kepler Lake, south-central Alaska. Photo by R.A. Combellick, summer 1982.

where aggregate is required for ice-island construction, pads, etc.

Sand and gravel was used for specific construction projects near Nome by the Alaska Department of Transportation and Public Facilities and for various private uses. However, specific levels of activity are unknown.

Jade was produced in the Jade Mountains east of Kotzebue by a NANA Regional Corporation leasee. Production figures for 1982 have not been released.

Eastern Interior Region

About 1 million tons of aggregate were produced from at least six pits in the Fairbanks area. The chief producer continues to be Fairbanks Sand and Gravel. Of note is a unique plant operated by the Ace Construction Company (Ace) near Fox, north of Fairbanks. The company has acquired a patented fraction of placer ground, including tailings previously mined by the dredges of the FE Company as well as unmined ground. Using a sophisticated washing plant, Ace produces several sizes of aggregate and byproduct gold. Both products are sold to local consumers.

Yutan Construction Company produced riprap, road metal, ballast, and crushed fill from their basalt quarry

near Badger Road east of Fairbanks (fig. 22). Volume of production has not been reported.

Southwestern Region

Several river bars on the Kuskokwim River above Aniak yielded 120,000 tons of sand and gravel used to supply Bethel and other villages with foundation materials. The cost of barging aggregate from Birch Creek Crossway to Bethel is \$100-125 per yard. DGGS is currently identifying upland sites that could supply the Kuskokwim Delta area with this costly and important commodity. Contractors for the City of McGrath mine small amounts from point-bar sand and gravel deposits on the Kuskokwim River for road construction and airport repairs, and a project is underway to locate good-quality aggregate to rebuild the municipality's 5,000-foot-long runway.

South-central Region

In 1982, 4.35 million tons of sand and gravel were used in south-central Alaska. Pits developed by Anchorage Sand and Gravel, Inc., in the Palmer area are the largest producers (fig. 23). An indication of the importance of these operations to the state is shown by examination of records submitted by W.F. Coghill of the Alaska Railroad. In 1982, 2,753,755

tons of gravel — equal to 61 percent of all major commodity tonnages moved on the Alaska Railroad — were shipped at a cost of \$1.60 per ton from the Palmer pits to the Anchorage metropolitan area. The big increase in sand and gravel haulage is one important reason this railroad has recorded an operating profit during the last two fiscal years. The Alaska Railroad used 280,000 short tons of gravel and crushed ballast for rail-bed maintenance in both the south-central and eastern interior regions of the state.

Six or more pits operated by small companies on the Kenai Peninsula produced more than 740,000 short tons of aggregate mainly for road construction projects.

Soapstone is mined in Grubstake Gulch near Palmer. Small tonnages are provided for the arts and handicraft industries.

Southeastern Region and the Alaska Peninsula

Incomplete returns show that about 300,000 tons of sand and gravel were mined in the Juneau and Ketchikan areas. The largest output was from Juneau Ready-Mix, Inc., who operate the Lemon Creek 3 and 4 pits near Juneau. Other producers include the City of Ketchikan and Dungen-Redd-Kopp, Inc.

Ketchikan Ready-Mix and Quarry, Inc., quarried 60,000 short tons of basalt for shot rock near Ketchikan. They expect to increase production by at least 10 percent in 1983.

There was no reported 1982 production of industrial minerals from the Alaska Peninsula region.

Coal and Peat

Eastern Interior Region

Except for one small operation in the Matanuska Valley, the Usibelli Mine near Healy is Alaska's only producing coal mine (fig. 24). Usibelli's 1982 production of 829,000 tons supplied Fairbanks and military bases in the interior. A new \$6 million tippie and loading facility became operational in 1982.

The Suneel Company has been successful in signing a contract to sell 800,000 tons per year of Usibelli coal to the Korean Electric Power Company (KEPCO). The

contract was secured in the face of competition from more than 60 international bidders. Coal shipments through Seward are now slated to commence in 1984.

Paul Omlin, owner of the Premier Coal Mine on Wishbone Hill in the Matanuska Valley coal field, installed a washing plant and produced approximately 1,000 tons of high Btu bituminous coal. This two-man operation supplies local users. Tables 8 and 9 summarize reserves and resources and analyses of major coal deposits in Alaska, respectively. General locations of principal coal fields are illustrated in figure 25.

Horticultural peat is mined from at least four pits in the Fairbanks area and one near Willow. The interior production for 1982 was 10,000 cubic yards. Recently the McGrath-Takotna-Nikoki-Talida Village Association began a horticultural peat project for local use in the upper Kuskokwim River area. A pilot project involved the mining of several hundred yards of peat during 1982. Similar projects in other Alaskan villages are reportedly in progress.



Figure 24. 'Ace in the Hole' dragline in operation at the Usibelli Coal Mine, Healy, Alaska. Photo by R.D. Merritt, summer 1982.

Drilling Activity in 1982

Introduction

Contract drilling of placer, coal, and hard-rock deposits in 1982 totalled about 310,000 feet. This figure probably represents a continuance of the level of drilling activity in 1981. Total drilling footage in 1983 may drop significantly.

Placer Drilling

Contract placer drilling totalled 25,000-30,000 feet in 1982. This figure includes rotary and resonant exploration drilling but does not include thaw-field drilling. Because much placer exploration involves in-house churn drilling, this figure does not fully express total placer-drilling activity.

Placer-drilling levels in 1983 could be expected to increase if the price of gold remains strong. Whether future drilling will continue as a mix of the churn, rotary, and resonant drilling, or whether innovative rotary techniques or the new resonant techniques will begin to dominate placer drilling remains to be seen.

Coal Drilling

Rotary and core drilling totalled close to 80,000 feet in the Beluga, Yentna, and Bering River coal fields. In April, Diamond Alaska concluded a large drilling program that consisted of coal-exploration drilling, observation wells and geotechnical holes. Mobil Mining and Coal conducted a reconnaissance exploration program in the Yentna area, while the Chugach Native-KADCO exploration effort continued in the Carbon Mountain area of the Bering River coal field. Additionally, DCGS

contracted for 1,600 feet of core and rotary drilling in the Seward Peninsula Chicago Creek deposit and 400 feet of auger drilling in the Koyuk area.

Of the 80,000 feet of drilling done in 1982, close to 50,000 feet were drilled between January and April for Diamond Alaska in the Beluga field. Diamond Alaska indicated that the bulk of their exploration work is complete and only small-scale environmental and geotechnical drilling programs remain prior to the mine-development phase.

Plans for continued exploration drilling in the Yentna area by Mobil Mining and Coal and in the Bering River area by Chugach/KADCO are not known. The potential for new activity may be stimulated in the Beluga area by state lease sales. However, if no new exploration programs are begun, total drill footage for coal projects in 1983 could fall by over 50 percent or more from 1982 levels.

Table 8
Alaskan coal reserves and resources from eight major fields in millions of tons
(modified from McGee and Emmel, 1979)

	Proven reserves	Indicated resources	Hypothetical resources
Northern fields	235.0	49,000-120,000	330,000
Nenana field	860.0	6,000	8,700
Jarvis Creek field	0.3	13-76	---
Susitna field	850.0	2,700-10,200	27,000
Matanuska field	6.6	108-130	149
Bering River field	62.0	--	36-1,000
Herendeen Bay field	--	10-100	300
Chignik field	--	100	300
Total in billions	2.014	57.9-136.6	366.5-367.4

Table 9
Representative analyses of Alaskan coals; as-received basis, in part based on Barnes, 1967
(from Sanders, 1983).

Location	Moisture (%)	Vol. mtr. (%)	Fixed carbon (%)	Ash (%)	Sulfur (%)	Heating value (as received) (Btu)	Approx. heating value (moist. min. mtr. free) (Btu)
Northern Alaska							
Kukpowruk R.	1-10	31-36	53-56	2-15	0.2-0.3	11,910-12,880	13,500
Kuk R.	18-27	29-32	40-43	2-10	0.2-0.3	8,780-9,510	10,100
Meade R.	8-10	32-36	38-50	6-20	0.2-0.8	7,700-10,720	11,000
Interior Alaska							
Eagle	2-14	20-44	40-54	2-23	0.2-0.6	Approx. 11,200	14,900
Nulato	1-11	24-41	47-65	3-23	0.2-0.6	Approx. 9,500	12,300
Healy	18-27	33-42	27-35	3-13	0.1-0.3	7,570-9,430	9,300
Jarvis Cr.	20-23	35-43	24-35	5-13	0.3-1.4	7,815-9,415	9,500
South-central Alaska							
Beluga	11-29	28-38	26-35	10-31	0.1-0.3	6,290-8,890	8,600
Yentna	32-33	33-38	26-29	2-8	0.1-0.3	7,030-8,020	8,400
Kenai	21-27	31-38	24-34	3-22	0.2-0.4	6,550-8,600	8,400
Broad Pass	21-36	27-35	20-28	11-21	0.2-0.3	5,410-7,040	7,500
Wishbone Hill	3-9	32-45	38-51	4-22	0.2-1.0	10,390-13,190	13,800
Chickaloon	1-4	14-23	60-72	6-20	0.4-0.7	11,960-14,380	15,300
Anthracite Ridge	3-9	7-11	64-81	7-21	0.2-0.7	10,720-13,425	14,400
Herendeen Bay	7-8	32-35	49-51	7-21	0.3-0.4	11,260-11,790	13,000
Bering River							
West end	1-8	13-17	65-91	2-18	0.6-1.0	11,000-15,000	15,400
East end	3-8	5-13	66-83	2-21	0.6-1.0	11,890-12,790	15,200
Admiralty Is.	3-6	34-35	36-40	21-23	0.9-1.3	9,930-10,630	13,900

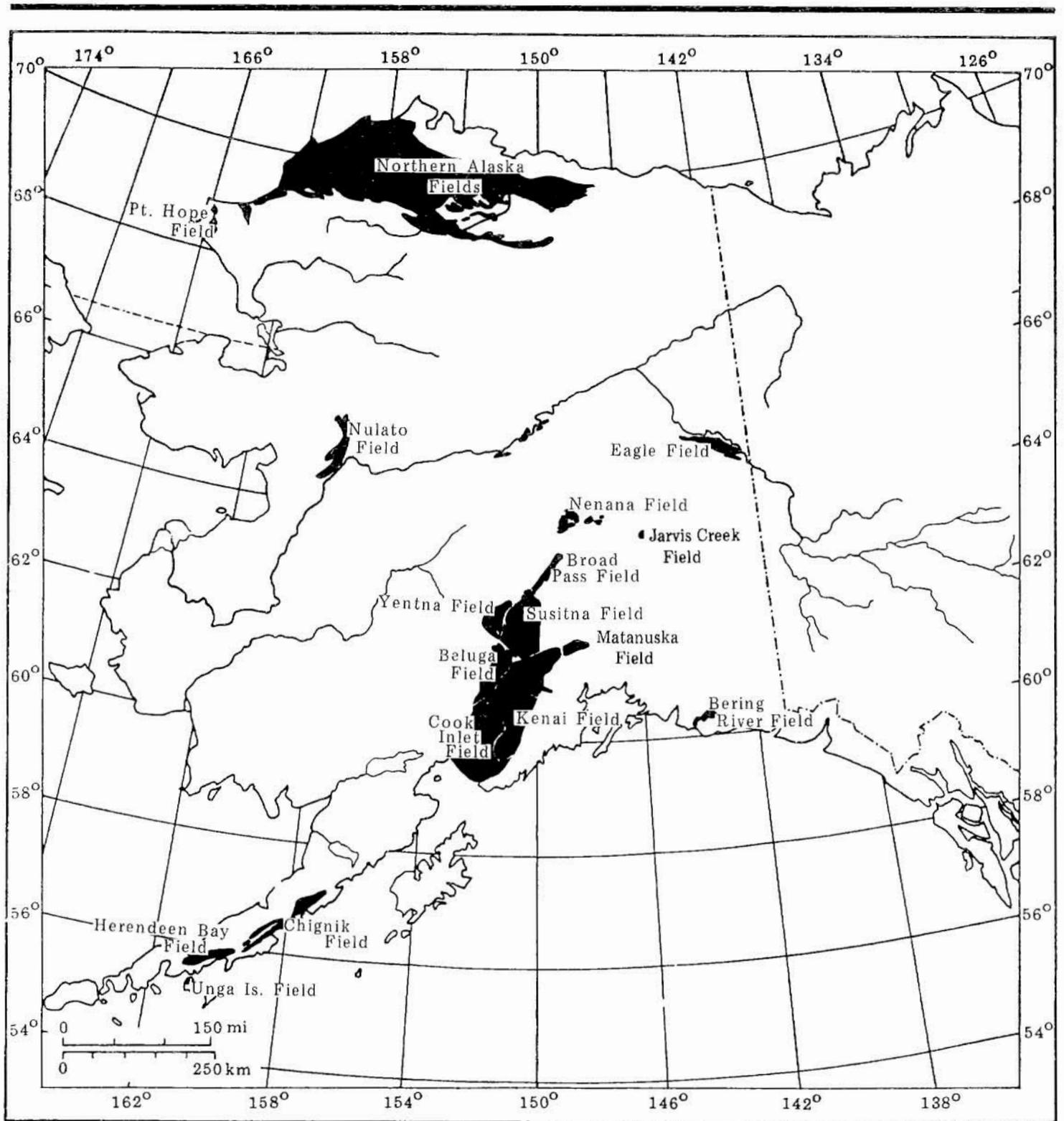


Figure 25. Location of the principal coal fields in Alaska.

Hard-rock Drilling

Expectations were high in the first few months of 1982, when 300,000 feet of hard-rock drilling were predicted for the field season. However, actual drill footage totalled about 200,000 feet, which is estimated to be about the same footage drilled in 1981. Because of the high projected footage and the depressed levels of activity in

'lower 48' mining states, several drilling companies previously inactive in the state opened offices in Alaska.

Included were Boyles Brothers Drilling Company and Longyear, Inc., who both gained contracts in Alaska. NANA-Coates Diamond Drilling, Inc., a joint venture between the NANA Development Corporation and Coates Drilling, Inc., of Vancouver and Reno, was

formed to carry on the exploration drilling of the Red Dog and Noatak properties in northwest Alaska. Also, Caron North American, a company established from Alaskan interests and Caron Diamond Drilling of Whitehorse, Yukon Territory, gained a contract with the Independence Gold Mine near Anchorage. Together, these new operators accounted for 25 to 35 percent of the statewide hard-rock drilling.

Drilling contractors active in the state during 1982 are listed in table 10, and companies conducting drilling programs during 1982 are listed in table 11.

The failure of the expected record footages to materialize has been attributed to the recessionary economy. Despite excitement about many Alaskan projects, the budget cuts of home offices in the 'lower 48' extended to Alaskan projects. In addition to program reductions, some exploration companies previously active in the state 'broke their picks' and discontinued active programs in Alaska.

Table 10
Drilling contractors active in Alaska, 1982

Alaska Drill Supply & Equipment Company 7330 Silver Birch Drive Anchorage, Alaska 99502	M-W Drilling, Inc. P.O. Box 10-378 Anchorage, Alaska 99511
Arctic Resources Drilling, Inc. 6361 Nielson Way, Suite 101 Anchorage, Alaska 99502	NANA Coates Diamond Drilling, Inc. 4706 Harding Drive Anchorage, Alaska 99503
Boyles Brothers Drilling Company P.O. Box 4307 Spokane, Washington 99202	Resource Associates of Alaska, Inc. 4230 Airport Way Fairbanks, Alaska 99701
Caron North American 8000 King Way Anchorage, Alaska 99502	Salisbury & Dietz, Inc. S. 1815 Lewis Spokane, Washington 99204
Denali Drilling 6000 'A' Street Anchorage, Alaska 99502	Sedcor Exploration, Ltd. Phillips Field Road P.O. Box 60750 Fairbanks, Alaska 99706
Diamond Drill Contracting Company P.O. Box 11307 Spokane, Washington 99211	Skadmore Machine & Tool Co. P.O. Box 470 Fairbanks, Alaska 99707
Exploration Supply & Equipment, Inc. 6727 Seward Highway Anchorage, Alaska 99502	Southeast Drilling Co., Inc. P.O. Box 6612 Ketchikan, Alaska 99901
Geo-Bore Drilling, Inc. P.O. Box 2602 Coeur d'Alene, Idaho 83814	Sprague & Henwood, Inc. 221 W. Olive Street Scranton, Pennsylvania 18501
Hardrock Construction P.O. Box 6455 Ketchikan, Alaska 99901	Thibideau Drilling Contractors 3864 Peger Road Fairbanks, Alaska 99701
Interstate Exploration, Inc. 512 West International Airport Road P.O. Box 6106 Anchorage, Alaska 99502	Thrasher & Associates, Inc. P.O. Box 114 Nome, Alaska 99762
Lingvosa, Inc. 5941 Arctic Boulevard, Unit P Anchorage, Alaska 99502	Wallace Diamond Drilling, Inc. P.O. Box 799 Osburn, Idaho 83849
	Wink Bros. Drilling 1101 Mendenhall Peninsula Juneau, Alaska 99801

Table 11
Companies conducting drilling programs in Alaska, 1982

Alaska Apollo Gold Mines, Ltd.
Alaska Gold Company
Anaconda Minerals Company
Bear Creek Mining Company
Chugach Natives, Inc.
Cominco American, Inc.
Diamond Alaska Coal Company
Doyon, Ltd.
Enserch Exploration, Inc.
GCO Minerals Company
Geneva Pacific Corporation
Houston International Minerals, Inc.
Mapco Alaska, Inc.
Mobil Mining and Coal
Noranda Exploration, Inc.
Noranda Mining, Inc.
Phillips Petroleum Co.
Placid Oil
Resource Associates of Alaska, Inc.
UNC Teton Exploration
U.S. Borax and Chemical Company
WGM, Inc.

In addition to mineral-exploration drilling, projects on Unalaska Island at the Makushin Volcano and on the Seward Peninsula at Pilgrim Hot Springs were carried out to assess the geothermal-energy potential. Two small geothermal-drilling programs were also conducted at Summer Bay on Unalaska Island and at Tenakee on Chichagof Island. Total footage for these projects was approximately 8,000 feet.

The level of hard-rock drilling in 1983 is felt to be dependent on the general economy. A strong recovery may be the necessary condition for maintaining or increasing drilling activity in 1983. Continued strengthening of gold and silver prices should have a positive effect, but significant drawdown of other metal stockpiles may be required before an economic recovery begins to affect the mineral industry overall.

If a strong recovery is not sustained through early 1983, many companies feel that drilling levels will drop. While drill programs on strong prospects may continue, drilling on new discoveries may be postponed. At a minimum, the base level of hard-rock drilling in 1983 will probably be defined by the total footage from projects near or in development phases, projects with fixed exploration time limits mandated by ANILCA, and projects performing maintenance-level assessment work.

