Alaska's Mineral Industry 1998

SPECIAL REPORT 53
Division of Geological &
Geophysical Surveys

in cooperation with
Division of Trade & Development
Division of Mining, Land and Water

Alaska's Mineral Industry 1998

by
D.J. Szumigala and R.C. Swainbank

Division of Geological & Geophysical Surveys

SPECIAL REPORT 53

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Publication of this report is required by Alaska Statute 41 "to determine the potential of Alaska land for production of metals, minerals, fuels, and geothermal resources; the location and supplies of groundwater and construction materials; the potential geologic hazards to buildings, roads, bridges, and other installations and structures; and shall conduct such other surveys and investigations as will advance knowledge of the geology of Alaska."

NOTE: Mention of any company or brand name does not constitute endorsement by any branch or employee of the State of Alaska.

Alaska's minerals industry had another outstanding year in 1998 and continues to be a major factor in our state's increasingly diversified economy. The total value of just over $1 billion was the second highest on record, and the third billion dollar year in a row for Alaska's mining industry.

Increased production from Alaska's largest mines helped offset historically low prices for metals last year. The Red Dog Mine near Kotzebue increased production of lead, zinc, and silver and continues to be the world's largest producer of zinc, with exciting new prospects discovered this year. Greens Creek Mine near Juneau remains one of the largest producers of silver in the U.S., and continues to produce significant amounts of lead, zinc, copper, and gold. The Fort Knox Mine near Fairbanks is Alaska's largest gold producer.

In all, Alaska's mineral industry provided almost 3,500 good paying, full-time jobs for Alaskans. While that was down from the previous year, mainly due to the temporary closure of placer mining operations, interest in Alaska's mineral wealth remains strong.

Spending on new exploration during 1998 held strong, primarily in the eastern interior region of Alaska with exciting results from the Pogo property near Delta Junction, continued exploration around Fairbanks, and renewed interest in the polymetallic minerals found on the north flank of the Alaska Range.

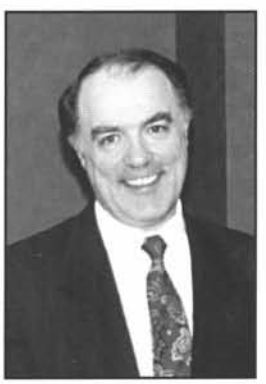
The State of Alaska continues to be a partner in encouraging mining development. The Division of Geological & Geophysical Surveys continued their programs to provide detailed information on Alaska's geologic framework. Airborne geophysical surveys and related field programs help point the way to future exploration and development.

The year 1998 continued to be a healthy one for Alaska's mining industry. While challenges to the industry remain, the State of Alaska looks to continue its support and encouragement for this important sector of Alaska's economy.
Governor Tony Knowles

Despite a worldwide downturn in exploration in 1998, there was a negligible decrease in Alaska, where the excitement created by the Pogo discovery led to a staking rush in the eastern interior. Much of the activity was by companies new to Alaska, and we welcome them as partners in the development of Alaska's abundant mineral resources

The value of mineral production also remained high as the giant Red Dog zinc-lead mine ramped up to 135% of the previous year's production due to completion of a major facility upgrade, funded in part by the Alaska Industrial Development and Export Authority (AIDEA). Some of the functions of AIDEA, an entity within the new Department of Community and Economic Development, are documented in this volume.

Although the total value of the mineral industry in Alaska declined slightly in 1998, it remains a billion dollar industry, and creates new wealth in some of the more remote areas of the state. As the Asian and South American economies recover from the recession, Alaska can help provide the raw material to feed the global appetite well into the next millennium.
Deborah B. Sedwick, Commissioner, Department of Community & Economic Development



1998 was a year of challenges and promises. For challenges: metal prices were the lowest since the late '70s. These low prices have challenged our existing producers and challenged the families that rely on small placer operations for their livelihood. In general, the mining industry continued to experience company downsizing and cutting back of exploration programs worldwide. On the good side: Alaska still continues to enjoy favor among both the major and junior companies. Claim staking continued to hold at or near previous levels, and new junior mining companies continued to show strong interest in Alaska. Production levels have stayed up as have important contributions of the industry to employment and income for Alaskans. In addition, as the year ends we may be seeing some upward movement in the price of gold.

The mining industry continues to contribute to Alaska in continued exploration and development of new deposits on state lands, and Alaska Native corporation lands. The industry remains especially important in rural Alaska where the benefits of mineral development translate to employment opportunities and help raise the standard of living for rural residents. The opportunities still exist. We at DNR will do everything we can to help make these opportunities realities.
John T. Shively, Commissioner, Department of Natural Resources

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EXECUTIVE SUMMARY

Alaska's Mineral Industry 1998, Special Report 53, is the 18th annual report produced jointly by the Departments of Natural Resources and Community and Economic Development through their Divisions of Geological & Geophysical Surveys (DGGS) and Trade & Development, respectively.

The total value of Alaska's mineral industry during the 1998 calendar year, including exploration and development investment and mineral production, was $1.033 billion. This is an 11 percent drop from the record value of $1.162 billion set in 1997. The decrease is due to a sharp decline in base and precious metal prices, and the completion of major mineral development projects in Alaska between 1997 and 1998.

The value of Alaska's mineral production decreased 1.7 percent from the 1997 level to $920.2 million. In general, increased production from Alaska's largest mines was offset by historically low base and precious metal prices. Red Dog Mine near Kotzebue increased production of lead, zinc, and silver and continues to be the world's largest producer of zinc. Greens Creek Mine near Juneau remains one of the largest producers of silver in the U.S., and continues to produce significant lead, zinc, copper, and gold. Fort Knox Mine near Fairbanks is Alaska's largest gold producer, with an average daily production of approximately 1,000 ounces of gold, and there was continued gold production from Nixon Fork Mine, Illinois Creek Mine, and over 110 placer mines distributed throughout Alaska. Usibelli Coal Mine remained Alaska's sole coal producer and 1998 production was hampered by low coal prices and recessed Asian markets. Sealaska Corp. began production of high-grade calcium carbonate, suitable for high-quality paper coatings and paint, from Calder Mine on Prince of Wales Island. Sand, gravel, and rock production was significantly less than 1997 levels, but almost equal to the average production amounts for the period from 1995 to 1997.

Development expenditures in 1998 dropped sharply from $167.4 million spent in 1997 to $55.4 million spent in 1998. Red Dog Mine completed its Production Rate Increase project in September. Fort Knox Mine added a SAG crusher and a number of in-pit projects. Greens Creek Mine continued development work to access its Southwest Orebody. Development work was completed at Calder Mine and the mine was brought into operation in August. Ongoing development work continued at numerous placer mines throughout the state.

Exploration expenditures in Alaska during 1998 were $57.3 million, down only 0.8 percent from 1997 levels, despite historically low metal prices and massive reductions in worldwide mineral exploration budgets. Sixty-three percent of expenditures were spent in the eastern interior region of Alaska, sparked by continued exciting results from the Pogo property, continued exploration programs in the Fairbanks mining district, and renewed interest in the polymetallic mineral belt on the north flank of the Alaska Range. Significant resource calculations were announced for several properties in the eastern interior region. New resource calculations include 5.2 million ounces of gold at the Pogo property, 1.6 million ounces of gold at the Golden Summit property, and 3.1 million tons of 4.4 percent zinc, 1.9 percent lead, 0.2 percent copper, 2.73 ounces per ton silver, and 0.016 ounces per ton gold calculated for the DC North horizon on the Dry Creek property. Gold exploration was also strong in southwestern Alaska, with an announced resource of 11.5 million ounces of gold at the Donlin Creek property and a gold resource of almost 1 million ounces at the Shotgun property.

Alaska's mineral industry in 1998 provided an estimated 3,476 full-time-equivalent jobs, a drop of approximately 10 percent from 1997. Most of the job loss was in the development sector. Gold production employment was also lower in 1998 due to no mining at Illinois Creek Mine and temporary closure of placer mining operations across Alaska.

DGGS contracted for airborne geophysical surveys conducted in the Fortymile and Livengood mining districts and released airborne geophysical results for surveys flown in the Ruby, Talkeetna Mountains, Wrangell, and Wiseman areas. DGGS conducted mineral-related field programs in the Petersville and Chulitna areas previously surveyed by airborne geophysics. Greens Creek Mine won first place for underground mines in the Sentinels of Safety Award and Fort Knox Mine was second runner up for open-pit mines in the same contest. Jon Vander Wal received the 1998 Reclamation Award for Excellent Mine Reclamation from the Alaska Department of Natural Resources. A long-awaited land exchange between Kennecott Minerals Co. and the United States government was completed during 1998 for 7,500 acres adjacent to Greens Creek Mine.