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Appendix A

Major Claim Groups^a

Quadrangle	Claim group name(s)	Approx. no. of claims	New claim groups or claims added since 1981	Land status ^b F-federal S-state	Commodities	Holding company
NORTHERN REGION						
POINT HOPE	Jack claims	548		F	lode	GCO Minerals
DE LONG MTNS.	Red Dog area Lik (and others) Husky	4,832 3,255 55	NEW	F F&S	Pb, Zn, Ag lode Pb, Zn, Ag lode	Cominco GCO Minerals Bear Creek Mng. Co.
PHILLIP SMITH MTNS.	Occasional (and others)	28	[+8]			Placid Oil
NOATAK	Ore (and others) Katyak Rat (and others)	3,392 32 632	[+1,701]	F S	Pb, Zn, Cu lode	Cominco Bear Creek Mng. Co. GCO Minerals
AMBLER RIVER	Smucker (and others) Arctic (and others) Ambler (and others) Jade Queen Nora (and others) Lisa (and others) Patti	1,187 565 433 23 598 1,051 29	[+84]	F&S F F&S F F&S F	lode Cu, Zn, Ag lode lode Jade, asbestos lode lode lode	Anaconda Bear Creek Mng. Co. Sunshine Mng. Co. NANA Regional Corp. GCO Minerals Noranda, Bear Creek Mng. Co. Cominco
SURVEY PASS	Picnic, Picnic Cr. Synbad (and others) Sun, X ext., QR ext. Hot Claims Star Claims CJ, SCJ	32 300 228 64 52 32		F S S S S S	Cu lode lode lode lode lode	Bear Creek Mng. Co. Anaconda Sunshine Mng. Co. Noranda Canevex Inc. GCO Minerals
WISEMAN	Hammond (and others) New Hope Assoc. Middle Fork Disc. Iceworm (and others) Skroo, RO claims S. Fork Emma Cr.	50 120 230 172 57	[+25] [+48]	F F F F	Au, placer, lode Au Au placer lode Au	Eldorado Bench Assoc. A. Miscovich Maple Leaf Gold, Inc. Anaconda W. & C. Nordeen
CHANDALAR	Mowgli (and others)	122		F		Placid Oil
WESTERN REGION						
HUGHES	Hogatza River area	60+ ptd		F	Au	Alaska Gold Co.
TELLER	Tin Cup, Brass Cup Kougarok area Tin	82 1,007 64	[+10]	S S S	lode Sn lode lode	Texas Gulf, Inc. Anaconda C.L. Sainsbury
BENDELEBEN	Below Henry Cr. Pinnell (and others) Kugruk (and others) Sunshine (and others) BCU (and others) PCA Tiaga DV Confederate	134 47 71 90 372 548 210 577 55	NEW NEW [+6] [+160]	F F F F S&F S F S	Au Au Pg, Ag, Au Cu, Ag, Au lode lode lode lode	Tweet and Sons G. Nelson, S. Sobocienski R. Berg H. Carlson Greatland Expl. Greatland Expl. Greatland Expl., Tundra Expl. Houston Oil & Minerals Gem Exploration

^a Data obtained from the State of Alaska DCGS Kardex file system. Data must have been entered in the Kardex file system before December 31, 1982. Additionally, claim holders have 90 days after staking to file claim notices with the District Recording Offices. The DCGS Mining Information Office receives copies of the claim notices monthly from the statewide District Recording Offices; thus, there is a possible 4-month information lag, and claims staked after September 1982 may not be reflected in this table.

The Kardex file system provides a relatively accurate account of the number of active claims in each quadrangle. The word "active" however, must be qualified. For claims on state land, \$200 of annual labor (assessment or improvement work) per claim is required by the state. Federal regulations require \$100 per claim of annual labor for claims on federal land. Claim owners must submit an affidavit of annual labor for any work done by September 1 of each year. To determine the extent of mining activity on each claim or claim block, these affidavits must be researched and read individually.

^b Where known.

Quadrangle	Claim group name(s)	Approx. no. of claims	New claim groups or claims added since 1981	Land status ^b F-federal S-state	Commodities	Holding company
CANDLE	Winner Assoc. (and others)	38		F	Au	R. Berg. Tundra Expl.
	Mud Creek (and others)	54		F	Au	Mud Creek Mining
	Bod (and others)	143				Greatland Expl.
	KRN Mud. Sand. Gravel	71 102	NEW	S		Houston Oil & Minerals Noranda
NOME	Frozen Asset (and others)	45 + ptd		F		Alaska Gold Co.
	Rogen, MD	96				Mapco
	H. Rock Cr. (and others)	146			placer & lode	D. Hale
SOLOMON	Disc. Solomon (and others)	162	[+ 104]		Au	J. Slager
	W.W. Berch (and others)	162	[+ 72]		Au, W	C. Glass & G. Bowlin
NULATO	Yuki	117	[+ 58]			C.C. Hawley & Assoc.
	Okie (and others)	462			lode	Anaconda
	Gamble (and others)	45	[+ 14]			Bear Creek Mng.
RUBY	Yuki Discovery	211	NEW		Au	Yuko Mountain Mining Co.
	DLH, Toke, DBH	70			Au, Sn	Resource Assoc. of Alaska
	TAM	43			Au	Resource Assoc. of Alaska
	PH	37			Au	Resource Assoc. of Alaska
	TIM	67			Au	Resource Assoc. of Alaska
	MON	38			Au, Ag, Sn	Resource Assoc. of Alaska
	Poorman Assoc. (and others)	87	[+ 34]		Au, Sn	Miscovich Bros. Mining Co.
	SED (and others)	217		S		Stockman Exploration & Development
OPHIR	Discovery	55				S. Bartel
	Discovery (and others)	44			Au	O'Carrol
	Maki Gulch (and others)	90			Au	W. Magnusen
	R & W	48			placer	R. Roberts, J. Wortman
	Warner	80	NEW			J. Ramsey
MEDFRA	Nixon Fork Mine	73			Au, Ag, Cu, Bi	Mespell, Almasy
	Win, Won	97		S		Duval Corp.
	Wash, Page	45	NEW			L. McMaster
EASTERN INTERIOR						
BETTLES	Tiara	47		F	placer	J. & M. Thomas
TANANA	TOF	122			lode	Resource Assoc. of Alaska
	Boulder Creek Taxi	104		S		Boulder Creek Mining
	Bunny	70	[+ 11]			Resource Assoc. of Alaska
	Golden Eagle	225		S		W. & E. Gibson
	BB	681	[+ 536]		lode	Anaconda

Quadrangle	Claim group name(s)	Approx. no. of claims	New claim groups or claims added since 1981	Land status ^b F-federal S-state	Commodities	Holding company
LIVENGOOD	Quail Discovery (and others)	40	[+39]			C. Congdon
	Livengood Bench (and others)	160		F	Au, placer	Livengood Placers, Inc.
	Ing (and others)	68		F	Au	Placid Oil
	Fairbanks Creek	37		F	Au	Fairbanks Gold Dredging Co.
	Grace (and others)	117		F	Au	Placid Oil
	Little Jim West Ridge	99	[+47]	S	Au, Sb, Ag, Pb	Mohawk Resources of Alaska
	Silver Starlight (and others)	64	[+16]	F	Au, W, Pb	J. Lundgren
	Bee Group, Y, Chee	194		F	lode	Mapco, R.E.C.
	V.M. (and others)	188	[+31]	S	lode	R. Vetter, R. McKibben
	July Claims	44	[+10]	S		D. Eagan, J. Knaebel
	Ramona, Maton	45		S		J. Reeves, A. Thayer
	Vetter and Marley	126	NEW			G. Vetter, M. Marley
	Lucky Claims	159	[+9]			J. Knaebel
West Ridge	52		S		Mohawk Resources of Alaska	
CIRCLE	Star Claims	46	[+17]		Au	A. Ebenal
	Discovery	42		F	Au	H. & H. Warner
	Shane (and others)	60		F	Au	Ventures North Mng. Co.
	Car Claims	153		F		Resource Assoc. of Alaska
	Munson Creek (and others)	142		F	Au, placer	Executive Professional Inv. Capital Corp.
	Svenson (and others)	63	[+10]	F	placer	Emerson Exploration
	Sheep Creek (and others)	84		F	placer	H. Shope, L. Hite
	Free, Free-B, OH	180		F	U, lode	Mapco
	FHS (and others)	146		F	lode	Houston Oil & Minerals
	Fur, Sin, Millsite	969		F	lode	Resource Assoc. of Alaska
	Harrington, Era	25		S	Au, placer	F. Wilkerson, D. Ackels
	You. Gap, Old, Jenny	89			placer	Chena Mining Group
	Ann Claims	225			lode	W.G.M.
CHARLEY RIVER	Jumbo Fraction (and others)	148		F	Au, Pt.	J. Vogler
KANTISHNA RIVER	Golden Spike, Good Hope	68			Au, placer	Cripple Creek Mining, R. Summer
	SIS Claims	90			lode	Exxon
	Jubilee	67		S		J. Hook, C. Woodruff
FAIRBANKS	Eagle (and others)	81	[+2]		Sb, Au	Mohawk Res. Alaska, Inc.
	Eva, LB, Black Bear	161			Au, W, Bi, As	B. Blair, J. Roman
	Gold King Creek, California Creek	62		F	Au	B. Blair
	Grant Mine	21		F&S	Au	R. Burggraf, Tri-Con
	Camp #1 (and others)	87				R. Buzby
	St. Paul, Golden United	203	[+33]	S	Au	F. Barelka et. al
	BE (and others)	65		S	Au, lode	B. Blair
	Bar 1 Disc. (and others)	45				A. Zelwegor, R. Rotter
	Gil Claims (and others)	134			lode, placer	Resource Assoc. of Alaska
	Heartache (and others)	97		F	Au	P. Barelka
BIG DELTA	Discovery, K-P	54			Au	J. Parry
	DFU, CT	95			lode	Houston Int'l. Minerals Corp., Resource Assoc. of Alaska
	M, P, F, Y	125	[+74]			B. & S. Taber
	Aurous Claims	52	[+50]			Aurous Valley Mng. Corp.
	G. Chet, Hy	245			placer	Chena Mining Group
	BLKSH	88	[+46]		lode	Resource Assoc. of Alaska
	Below Gail, Donna	90				GLD Corp.
	F, Y	50	NEW		Au	J. Whalen, B. Taber, S. Taber
	Gayla (and others)	43			placer	GLD Corp.
	KT, BD, CAB, LC	300	[+30]			W.G.M.
	Hawg	264			lode	Anaconda
	D.C. Claims	51	[+3]		lode	W.G.M.
	Jen Claims	92	NEW			Anaconda

Quadrangle	Claim group name(s)	Approx. no. of claims	New claim groups or claims added since 1981	Land status ^b F-federal S-state	Commodities	Holding company
EAGLE	Crysofile	4ptd			Asbestos	Doyon Ltd.
	Discovery	52		F	lode	Resource Assoc. of Alaska
	Gold Bar	40			Au	Alaska Placer Corp.
	Pat Pye (and others)	149	[+ 103]	F		T. Brown, P. Sommer
	Walker Association	56			placer	F. Miller, L. McMaster
	Bonanza	150			placer	N. Thurneau
	Fortymile River	40			placer	J. Taylor, A. Leach
	Black Velvet Assoc. Solomon, Sheba	53 41			S S	J. Smith, J. Robinett B. Fay, F. Robbins
MT. MCKINLEY	Liberty (and others)	83	[+ 20]		Au, Ag, Sb	Northwest Expl. Inc.
HEALY	Artesia (and others)	222				Resource Assoc. of Alaska
	Long Claims	100			lode	Houston Intl. Minerals Corp.
	Timberline Claims	90	[+ 20]		Au	Timberline Mining Co.
	Copper King, Denali	62			Cu	Sundum Development Corp.
	Ohio Creek (and others)	956			Cu, Pb, Zn, Ag	Chulitna Mining Corp.
	Metal	60				McCallie Creek Mining
	AATSCO	189		F	lode	ATTSCO Mining Co.
	Copper Kitty (and others)	125			lode	M. Denson
	Gold Hill	74	[+ 48]		lode	Stevens Expl. and Mng. Co.
	Nimrod, Nimsick, Nim	136			lode	R. Swainbank
	SMOG (and others)	906			lode	Getty Mineral Res. Co.
	TSU	66			lode	Resource Assoc. of Alaska
	C-D Copper King	57			lode	C-D Development Corp.
	Roosevelt Creek, Valdez Creek	72			placer	J. Davis, D. Pelky, and R. Malesky
Mill Claims	40	NEW			C-D Development Corp.	
MT. HAYES	Borealis	322			Au	T. Stoelting
	Copper, Chisna	110			Cu	W. Appelt
	Kathleen, Margaret	62	[+ 16]			H. Herning, M. Ringstad
	MEX	122	[+ 28]			Mankomen Exploration
	Ranchers (and others)	71				Ranchers Exploration and Development Corp.
	PGW (and others)	540			lode	Anaconda, Resource Assoc. of Alaska
	Acc. Hill, Bud	43			lode	W. Vaux
	Zackly	339	[+ 206]	F	lode	Teton Exploration, Resource Assoc. of Alaska
	Little Clearwater (and others)	135	[+ 89]		Au, placer	Tamany Gold Mining Co.
	AMP	99			lode	Hunt Oil Co.
	Gray Dog	50	NEW			W. Daugherty
	W.F. Group	49	NEW			Northern Resources
	Zip Claims	41	NEW			Trans Arctic Expl.
CC Claims	42	NEW			Resource Assoc. of Alaska	
TANACROSS	Border, OM	63	[+ 13]	F	placer	Northwest Survey Corp. Ltd., Y.T.
	Ladue, Big Creek, Trident	54		F	lode	Noranda
	TP, TPN, AR	104		S	lode	Cook Inlet Regional Corp., Houston Oil & Minerals
	HD, HDN, HDS	108		S		Anaconda, Resource Assoc. of Ak
	OH, Dawg, TY	182		F	lode	Noranda, E. Hoch
	Sixtymile Assoc.	41		F	placer	D & D Sweeten
	Apex Assoc. (and others)	84			placer	D. Snellman, C. Beyer
SOUTHWESTERN REGION						
IDITAROD	Otter Creek	34		F	Au, Hg, W	GCO Minerals, J. Miscovich
	L.L. Benches	59	[+ 21]	F	Au	E. O'Carrol
McGRATH	Alpha (and others)	181		F	Pb, Zn, Ag	Alaska Minerals Co.
	Win Claims	73	[+ 66]		Pb, Zn, Ag	R. Murvay and E. Greene
	Big Sky (and others)	972	[+ 620]			Anaconda
	Peak Claims	98				Seven A.M. Investment Enter- prises, E. Lowery
	T.T.	44	[+ 21]			Hunt Oil Co.
Cheeneetnuk	33	NEW			Bear Creek Mining	

Quadrangle	Claim group name(s)	Approx. no. of claims	New claim groups or claims added since 1981	Land status ^b F-federal S-state	Commodities	Holding company
RUSSION MISSION	White Bear (and others)	44		F	placer	H. Faulkner
SLEETMUTE	Elah Claims Black Bear (and other) Buck, Holo Claims SA, SB, BMC	69 61 306 757	[+ 6]	S	Au, lode	R & H Mining J. Wylie Buckstock Mining Co. Troy Resources Corp.
LIME HILLS	Gamo BR, LY	30 242	NEW	S		Amex Exploration Hunt Oil Co.
BETHEL	Tuluksak River	415			Au, placer	Northland Gold Dredging, Tuluksak Dredging
TAYLOR MTNS.	Gemuk (and others) Taylor Creek (and others)	62 253	[- 173]		Hg, Sb Au	P and C Roderick, Haday Phillips Petroleum
LAKE CLARK	Terry, Gil Kody	51 65			Au	Alaska Gold Partners (lease from Energy Resource Development) Anaconda
SOUTH-CENTRAL REGION						
TALKEETNA	Porcupine (and others) Cam, Gena Bench Nex Yer Crown Triangle Nakochna, Roma (and others) Coffee Break Alberts Bench (and others) Coarse Gold	99 47 49 50 140 119 131 165		F F S S	Au, placer Au, placer Au, Pt. Ag, placer Au, placer	Pioneer, Add-Ventures Dutch Creek Mining H. Ramsey, B. Johnson L. McDaniel R & M Flounders, D & M McClurg J. Phillips, United Associates, Al-Von Mining Co. J. Fuller, D. Metcalf
TALKEETNA MTNS.	Willow (and others) Molly TSISI Ptarmigan Pup (and others) Walker Discovery (and others) Coal, Gun Susan (and others) Renegade Pick Creek (and others) DWN, DES HOW (and others) Sometimes Lucky (and others) Falls Creek Three Rivers Teac (and others) CERCA (and others)	52 93 130 94 79 289 851 211 49 74 69 46 78 127 140 85	[+ 114]	S S S S S S S	Au, placer Mo, Zn, Cu, lode placer placer lode Au, placer placer Au, placer Au, placer Au, placer Au, placer	D. Young Silver Dome Mining Northern Mng. and Minerals Northernmost Enterprises C. Nicholson Houston Intl. Minerals Corp. Amend Mining Co., P. Horvat, Jr. Hamilton Mng. Enterprises, et al. Consolidated Mining Inc. Greatland Exploration Greatland Exploration, Enserch H. Parker D. Horvat J. Voss J. Voss, J. Peterson D. & H. Parker
NABESNA	TAKU (and others) Big El (and others) Nike (and others) CCCU	50 82 39 83		F F	Cu lode	Bear Creek Mining A. Dipple Bear Creek Mining, Inspiration Devel. Co. CCCU, Inc.

Quadrangle	Claim group name(s)	Approx. no. of claims	New claim groups or claims added since 1981	Land status ^b F-federal S-state	Commodities	Holding company	
TYONEK	Bonanza (and others)	81	[+ 366]		Au	B. & E. Bolstridge	
	Theodore	620			Au, placer	Starling Mining Co., B. Bolstridge	
	Susitna Mtn. (and others)	66			placer	B. Bolstridge	
	Beluga	273				J. LaSpesa	
	Susitna	1,084			Au, placer	J. LaSpesa	
	Fire Claims	44			S	Aspen Exploration	
Estelle	140		Seven A.M. Investment Enterprises				
	South Peak (and others)	2,344		S		J. LaSpesa	
ANCHORAGE	Independence Mine	93 + ptd		F	Au	Enserch, S. Wilson	
	MacDoc, Cairn	36		S		Aspen Exploration	
VALDEZ	Magnet (and others)	84			Fe?	Amalgamated Bananas and Steel	
McCARTHY	Binocular group (and others)	508		F	Cu	Geneva-Pacific Corp.	
SEWARD	Glacier Creek	63	[+ 50]	F	Au?	G. McCarthy, D. Cavanagh	
	Wager 1 (and others)	46			Au	W. Jones	
	Cripple Creek (and others)	54				C. & W. Crouch	
	Golden, Glacier	86			[+ 2]	placer	C. & C. Toohey
	Jarood Claims				35	lode	R. Sheardown
Lost Creek, Norman	72		lode, placer	I. Merrill			
BERING GLACIER	Yakataga Beach	85	NEW		U, Th, Au	Alaska Gold Mines	
	N.C. Claims	108					Northcoast Minerals
SELDOVIA	Snow, Jes, RLM, EJH	92				Anaconda	
ALASKA PENINSULA & KODIAK REGION							
HAGEMEISTER IS.	Big Hurrah (Goodnews Bay)	159		F	Pt, Au	C. Johnston	
CHIGNIK	Peat #1-50	89	[+ 55]		Pb, Mn, Zn, Au, Ag, Cu, Mo	Ward	
PORT MOLLER	Apollo Gold Mine	6ptd			Au, Pb, Zn, Cu	Alaska Apollo Gold Mines, Ltd.	
SOUTHEASTERN REGION							
SKAGWAY	Marmot	61		F	Au, Ag, Cu, Pb	Marmot Mining Exploration, Alyn Mining Co.	
JUNEAU	KNS (and others)	102	[+ 36]		Au	Placid Oil	
	Eagle River, Eagle	65				Placid Oil, Whalen's Mining & Exploration	
	Molly (and others)	54				Cu	St. Joe American
	Hawk Inlet (and others)	145				Au, Ni, Cu, Co	S. & A. Pekovich
	Rex, Billy's Reward	43				Au	Noranda
	Golden Beaver	57				Au	Noranda
	Big Sore (Green's Creek)	480				Ag, Pb, Zn	Noranda
	Hi	518				Au, Cu	Resource Assoc. of Alaska, Dano Mines Co.
Numbo	96	NEW	lode	Houston Oil & Minerals			
TAKU	Lady Dee (and others)	117			placer	C. Norden	

Quadrangle	Claim group name(s)	Approx. no. of claims	New claim groups or claims added since 1981	Land status ^b F-federal S-state	Commodities	Holding company
SITKA	PY	79			lode	Anaconda
	DM	111	NEW		lode	Coastal Development Corp.
	Yakobi (and others)	376			Ni, Cu, Co	Inspiration Development Co.
SUMDUM	Cookgroup, Cars	97	[+ 26]		Au, Pb	Mapco
	Endicott	57			lode	L. Anthony, R. Renshaw
	Sunny	81				E. Redman
PORT ALEXANDER	LCM (and others)	184				Phillips Petroleum
	Corn	92	[+ 2]			Resource Assoc. of Alaska
	Peggy	32				Mapco, P. Holdsworth
PETERSBURG	Hattie Group	544			Au, Ag, Cu, Zn, Pb	Houston Oil & Minerals
	Frenchie	34				C.C. Hawley & Associates
	Whistle Pig	295			Pb, Zn, Ag	Huffy
	Marquerite	224			lode	Mapco
CRAIG	J.D., Cat, Rat	67			Au, Ag	Mapco
	Ruby Tuesday	72			Zn, Pb	Noranda
	Winnie (and others)	45			limestone	Ideal Cement Co.
	Oswego	40			limestone	Oregon Portland Cement
	Deana	119				Anaconda
	Chum, Witness post	56			lode	Houston Oil & Minerals
	DV, TM, FR, CC	413	[+ 26]			Exxon
KETCHIKAN	CAA (and others)	36	[+ 11]		Sb	Duval Corp.
	Butte (and others)	71			Ag, Pb, Au, Cu	Mineral Basin Mining
	Quartz Hill	1,077			Mo, lode	U.S. Borax
	Peat (and others)	106			lode	Resource Assoc. of Alaska
DIXON ENTRANCE	Cub, Cub Fraction	27			U	Kendrick Bay Mining Co.
	Bokan	118			U	Seraphim Eng.
	T.D. Claims	324			U	R. Stough, T. Willis, R. Pickrell, F. Young
	Kaigani, Billy	72			lode	Noranda

Appendix B

Mining Firms Active in Alaska, 1982

NORTHERN

Anaconda Minerals Co. (base and precious, expl.)
 Bear Creek Mining Co. (Cu, Zn, Pb, Ag, Au, expl.)
 L. E. Brown (Au, expl.)
 CDC Partners (Au, Ag hard rock, expl.)
 Cominco Alaska Inc. (Cu, Zn, Pb, Ag, hard rock, expl./
 develop.)
 D. H. Mining and Exploration (Au placer, expl./prod.)
 GCO Minerals Co. (Pb, Zn, Ag, expl.)
 Mick & Cecilia Manns (Au placer, expl./develop.)
 Sunshine Mining Co. (Au, Ag, Pb, Zn, Cu, expl.)
 Wild River Ventures (Au, develop. prod.)

WESTERN

Anaconda Minerals Co. (Cu, Pb, Zn, Sn, W, Mo, Au, Ag,
 expl.)
 ASARCO Inc. (Au placer, expl.)
 Rhinehart Berg (Au, Ag placer, expl.)
 Berg-Wetlesen (Au, Ag, expl.)
 Compass Mining Co. (Au placer, prod.)
 Duval Corp. (Au, Ag, Sn, expl.)
 Green Mining and Exploration (Au, placer and hard rock/
 expl.)
 Howard P. Guthrie, Guthrie Land Co. (Au, placer/expl./
 develop.)
 Hunt Oil Co./Minerals Div. (Sn, expl.)
 Maurice Kelliher (Au placer, expl./prod.)
 Hugh Lindfors, Iron Creek Co. (Au, assess.)
 Lost River Mining Co. (Sn placer, expl./develop./prod.)
 Frank W. McIntyre (Au, Ag placer, expl.)
 Nimco Mining (Au, placer/expl.)
 Shag Mining Co. (Au placer, develop./prod.)
 Tomkin & Associates (Au, placer/expl./develop.)
 Union Oil/Molycorp. (Y, expl.)

EASTERN INTERIOR

A & B Placer (Au, placer/expl./develop.)
 Alaska Mineral Services (expl./develop.)
 Albett Mining Company (Au placer, prod.)
 AMAX Exploration Inc. (precious metals, expl.)
 Anaconda Minerals Co. (base and precious, expl.)
 Bear Creek Mining Co. (Pb, Zn, Ag, Sn, expl.)
 William E. Bell (Au placer, expl./develop.)
 Donald Blakely (Au placer, expl.)
 Walter Bullwinkle (Au, placer/expl./develop.)
 Jeffrey Burton & Associates (Au, expl.)
 Dickie L. Byrd (Au, Fe, expl.)
 CJ Equipment Services (Open-pit gravel)
 Rod Christensen (Au placer, expl./develop.)
 John Cook (Au placer, develop./prod.)
 D.J.M. Construction and Mining (labor supply)
 Delta Smelting & Refining Alaska, Inc. (precious-metal
 refining)
 Green Mining & Exploration (Au, placer/prod.)
 Greenhorn Mining (Au placer, prod.)
 Heflinger Mining & Equipment Co. (Au placer, prod.)
 Herning Exploration and Mining Co. (Au, expl.)
 High Bench Placers (Au placer, expl./prod.)
 Hoosier Creek Mining (Au placer, prod.)
 Michael C. Hromodka (Au placer, expl./develop.)
 Lloyd D. Hubbard (Au placer, expl.)
 Hunt Oil Co./Minerals Div. (base and precious, expl.)
 J & M Mining (Au placer, expl.)

Kantu Minerals (Au placer, expl./prod.)
 M. T. Killion (Au placer, prod.)
 Kin Alaska et. al. (expl.)
 Jock LaCross (Au, placer, expl./develop./prod.)
 La-Rowe Mining & Development Co. (Au, placer/prod./
 develop.)
 Livengood Joint Venture (Au placer, prod.)
 Lucky "7" Mining Co. (Au, W, placer/expl./prod.)
 Magic Circle, Inc. (Au placer, prod.)
 Ray Malesky (Au placer)
 R. S. McCombe (placer, lode, expl./prod.)
 Mohawk Resources Alaska, Inc. (Au, Ag, Pb, hard rock, placer,
 expl./develop./prod.)
 Nelson Mining Co. (Au placer, expl./develop.)
 Northern Lights Exploration Co. (expl.)
 Patino, Inc. (Pb, Zn, Ag, W/expl.)
 M. A. Pavey (Au placer, expl./prod.)
 Phelps-Dodge/Getty Oil & Mining (expl.)
 Phillips Petroleum Co. (expl.)
 Pipedream Mining & Mineral Exploration (Au, W, placer,
 expl./develop./prod.)
 Pittman Mines (Au, placer/expl.)
 Polar Construction & Mining Co. (Au, Ag, placer/expl./
 develop./prod.)
 Putnam Enterprises (Au placer, develop.)
 Ranchers Exploration and Development Corp. (Au placer,
 expl./prod.)
 Resource Associates of Alaska, Inc. (base and precious, expl./
 develop.)
 Rhode Island Creek Mines (Au placer, expl./prod.)
 Rudy's Enterprises (gravel/develop.)
 St. Joe American Corp. (Au, hard rock, expl./develop.)
 Swan Mark Enterprises (Au placer, expl./develop.)
 Talmo, Inc. (Au placer, prod.)
 Texas Placer Mining (partners W/Dames & Moore) (Au, placer/
 expl./prod./develop.)
 Thistle Creek Mining Co. (Au, placer/expl./develop./prod.)
 Mark Thoennes (hard rock, expl.)
 University of Alaska, Fairbanks, (develop.)
 Frank J. Vana (Au, placer/expl.)

SOUTHWESTERN

Anaconda Minerals Co. (base and precious, expl.)
 Bear Creek Mining Co. (Cu, Pb, Zn, Ag, Au, expl.)
 Bowman Group (Au placer)
 Hansen Properties, Inc. (Pt placer, develop./prod.)
 Hunt Oil Co./Minerals Div. (base and precious, expl.)
 JFM & Associates (Au placer, Pt, Ti, expl.)
 Miscovich and Walsh Mining Co. (Au, Ag, placer, prod.)
 Phillips Petroleum (base and precious, expl.)
 R & H Mining, Inc. (Hg, expl.)

SOUTHCENTRAL

Alkam Corp. (Au, placer/expl.)
 Anaconda Minerals Co. (base and precious, expl.)
 Robert A. Arney (Au placer, expl.)
 Bear Creek Mining Co. (Cu, Mo, expl.)
 Bill Bradley (Au, placer, expl.)
 Brass Monkey Ranch (gravel, prod.)
 CCCu, Inc. (Au, Mo, Co, base metals, expl.)
 Chugach Natives (gravel prod./coal, expl.)
 Waldo & Ruby Cogle (gravel/prod.)
 Cominco American, Inc. (W/expl.)

Mike A. Conner (Au, Ag, W, placer, expl./develop.)
 Ernest M. Cuzzocreo (Au placer, expl./prod.)
 Diamond Shamrock JV Diamond Alaska Coal Co. (coal,
 develop.)
 Enserch Exploration, Inc. (Au, expl.)
 Finnbear Mining & Exploration Co. (Au, PGM, expl./prod./
 develop.)
 Clarence Fry (Au, Ag, W placer, expl./develop.)
 Geneva Pacific Corp. (base and precious/expl.)
 H & H Exploration & Mining (Au/expl.)
 Warren Henry (Au placer, expl./prod.)
 J & S Mining (expl./develop.)
 Joint Venture Mining Co. (Au, placer/expl./prod.)
 Jones & Co. (Au, Ag placer, expl./develop.)
 Les Kosyuan (Au placer)
 Landtec Natural Resource Company (Au placer, develop.)
 Harvey Lindenschmidt (Au, Ag, Pt, expl./develop.)
 Luke's Mining Co. (gravel, prod.)
 Mt. McKinley Gold, Inc. (Au placer, expl.)
 Mobil Coal Resources, Inc. (coal, expl.)
 Nelchina Mines (Au, Pt placer, expl./develop.)
 Paul Omlin (coal/prod.)
 Placer Amex (coal/prod.)
 Dan Renshaw (Au, hard rock, expl./develop.)
 Rock Hard Mining Co. (Au, placer, expl.)
 Sherman C "Red" Smith (limestone, hard rock, placer, expl./
 develop.)
 Silver Star Mining Co. (Au, Ag, expl./develop.)
 Y R. Stubblefield (Au, placer/expl.)
 Sunrise Consolidated Mines (Sb, Au, Ag, Ti, building stone,
 placer/expl.)
 Dennis D. Wilkins (Au, placer/expl.)

ALASKA PENINSULA/KODIAK

Alaska Apollo Gold Mines, Ltd. (Au, Cu, expl./develop.)
 Resource Associates of Alaska, Inc. (Au, Ag, Pb, Zn, expl.)

SOUTHEASTERN

AMAX Exploration Inc. (precious metals, expl.)
 AMOCO Minerals Co. (Cu, Mo, expl.)
 Bear Creek Mining Co. (Cu, Pb, Zn, Ag, Au, expl.)
 E. O. Bracken (expl.)
 Duval Corp. (Au, Ag, Sn, expl.)
 Exploration Ventures Co., Inc. (Au, Ag, expl./develop.)
 Exxon Minerals, Inc. (base metals, expl.)
 G & L Placers (Au, placer/develop.)
 Hyak Mining Co (Au, Ag, Pb, Zn, expl.)
 Juneau Mining Co. (Au placer, develop.)
 Juneau Ready-Mix, Inc. (sand and gravel, develop./prod.)
 Kendrick Bay Mining Co. (U, expl.)
 Ketchikan Ready-Mix & Quarry, Inc. (Basalt quarry, prod.)
 Noranda Exploration, Inc. (base and precious, develop.)
 Phillips Petroleum Co. (expl.)
 Resource Associates of Alaska, Inc. (base and precious, expl.)
 John Schnabel (Au placer, expl./prod.)
 Standard Metals Corp. (U, expl.)
 U.S. Borax & Chemical Corp. (Mo, develop.)

STATEWIDE

Consolidation Coal Co. (coal, expl.)
 Houston International Minerals Co. (base and precious, expl.)
 Noranda Exploration, Inc. (base and precious, expl.)
 Utah Mines, Ltd. (coal, base, and precious, expl.)

Appendix C

Alaska State, Federal, and Private Agencies Involved in Mineral-Development Activities, 1982

STATE OF ALASKA AGENCIES:

- A. Department of Commerce and Economic Development
State Office Building, 9th Floor
Pouch D
Juneau, Alaska 99811
(907) 465-2500
Commissioner - Richard Lyon

Function: To promote economic development in Alaska.

Office of Mineral Development
675 7th Avenue, Station A
Fairbanks, Alaska 99701
(907) 452-7464
Director - John Sims

Function: An advocacy agency that provides a liaison between state government and the private sector of the mining industry in Alaska. Provides assistance to the mining loan program; plays an active role in the development of mining in the State.

- B. Department of Environmental Conservation
3220 Hospital Drive
Pouch O
Juneau, Alaska 99811
(907) 465-2600
Commissioner - Richard Neve

Function: Sets regulations for water-quality standards in placer mining areas and monitors these areas to see if the standards are being met.

- C. Department of Fish and Game
P.O. Box 3-200
Juneau, Alaska 99802
(907) 465-4100
Commissioner - Don Collinsworth

Function: Habitat protection in salmon streams. A state game-refuge permit is required for any construction, exploration, or development work in a designated refuge. An applicant should submit plans for anticipated use.

- D. Department of Natural Resources
State Office Building, 11th Floor
Pouch M
Juneau, Alaska 99811
Commissioner - Esther Wunnicke

Divisions and offices:

1. Division of Geological and Geophysical Surveys (DGGS)
3001 Porcupine Drive
Anchorage, Alaska 99501
(907) 274-9681

State Geologist - Ross G. Schaff
Deputy State Geologist - Bill Barnwell
(Anchorage)
Deputy State Geologist - Wyatt G. Gilbert
(Fairbanks)

Function: Conducts geological studies statewide and inventories water, mineral, and energy resources. Maintains a file of all known mineral occurrences and prospects and of patented and unpatented claims staked in Alaska since 1953. Libraries of geological bulletins, other published reports, and periodicals are maintained. Conducts mineral analyses at DGGS research laboratory at the University of Alaska, Fairbanks.

DGGS Mining Information Offices located at:

794 University Avenue
P.O. Box 80007
College, Alaska 99708
(907) 474-7147

State Office Building, 11th Floor
Pouch M
Juneau, Alaska 99811
(907) 465-2414

3601 C Street
Pouch 7-005
Anchorage, Alaska 99510
(907) 263-2205

State Office Building, 2nd Floor
P.O. Box 2438
Ketchikan, Alaska 99801
(907) 225-4181

DGGS Mineral Laboratory and Assay Office
O'Neill Building, 2nd Floor
University of Alaska
P.O. Box 80007
College, Alaska 99708
(907) 474-7122

2. Division of Minerals and Energy Management (DMEM)
555 Cordova Street, Olympic Bldg.
Pouch 7-034
Anchorage, Alaska 99510
(907) 276-2653
Director - Kay Brown
Deputy Director, Minerals - David Hedderly-Smith

Function: State regulatory agency on mining claims and mineral (oil and coal) leases. Maintains a case file for each claim, which is available for public inspection at the division's office. It does not determine validity of claims or settle claim disputes.

3. Division of Land and Water Management
555 Cordova Street, Olympic Bldg.
Pouch 7-005
Anchorage, Alaska 99510
(907) 276-2653
Director - Thomas Hawkins

Function: Manages state lands and determines their use. Maintains land-status maps. Issues leases on state leasable minerals such as coal. Regulates water use. Miscellaneous-use permit is required for use of explosives, hydraulic equipment, or heavy equipment drilling deeper than 300 feet in exploration.

Southeast District Land Office
Pouch M
Juneau, Alaska 99811
(907) 465-2415
Mar Winegar

Southcentral District Land Office
3327 Fairbanks Street
Anchorage, Alaska 99503
(907) 279-7696
Lawrence A. Dutton

Northcentral District Land Office
4420 Airport Way
Fairbanks, Alaska 99701
(907) 479-2243
Jerry Brossia

4. Division of Forestry
555 Cordova Street
Pouch 7-005
Anchorage, Alaska 99510
(907) 276-2653
Director - Theodore Smith

Function: Regulates mining in state forests.

- E. Department of Revenue
State Office Building, 11th Floor
Pouch S
Juneau, Alaska 99811
(907) 465-2300
Commissioner - Bob Heath

Function: Issues mining licenses and collects taxes on production.

- F. University of Alaska
Fairbanks, Alaska 99701
(907) 474-7565

1. College of Environmental Sciences
Geology/Geophysics Program
Division of Geoscience (B.S., M.S., Ph.D.)
Department Head - Richard C. Allison
2. School of Mineral Industry
(907) 474-7366
Acting Dean - David R. Maneval

Department of Mineral Engineering (B.S., M.S.)
Mining Engineering (B.S., M.S.)
Geological Engineering (B.S., M.S.)
Mineral Preparation Engineering (M.S.)
Petroleum Engineering (A.S., M.S.)
(907) 474-7388
Department Head - Frank J. Skudrzyk

3. Arctic Environmental Information and Data Collection
Provides information and data dealing with the Arctic environment.
707 A Street
Anchorage, Alaska 99501
Director - David Hickok

4. Mineral Industry Research Laboratory
Laboratory and field-study reports are available for purchase. General information concerning mining, tries to meet miners' needs and answer their questions.
209 O'Neill Building
University of Alaska
Fairbanks, Alaska 99701
Acting Director - David R. Maneval

FEDERAL AGENCIES

A. U.S. Department of the Interior

1. Bureau of Land Management (BLM)
Pouch 7-512
Anchorage, Alaska 99501
State Director - Curtis McVee

District Manager - Carl Johnson
Fort Wainwright
Fairbanks, Alaska 99701
(907) 356-2025

Function: Administers federal lands not otherwise designated. Records federal mining claims and annual assessment affidavits. Administers and records all leases on leasable minerals, i.e., oil, gas, and coal, phosphates, and oil shale. Arranges for sale of other than locatable and leasable minerals, i.e., sand, gravel, stone, etc. Issues right-of-way and special-use permits. Controls regulations to prevent surface damage. Maintains land-status plats and issues patents.

2. U.S. Geological Survey (USGS)
218 East Street
Anchorage, Alaska 99501
Chief - David Carneggie

Function: Concerned with physical resources, the configuration and character of the land surface, the composition and structure of the underlying rocks, and the quality, volume, and distribution of water and minerals.

3. U.S. Bureau of Mines (USBM)
P.O. Box 550
Juneau, Alaska 99801
(907) 364-2111
Chief - John Mulligan

Function: Research on mineral deposits and metallurgy. Handles data on minerals availability and has a record of mine names and locations of both past and present mines. Has a mine-map repository.

4. National Park Service
Pouch 7-512
Anchorage, Alaska 99501
Director - John Cook
Chief, Lands and Mining - Richard Stenmark

Function: Administers lands under jurisdiction of the National Park Service in Alaska; includes active mining districts in the Kantishna Hills, Wrangell Mountains, and other areas. Ensures compliance with laws in D-2 Lands Resolution.

B. U.S. Department of Labor

1. Mine Safety and Health Administration (MSHA)
117-107th Avenue N.E.
Bellevue, Washington 98004
(206) 442-5455
Director - Ken Russell

Function: Mine health, safety administration for mines other than coal. Conducts training and safety classes for federal and state mine inspectors and mining personnel. Research in mine safety. (There is no mine-safety inspector in Alaska. Periodically an inspector from Washington State inspects and enforces safety rules and regulations.)

2. Mine Safety and Health Administration
P.O. Box 25367
Denver Federal Center
Denver, Colorado 80225
Regional Manager - John Martin

Function: Mine safety and health administration for coal mines. The duties are the same as for mines other than coal, with additional responsibility in certifying permissible equipment for use in coal mines, dust inspection; cooperates with State mine inspectors who certify foremen and other coal workers. Mine inspectors come to Alaska from Price, Utah, or Denver, Colorado.

C. U.S. Department of Agriculture

1. U.S. Forest Service (USFS)
Federal Building
P.O. Box 1682
Juneau, Alaska 99802
Regional Forester - John Sandor

Function: Provides mineral-material permits for mining and prospecting in national forests. Because the USFS has responsibility for management and protection of surface resources, an "Intent to Operate" or a "Plan of Operations" must be completed in cases where substantial surface disturbances may occur. Lead agency with respect to Quartz Hill and Greens Creek projects, Southeast Alaska.

D. U.S. Department of Environmental Protection (EPA)

Federal Building
Alaska Operations Office
701 C Street
Box 19
Anchorage, Alaska 99513
(907) 271-5083
Director - W. James Sweeney

1200 6th Avenue
Park Place Building
Seattle, Washington
Regional Administrator - John Spencer

Function: Regulates effluent discharges and air quality. Issues general permits to placer miners.

E. Department of Defense

U.S. Army Corps of Engineers
Regulatory Functions Branch
Geology and Exploration Section - Peter Williamson
P.O. Box 7002
Anchorage, Alaska 99510
Chief - Colonel Lee R. Nunn

Function: Discharge of dredge or fill material into U.S. navigable waters. Issues Department of the Army permits. Reviews defense requirements for fuel, including certification of coal mines.