Alaska's Mineral Industry 1998

D.J. Szumigala[1] and R.C. Swainbank[2]

INTRODUCTION

This summary of the 1998 Alaska mineral industry is made possible by information provided through replies to questionnaires mailed by the Alaska Division of Geological & Geophysical Surveys (DGGS), phone interviews, press releases, and other information sources. This report is part of a cooperative venture between DGGS in the Department of Natural Resources (DNR) and the Division of Trade & Development (DTD) in the Department of Community & Economic Development (DCED), with help from the Division of Mining, Land & Water (DMLW) in DNR. This report is for the 1998 calendar year and it is the 18th annual report produced jointly by DNR through DGGS and DCED through DTD.

Figure 1 and table 1 show the estimated value of the mineral industry in Alaska each year from 1981 through 1998, divided into exploration and development investments and value of mined products. As in years past we rely on company information to define exploration and development parameters. Average metal values are calculated from weekly average spot prices on the London Metal Exchange, and these values are used to calculate the value of production unless a company provides a different average sale price. The 1998 Alaska mineral production value does not take into account items such as smelter charges and penalties, or shipping costs. Forward sales at higher-than-spot prices are used if reported by a company. Mining companies report units in either English or metric units, but this publication only reports units using U.S./English units. A conversion table is provided in Appendix G.

The 1998 cumulative value is $1.033 billion, compared with $1.162 billion in 1997. The overall decline in the mineral industry's value is mainly due to a reduction in development expenditures ($55.4 million in 1998 versus $168.4 million in 1997) (table 1; fig. 1), and a slight decline in the value of production, particularly in the metals sector.

Table 1. *Total value of the mineral industry in Alaska by year (in millions of dollars)*

	Exploration (expenditure)	Development (expenditure)	Production (value)	Total
1981	$ 76.0	$ 26.4	$ 188.6	**$ 291.0**
1982	45.0	41.6	196.4	**283.0**
1983	34.1	27.8	232.4	**294.3**
1984	22.8	53.6	199.4	**275.8**
1985	9.2	34.1	226.6	**269.9**
1986	8.9	24.3	198.5	**231.7**
1987	15.7	100.3	202.4	**318.4**
1988	45.5	275.0	232.2	**552.7**
1989	47.8	134.3	277.0	**459.1**
1990	63.3	14.3	533.0	**610.6**
1991	39.9	25.6	546.5	**612.0**
1992	30.2	30.0	560.8	**621.0**
1993	30.3	27.7	448.7	**506.7**
1994	31.1	44.9	507.5	**583.5**
1995	34.3	148.6	537.2	**720.1**
1996	44.6	394.0	590.4	**1,029.0**
1997	57.8	168.4	936.2	**1,162.4**
1998	57.3	55.4	920.2	**1,032.9**
TOTAL	**$693.8**	**$1,626.3**	**$7,534.0**	**$9,854.1**

SOURCE: Alaska's mineral industry reports published annually by DGGS.

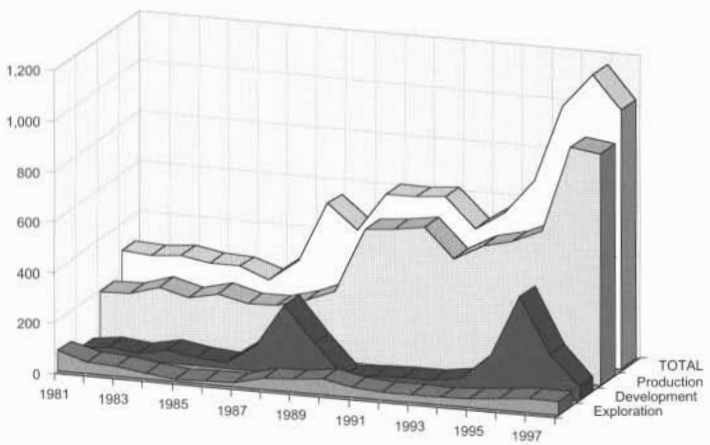


Figure 1. *Alaska's mineral industry total value, 1981-98.*

[1]Alaska Division of Geological & Geophysical Surveys, 794 University Avenue, Suite 200, Fairbanks, Alaska 99709-3645.
[2]Alaska Division of Trade and Development, Unit #7, 3677 College Road, Fairbanks, Alaska 99709.