PRIVATE AGENCIES

Resource Development Council for Alaska, Inc.
447 West 7th Avenue, Box 516
Anchorage, Alaska 99501
(907) 278-9615

Northwest Mining Association
633 Peyton Building
Spokane, Washington 99201
(509) 624-1158

Alaska Geological Society
717 K Street, P.O. Box 1288
Anchorage, Alaska 99510

Alaska Miners Association, Inc.
509 West 3rd Avenue, Suite 17
Anchorage, Alaska 99501
(907) 276-0347

Mineral Industry Research Laboratory
School of Mineral Industry
University of Alaska
College, Alaska 99708
(907) 474-7135

American Institute of Professional Geologists
Box 957
Golden, Colorado 80401

Appendix D

Significant Mineral Prospects and Deposits in Alaska

Unless otherwise noted in text, all reserve and resource estimates are unofficial.

1. **Lik, Sue** - Major stratabound massive-sulfide (Zn-Pb-Ag-Cd-barite) deposit in black shales and cherts; eastward extension of mineralized belt containing deposit/prospect at localities 1 and 2; inferred reserve (Lik) estimate of 25 million tons of 10% combined Pb+Zn and 3 oz/ton Ag.
2. **Red Dog** - Major stratabound massive-sulfide occurrence similar to locality 1. According to Cominco (Feb. '82), "Red Dog has 85 million tons of 17.1% Zn, 5% Pb, 2.4 oz/ton Ag."
3. **Avan Hills** - Unexplored chromite occurrences and Ni geochem anomalies in layered ultramafic complex.
4. **Drenchwater** - Stratabound massive-sulfide (Pb-Zn-Ag) occurrence associated with black shale, chert, and felsic volcanics; 60' x 150' exposure averages 3.0% Pb, 17.4% Zn, and 3.3 oz/ton Ag; numerous sulfide occurrences and strong geochemical anomalies between localities 1-4 and locality 7.
5. **Misheguk Mountain** - Chromite occurrences in ultramafic complex; potential exists for similar occurrences in belt between localities 5 and 6.
6. Significant fluorite mineralization; grades of up to 78% fluorite reported.
7. **Porcupine Lake** - Stratiform fluorite occurrence; traced for approximately 2 miles; grades of up to 25-30% fluorite reported.
8. Stratiform Cu mineralization in chert; stratabound massive-sulfide potential similar to that at localities 1, 2, 4 and 7.
9. Phosphate deposits occur in two stratigraphic formations (Lisburne and Shublik) which extend across the entire northern Brooks Range, grades of up to 35.8% P₂O₅ reported.
10. **Esotuk Glacier** - Mo-Sn-W-Pb-Zn potential in intrusive complex and associated skarns.
11. **Omar-Frost** - Cu replacement (Ruby Creek type, locality 26) and stratiform barite Zn-(Cu) occurrences in carbonates; resources of 1 to 10 million tons, barite at one occurrence.
12. **Klery Creek, Caribou Creek, Gold Run Creek, Joe Creek** - High-grade gold accumulations in placer gravels.
13. **Klery Creek** - Lode Au deposit; worked intermittently from 1909 through 1930's. Total production through 1931 estimated at about 31,320 oz, which probably includes placer production.
14. **Smucker** - Massive-sulfide deposit; significant tonnages of Cu-Zn-Pb ore; 3,000 ft. strike length; active exploration.
15. **Bornite** - Major stratiform copper-zinc deposit in carbonate; 5 million tons grading 4-12% Cu. Larger reserve estimate of 40 million tons of about 2% Cu and an undisclosed amount of zinc and cobalt.
16. **Arctic** - Major stratabound massive-sulfide deposit in sequence of metarhyolites, metatuffs, and graphitic schists; current drilling indicates reserves of 30-35 million tons of 4.0% Cu, 5.5% Zn, 1.0% Pb and 1.5% oz/ton Ag.
17. Skarn deposit; 100 ft. by 300 ft. zone with approximately 1% WO₃-Sn.
18. **Sun** - Major stratabound massive-sulfide deposit in sequence of metarhyolites and schists; drilling through 1976 indicated gross metal value of approximately \$1 billion.
19. **Ernie Lake** - Potential for major stratabound massive-sulfide deposits. Gossan zones found with strongly anomalous Cu-Pb-Zn-Ag values; not explored because of land status.
20. High-grade replacement (?) Pb-Zn-Ag deposits in carbonates; grades of up to 20% Pb + Zn reported; active claims.
21. Stratiform massive sulfide Cu-Pb-Zn-Ag prospects; gossans of massive sulfides common.
22. Stratiform Cu-Pb-Zn mineralization; grades of up to 3% Cu reported.
23. Stratiform (?) Cu mineralization in calcareous schist along 5-mile-long belt; grades of up to 1% Cu reported; active claims.
24. **Koyukuk-Nolan District** - Major placer-Au region; substantial production (290,000 oz) from 1893 to present; significant deep placer reserves remain unmined.
25. Porphyry-Cu prospects with associated skarn deposits; potential for small deposits grading over several percent Cu.
26. High-grade Cu-Zn occurrences with values up to 10% Cu and 10% Zn.
27. High-grade Cu and Cu-Zn-(Pb)-(Ag) skarn (?) prospects with potential for large tonnages; grades of up to 10% Cu and 5% Zn reported.
28. **Geroe Creek** - Porphyry Mo-Cu prospect; grades of up to 0.1% Mo reported; active claims.
29. **Chandalar District** - Major Au district; substantial production (greater than 30,000 oz Au) from both placer and vein deposits; active exploration, development, and minor production since early 1960's.

30. **Wind River, N. Fork Chandalar(?)** - Stratabound massive sulfide (Pb-Zn) prospects; grades of up to 5% Zn and 6% Pb reported.
31. Stratiform massive-sulfide Cu-Pb-Zn-Ag potential; grades of up to 5% Zn, 1% Cu, 1% Pb and 0.5 oz/ton Au reported; active claims.
32. Stratiform barite - (Cu-Pb-Zn-Ag) potential.
33. **Bear Mountain** - Major stockwork Mo-(W)-(Sn) occurrence in intrusive breccia; strongly anomalous Mo-W geochem anomalies.
34. Stratiform massive-sulfide potential; widespread galena (Pb) mineralization; grades of up to 30% Pb and 1% Cu reported; strongly anomalous Pb and Zn geochem values in stream sediments.
35. **Lost River** - Major tin, fluorite, tungsten, and beryllium deposits, 38 million tons of ore inferred from at least 45,000 ft. of drilling.
36. **Ear Mountain** - Placer Sn district and Sn-Cu-(Au-Ag-Pb-Zn) skarn deposits; area is also strongly anomalous in uranium.
37. **Kougarok Mountain** - Significant tin occurrence; new discovery.
38. Active uranium claims; uranium soil geochemical anomalies up to 0.05% U₃O₈.
39. **Hannum** - Stratiform massive-sulfide Pb-Zn-Ag prospects; 30- to 150-foot thick zone of oxidized Pb-Zn-Ag mineralization with a potential strike length of over one mile; oxidized material assays up to 12% Pb + Zn and 2 oz/ton Ag.
40. Stratiform massive-sulfide Pb-Zn-Ag-Au prospects; strongly anomalous soils and gossans; potential for a very large mineralized horizon.
41. **Independence Creek** - Stratiform massive-sulfide Pb-Zn-Ag prospect; high grade ore shipped in 1921 contained 30% Pb, 5% Zn, and 33 oz/ton Ag.
42. Substantial placer Au reserves; active exploration.
43. **Aurora Creek** - Stratiform massive-sulfide Pb-Zn-Ag-barite-fluorite prospects; mineralization of large extent.
44. Tungsten-antimony-gold lodes with up to 3% WO₃, and stratiform (?) massive-sulfide Pb-Zn-Ag mineralization with up to 8% Pb + Zn.
45. **Nome** - Major placer-Au district; substantial production (4,348,000 oz Au) from some of the world's richest placer deposits.
46. Stratiform massive-sulfide Pb-Ag-(Zn) prospect in carbonate; grades of up to 23% Pb and 20 oz/ton Ag reported.
47. **Big Hurrah** - Major Iode-Au deposit; contains significant W mineralization; produced over 10,000 oz Au.
48. **Solomon District** - Placer-Au district; produced over 250,000 oz Au from placers; vein deposits in area contain up to 8.5 oz/ton Au.
49. **Kachauik** - Uranium prospect in intrusive rocks; highly anomalous thorium geochemical values of up to 1,000 ppm U.
50. **Omaliik** - Stratiform (?) massive-sulfide Pb-Zn-Ag prospects in carbonates; produced Pb-Ag ore between 1881 and 1890 that averaged about 10% Pb and 40 oz/ton Ag; grades of oxidized zinc ore up to 34% Zn reported.
51. **Windy Creek** - Significant Mo-F mineralization; values up to 0.15% Mo reported.
52. **BCU** - The Darby pluton is known to be highly anomalous in U and Th; active exploration.
53. **Anzac Creek** - Significant uranium geochemical anomalies occur in and around intrusive complex; active exploration.
54. **Quartz Creek** - Significant Pb-Zn-Ag mineralization; values up to 15% Pb + Zn and 10 oz/ton Ag; altered zone 18 miles long and 2 to 5 miles wide; active exploration.
55. Significant Pb-Zn-Ag mineralization; values greater than 3% Pb + Zn and 1 oz/ton Ag reported; active exploration.
56. **Placer River** - Significant Mo-F mineralization disseminated in intrusive rock; values greater than 0.2% Mo reported; active exploration.
57. **Candle Creek** - Placer Au deposits with significant reserves blocked out; uranium in placer concentrate assays up to 3.8% uranium.
58. Numerous uranium occurrences associated with alkaline intrusive complexes; active exploration.
59. Uranium occurrence; values up to 500 ppm uranium reported.
60. **Purcell Mountain** - Uranium occurrences associated with alkaline-intrusive complex; active exploration.
61. **Hogatza** - Placer dredge operation; Au deposit, substantial production from 1957 to 1975; dredge reactivated in 1981; nearby Utopia Creek productive 1930-1962.
62. **Bonanza Creek** - Recent discovery of significant tungsten mineralization along intrusive contact zone; similar to recent discoveries in Yukon Territory, Canada.
63. **Ruby District** - Placer-Au-Sn district; produced about 420,000 oz Au between 1931 and 1960 and undisclosed amount of tin; district also contains Pb-Ag prospect with up to 82 oz/ton Ag (potential for significant stratabound massive-sulfide deposits).
64. **Hot Springs District** - Placer-Au-Sn district; produced about 450,000 oz Au and over 600,000 pounds of tin through 1968.

65. **Tolovana District** - Active placer and lode Au district; produced 387,000 oz Au up to 1960; larger placer-gold reserves are unmined.
66. **Lime Peak** - Uranium mineralization.
67. **Fairbanks District** - Seventh largest gold district in the United States and largest gold producer in Alaska. Major lode-Au districts with significant tungsten and antimony mineralization; produced 239,247 oz of lode Au prior to 1960 and over 4 million pounds Sb through 1970. 7,700,753 ounces of Au taken from placer deposits through 1982.
68. **Mt. Prindle** - Significant uranium/rare-earth mineralization; rock geochemical values up to 0.1% U₃₀₈ reported; active exploration.
69. **Twin Mountain** - Significant skarn-type tungsten deposit, new discovery.
70. **Circle Mining District** - District with numerous active placer-Au claims, uranium anomalies (up to 6.0% uranium in rock), and tungsten mineralization. District has produced over 800,000 ounces of gold since 1893.
71. **Three Castle Mountain, Pleasant Creek, Casca VABM** - Stratabound (?) massive-sulfide Pb-Zn mineralization; grades of up to 17% Zn and 2% Pb reported.
72. **Poovookpuk Mountain** - Porphyry Mo mineralization occurs at several localities within the Sevoukok Pluton; grades of up to 0.25% MoS₂ reported.
73. **Flat District** - Major placer-Au district; produced 1,364,404 oz Au; district is currently active with moderate placer reserves; potential for very large resource of lode Au and W at complex Golden Horn lode deposit (W-Au-Zr-Cr-Hf-Hg-Sb).
74. **Ophir District** - Placer-Au district with significant lode Au-Sb-Hg mineralization; produced more than 540,000 oz placer Au (includes Tolstoi and Candle Creek).
75. **Nixon Fork Deposits** - Major lode Au-Cu district; one mine produced between 40,000 and 60,000 oz Au.
76. Numerous metasomatic hydrothermal tungsten-silver-base-metal occurrences in Farewell mineral belt.
77. Significant disseminated Cu-Ni-Au mineralization; discovered in 1976.
78. Significant Cu-Ag-Au deposit; recently discovered and explored.
79. **Purkypile** - Significant Ag-Sn-Be mineralization associated with granitic intrusions; grades of up to 4.5 % Sn over mining widths; area also has uranium and tungsten potential.
80. Significant massive and disseminated chromite occurrences associated with ultramafic complexes; discovered in 1975 by USGS.
81. **Kantishna District** - Major placer-Au and lode-Ag-Au-Pb-Zn-Sb-W district; produced about 65,000 oz placer-Au, about 260,000 oz lode Ag, and several million lbs Sb; lode deposits very high-grade (Ag grade averaged 157 oz/ton); potential for significant Ag-Au-Pb-Zn deposits; active claims.
82. **Stampede Mine** - Major Sb deposit; produced about 3.5 million lbs Sb; highly anomalous stream sediments in area (up to 1,900 ppm Zn, 2,200 ppm Pb, 500 ppm Cu, 3.0 ppm Ag) indicative of stratabound massive-sulfide deposits.
83. **Chitsia Mountain** - Significant stratabound massive-sulfide barite Pb-Zn-Ag occurrences; grades of up to 3% Pb, 1% Zn, and 1 oz/ton Ag reported in oxidized rock; low-grade mineralized zones up to 6 miles long and ¼ mile wide; a major stratabound massive-sulfide belt extends eastward from this locality across the entire northern Alaska Range.
84. Significant Sn-Ag-Zn skarn prospect; discovered in 1976.
85. Stratiform Cu-Au-Ag-Sb prospect; mineralized zone about 10,000 feet by 3,000 feet; grades of up to 0.7% Cu, 9 oz/ton Ag, 1.8 oz/ton Au, and 0.7% Sb reported.
86. Significant Sn-Ag-(Cu-Pb-Zn) mineralization; grades greater than 0.1% Sn, 15 oz/ton Ag, 2% Pb, and 1% Zn reported; veins exposed over 1.5-mile strike length.
87. **Golden Zone Mine** - Major Au-Cu-Ag deposit in breccia pipe; produced about 1,581 oz Au, 8,617 oz Ag, and 42,000 lbs Cu; proven reserves of about 10 million tons of 0.1 oz/ton Au with Cu and Ag.
88. **Nim Prospect** - Porphyry Cu-Ag ± Au prospect; grades of up to 5.0% Cu and 9 oz/ton Ag reported.
89. **Sheep Creek and Liberty Bell** - Massive-sulfide deposits; the latter is a stratiform deposit with 100,000 tons of ore blocked out; former contains stanniferous zones similar to Sullivan, B.C. deposits and grades of up to 4% Cu, 14.5% Zn, 6% Pb, and 7.6 oz/ton Ag.
90. **Denali Prospect** - At least six small stratabound Cu lodes contain almost \$200 million of Cu at current prices.
91. **Lichen Prospect** - Copper-precious metal stratabound deposit.
92. **Anderson Mountain, Dry Creek, Virginia Creek** - Significant stratabound massive-sulfide Cu-Pb-Zn-Ag prospects; potential for large, high-grade deposits; active claims and exploration.
- 93-94. **Delta massive-sulfide belt** - Contains over 30 deposits and occurrences of precious-metal-enriched base-metal massive-sulfide lodes; active exploration.
95. **Chistochina** - Porphyry-Cu prospect and placer-Au district; substantial placer-Au production; large placer reserves. Small amounts of Pt also recovered. District produced in excess of 177,000 ounces of gold.
96. Porphyry Cu-Mo prospects; potential for discovery of significant tonnages of supergene-enriched ore such as at locality 120; active claims and exploration.
97. **Mosquito, Peternie** - Porphyry-Mo prospects; grades of up to 0.17% MoS₂ reported in drill intercepts; active claims and exploration.

98. **Slate Creek** - 61 million tons of 5-6% chrysotile fiber; major asbestos deposit; potential for large reserves of mineable-grade material; active exploration.
99. Stratabound (?) massive-sulfide Cu-Pb-Zn-Ag mineralization; grades of up to 1% Cu, 5% Zn, 3% Pb, and 2 oz/ton Ag reported.
100. **Fortymile District** - Numerous active placer-Au deposits; lode-Au deposits and W mineralization also occur in area. District has produced over 417,000 oz Au from placer deposits.
101. Significant stratabound massive-sulfide prospect; values up to 0.52% Cu, 2.5% Pb, and 5 oz/ton Ag in oxidized rock reported; active claims and exploration.
102. **Taurus** - Major porphyry-Cu-Mo prospect; potential for large reserves of 0.5% Cu and 0.05% MoS₂; active exploration and claims.
103. **Big Creek or Ledue** - Stratabound massive-sulfide prospect; moderate- to high-grade Pb-Zn-Ag in drill intercepts.
104. **Red Devil** - Major Hg deposit; mine produced approximately 35,000 flasks of Hg intermittently between 1940 and 1972.
105. **Apollo Mine** - Major lode-Au deposit; produced about 107,900 oz Au from ore that averaged about 0.22 oz/ton Au. Inferred reserve, equal to about what was previously mined.
106. **Pyramid** - Porphyry-Cu-Mo deposit; reserves of 100 million tons of 0.5% Cu and 0.03% Mo; strong stream-sediment-geochemical anomalies (up to 500 ppm Cu, 700 ppm Pb, 20 ppm Ag, and 70 ppm Mo) several miles to the north suggest this area has similar potential for porphyry-Cu-Mo deposits.
107. **Ivanof** - Porphyry-Cu prospect; grades of up to 0.72% Cu reported; potential for large tonnages of low-grade Cu mineralization.
108. **Mallard Duck Bay** - Porphyry prospect.
109. **Cathedral Mountain, Braided Creek** - Stratabound deposit.
110. **Warner Bay** - Porphyry prospect.
111. **Weasel Mountain, Bee Creek** - Porphyry Cu-Mo prospect; grades of up to 0.48% Cu and 0.035% Mo reported; potential for moderate tonnages of low-grade Cu mineralization.
112. Porphyry-Cu prospect; grades of up to 0.56% Cu reported; potential for moderate tonnages of similar grade material.
113. **Mike Deposit** - Porphyry-Mo prospect; grades of up to 0.21% MoS₂ in rocks and 350 ppm Mo in stream sediments reported; potential for large tonnages of low grade Mo mineralization.
114. **Rex Deposit** - Porphyry-Cu prospect; grades of up to 0.3% Cu reported; potential for moderate reserves of similar grade material; numerous stream sediment and color anomalies (gossans) indicative of porphyry-Cu-Mo mineralization occur between localities 104 and 110; the entire Gulf of Alaska side of the Alaska Peninsula is a major porphyry Cu-Mo belt (province) that is continuous with a major porphyry Cu-Mo belt in the Alaska Range to the northeast.
115. Porphyry-Mo prospect associated with intrusive breccia.
116. **Goodnews Bay** - Major Pt-placer district; estimated to have produced over 540,000 oz of the PGM between 1934 and 1976; the largest commercial resource of PGM metals in the United States; reserves of approximately 60 million cubic yards possible.
117. **NYAC Gold District** - Large reserves of auriferous gravel.
118. **Dutton** - Significant stratiform Cu occurrences; mineralization in basic volcanics occurs over several square miles with up to 5% Cu.
119. **Dureya** - Porphyry-type Cu-Mo mineralization in intrusive complex; up to 3.3% Cu in veinlets.
120. **Tak II** - Stratiform massive-sulfide Cu prospect; massive pyrite with several percent Cu; prospect similar to that of major deposit at locality 150.
121. Major stratabound massive-sulfide Pb-Zn-Ag-Au-barite mineralization in felsic volcanics and tuffs; consistent grade of 1% Cu, 2% Pb, 1-5% Zn, 0.75 oz/ton Ag, 0.03-0.09 oz/ton Au, and 15-30% barite reported; potential for major deposit.
122. **Kasna Creek** - Major stratiform massive-sulfide deposit; proven reserves of over 10 million tons of greater than 1% Cu; potential for over 30 million tons of greater than 1% Cu, other Cu, Pb, and Zn occurrences in area have similar potential.
123. Significant porphyry-Cu-Ag prospects; strongly leached rocks contain up to 0.3% Cu, 14 oz/ton Ag, 0.15% Pb and 0.36% Zn over mineralization zones in excess of 500 feet wide and 2,000 feet long.
124. Significant porphyry-Cu mineralization in volcanic-intrusive complex; stream-sediment samples over several square miles are strongly anomalous in copper (360-1,250 ppm).
125. **Magnetite Cove** - Massive iron-skarn deposits; grades of 10-30% Fe₃O₄ common; local rock samples contain up to 13% Zn, 6.6% Cu, and 10 ppm Ag.
126. Significant porphyry-Cu-Mo mineralization, grades of 1-5% Cu reported.
127. Significant stratabound massive-sulfide Cu-Ag-Au deposits with 3-4% Cu; deposits are similar to those in the Ambler mineral belt in the Brooks Range (localities 25, 27, and 28).
128. Stratiform massive-sulfide Cu mineralization; grades of 1-3% Cu reported; mineralization similar to major deposit at locality 150.
129. Significant porphyry-Mo prospects; grades of up to 0.32% Mo in rocks and 200 ppm Mo in stream sediments reported; potential for large, low-grade Mo deposits.