EMPLOYMENT

The estimated total employment by the Alaska mineral industry in 1998 was 3,476 full-time-equivalent jobs (table 2; fig. 2). This represented a drop of 386 jobs or about 10 percent from the decade high of 3,862 jobs set in 1997. Overall, most of the employment drop was in the development sector, with less development projects in 1998 than in 1997 and major development work at Red Dog Mine completed by mid year. A slight decrease in the number of placer miners for 1998 was due to the low gold price and consequent temporary closure of several operations. Employment in coal mining and in rock production was essentially the same as in 1997.

ACKNOWLEDGMENTS

This report on the Alaska mineral industry is designed to provide current, accurate, and technically reliable information. The authors wish to thank all the companies, agencies, and individuals who responded to the questionnaires or phone calls and provided information about their activities and operations. Without your voluntary and timely information this report would not be possible.

DGGS mailed 1,092 questionnaires in November 1998, and DGGS received 209 replies (19 percent response rate). Dave Szumigala (DGGS) and Dick Swainbank (DTD) prepared the body of the text and appendixes. Alaska Industrial Development and Export Authority (AIDEA) section was provided by AIDEA staff. The cover design is by Ann-Lillian Schell and graphic illustrations are by Alfred Sturmann, Joni Robinson, and Paula Davis. Paula Davis edited the final version, and Joni Robinson completed the layout and design. Publication was made possible by funds from the Division of Trade & Development.

Table 2. *Estimated Alaska mine employment, 1992–98*[a]

	1992	1993	1994	1995	1996	1997	1998
Gold/silver mining							
Placer	1,251	1,205	1,150	975	825	780	710
Lode	N/A	N/A	- -	38	138	415	345
Polymetallic	240	26	- -	- -	68	230	275
Base metals	349	376	311	397	407	478	466
Recreational	325	270	280	255	260	270	255
Sand & gravel	640	580	640	577	598	700	658
Rock	145	205	210	200	149	123	121
Coal	115	109	115	120	115	118	128
Peat	40	49	55	30	38	42	40
Tin, jade, soapstone, ceramics, platinum	20	20	25	20	20	20	20
Mineral development	164	132	115	637	862	409	177
Mineral exploration	137	164	182	157	257	277	282
TOTAL	**3,426**	**3,136**	**3,083**	**3,406**	**3,737**	**3,862**	**3,477**

[a]Calculated on a 260-day work year.
N/A = Not available.
- - Not reported.

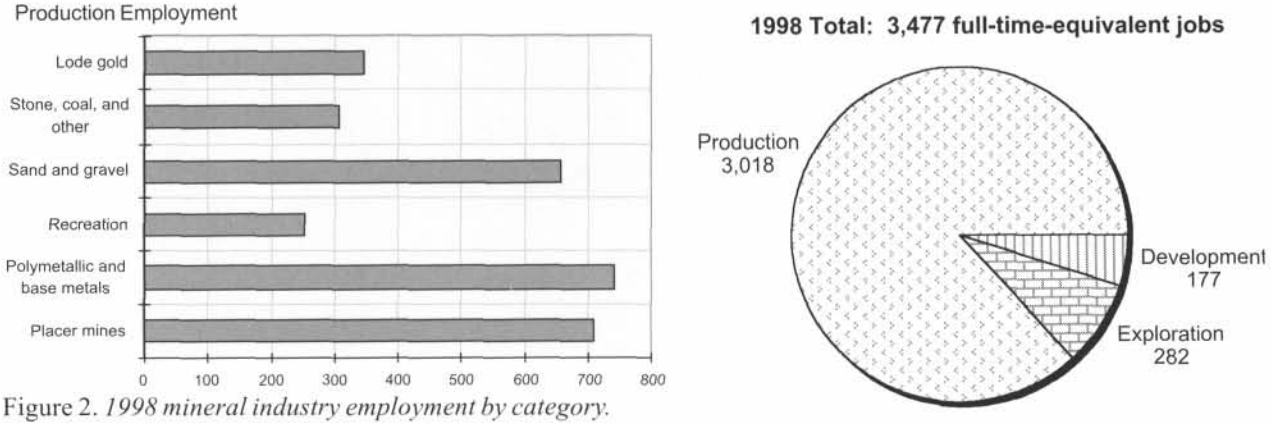


Figure 2. *1998 mineral industry employment by category.*

EXPLORATION

Minimum exploration expenditures throughout Alaska during 1998 were $57.3 million, down only 0.8 percent from the $57.8 million invested in 1997 (table 1) despite massive reductions in exploration budgets worldwide. Figure 3 shows the regions of the state used in this and subsequent sections. Expenditures and employment figures by commodity and region are listed in table 3. Exploration expenditures in Alaska by commodity for the past 17 years are listed in table 4. Tables 3 and 4 show the regional distribution and the commodities sought, and figure 4 is a graphic derived from table 4. Gold continues to be the most favored metal, but in recent years polymetallic deposits which contain gold and silver in addition to base metals such as copper, lead, and zinc, have become more popular. Figure 5 shows the location of the more significant exploration projects.

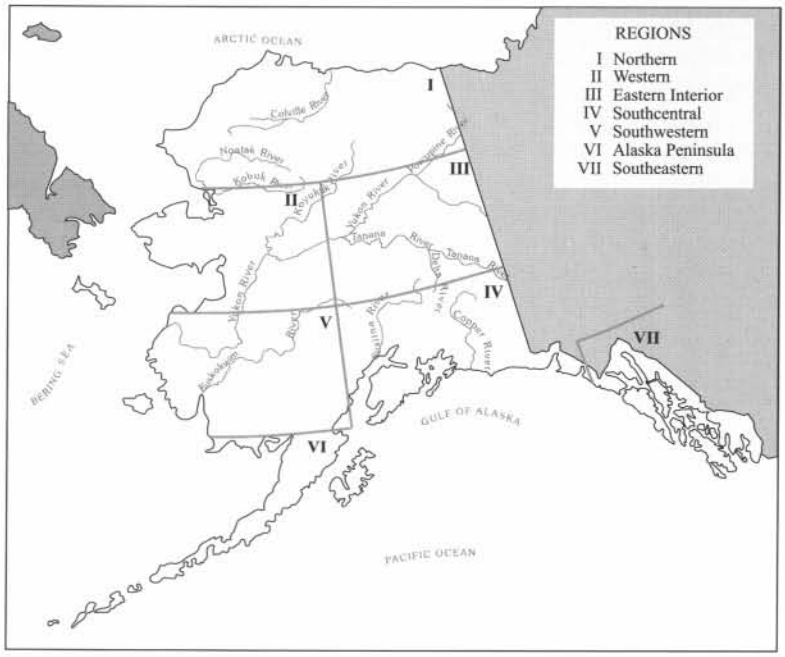


Figure 3. *Regions of mineral activity in Alaska as described in this report.*

Table 3. *Reported exploration expenditures and employment in Alaska, 1998*

	Northern	Western	Eastern interior	South-central	South-western	South-eastern	Total
			Exploration expenditures				
Base metals	$1,000,000	$ --	$ --	$ --	$ --	$ --	**$ 1,000,000**
Polymetallic	2,550,000	20,000	7,191,000	300,000	76,000	3,590,000	**13,727,000**
Precious metals							
Placer	357,000	87,000	393,000	12,000	16,000	99,000	**964,000**
Lode	--	200,000	28,367,000	127,000	10,063,000	2,720,000	**41,477,000**
Coal and peat	--	--	--	87,000	--	--	**87,000**
Industrial minerals	--	--	--	--	--	12,000	**12,000**
Other[a]	--	--	--	--	--	--	**--**
TOTAL	**$3,907,000**	**$307,000**	**$35,951,000**	**$526,000**	**$10,155,000**	**$6,421,000**	**$57,267,000**
			Exploration employment				
Employment							
Workdays	3,970	954	50,443	704	9,847	7,380	**73,298**
Workyears[b]	15	4	194	3	38	28	**282**
Number of companies reporting[c]	8	8	56	9	7	11	**99**

-- Not reported.
[a]Jade, platinum, gemstones.
[b]Based on 260-day workyear.
[c]Some companies were active in several areas.
No exploration expenditures or employment reported for Alaska Peninsula in 1998.

Sixty-three percent of exploration expenditures were spent in the eastern interior region of Alaska and 17.5 percent of exploration dollars were spent in southwestern Alaska. The eastern interior region received the most attention, with much activity around the Pogo gold deposit, where reserves increased to 5.2 million ounces, and in the polymetallic mineral belt on the north flank of the Alaska Range. In southwestern Alaska, the focus was also on gold. Total gold reserves increased to 11.5 million ounces at the Donlin Creek property, and there was other significant work throughout the Kuskokwim mineral belt. In the northern and southeastern regions, base metal and polymetallic targets were the focus of exploration programs.