130. Significant porphyry-Cu-Mo mineralization in intrusive complex; grades of up to 0.88% Cu and 0.33% Mo reported; potential for large, low-grade Cu-Mo deposit.
131. Major porphyry-Mo occurrences; assays of mineralized rocks range from 0.1 to 0.2% Mo, some occurrences have associated Cu, Pb (up to 2%), and Zn (up to 1.85%).
132. Porphyry-Cu mineralization in tourmalinized intrusion; grades of around 1% Cu common; potential for large low-grade deposit.
133. Porphyry-type Cu mineralization and stratiform massive-sulfide prospects; grade of 1 to 3% Cu reported in intrusions; massive-sulfide prospects contain up to 13% Zn and 5% Cu; active claims and drilling; potential for significant deposits.
134. **Jimmy Lake** - Complex Cu-Ag-Sn deposit; grades of up to 105 oz/ton Ag; grades in 30-foot-drill intercept up to 37 oz/ton Ag and 3% Cu.
135. Porphyry-Cu mineralization; average grade of about 0.6% Cu and 0.18 oz/ton Ag; skarn deposits adjacent to intrusion contain up to 22% Cu and 14 oz/ton Ag.
136. Porphyry-Cu mineralization; grades of around 1% Cu reported.
137. Porphyry-Mo prospect; grades of up to 3% Mo reported; active exploration.
138. **Red Mountain** - Past-producing chrome mine; 36,000 tons of metallurgical-grade ores shipped through 1976. Potential for millions of tons of lower grade ore.
139. Significant massive- and disseminated-chromite (Cr) occurrences in layered ultramafic complex; grades of up to 25.8% Cr₂O₃ reported.
140. **Willow Creek, Independence, Lucky Shot, War Baby Lodes** - Major lode-Au-(Ag-Cu-Pb-Zn-Mo) district; produced about 448,082 oz lode Au and about 204,000 oz placer Au; potential for porphyry-Cu-Mo deposits. Independence Mine presently under active development.
141. Massive and disseminated chromite (Cr) in ultramafic complex; rocks geochemically anomalous in Ni.
142. **Latouche - Beatson** - Major stratabound massive-sulfide Cu-Zn-Ag deposit; produced about 205 million lbs Cu from about 6 million tons ore (grade averaged about 1.7% Cu); inferred reserves about 5 million tons of 1% Cu, 1.5% Pb+Zn, and 1 oz/ton Ag; deposit occurs near southern end of major stratabound massive-sulfide belt that contains deposits at localities 173 through 176; numerous other occurrences in area have potential for large tonnages of similar grade ore; active claims and exploration.
143. **Rua Cove** - Major stratabound massive-sulfide Cu-Zn deposit. Published reserves at least 1.1 million tons of 1.25% Cu; potential for larger reserves; numerous similar massive-sulfide occurrences in area have similar potential; active claims and exploration.
144. **Ellamar** - Stratabound massive-sulfide Cu-Zn-Au deposit; produced about 16 million pounds copper, 51,307 ounces gold, and 191,615 ounces of silver from 301,835 tons ore. Active claims and exploration.
145. Stratabound massive-sulfide Cu-(Ag-Ag-Zn) prospect; active claims and exploration.
146. **Midas Mine** - Major stratabound massive-sulfide Cu-(Au-Ag-Pb-Zn) deposit; produced about one million lbs Cu; similar to deposits at localities 172 and 173; active claims and exploration.
147. **Spirit Mountain** - Significant massive and disseminated Cu-Ni mineralization in ultramafic complex.
148. Porphyry Cu-Mo prospects; grades of up to 2% Cu reported; active claims and exploration.
- 149a. **Binocular and Other Deposits** - Significant stratiform massive-sulfide Cu-Ag deposits (Kennicott type); contains drilled-out reserves; potential for large, high-grade deposits.
- 149b. **Kennicott Deposits** - Major stratiform massive-sulfide Cu-Ag deposits. Some of the highest grade copper lodes ever mined; produced approximately 1.2 billion lbs Cu and 9 million oz Ag. One report states that up to seven years of reserve (at 500 TPD) remains in workings.
150. Significant stratiform massive-sulfide Cu-Ag deposits.
151. Cu-Pb-Zn-Ag mineralization in breccia; potential for significant high-grade mineralization.
152. **Nabesna Mine** - High-grade Au skarn; 66,960 ounces of gold won from 88,224 tons of ore, 1930-41; more reserves possible.
153. **Bond Creek-Orange Hill** - Two major porphyry Cu-Mo deposits; inferred reserves of 850 million tons of 0.3-0.5% Cu and 0.03% MoS₂.
154. **Carl Creek** - Porphyry-Cu deposit; inferred reserves of 16 million tons of 0.2% Cu.
155. **Baultoff** - Porphyry-Cu deposit; inferred reserves of 160 million tons of 0.2% Cu.
156. **Horsfeld** - Porphyry-Cu deposit; inferred reserves of 60 million tons of 0.2% Cu.
157. **Marmot** - Major stratiform barite-Pb-Zn-Cu-Ag deposit; 48-80 ft-thick unit of 60% barite with Ag values, and a basal 2-8 ft thick unit of massive-sulfide (2% Pb, 3% Zn, 1% Cu, 2-4 oz/ton Ag and 0.12 oz/ton Au).
158. **Klukwan** - Major Fe-Ti deposit in ultramafic intrusion; inferred reserves of 1 to 5 billion tons of 11-20% Fe and 1.6 to 3.0% Ti.
159. **Nunatak Deposit** - Large, low-grade porphyry-Mo deposit; reserves of 8.5 million tons of 0.125% MoS₂; 129.5 million tons of 0.026% MoS₂.
160. Pb-Zn-Ag skarn mineralization.
161. **Endicott River** - Stratiform massive-sulfide Cu-Zn prospect; active claims.

162. **Brady Glacier** - Major Ni-Cu deposit in layered ultramafic intrusion; proven reserves of 100 million tons of 0.5% Ni (in sulfides) and 0.3% Cu; one of the largest nickel reserves in the United States; has Pt and Co credit.
163. **Mertie Lode and Funter Bay District** - Area contains substantial reserves of lode-Au mineralization (reserves containing 0.5 to 1 oz/ton Au partially blocked out); past production totaled 10,000 to 15,000 oz Au; area also contains significant Ni-Cu and Pb-Zn-Au occurrences (Ni-Cu deposit has reserves greater than 560,000 tons of 0.34% Ni and 0.35% Cu and about 0.15% cobalt).
164. **Alaska Juneau** - Major lode-Au deposit; produced 3.52 million ounces Au from 88.5 million tons between 1893 and 1944.
165. **Treadwell** - Major lode-Au produced 2.9 million ounces gold from 28.8 million tons ore between 1885 and 1922.
166. **Lemesurier Island** - Porphyry-Mo occurrence.
167. **Chichagof and Hirst Chichagof** - Major lode-Au district; two deposits produced about 770,000 oz Au; Chichagof mine produced about 700,000 oz Au and 200,000 oz Ag; Hirst Chichagof produced 67,980 oz Au and 20,000 oz Ag.
168. Stratiform massive-sulfide Cu-Zn deposit.
169. **Mirror Harbor** - Ni-Cu in layered ultramafic complex; probable reserves of 8,000 tons of 1.57% Ni and 0.88% Cu or inferred reserves of several million tons of 0.2% Ni and 0.1% Cu.
170. **Bohemia Basin** - Major Ni-Cu-Co deposit in layered ultramafic intrusion; reserves of 22 million tons of 0.33 to 0.51% Ni, 0.21 to 0.27% Cu, and 0.04% recoverable Co.
171. **Apex-El Nido** - Significant lode-Au-W deposits; produced between 10,000 and 50,000 oz Au.
172. **Greens Creek** - Major stratiform massive-sulfide Pb-Zn-Cu-Ag-Au deposit. Published reserves - 3.5 million tons of about 10% combined Pb-Zn-Cu, 12 oz/ton Ag, and about 0.16 oz/ton gold.
173. Area contains numerous occurrences of high-grade copper deposits; values up to 20% Cu and 2 oz/ton Ag reported; active claims.
174. **Snettisham** - Fe-Ti deposit in ultramafic intrusion; average grade about 18.9% Fe and 2.6% Ti.
175. **Tracy Arm** - Stratabound massive-sulfide prospect; over 1,140 feet long and 12 feet thick with grades averaging 1.5% Cu, 3.9% Zn, 0.013 oz/ton Au, and 0.76 oz/ton Ag; reserves of 40,000 tons per 100 feet of depth.
176. **Sumdum** - Stratabound massive-sulfide prospect with potential strike length over 10,000 feet and up to 50 feet thick. Inferred reserve 26,700,000 tons average 0.57% Cu, 0.37% Zn, and 0.3 oz/ton Ag.
177. Major stratabound massive-sulfide Cu-Zn prospects; stream-sediment anomalies up to 2% Zn; active claims and exploration; southward continuation of major stratabound massive-sulfide belt containing deposit at locality 178.
178. Stratabound massive-sulfide deposit; grades of up to 1% Cu, 0.3% Pb, 3.5% Zn, and 2 oz/ton Ag reported.
179. **Baranof, Warm Springs Bay** - Significant porphyry-Cu-Mo prospect; grades of 0.25% Cu and 0.07% MoS₂ reported.
180. **Red Bluff Bay** - Significant Cr mineralization in ultramafic complex; reserves of 570 tons of greater than 40% chrome or 29,000 tons of 18-35% chrome; numerous other Cr occurrences are exposed to the northwest.
181. **Cornwallis Peninsula** - Major stratabound massive-sulfide Cu-Pb-Zn-Ag barite prospects; grades of up to 20% Pb + Zn and 23 oz/ton Ag reported; active claims and exploration.
182. Stratiform massive-sulfide Cu-Pb-Zn-Ag-barite prospect; area contains numerous other stratabound sulfide-barite occurrences.
183. **Castle Island** - Stratiform barite deposit with about 850,000 tons of production (1963-1980); deposit contains Zn, Pb, and Cu sulfides; potential for stratabound massive-sulfides in area.
184. **Groundhog Basin** - Area contains several stratiform massive-sulfide prospects; grades of up to 8% Pb, 29 oz/ton Ag, and 0.5 oz/ton Au reported; active claims; area also contains porphyry type Cu-Mo mineralization.
185. **Snipe Bay** - Ni-Cu deposit in layered ultramafic intrusions; inferred reserves of 430,000 tons of 0.3% Ni, and 0.3% Cu and 0.13 oz/ton Ag.
186. **San Juan Batista Island** - Porphyry-Mo prospect.
187. **Kasaan Peninsula** - Major massive-sulfide Cu-Fe-Au and Cu-Pd-Pt district; produced approximately 28 million lb Cu from deposits that averaged about 2% Cu; reserves of 4 million tons of 50% Fe or 1.5 million tons of less than 2% Cu. Salt Chuck Mine produced over 20,000 oz PGM prior to World War II.
188. **Union Bay** - Significant Fe-Ti mineralization in ultramafic intrusion; contains concentrations of Pt and V.
189. **Borroughs Bay** - Porphyry-Mo prospect; grades of 0.06% MoS₂ reported.
190. Massive-sulfide deposit; potential for large tonnages of up to 10% Cu, 2% Zn, and 1.5 oz/ton Ag.
191. **Hyder District** - Has produced 25,000 tons of high-grade W-Cu-Pb-Zn-Ag ores (1925-51). Porphyry Mo-W and massive-sulfide skarn Pb-An-Au-Ag and W prospects; grades of up to 10% Zn, 6% Pb, 5 oz/ton Ag, and 1 oz/ton Au reported for the massive-sulfide deposits; potential for very large tonnages of commercial grade, porphyry-Mo-W mineralization.

192. **Jumbo** - Produced about 10 million lbs of Cu, 280,000 oz Ag, 7,000 oz Au; estimated reserves of over 650,000 tons grading 45.2% Fe, 0.73% Cu, 0.01 oz/ton Au, and 0.08 oz/ton Ag.
193. **Copper City** - Stratiform massive-sulfide Cu-Zn prospects; grades of up to 12.7% Cu, 2.7% Zn, 2.5 oz/ton Ag and 0.2 oz/ton Au reported; potential strike length greater than 2 miles.
194. Massive-sulfide Cu-Pb-Zn occurrences.
195. **Quartz Hill** - World class porphyry-Mo deposit; active exploration and development since discovery in 1974; announced reserves of greater than 1.5 billion tons of 0.136% MoS₂ make this deposit one of the largest Mo reserves in the world; core zone averages better than 0.20% MoS₂.
196. Porphyry-Mo occurrence.
197. Significant stratabound (?) massive-sulfide Cu-Pb-Zn-Ag prospects; grades of up to 1% Cu; 8% Zn, 4% Pb, and 2 oz/ton Ag reported; active claims.
198. Stratabound (?) massive-sulfide Cu-Pb-Zn-Ag deposit; small tonnage, high-grade deposits with up to 20% Zn, 11% Pb, 1% Cu and 4 oz/ton Ag.
199. **Niblack** - Stratiform massive-sulfide Cu-(Pb-An-Ag) prospects; produced over 1.4 million lbs Cu, 11,000 oz Au, and 15,000 oz Ag; active claims and exploration.
200. **Bokan Mountain** - Numerous U-Th prospects associated with granitic intrusive complex; produced 120,000 tons of ore grading 1.0% U₃O₈ from 1955-71; active claims and exploration; more reserves proven in late 1970's.
201. Stratiform massive-sulfide Cu-Pb-Zn-Ag-barite prospects.
202. Stratiform (?) massive-sulfide deposits; grades of up to 15% Pb + Zn and 5 oz/ton Ag reported; 70-foot-thick massive-sulfide intercept with 1% Cu, 4% Zn, 1% Pb, and 1.5 oz/ton Ag; active claims and exploration.
203. Stratiform massive-sulfide Cu-Zn prospect; active exploration.

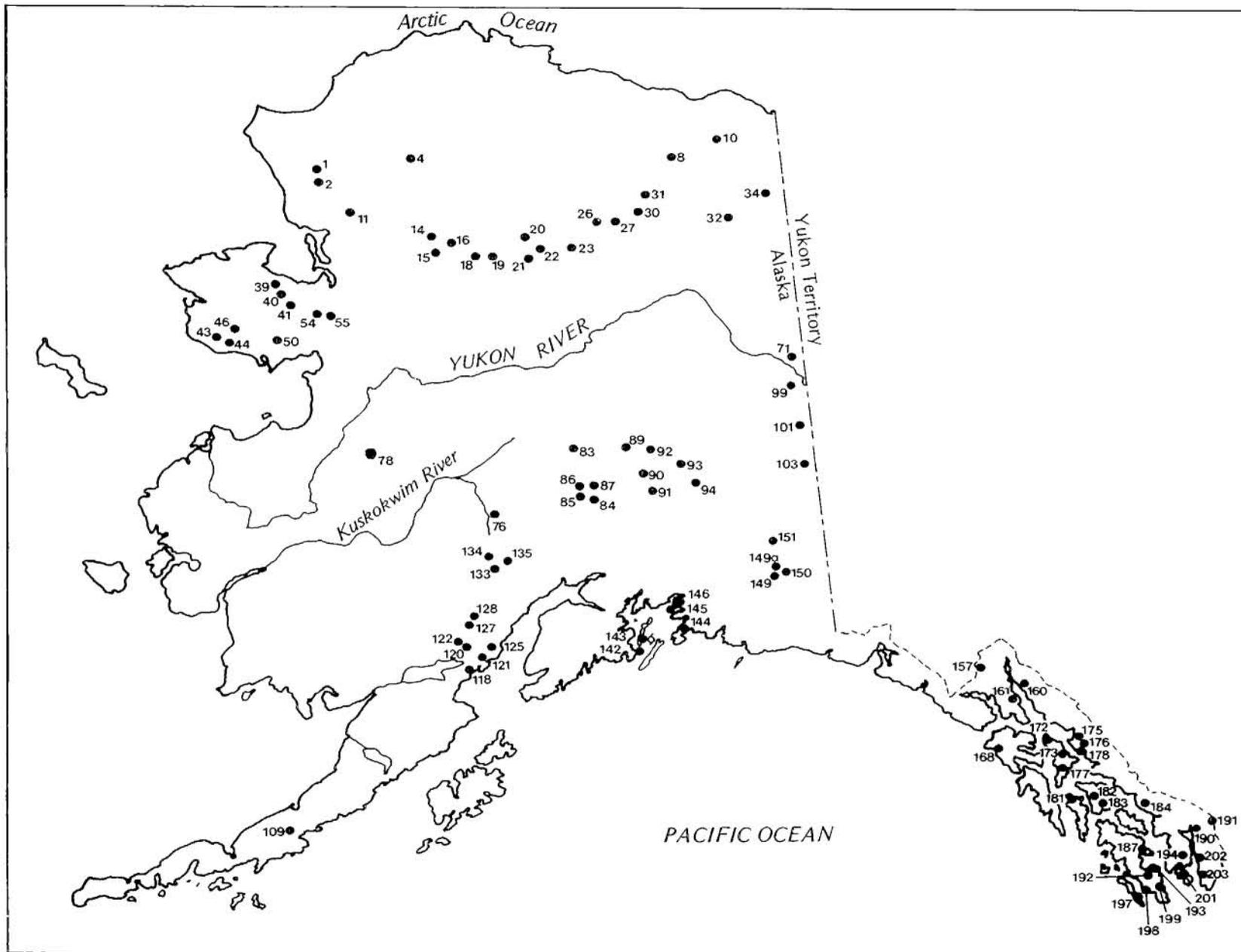


Figure 26. Significant copper, lead, zinc ± silver and gold deposits and prospects in Alaska; numbers refer to appendix D.