Table 5 is a summary of mining claim activity during the last 8 years. Slightly more state mining claims and significantly less federal mining claims were staked in 1998 than in 1997, and the number of active claims, both federal and state, increased in 1998. New federal mining claims were generally confined to the Wiseman and Bettles quadrangles in the northern region, and southeastern Alaska, especially the Juneau and Petersburg quadrangles (Appendix A). The largest concentration of staking activity on State lands occurred in the Goodpaster area around the Pogo gold property. The Alaska Division of Mining, Land & Water estimates that at least 150,000 acres of state lands—and maybe more—were staked during 1998 in the

Figure 4. *1998 exploration expenditures by commodity.*

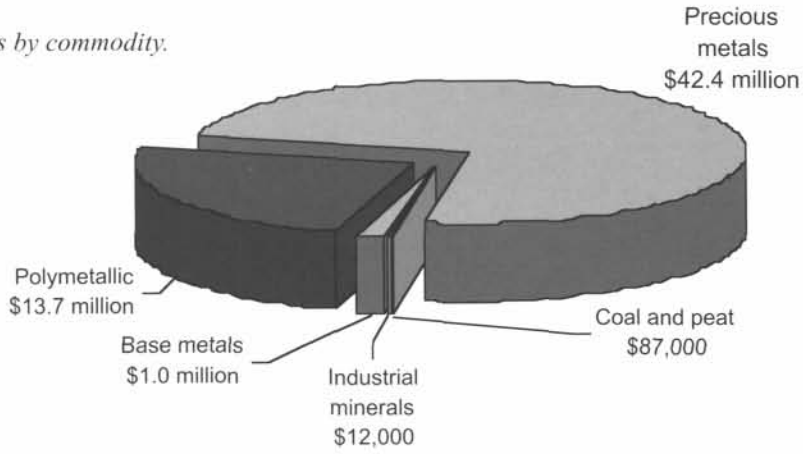


Table 4. *Reported exploration expenditures in Alaska by commodity, 1982–98*

	Base metals	Polymetallic[a]	Precious metals	Industrial minerals	Coal and peat	Other	Total
1982	$31,757,900	$ N/A	$ 10,944,100	$ --	$ 2,900,000	$ 15,300	**$ 45,617,300**
1983	9,758,760	N/A	20,897,555	2,068,300	1,338,454	70,000	**34,133,069**
1984	4,720,596	N/A	14,948,554	270,000	2,065,000	279,500	**22,283,650**
1985	2,397,600	N/A	6,482,400	--	270,000	--	**9,150,000**
1986	1,847,660	N/A	6,107,084	170,000	790,000	--	**8,914,744**
1987	2,523,350	N/A	11,743,711	286,000	1,150,000	31,000	**15,734,061**
1988	1,208,000	N/A	41,370,600	160,200	2,730,000	--	**45,468,800**
1989	3,503,000	N/A	43,205,300	125,000	924,296	5,000	**47,762,596**
1990	5,282,200	N/A	57,185,394	370,000	321,000	97,000	**63,255,594**
1991	4,789,500	N/A	34,422,039	92,000	603,000	2,000	**39,908,539**
1992	1,116,000	3,560,000	25,083,000	25,000	425,000	--	**30,209,000**
1993	910,000	5,676,743	23,382,246	163,500	--	125,000	**30,257,489**
1994	600,000	8,099,054	18,815,560	225,000	2,554,000	810,000	**31,103,614**
1995	2,770,000	10,550,000	20,883,100	100,000	--	3,000	**34,306,100**
1996	1,100,000	11,983,364	31,238,600	400,000	--	--	**44,721,964**
1997	1,700,000	22,347,000	32,960,500	80,000	720,000	--	**57,807,500**
1998	1,000,000	13,727,000	42,441,000	12,000	87,000	--	**57,267,000**
TOTAL	**$76,984,566**	**$75,943,161**	**$442,110,743**	**$4,547,000**	**$16,877,750**	**$1,437,800**	**$617,901,020**

[a]Polymetallic deposits considered as a separate category for the first time in 1992.
N/A = Not available.
-- Not reported.

Goodpaster area near the Pogo prospect. The staking frenzy in the Goodpaster area continued throughout the winter. Current estimates are that 5,350 claims and 2,900 prospecting sites covering 678,000 acres of land were staked and recorded in the Pogo area by late February 1999.

Exploration highlights are given below for each region of Alaska. The information is divided into sections on metal exploration activities and industrial minerals (including coal) activity.

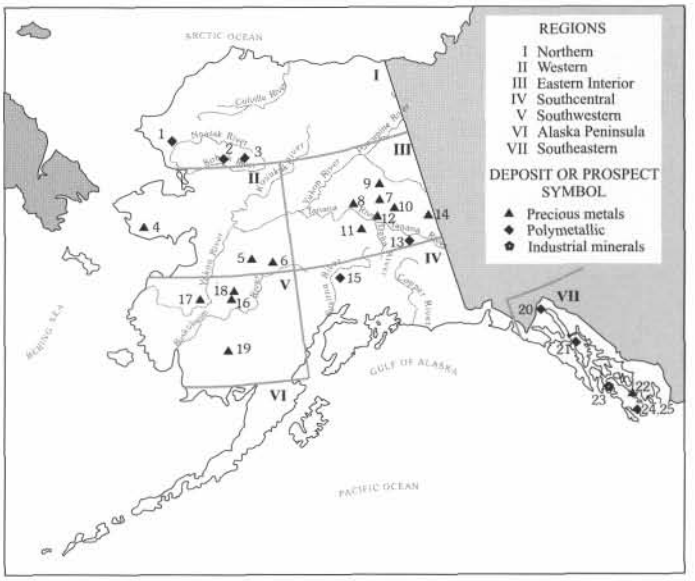
NORTHERN REGION

Exploration expenditures reported in this region in 1998 were $3.9 million, as compared with $3.45 million in 1997.

METALS

Cominco Alaska Inc. and Kennecott Exploration Co. dominated exploration activities in Alaska's northern region during 1998. Cominco Alaska conducted exploration at Red Dog Mine, located north of Kotzebue. Cominco also had a 12,600-foot drill program at the Paalaaq deposit north of the Red Dog Mine Main Pit. This drill program discovered a potential new zone below the Paalaaq deposit that will be explored further with drilling during 1999. Cominco's ore reserves of the Red Dog Mine and satellite deposits are listed in table 6.

Kennecott Exploration Co. had a $2 million exploration program in the western part of the Ambler Copper Belt on



I Northern Region

1. Red Dog Mine—Cominco Alaska Inc.
2. Ambler mineral belt—Kennecott Exploration Co.
3. Arctic deposit—Kennecott Minerals Co.

II Western Region

4. Nome area—Consolidated Aston Resources Ltd.
5. Colorado Creek—North Star Exploration Inc., NovaGold Resources Inc.
6. Nixon Fork—Real del Monte Mining Corp.

III Eastern Interior Region

7. Salcha River area—NovaGold Resources Inc.
8. Fairbanks district
   a. True North—Newmont Exploration Ltd.
   b. Fort Knox—Kinross Gold Corp.
   c. Gil claims—Kinross Gold Corp./Teryl Resource Corp.
   d. Ester Dome—Placer Dome Exploration Inc.
   e. Golden Summit—International Freegold Mineral Development Inc.
   f. General—LaTeko Resources Inc., Cripple Creek Joint Venture
9. Circle district—LaTeko Resources/Camnor Resources Ltd., Golden Phoenix Mineral Inc., Newmont Exploration Ltd.
10. Pogo
    a. Pogo—Teck Corp./Sumitomo Metal Mining America Inc.
    b. Pogo/Goodpaster area—WGM Inc., Sumitomo Corp., North Star Exploration Inc., Newmont Exploration Ltd., Western Keltic Mines Alaska Inc., Equity Engineering Ltd., NovaGold Resources Inc., Ventures Resource Corp.
11. Bonnifield district—Grayd Resource Corp., Camnor Resources Ltd., Inmet Mining Corp.
12. Richardson district—Kennecott Exploration Co., Placer Dome Exploration Inc., Golden Phoenix Minerals Inc., Tri-Valley Corp.
13. Tok area—American Copper & Nickel Co. Inc. (ACNC)/Grayd Resource Corp.
14. Fortymile district—Kennecott Exploration Co.

IV Southcentral Region

15. Iron Creek area—Kennecott Exploration Co.

V Southwestern Region

16. Donlin Creek—Placer Dome Exploration Inc.
17. Stuyahok—Calista Corp.
18. Donlin Creek–Flat area—Ventures Resource Corp., NovaGold Resources Inc.
19. Shotgun Hills—NovaGold Resources Inc.