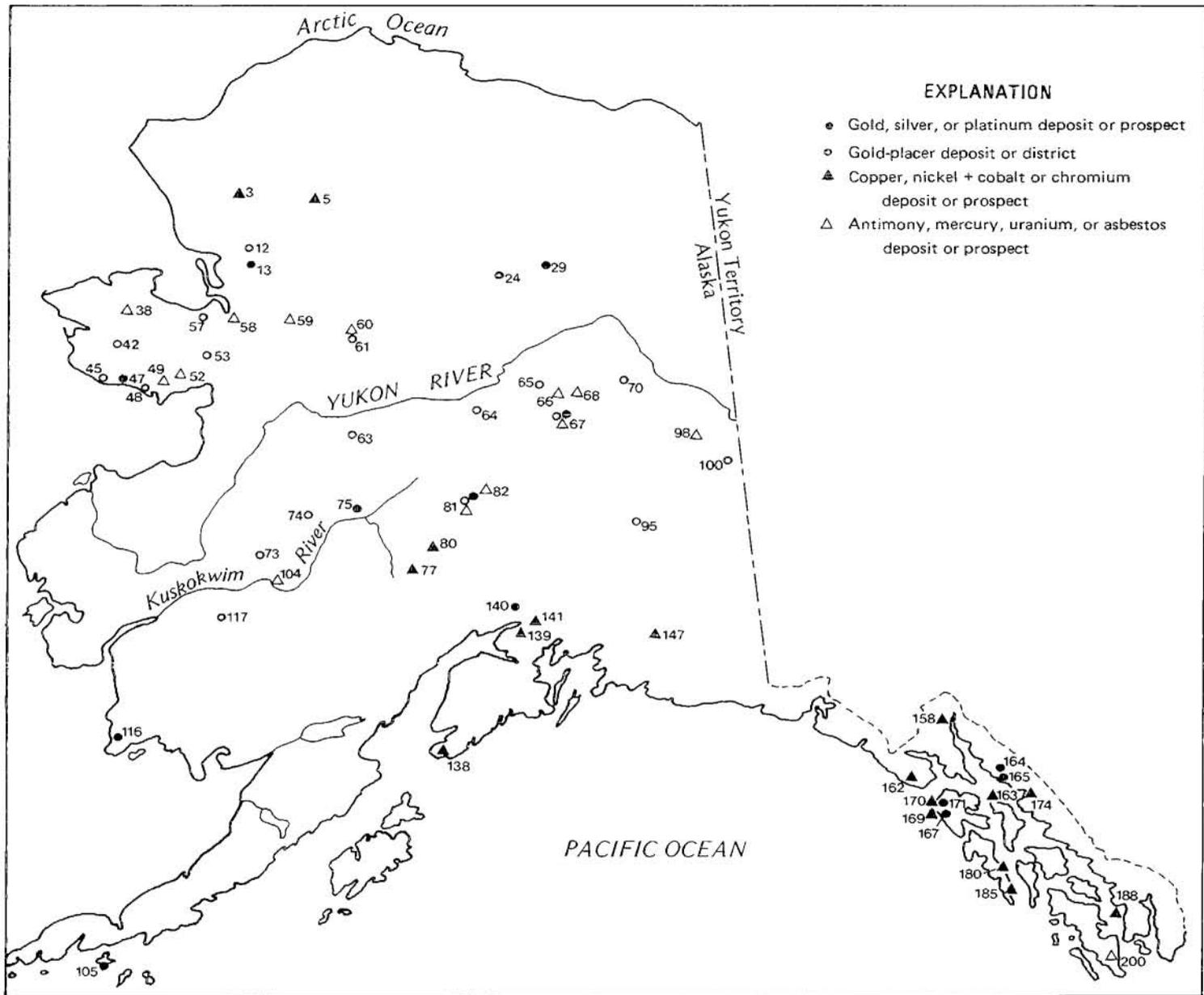


Figure 27. Significant gold, silver, and strategic mineral deposits in Alaska; numbers refer to appendix D.

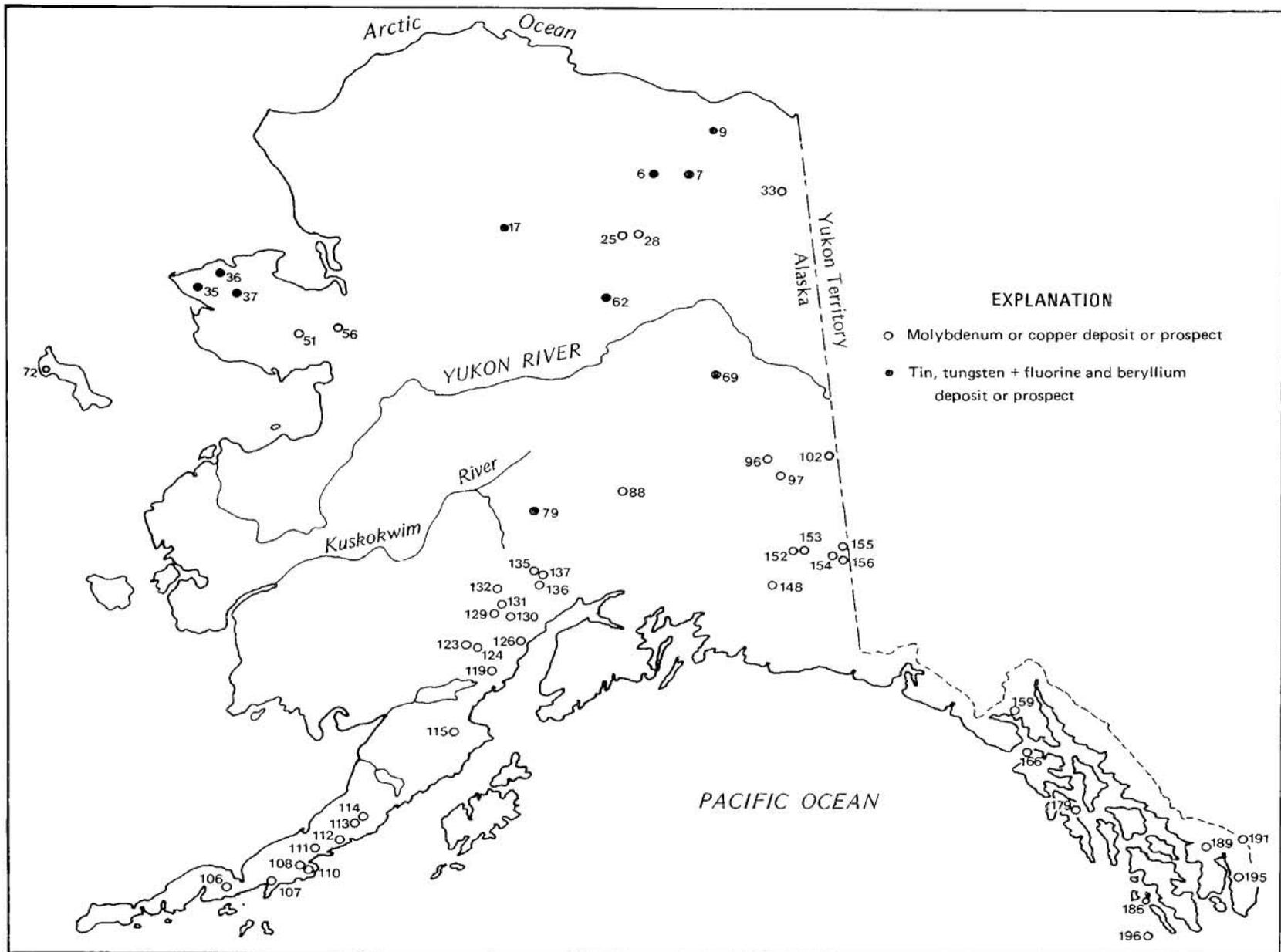


Figure 28. Significant copper or molybdenum and tin, tungsten ± fluorine and beryllium deposits and prospects in Alaska; numbers refer to Appendix D.

Appendix E

Mining Licenses Issued by the Alaska Department of Revenue, 1982

(All placer-gold unless otherwise noted)

A.B. PLACER, INC.
P.O. Box 74528
Fairbanks, Alaska 99701

ABJ MINING CO.
Joseph F. De Smidt, Jr.
Box 776
Sterling, Alaska 99672

A & J EXPLORATION &
MINING CO.
1106 Nenana Street
Fairbanks, Alaska 99701

ACHMAN MINE (Singin
Sams Rainbow Mine)
P.O. Box 1411
Fairbanks, Alaska 99707

ROLAND F. ACHMAN
P.O. Box 61185
Fairbanks, Alaska 99706

JAMES D. ADAMS
SR Box 2680
Wasilla, Alaska 99682

MELVIN & ROCY
ADKINS
4110 Debarr Road No. 2C
Anchorage, Alaska 99504

ALAMIN MINING CORP.
P.O. Box 104
McGrath, Alaska 99627

ALASKA APEX AND
MINING
James P. Conway
SR B, Box 7660
Palmer, Alaska 99645
(Sand - Gravel)

ALASKA CONSOLI-
DATED COPPER CO.
General Delivery
Chugiak, Alaska 99567
(Lode - Copper)

ALASKA CONSTRUC-
TION & MINING
Donald Harris
Box 32
McGrath, Alaska 99627

ALASKA GOLD CO.
Box 640
Nome, Alaska 99762

ALASKA GOLD CO.
P.O. Box 1170
Fairbanks, Alaska 99707

ALASKA GRAVEL
SALES, INC.
1422 K Street
Anchorage, Alaska 99501
(Sand - Gravel)

ALASKA MINERAL
SERVICES
100 C Street
Fairbanks, Alaska 99701

ALASKA MINING &
EXPLORATION
P.O. Box 844
Anchorage, Alaska 99510
(Lode - Gold)

ALASKA SILVEINIA
MINES
Joseph C. Manga
P.O. Box 844
Fairbanks, Alaska 99707
(Lode - Silver, Lead)

ALASKAN MINING &
PROCESSING, LTD.
9621 Camp Road, Suite J
Spring Valley, CA 92077

ALASKAN PACIFIC IN-
VESTMENTS
P.O. Box 73685
Fairbanks, Alaska 99707

ALBETT MINING
General Delivery
Chicken, Alaska 99772

ALDER CREEK MINES
1213 Coppet Street
Fairbanks, Alaska 99701

CLIFFORD DALE
ALEXANDER
Box 602
Fairbanks, Alaska 99707

ALKAM CORPORATION
3874 Caravelle Drive
Anchorage, Alaska 99502

ALPHA MIDAS
4832 Palo Verde Avenue
Fairbanks, Alaska 99701

ALEUTIAN AGGRE-
GATE VENTURES
P.O. Box 4-D
Anchorage, Alaska 99509
(Rock - Sand)

ALROK ENTERPRISES
Box 235
Sutton, Alaska 99674

AL-VON MINING CO.,
INC.
Box 4-1214
Anchorage, Alaska 99509

AMANETA PLACER
Bettles Field, Ak. 99726

AMERICAN COPPER &
NICKEL CO., INC.
c/o Inco United States Inc.
One, New York Plaza
New York, NY 10004
(Lode - All Base
& Precious Metals)

AMERICAN CREEK
PARTNERS
Box 81467
College, Alaska 99708

ANACONDA MINERALS
COMPANY
2550 Denali St. Ste. 1000
Anchorage, Alaska 99503

ANCHORAGE SAND &
GRAVEL CO., INC.
1813 East First Avenue
Anchorage, Alaska 99501
(Sand - Gravel)

DAVID S. ANDERSON
2429 Wilbur Street
Fairbanks, Alaska 99701

NORTHERN VENTURES
R. J. Anderson &
W. T. Nielson
SR Box 80951
Fairbanks, Alaska 99701

ANNASARA ENTER-
PRISES
P.O. Box 80541
College, Alaska 99708

SILVERADO MINES,
LTD.
Garry L. Anselmo
P.O. Box 2357
Fairbanks, Alaska 99707
(Lode - Gold & Silver)

KANTISHNA MINES,
LTD.
Leo Mark Anthony
2020 Lake Otis Pky.
Anchorage, Alaska 99984
(Lode - Precious &
Base Metals)

THOMAS R. ANTHONY
SR A, Box 440-R
Anchorage, Alaska 99507

AOS MINING &
ENGINEERING
Roy W. Ferrenbach
4015-I 601 St.
Ft. Wainwright, Ak. 99703

ARCTIC MINING CORP.
P.O. Box 668
Anchorage, Alaska 99510
(Placer - Gold, Tin)

ARCTIC VENTURES OF
ALASKA
214 Redwood Hwy.
Cave Junction, OR 97523

RONALD ARNCE
1003 Chugach Way No. 41
Anchorage, Alaska 99503

ROBERT A. ARNEY, SR.
3500 Mountain View,
No. 47
Anchorage, Alaska 99504

ARCTIC ASPHALT
PAVING, INC.
P.O. Box 14
Soldotna, Alaska 99669
(Sand - Gravel)

ASPEN EXPLORATION
CORPORATION
3525 South Tamarac St.,
Suite 350
Denver, Colorado 80237

AU LIMITED MINING
P.O. Box 80674
College, Alaska 99708

AU PLACER, INC.
715 L Street, Suite 8
Anchorage, Alaska 99501

AULT ENTERPRISES/
MINING VENTURES
P.O. Box 82330
College, Alaska 99708

MIDNITE MINING ASSN.
Robert Aumiller
SRA 71188
1/4 Mile Badger Road
Fairbanks, Alaska 99701

JEFFERY MICHAEL
AUSTIN
Box 1303
Seward, Alaska 99664

CHARLES AWE
Nyac, Alaska 99642

B & B MINING
Box 124
Trapper Creek, AK 99688

B & B MINING CO.
Wiseman, Alaska 99726

B & C MINING CO.
Ken Charlesworth
P.O. Box 8282
Anchorage, Alaska 99508

B & E MINING
Box 175
Gakona, Alaska 99586
(Gravel - Sand)

DOUG BACKUS
North Pole, Alaska 99705

GEORGE BAILEY
MINING
P.O. Box 2052
Fairbanks, Alaska 99701

SAMUEL RANDOLPH
BAILEY
7211 Sitkin Circle A
Anchorage, Alaska 99504

BASIN MINING CO.
A. W. Beeman
501 Hillcrest
Odessa, Texas 79761

CHARLES BASS
131 Concordia
Fairbanks, Alaska 99701

HAROLD E.
BATCHELOR
102 Steelhead Road
Fairbanks, Alaska 99701

JOHN DANE
BAUMILLER
Box 422
Blandard, ID 83804

BEAR CREEK MINING
CO.
1111 Dowling Road
Anchorage, Alaska 99502

W. J. BEERMAN
c/o Patsy's Sinoma
Crk. Trading Post
Gakona, Alaska 99586

EARL H. BEISTLINE
P.O. Box 80148
Fairbanks, Alaska 99708
(Lode - Precious
metals, lead, zinc,
antimony)

JAMES W. BELFIELD/
ROBERT HENDRICKS
Dixon Apts., Apt. 2A4
Fairbanks, Alaska 99707

ALBERT LEE BELL
Box 4652
Kenai, Alaska 99611

ROCKY JOE BELL
P.O. Box 4652
Kenai, Alaska 99611

BEN CREEK PLACERS
Box 44
Eagle, Alaska 99738

BONDRY LES BEND
General Delivery
Chicken, Alaska 99732

JEFFREY L. BETTIS
358 E. 2nd Avenue
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Constance Parka
P.O. Box 10087
Fairbanks, Alaska 99701

JAMES R. LAYMON
P.O. Box 44
Eagle, Alaska 99738

JAMES B. & ANN LEACH
3141 Kenwood Circle
Anchorage, Alaska 99504

CLIFFORD LEE
SRA 1419 W.
Anchorage, Alaska 99502

LESTER-ORBANKSKI
MINES, INC.
Box 56
Central, Alaska 99730

STEVE LEVINSKI
General Delivery
Chicken, Alaska 99732

LIVENGOOD JOINT
VENTURE
P.O. Box 467
Fairbanks, Alaska 99707

DAN LIVERMORE
3302 Dorbrandt, No. 4
Anchorage, Alaska 99503

GEORGE D. LIVERMORE
3302 Dorbrandt, No. 4
Anchorage, Alaska 99503

RICHARD E. LOHR AND
COMPANY, INC.
2531 McKinney Ave.
Dallas, Texas 75201

LONDON MINING CO.
John R. and Lucille A.
London
1801 State Street
Anchorage, Alaska 99504

WILLIE LOPEZ
P.O. Box 801
Kodiak, Alaska 99615

WALLACE J. LORD
4100 DeBarr
P.O. Box 8296
Anchorage, Alaska 99508

LOST RIVER ALASKA
CORP.
R. Jansen, President
67 Richmond St., W.,
Suite 301
Toronto, Ontario
CANADA M5H 1Z5
(Lode - Tin,
Tungsten, Fluorite)

DONALD L. LUCAS
1803 Kepner St.
Anchorage, Alaska 99504

LUCKY SEVEN MINING
COMPANY
P.O. Box 141
Fairbanks, Alaska 99707

LUKE'S GRAVEL CO.
P.O. Box 393
Homer, Alaska 99603
(Gravel)

LUNDFERS/READER
Box 355
Nome, Alaska 99762

M & M MINING CO.
8821 Cordell Circle, No. 1
Anchorage, Alaska 99502

M & M MINING/ROD
MITCHELL
SR Box 50718
Fairbanks, Alaska 99701

M.P. ENTERPRISES
Box 542
Haines, Alaska 99827

M & R MINING CO.
P.O. Box 60147
Fairbanks, Alaska 99706

MACRYER MINE
14 1/4 M Steese Hwy.
SR Box 20657-C
Fairbanks, Alaska 99701

MAGIC CIRCLE, INC.
SR Box 10269
Fairbanks, Alaska 99701

MAMMOTH MINE
Stanley C. Rybachek
Box 55698
North Pole, Alaska 99705

ART MANGINELLI
P.O. Box 10-1156
Anchorage, Alaska 99511

ALBERT MITCHELL MANNS/
CECILIA MANNS
General Delivery
Bettles, Alaska 99726

MAPCO ALASKA, INC.
1301 E. 64th Avenue
Anchorage, Alaska 99726
(Gravel)

STEVEN P. MARKESINO
1429 Ash Street
Fairbanks, Alaska 99701

MARVIN W. MAY
3308 Glenn Don Drive
Anchorage, Alaska 99504

STEVEN J. MASON
3509 Cope Street
Anchorage, Alaska 99503

RAY MATHEWS
General Delivery
Tok, Alaska 99780

MAJOR INVESTMENTS,
LTD.
P.O. Box 2384
Anchorage, Alaska 99510
(Gravel)

MAXWELL MINE &
EXPLORATION
SRA Box 482
Anchorage, Alaska 99507

DONALD J. MAY
Polar Construction
and Mining Co.
4545 Wood River Dr.
Fairbanks, Alaska 99701
(Placer - Gold & Silver)

GARY MCCARTHY, RON
REYONLDS, WH McLINN
P.O. Box 689
Girdwood, Alaska 99586

GEORGE H. MCCULLOUGH
Mile 3 Spur Road
Talkeetna, Alaska 99676

JOHN MCGROLDRICK &
GUY LEADBETTER
Box 1162
Wasilla, Alaska 99687

DENNIS WILLIAM
McNEIL
General Delivery
Manley Hot Springs
Alaska 99756

RICHARD LEE
McINTOSH
SR Box 22129
Fairbanks, Alaska 99701

JAMES ALBERT
McLAUGHLIN
Box 405
Haines, Alaska 99827

DOUG McRAE, SR.
Box 464
Seward, Alaska 99664

MEADOWLARK MINING
CO., INC.
Box 1640
Fairbanks, Alaska 99707

CAPE COMPANY c/o DICK
MEDLEY
General Delivery
Pierce, ID 83546

DRAGO, MESICH, RAY &
KAY BAKER
P.O. Box 2706
Fairbanks, Alaska 99707

MESPELT & ALMASY
MINING CO.
Nixon Fork Mine
McGrath, Alaska 99627
(Placer/Lode - Gold)

MILES MESSINGER
P.O. Box 1212
Palmer, Alaska 99645

METCO, INC.
Frank Dieckgraeff
P.O. Box 895
Seward, Alaska 99664
(Gravel)

PAUL D. MIEBS
P.O. Box 17061
Big Lake, Alaska 99687

CHARLES M. MIKNICH
SRA Box 1550 G
Anchorage, Alaska 99507

THE MINING CO.
c/o John E. McClain
P.O. Box 436
Soldotna, Alaska 99669

JOHN A. MISCOVICH
General Delivery
Flat, Alaska 99584

MISCOVICH MINING CO.
Box 262
Galena, Alaska 99741

DENNIS C. MITCHELL
1405 Summitview
Anchorage, Alaska 99507

ELTON R. MODROO
P.O. Box 1080
Kellog, ID 83837

MOHAWK OIL AND GAS,
INC.
P.O. Box 74224
Fairbanks, Alaska 99707
(Lode - Gold)

MONTI BAY SAND &
GRAVEL
Box 333
Yakutat, Alaska 99689
(Gravel)

VINCENT & LINDA
MONZELLA
SR Box 20633-A
Fairbanks, Alaska 99701
(Placer - Gold;
Lode - Tungsten)

JOHN P. MOORE
P.O. Box 4-604
Anchorage, Alaska 99509

RON MOORE/VERN
CHERNESK
Box SRA Box 6388
Palmer, Alaska 99645

CLAUDE H. MORRIS, JR.
P.O. Box 546
Girdwood, Alaska 99587

MRAK PLACER MINE
P.O. Box 1963
Palmer, Alaska 99645

MT. MCKINLEY GOLD
P.O. Box 711
Wasilla, Alaska 99687

MT. PARKER PROPERTIES
Jeanne E. and Allen C.
Trump
P.O. Box 289
Juneau, Alaska 99802
(Lode - Gold, Silver,
Lead, Zinc)

GREGORY MUCKEY
Earle Foster &
Josephine Jurgeleity
P.O. Box 44
Haines, Alaska 99827

NELCHINA MINES, J.V.
51850 Wickersham Dr.
Anchorage, Alaska 99507

FRED W. NELIUS, JR.
P.O. Box 4-3027
Anchorage, Alaska 99503
(Hand - Antimony)

NELSON MINING CO.
413 Glacier Avenue
Fairbanks, Alaska 99701

JON NESBIT, RALPH HAMM,
DAVID OWENS
P.O. Box 336
McKinley Park Station
Alaska 99775

HAROLD A. NEVERS
8148 Pinewood Dr.
Juneau, Alaska 99801

JACK NEWBANCE
Maney Hot Springs
Alaska 99756

NEWMONT EXPLORATION,
LTD.
300 Park Ave., 12th Floor
New York, NY 10022
(Exploration - Various)

STEVE NIERDOEIK
275 Coulson Road
Chehalis, WA 98532

NIMCO MINING
J. C. Newman
P.O. Box 1646
Nome, Alaska 99762

NORANDA EXPLORATION,
INC.
627 Gaffney
Fairbanks, Alaska 99707

NORANDA EXPLORATION,
INC.
Paul S. Glavinovich
139 E. 51st Avenue
Anchorage, Alaska 99503
(Exploration - Base,
Precious Ferro Alloy Metals)

JAMES H. NORCROSS
Norcross-Stroneburg
Mining co.
General Delivery
Taktotna, Alaska 99675

WILLIAM H. NORDEEN/
CLAUDINE M. NORDEEN
Emma Creek
Wiseman, Alaska 99726

NORTH COAST MINING,
INC.
P.O. Box 250
Juneau, Alaska 99802

NORTHERN MINERALS/
R.A. Blakestad
P.O. Box 60750
Fairbanks, Alaska 99706

NORTHERN STEEL
CORP.
Box A-14
Chugiak, Alaska 99567
(Gravel)

NORTHLAND GOLD
DREDGING
Nyac, Alaska 99642

NORTHWEST
EXPLORATIONS
K.L.K., Inc.
Palmer, Alaska 99645

NORTHWEST
EXPLORATION, INC.
Thomas P. McMahon
14401 Pacific Avenue
Tacoma, WA 98444

NOVA ASSOCIATES
P.O. Box 6848
Anchorage, Alaska 99502

NUGGET ESTATE
MINING CO.
Edward W. & Grace
Montgomery
P.O. Box 60430
Fairbanks, Alaska 99701

NUGGET MINING CO
General Delivery
Council, Alaska 99790

DONALD B. OESAN AND
ERIC KAUFMAN
P.O. Box 827
Eagle River, Alaska 99577

CHARLES JAMES OGG
Box 3
Mesick, MI 49668

BILL OHMAN
P.O. Box 10994
Fairbanks, Alaska 99701

JOHN ROBERT OLSEN
General Delivery
Hope, Alaska 99605

STEPHEN G. OLSON
Boundary, Alaska 99790

STEVEN LLOYD OLSON
6½ Mi. Old Richardson
P.O. Box 10035
Fairbanks, Alaska 99701

DONALD R. ORCUTT
Manley Hot Springs
Alaska 99756

ORO FINO MINING CO.
P.O. Box 5
Valdez, Alaska 99686

LLOYD OSBORN
SRC Box 8458
Palmer, Alaska 99645

MICHAEL OSTLER
General Delivery
Candle, Alaska 99728

MICHAEL OSTLER
c/o New Star Corp.
2097 S. Billings Ave.
Provo, UT 84601

PMX MINES
Dave McClarg
4312 Zodiak
Anchorage, Alaska 99507

P & S MINING
1215 9th Avenue
Fairbanks, Alaska 99701

PACIFIC COAST MINES,
INC.
3075 Wilshire Blvd.
Los Angeles, CA 90010
(Exploration, Copper,
Lead, Zinc, Silver,
Molybdenum)

PACIFIC COAST
MOLYBDENUM CO.
3075 Wilshire Blvd.
Los Angeles, CA 90010
(Exploration -
Molybdenum)

PAGE MINING CO.
General Delivery
Chicken, Alaska 99732

PAN ALASKAN GOLD
MINES, INC.
I. S. Lindzon
67 Richmond St., W.
Suite 301
Toronto, Ontario
CANADA M5H 1Z5
(Exploration - Tin,
Tungsten, Fluorite)

PAN CENTRAL ALASKA,
INC.
67 Richmond St., W.
Suite 301
Toronto, Ontario
CANADA M5H 1Z5
(Exploration - Tin,
Tungsten, Fluorite)

PAN CENTRAL
EXPLORATIONS, LTD.
67 Richmond St., W.
Suite 301
Toronto, Ontario
CANADA M5H 1Z5
(Exploration - Tin,
Tungsten, Fluorite)

DAVID L. PARKER
131 Concordia
Fairbanks, Alaska 99701

GLEN C. PARR
SR Box 70690
Fairbanks, Alaska 99701

PARTNERSHIP, CASE,
TURNER, WAY
22 Glacier No. 7
Fairbanks, Alaska 99701

PASS PRODUCTS, INC.
8511 East 4th Avenue
Anchorage, Alaska 99504

CHARLES W. PAULSON
Box 224
Sterling, Alaska 99672

DONALD W. PAULSON
Box 224
Sterling, Alaska 99672

M. A. PAVEY
1111 Lakeview Terrace
Fairbanks, Alaska 99701

DAVID F. PAXTON
SR Box 20264
Fairbanks, Alaska 99701

PAYCHECK MINING
General Delivery
Boundary, Alaska 99790

CHARLES J. PAYTON
1132 Ivy Street
Fairbanks, Alaska 99701

ROLLIN J. PETERS
No. 21 Gold Lodge
Juneau, Alaska 99801

DONALD E. PETERSON
P.O. Box 172
Haines, Alaska 99827

ROBERT L. PETERSON
Box 10367
Curry's Corner
Fairbanks, Alaska 99701

PHELPS DODGE
CORPORATION
300 Park Avenue
New York, NY 10022
(Inactive)

PHILLIPS
Richard E. Drumheller
320I C Street, Suite 303
Anchorage, Alaska 99503

PHOENIX
100 Dunbar
Fairbanks, Alaska 99701

FRANK W. PINKERTON
Pinkerton Mining &
Exploration
4721 Kershner Avenue
Anchorage, Alaska 99503
(Lode and Limited
Placer - Gold, Silver,
Uranium, Other
Minerals)

PIONEER PLACER CO.
P.O. Box 80526
Fairbanks, Alaska 99708

R. C. PITTMAN
P.O. Box 641
Twisp, WA 98856

RAYMOND PITTMAN
Manley Hot Springs
Alaska 99756

PLACER EVALUATION,
INC.
519 C Street
Anchorage, Alaska 99501

POINTS NORTH CO.
Box 106
Central, Alaska 99730

POORMINE MINE
Box 6764 SRA
Palmer, Alaska 99645

MERRILL POWERS
SR Box 80729
Fairbanks, Alaska 99701

PREDREAM MINING &
MINERAL EXPLORATION
SR Box 50503 F
Fairbanks, Alaska 99701

PRIMROSE MINING CO.
Box 1158
Seward, Alaska 99664

A. W. PRINGLE
General Delivery
Manley Hot Springs
Alaska 99756

GEORGE PYE/ROBERT M.
LUCAS
2933 Firethorne Ave.
Fullerton, CA 92635

QUARTZ CREEK
EXPLORATION CO.
Route 2, Box 242
Sterling, Alaska 99672

QUEENE ALICE GOLD
MINING CO.
1166 Coppet Street
Fairbanks, Alaska 99701

R & S MINING CO.
P.O. Box 411
Bethel, Alaska 99559

RAINBOW'S END 1 & 2
SRA Box 6321
Palmer, Alaska 99645

RAJAS
Ralph Swarthout
Box 8-9127
Anchorage, Alaska 99508

JOEL S. RAMSTAD
Yukon Mining, Inc.
P.O. Box 1454
Anchorage, Alaska 99510
(Placer - Gold & Tin)

RAND L & CO.
Wallace Blasingan -
Joseph L. Taylor
Box 287
Copper Center, AK 99573

MERLIN P. RASMUSSEN
SRA Box 438-L
Anchorage, Alaska 99507

RAYMOND R. & EMMA
SMITH
P.O. Box 7
Haines, Alaska 99827

RED TAPE MINING CO.
SRB Box 7459
Palmer, Alaska 99615

REDBECK CO.
Box 1505
Fairbanks, Alaska 99701

WILLIAM T. REDMOND
P.O. Box 535
Girdwood, Alaska 99587

JOHN REEVES
P.O. Box 81941
College, Alaska 99708

JOHN E. REGAN
P.O. Box 1176
Fairbanks, Alaska 99701

GAROLD REID
Box 1622
Fairbanks, Alaska 99707

RESOURCE ASSOCIATES OF
ALASKA, INC.
3130 Airport Way
Fairbanks, Alaska 99701

RICHARD REYNDERS
SR 70594
Fairbanks, Alaska 99701

RIFFLE MINING CO.
1540 NW Ballard Way
Seattle, WA 98107

JOHN B. RITTER
Paradise "Peak"
1777 Mendenhall Peninsula
Spur Road
Juneau, Alaska 99801
(Lode - Various)

PHIL H. ROBINETTE
Robinette Mining Co.
909 Chugach Way, No. 70
Anchorage, Alaska 99503

ELLIS ROBERTS OR ROBERT
ROBERTS
Chicken, Alaska 99723

ROCK-HARD MINING CO.
John H. Wagner
3564 Heartwood Place
Anchorage, Alaska 99504

ROCKLINE, INC.
Robin J. Mearkle
P.O. Box A014
Chugiak, Alaska 99567
(Sand & Gravel)

NORMAN OR JOAN ROCKRY
SR Box 70374
Fairbanks, Alaska 99701

PAUL RODERICK
Box 836
Homer, Alaska 99603

CLIFFORD ROOKER
Box 3091
Kenai, Alaska 99611

ROSS MINING & EXPLORA-
TION CO.
SR Box 50816 - S
Fairbanks, Alaska 99701

ROUGHTOP MINING CO.,
INC.
General Delivery
Manley Hot Springs
Alaska 99756

JOHN D. RUBEL
SR Box 90574
Fairbanks, Alaska 99701

LEE RUBLE
P.O. Box 176
Central, Alaska 99730

RUBY MINING CO.
Albert W. Kangas
P.O. Box 1
Ruby, Alaska 99726

GENE RUSSELL
P.O. Box 21
Central, Alaska 99730

STANLEY L. RYNECHEK
North Pole, Alaska 99705

SMK 2 MINING
Box 28
Ruby, Alaska 99768
(Placer - Drift - Gold)

SMK 2 MINING
Michael A. Swertsik
Box 27
Ruby, Alaska 99768

SANCLIMENTI
P.O. Box 890
Key West, FL 33040

BRUCE D. SAVAGE
Box 1033
Fairbanks, Alaska 99707

PHILIP SAYER
Little Creek Mining
Box 2353
Homer, Alaska 99603

EARL L. SCHENE
Chickaman Mining Co.
General Delivery
Chickana, Alaska 99732

HARVEY BELTON LINEN
SCHMIDT
2802 Wesleyan Dr.
Anchorage, Alaska 99504

JOHN SCHNABEL
P.O. Box 595
Haines, Alaska 99827

SCHOOL OF MINERAL
INDUSTRY
David Maneval
University of Alaska
Fairbanks, Alaska 99701
(Instructional - Lode -
Exploration - Antimony)

DON SCHUBERG
D. O. Contracting
P.O. Box 4-604
Anchorage, Alaska 99509

WALTER P. SCHUMACHER
P.O. Box 1479
Palmer, Alaska 99645

HAROLD G. SEATER
S&S Mining Co.
4941 Wright Street
Anchorage, Alaska 99504

MARVIN D. SELF
Northland Mining
P.O. Box 728
Cooper Landing, Alaska 99572

SEWARD PENINSULA
MINING CO.
P.O. Box 1012
Nome, Alaska 99762

SHAG MINING CO.
P.O. Box 258
Fairbanks, Alaska 99707

SHAMROCK/RCJ ENT.
JOINT VENTURE
Robert C Jett and
John T. Riley
P.O. Box 4-2577
Anchorage, Alaska 99509
(Sand & Gravel)

SHENANDOAH MINERS
2615 E. Behrend
Phoenix, AZ 85024

JOHN ARTHUR SHILLING
Box 81424
College, Alaska 99708

SHIMSKY MINING CO.
2546 San Juan Valley
Friday Harbor, WA 98250

SHORT GULCH MINING
CO., LTD.
P.O. Box 9
Ruby, Alaska 99768

SHERMAN C. SMITH
Box 770
Cooper Landing, AK 99572

JEFF SILBAUG
Box 102
McKinley Park, AK 99755

JEFF SILBAUGH
351 1/2 E. 2nd
Anchorage, Alaska 99501

SILVER STAR MINING
CO.
Melvin Barry
323 W. Harvard
Anchorage, Alaska 99501
(Lode - Silver, Gold)

BILL SIPPLE
900 Kathy Place
Anchorage, Alaska 99504

SLIPPERY ROCK MINE
Box 6764 Star Route A
Palmer, Alaska 99645

SLUICE, LTD.
SR Box 50999
Fairbanks, Alaska 99701

SMALLY CREEK MINE
1025 - 23rd Avenue
Fairbanks, Alaska 99701

HOWARD SMITH
221 McCarrey St.
Anchorage, Alaska 99504

MARK HARRISON SMITH
P.O. Box 60656
Fairbanks, Alaska 99706

PHIL SMITH
P.O. Box 503
Kelso, WA 98626

WILLIAM L. SMITH
3948 Lorie Road
Anchorage, Alaska 99507

WILLIAM L. SMITH
Mud Creek Mining Corp.
627 Gaffney
Fairbanks, Alaska 99707

ESTER S. SNOOL
P.O. Box 4-604
Anchorage, Alaska 99509

SNOW LION MINING CO.
General Delivery
Haines, Alaska 99827

SOREFOOT ENTERPRISE
Box 213
Gakona, Alaska 99586

HAROLD L. SOULE
SRA Box 239
Anchorage, Alaska 99507

RAYMOND S. SPECK
P.O. Box 1042
Anchorage, Alaska 99510

JOHN SPIES
Box 55254
North Pole, Alaska 99705

SPRUCE CREEK MINING
CO.
Ophir
McGrath, Alaska 99627

ST. JOE AMERICAN CORP.
John W. Horton
2002 N. Forbes Blvd.
Tucson, AZ 85745
(Exploration -
Nonferrous Metals)

HELEN M. STAHL
5817 Winding Way
Anchorage, Alaska 99504

JAMES WILLIAM
STEFANOWSKI
P.O. Box 161
Talkeetna, Alaska 99676

JACKIE J. STEWART
P.O. Box 813
Delta Junction, AK 99737

DONALD J. STICKMAN
P.O. Box 114
Galena, Alaska 99741
(Prospecting - Gold,
Silver)

STICKMAN & SONS,
DAUGHTERS
P.O. Box 114
Galena, Alaska 99741

ROBERT T. STRANGE
5838 Rowan
Anchorage, Alaska 99507

RAY STRATTON
SRA Box 70375
Fairbanks, Alaska 99701

JOSEPH VINCENT
STRUNKA
P.O. Box 550
Fairbanks, Alaska 99707

YEWELL STUBBLEFIELD
Box 570
Soldotna, Alaska 99669

EDWARD R. STUGART
Milepost 84
Taylor Highway
Chicken, Alaska 99732

SUMDUM DEVELOPMENT
CORP.
P.O. Box 270, Suite 2700
1 First Canadian Pl.
Toronto, Ontario
CANADA M5X 1H1
(Exploratory - Copper)

SUMECK MINING CO.
Richard L. Eckert
1528 Kinnikinnick
Anchorage, Alaska 99504

WILLIS LEE
SUNDERLAND
North Star Mining
P.O. Box 1052
Homer, Alaska 99603

SUNFLOWER MINING CO.
Brent B. Pace
P.O. Box 564
Soldotna, Alaska 99669

WICK SUNPERLAND
P.O. Box 112
Central, Alaska 99730

SUNSHINE MINING CO.
M. E. Bernhardt,
Elton R. Modroo
P.O. Box 1080
Kellogg, ID 83837
(Exploration - Base
Metals; Placer - Gold)

SUNRISE CONSOLIDATED
MINERALS
Box 51
Hope, Alaska 99605

R. H. SVOBODA
400 Spruce St.
Fairbanks, Alaska 99701

SWAN MARK MINING
ENTERPRISES
SR Box 90668B
Fairbanks, Alaska 99701

VAN B. SWAN
P.O. Box 3932
Kenai, Alaska 99611

NELS & MARGARET
SWANBURG
Box 719
Nome, Alaska 99762

RALPH SWARTHOUT
Box 8-9127
Anchorage, Alaska 99508

FRED SWINGLER/JOHN
WITLEY
257 E. Potter Drive
Anchorage, Alaska 99502

T. J. MINING
Star Route D
Box 9068
Palmer, Alaska 99645

T & M MINING
Wild Lake
Bettles, Alaska 99726

TAKU MINING
P.O. Box 229
Douglas, Alaska 99824

TECHNICAL METALS
PROCESSING
393 N. Morrisson
San Jose, California 95126

TERRITORIAL CORP.
D. K. Hogan
Box 6217
Albuquerque, NM 87197

TERRITORIAL CORP.
c/o Ranchers Exploration
& Development Corp.
Double Eagle Mine
Box 6217
Albuquerque, NM 87197

AVERILL SHELDON
THAYER
Box 80052
College, Alaska 99708

THISTLE CREEK
MINING COMPANY
SR 51329-B
Fairbanks, Alaska 99701

FLOYD WAYNE
THOINBRUGH
P.O. Box 657
Ft. Greely, Alaska 98733

JOHN C. THOMAS
Tungsten Mining
P.O. Box 98
Central, Alaska 99730
(Placer - Gold;
Lode - Tungsten)

IVAN THORALL
Shisana Airport
Glennallen, Alaska 99588

THREE G MINE
Rt. 1
Healy, Alaska 99743

THREE RIVERS MINING
COMPANY
P.O. Box 2875
Anchorage, Alaska 99503

THURMAN OIL & MINING
925 Aurora Drive
Fairbanks, Alaska 99701

VERNON A THURNEAU
Box 51
Tok, Alaska 99780

TOM-KAT/RIFFLE
MINING CO.
Burton Carver
Box 40
Soldotna, Alaska 99669

CAMDEN W. & CYNTHIA D.
TOOBEY
P.O. Box 113
Girdwood, Alaska 99587

TRAIL MINING AND
DEVELOPMENT CO.
Sidney A. Abbott
SRA Box 100
Anchorage, Alaska 99502
(Underground Dredge,
Placer - Gold, Silver,
Copper)

TRI-CON MINING, INC.
P.O. Box 2357
Fairbanks, Alaska 99707
(Placer/Lode - Gold &
Silver)

TRIPLE B MINING
William S. Stock
Thunderbird Drive
St. Rt. 2, Box 312
Chugiak, Alaska 99567

JAMES WALLACE
TRUEDELLE
P.O. Box 972
Soldotna, Alaska 99669

JAYCE L. & KAREN M.
TUCKER, GARY T.
LONGLEY, SR.
Box 1051
Nome, Alaska 99762

ROBERT TUCKER/JAMES
LEGGETT
3101 Rose Street
Anchorage, Alaska 99507

WALLY TURNER
2564 State Street
Fairbanks, Alaska 99701

N. B. TWEET & SONS
Box 503
Teller, Alaska 99778

OSCAR TWEITEN
Box 162
Fairbanks, Alaska 99707

BRYSON ALLEN TWIDWELL
9599 Brayton Drive, No. 442
Anchorage, Alaska 99507

TWIN DOMES MINING
Box 58
Eagle, Alaska 99738

TWO M J N ASSOC.
Harry H. Warren, Agent
Rt. 2, Box 256
Sterling, Alaska 99672

LLOYD L. TYREC
P.O. Box 3-4027 ECB
Anchorage, Alaska 99501

DAVID UNDERWOOD
114 Mile, Steese Hwy.
Central, Alaska 99730

UNIVERSITY OF ALASKA,
FAIRBANKS
School of Mineral Industry
Fairbanks, Alaska 99701

DANIEL R. & MARVEL A.
UNSICKER
8516 LaViento Drive
Anchorage, Alaska 99502

KENNETH R. UPCLIURCH
P.O. Box 2006
Palmer, Alaska 99645

KATHY LEE URBON
301 Ergeg
Fairbanks, Alaska 99701

USIBELLI COAL MINE,
INCORPORATED
Pouch 1
Usibelli, Alaska 99787
(Surface Strip - Coal)

BARBARA K. VAN HORSEN,
STEVE KRIZMAN &
HENRY KRIZMAN
4012 Reka Drive
Unit G-6
Anchorage, Alaska 99504

BETTY K. VELIKANJE
2600 Draper Drive
Anchorage, Alaska 99503

ANGEL VIDAL &
STEPHEN MAHONEY
4357 Spenard Rd., No. 3
Spenard, Alaska 99503

VLARA BEA, INC.
General Delivery
Candle, Alaska 99728

WGM, INC.
R. S. Fredericksen
P.O. Box 59
Anchorage, Alaska 99510

W H MINING ASSOC.
Box 30
Hope, Alaska 99605

LEE WAITOLA
Sunshine Star Rt.
Kellogg, ID 83837

DANIEL K. WALSH &
PEARSE M. WALSH
Box 504
Nome, Alaska 99762

WALKER FORK MINING
CO.
P.O. Box 2196
Fairbanks, Alaska 99701

PAUL F. WALTERS
P.O. Box 8268
Anchorage, Alaska 99508

PAUL WATKINS WHITE
Patrick Douglas Peede
SR Box 60990
Fairbanks, Alaska 99701

WAWBEEK MINING CO.
2221 Muldoon Rd., No. 553
Anchorage, Alaska 99504

FREDERICK A. WEINARD
General Delivery
Candle, Alaska 99728

WESTERN ALASKA MINING
& OUTFITTING
139 South Beverly Dr.
Beverly Hills, CA 90212

WESTERN MINERALS
P.O. Box 250
Juneau, Alaska 99802

R. N. WHEDE
SR 3, Box 30160
Fairbanks, Alaska 99701

WHITE BEAR - FAULKNER
P.O. Box 246
Bethel, Alaska 99559

WHITE MINING CO.
P.O. Box 2794
Fairbanks, Alaska 99707
(Lode - Various)

BETTY & DAVID
WHITEHORN
D & B Mining
SR Box 80459
Fairbanks, Alaska 99701
(Dredge & Placer - Gold)

ERIC & PAUL WIELER
Box 15748A
Anchorage, Alaska 99504

DANIEL MATTHEW
WIETCHY
P.O. Box 60472
Fairbanks, Alaska 99706

WILD RIVER VENTURES
General Delivery
Wild Lake
Bettles, Alaska 99726

DENNIS D. WILKINS
General Delivery
Willow, Alaska 99688

FRED D WILKINSON
P.O. Box 2702
Fairbanks, Alaska 99707

DENNIS & J. A.
WILLOUGHBY
P.O. Box 4318
Soldotna, Alaska 99669

WILSON CONSTRUCTION,
INC.
Cordova, Alaska 99574
(Gravel)

DONALD WILSON
General Delivery
Bettles, Alaska 99726

WINDY CK. TIMBERLINE
MINING CO.
P.O. Box 231
Copper Center, Alaska 99573

DELBERT E. WISBY
P.O. Box 887
Anchorage, Alaska 99508

WITHROW MINING CO.
General Delivery
Bettles, Alaska 99726

RAYMOND D. WOLF
Box 625
Cave Junction, OR 97523

WOLFF MINING
Robert V. Wolff
c/o Boundary Lodge
Boundary, Alaska 99790

JULES WRIGHT
P.O. Box 60113
Fairbanks, Alaska 99706

DONALD E. YOUNG
P.O. Box 2469
Fairbanks, Alaska 99707

ROBERT V. YOUNG
Box 221
Talkeetna, Alaska 99676

YUKON MINING CO.
SRA Box 2061-G
Anchorage, Alaska 99507

YUKON MINING CO.
P.O. Box 1454
Anchorage, Alaska 99510

G. W. Seuffert
P.O. Box 80325
Fairbanks, Alaska 99708

YUKON MINING CO.
OF ALASKA
G. W. Seuffert
P.O. Box 80325
Fairbanks, Alaska 99708

YUKON MINING CO. OF
ALASKA
P.O. Box 3130
Anchorage, Alaska 99510

L. E. WYRICK
1133 M Court
Anchorage, Alaska 99501

PAUL E. ZABRISKIE
SRA Box 1585-F
Anchorage, Alaska 99507

GEORGE W. ZIMMER
2009 E. 3rd Avenue
Apt. 18E
Anchorage, Alaska 99501

J. D. ZIMMERMAN
General Delivery
Manley Hot Springs
Alaska 99756

ZODIAC MINING CO.
P.O. Box 55023
North Pole, Alaska 99705

Appendix F

Sand, Gravel and Quarry Stone Operators, 1982

CENTRAL CONSTRUCTION COMPANY, INC.
2112 Third Avenue
Seattle, Washington 98121
(Alaska Peninsula)

CITY OF ANCHORAGE
Department of Public Works
P.O. Box 400
Anchorage, Alaska 99510
(Southcentral)

RCJ ENTERPRISES
A&G Pit
Box 4-2577
Anchorage, Alaska 99509
(Southcentral)

ALASKA AGGREGATE CORP.
Alagco Pit
7800 Lake Otis Parkway
Anchorage, Alaska 99502
(Southcentral)

ENERGY CO. OF ALASKA
Tudor Road Pit
4607 E. Tudor Road
Anchorage, Alaska 99507
(Southcentral)

ANCHORAGE SAND & GRAVEL COMPANY
Lake Otis Pit
1813 1st Avenue
Anchorage, Alaska 99501
(Southcentral)

ASSOCIATED AGGREGATE COMPANY, INC.
Valley Concrete Pit
Box 7 Star Route B
Palmer, Alaska 99645
(Southcentral)

KLONDIKE ALASKA, INC.
KLONDIKE Pit & Plant
Box 588A
Chugiak, Alaska 99567
(Southcentral)

STEPHAN & SONS, INC.
Castle Pit
6957 Seward Highway
Anchorage, Alaska 99502
(Southcentral)

NORTHERN STEEL CORP.
Northern Steel Pit
Box 8001 NRB
Kenai, Alaska 99611
(Southcentral)

ROGERS & BABLER, INC.
Moreley Pit
4607 E. Tudor Road
Anchorage, Alaska 99507
(Southcentral)

ANCHORAGE SAND & GRAVEL COMPANY
Shackleton Pit
1813 E. 1st Avenue
Anchorage, Alaska 99501
(Southcentral)

MATANUSKA-SUSITNA BOROUGH
Butte Pit No. 1
Box B
Palmer, Alaska 99645
(Southcentral)

TAKU CONSTRUCTION & ENGINEERING
Matanuska Pit
P.O. Box 4-1942
Anchorage, Alaska 99509
(Southcentral)

DOUGLAS MOFFITT CONSTRUCTION
Moffitt Pit
Box 47
Palmer, Alaska 99645
(Southcentral)

ANCHORAGE SAND & GRAVEL COMPANY
Gebhart Pit
1813 E. 1st Avenue
Anchorage, Alaska 99501
(Southcentral)

STEPHAN & SONS, INC.
Spring Creek Pit
6957 Old Seward Highway
Anchorage, Alaska 99502
(Southcentral)

ANCHORAGE SAND & GRAVEL COMPANY
Palmer Loading Station Pit
1813 1st Avenue
Anchorage, Alaska 99501
(Southcentral)

ANCHORAGE SAND & GRAVEL COMPANY
Sand Lake West Pit
1813 1st Avenue
Anchorage, Alaska 99501
(Southcentral)

HERMON BROS CONSTRUCTION CO.
Matanuska River Pit
Box Q
Palmer, Alaska 99645
(Southcentral)

WILDER CONSTRUCTION CO., INC.
2006 State Street
Bellingham, WA 98225
(Southcentral)

ANCHORAGE SAND & GRAVEL COMPANY
Klatt Pit
1813 1st Avenue
Anchorage, Alaska 99501
(Southcentral)

MATANUSKA REDI MIX CONCRETE CO.
Fairview Loop Road Pit
Box B
Palmer, Alaska 99645
(Southcentral)

COOK INLET ASPHALT
Pioneer Plant
Box 4 1912
Anchorage, Alaska 99509
(Southcentral)

CONROCK CO., INC.
Conrock North Pit
1301 E. 64th Avenue
Anchorage, Alaska 99502
(Southcentral)

WILDER CONSTRUCTION CO., INC.
Wilder Sand Lake Pit
1813 E. 1st, Suite 203
Anchorage, Alaska 99501
(Southcentral)

ROGERS & BABLER
Chugiak Pit
1301 E. 64th Avenue
Anchorage, Alaska 99502
(Southcentral)

FEDERAL AVIATION ADMINISTRATION
Alaska Region
632 6th Street
Anchorage, Alaska 99501
(Southcentral)

CITY OF CORDOVA
Box 1210
Cordova, Alaska 99574
(Southcentral)

WASILLA AGGREGATES
Sand & Gravel Operation
P.O. Box 110
Wasilla, Alaska 99687
(Southcentral)

HARRIS SAND & GRAVEL
Glacier Pit
P.O. Box 72
Valdez, Alaska 99686
(Southcentral)

H & H CONTRACTORS, INC.
Material Site 30 0
Box 60610 - Phillips Field
Fairbanks, Alaska 99706
(Eastern Interior)

JOES TRUCKING CO.
Alaska Asphalt Pit
Box 10 1687
Anchorage, Alaska 99502
(Southcentral)

EARTHMOVERS OF FAIRBANKS
Glacier Stream Pit
P.O. Box 447
Valdez, Alaska 99686
(Southcentral)

H & H CONTRACTORS, INC.
Slana Pit
Box 60610 - Phillips Field
Fairbanks, Alaska 99706
(Eastern Interior)

BETTER CONCRETE PRODUCTS CORP.
Better Concrete Pit & Plant
P.O. Box 579
Kenai, Alaska 99611
(Southcentral)

BETTER CONCRETE PRODUCTS CORP.
Sand & Gravel
P.O. Box 579
Kenai, Alaska 99611
(Southcentral)

PENINSULA AGGREGATE
Stubblefield Pit
Box 271
Soldotna, Alaska 99669
(Southcentral)

ALASKA DEPT. OF HIGHWAYS
Naptowne Pit
Soldotna, Alaska 99669
(Southcentral)

METCO, INC.
Metco River Bar
Box 895
Seward, Alaska 99664
(Southcentral)

CENTRAL CONSTRUCTION CO., INC.
Nome Tailings Pit
2112 Third Avenue
Seattle, WA 98121
(Western)

BUREAU OF INDIAN AFFAIRS
Juneau Area OFC Br Rds
P.O. Box 3-8000
Juneau, Alaska 99801
(Southeastern)

JUNEAY READY MIX
Lemon Creek Pit and Plant
Box 270 - 6 Mile
Glacier Highway
Juneau, Alaska 99801
(Southeastern)

GASTINEAU CONTRACTORS
Upper Mendenhall Rv. Pit
Box 409
Juneau, Alaska 99801
(Southeastern)

HOLIN HORN & SHANKS
Horns Pit
RR 3, Box 3223, No. 29
Juneau, Alaska 99801
(Southeastern)

BELARDI & SCHNEIDER
Switzer Creek Pit
RR3, Box 3720
Juneau, Alaska 99801
(Southeastern)

HERNDON & NEAL GRAVEL CO.
Herndon & Neal Pit
Box 393
Homer, Alaska 99603
(Southcentral)

BRECHAN ENTERPRISES
Bellis Flat and Sand Beade Pits
Box 1275
Kodiak, Alaska 99615
(Southcentral)

CENTRAL CONSTRUCTION
CO., INC.
Sand & Gravel Operation
2112 Third Avenue
Seattle, Washington 98121
(Southwestern)

FEDERAL AVIATION
ADMINISTRATION
Northern Alaska
701 C Street
P.O. Box 14
Anchorage, Alaska 99513
(Northern)

FEDERAL AVIATION
ADMINISTRATION
Alaska Region
701 C Street, P.O. Box 14
Anchorage, Alaska 99513
(Western)

BRUCE MORLEY
Pete Ludwig Pit
RR3 Box 3753A.
Juneau, Alaska 99801
(Southeastern)

GASTINEAU
CONTRACTORS
Lower Mendenhall River
Pit
Box 409
Juneau, Alaska 99801
(Southeastern)

CHANNEL CONSTRUCTION, INC.
Landfill P2T
Box 1267
Juneau, Alaska 99802
(Southeastern)

A. N. KAISER & SONS
River Road Pit
Box 66
Auke Bay, Alaska 99821
(Southeastern)

JOHN CAMPBELL
CONSTRUCTION
Meadow Grove Pit
P.O. Box 474
Juneau, Alaska 99801
(Southeastern)

RED SAMM
CONSTRUCTION, INC.
Erwin Pit
Rt. 6, Box 68000
Juneau, Alaska 99803
(Southeastern)

ALASKA ELECTRIC
LIGHT & POWER CO.
Mill Tailing and Salmon
Creek Pits
Box 134, Franklin Street
Juneau, Alaska 99801
(Southeastern)

DWAIN REDDEKOPP, INC.
Tee Harbor Sq Pit
Box 27
Auke Bay, Alaska 99821
(Southeastern)

RED SAMM
CONSTRUCTION, INC.
Ludwig Pit
RR 6, Box 68000
Juneau, Alaska 99803
(Southeastern)

B & B EARTH MOVERS
Ludwig Pit
RR 3, Box 3754
Juneau, Alaska 99801
(Southeastern)

MADSEN CONSTRUCTION,
INC.
Erwin Pit No. 2
Box 338
Juneau, Alaska 99801
(Southeastern)

DWAIN REDDEKOPP, INC
Kodzoff Pit
Box 27
Auke Bay, Alaska 99821
(Southeastern)

FEDERAL AVIATION
ADMINISTRATION
Alaska Region
701 C St., P.O. Box 14
Anchorage, Alaska 99513
(Eastern Interior)

FAIRBANKS SAND &
GRAVEL, INC.
Box 686
Fairbanks, Alaska 99707
(Eastern Interior)

GHEMM CO., INC.
Metro Pit
P.O. Box 507
Fairbanks, Alaska 99707
(Eastern Interior)

H & H CONTRACTORS
Bridgewater and H & H Pits
Box 1811
Fairbanks, Alaska 99707
(Eastern Interior)

EARTHMOVERS OF
FAIRBANKS
Earthmovers Pit
925 Aurora Drive
Fairbanks, Alaska 99701
(Eastern Interior)

RUDYS SAND & GRAVEL
Rudys Pit
General Delivery
Tok, Alaska 99780
(Eastern Interior)

ALASKA DEPT. OF
HIGHWAYS
Soldotna Creek Pit
Soldotna, Alaska 99669
(Southcentral)

HARLEYS TRUCKING
David Block Pit & Plant
Box 1474
Soldotna, Alaska 99669
(Southcentral)

SODERBERG LOGGING &
CONSTRUCTION CO.
Quarry No. 5, Station 79400
Box 460
Kake, Alaska 99830
(Southeastern)

SILVER BAY LOGGING
COMPANY
Quarry No. 3, Station
335 & 50
Box 398
Sitka, Alaska 99835
(Southeastern)

DEPT. OF
TRANSPORTATION
Various Contractors
Pouch 6900
Anchorage, Alaska 99502
(Eastern Interior)

YUTAN CONSTRUCTION
COMPANY
Browns Hill Quarry
Box 1775
Fairbanks, Alaska 99707
(Eastern Interior)

KADIN CORP.
Broome Quarry
Box 1348
Wrangell, Alaska 99928
(Southeastern)

OLSEN & SONS, LTD.
Dry Straight Quarry No. 2
Box 309
Petersburg, Alaska 99833
(Southeastern)

S & S GENERAL
CONTRACTORS
Mitchell Tonka Quarry
No. 5, 3, 2
Box 3 4026
Anchorage, Alaska 99501
(Southeastern)

NEALY BROS.
CONTRACTING
Comstat Quarry
Box 4 807
Anchorage, Alaska 99503
(Southeastern)

CITY OF WRANGELL
Cemetery Quarry
Wrangell, Alaska 99929
(Southeastern)

PANHANDLE TRAILER
COURT
State Quarry 74179
P.O. Box 492
Wrangell, Alaska 99929
(Southeastern)

OWENS DRILLING CO.
Port Alice
Box 842
Wrangell, Alaska 99929
(Southeastern)

BRAND CONSTRUCTION
COMPANY
Lighthouse Quarry
Rt. 1, Box 78
Ketchikan, Alaska 99901
(Southeastern)

BRAND CONSTRUCTION
COMPANY
L Heureau Quarry
Rt. 1, Box 78
Ketchikan, Alaska 99901
(Southeastern)

HARDROCK CONSTRUCTION CO.
Hardrock Quarry
Box 6455
Ketchikan, Alaska 99901
(Southeastern)

CAMPBELL CONSTRUCTION CO.
Little Naukati Bay Quarry
Box 1389
Ketchikan, Alaska 99901
(Southeastern)

U.S. FOREST SERVICE
REGION 10
Various Contractors
Box 1628
Juneau, Alaska 99801
(Southeastern)

ROCK & ROAD
CONSTRUCTION
Rock & Road Quarry
P.O. Box 585, Lumber St.
Petersburg, Alaska 99833
(Southeastern)

DEPT. OF
TRANSPORTATION
Division of Aviation -
Own Crews
Pouch 6900
Anchorage, Alaska 99502
(Southeastern)

WAYNE CONSTRUCTION
COMPANY
Smileys Cannery Quarry
4100 Tongass Avenue
Ketchikan, Alaska 99901
(Southeastern)

DEPT. OF
TRANSPORTATION
Various Contractors
Pouch 6900
Anchorage, Alaska 99502
(Southeastern)

CITY OF PETERSBURG
Traprock Operation
Airport Quarry
P.O. Box 329
Petersburg, Alaska 99833
(Southeastern)

CITY OF JUNEAU
Various Contractors
155 S. Seward Street
Juneau, Alaska 99801
(Southeastern)

MOORES QUARRY
Box 8100
Ketchikan, Alaska 99901
(Southeastern)

WAYNE CONSTRUCTION
COMPANY
Carlanna Creek Quarry
4100 Tongass Avenue
Ketchikan, Alaska 99901
(Southeastern)

DEPT. OF PUBLIC WORKS
Division of Aviation
Various Contractors
P.O. Box 255
Mt. Edgecumbe, Alaska 99835
(Southeastern)

DEPT. OF
TRANSPORTATION
Various Contractors
Pouch 6900
Anchorage, Alaska 99502
(Eastern Interior)

U.S. FOREST SERVICE
REGION 10
Anchorage Area -
Various Contractors
Box 1628
Juneau, Alaska 99801
(Southcentral)

CITY OF KODIAK
Airport Quarry
Box 1397
Kodiak, Alaska 99615
(Southcentral)

BRECHAN ENTERPRISES,
INC.
City Airport Pit
Box 1275
Kodiak, Alaska 99615
(Southcentral)

ALASKA DEPT. OF
TRANSPORTATION
Seward Peninsula
P.O. Box 1467
Juneau, Alaska 99801
(Western)

THE ALASKA RAILROAD
Granite Operation
P.O. Box 7 2111
Anchorage, Alaska 99510
(Alaska Peninsula)

ALEUTIAN CONSTRUCTORS
Lake Leon Rock Quarry
Box 4D
Anchorage, Alaska 99509
(Alaska Peninsula)

U.S. FOREST SERVICE
REGION 10
Cordova Work Center
Chugach National Forest
Box 280
Cordova, Alaska 99570
(Cook Inlet)

Back Cover —

upper left — Slate Creek Asbestos 12" core (Doyon, Inc.).
photo by John Sims

upper right — Bulk sample pit, Placer Amex at Beluga.
photo by Benno Patsch

center — Discovery lode for Arctic 10 claim, Kogoluktuk River in background, Ambler District.
photo by Jay Hammitt

lower left — Loading coal at Usibelli.
photo by Vada Peterman

lower right — Dredge #6, Alaska Gold operation at Nome.
photo by Charlie Green