VI Alaska Peninsula Region

VII Southeastern Region

20. Palmer claims—Rubicon Minerals Corp./Atna Resources Ltd.
21. Greens Creek—Kennecott Minerals Co./Hecla Mining Co.
22. Rush & Brown Mine—Stealth Ventures Ltd.
23. Calder Bay—Sealaska Corp.
24. Niblack—Abacus Minerals Inc./Teck Corp.
25. Kensington—Coeur Alaska Inc.

Figure 5. *Selected exploration projects in Alaska, 1998.*

Table 5. *Summary of claim activity, 1991–98*

Year	1991	1992	1993	1994	1995	1996	1997	1998
New claims								
State	3,391	2,606	2,042	3,365	4,889	10,716	10,002[a]	10,439[b]
Federal	1,299	695	601	341	376	1,571	1,872	427
Subtotal	**4,690**	**3,301**	**2,643**	**3,706**	**5,265**	**12,287**	**11,874**	**10,866**
Active claim assessment								
State	29,754	26,615	25,684	22,601	20,217	25,586	27,602	30,718
Federal	23,222	20,254	9,298	8,495	7,766	9,346	11,320	11,033
Subtotal	**52,976**	**46,869**	**34,982**	**31,096**	**27,983**	**34,932**	**38,922**	**41,751**
Total state	33,145	29,221	27,726	25,966	25,106	36,302	37,604	41,157
Total federal	24,521	20,949	9,899	8,836	8,142	10,917	13,192	11,460
TOTAL	**57,666**	**50,170**	**37,625**	**34,802**	**33,248**	**47,219**	**50,796**	**52,617**

[a]In addition, 2,239 new prospecting sites, equivalent in area to 8,956 mining claims, were located in 1997. Includes 3,969 new claims on State-selected land.

[b]In addition, 3,419 new prospecting sites, equivalent in area to 13,676 mining claims, were located in 1998. Approximately 6,000 active mining prospecting sites in Alaska.

Information provided by Erik Hansen (independent consultant), Ronna Graham and Kerwin Krause (Division of Mining, Land & Water Management) and Carol Taylor and Don Baggs (U.S. Bureau of Land Management).

the south flank of the Brooks Range, and Kennecott Minerals had a modest drill program at the Arctic deposit farther to the east. Kennecott's programs included 6,000 feet of diamond core drilling, regional airborne geophysical surveys, and focused mapping programs. The Ambler district exploration is a joint venture between Kennecott Exploration Co. and Nana Corp. and included exploration on large blocks of State land.

The results of the cooperative DGGS–Bureau of Land Management (BLM) airborne geophysical survey of the Wiseman area were released during 1998. BLM geologists continued their evaluation of the Koyukuk mining district and conducted surface geophysical surveys in the Wiseman area.

No expenditures for coal or industrial minerals exploration were reported from this region in 1998.

Table 6. *Red Dog ore reserves*[a]

	Tons (millions)	Zinc (wt%)	Lead (wt%)	Silver (oz/ton)
Main (Proven & Probable)	52.5	19.2	5.2	2.89
Aqqaluk (Possible)	80.4	13.6	3.7	1.90
Hilltop (Indicated)	10.6	17.8	5.5	3.42
Paalaaq (Inferred)	14.3	15.0	4.0	2.63
Total	**157.8**	**15.9**	**4.4**	**2.40**

[a]As of December 31, 1998 from Cominco 1998 Annual Report.

WESTERN REGION

Exploration activities and expenditures in the western region of Alaska were $307,000—much less than the $3.0 million spent in 1997.

METALS

A few relatively small programs were conducted in the Nome area, mainly on land owned by the Bering Straits Native Corp. (BSNC), and in the Kuskokwim Mountains northeast of Donlin Creek.

Consolidated Aston Resources Ltd. entered into an exploration agreement and option to lease from BSNC approximately 11 square miles surrounding Mt. Distin and also leased the Sliscovich Group of patented claims on the southeastern flank of Mt. Distin, approximately 20 miles north of Nome. Work was also done on the Energizer claim group to the northwest of the Mt. Distin claim block. Consolidated Aston had a four core hole drilling and exploration program on the Fred Creek and Steep Creek prospects. Drilling at targets defined by coincident soil gold, arsenic, and antimony anomalies aligned in a northeast direction (1,000 feet wide by 4,500 feet long using conventional soil geochemical sampling techniques, or 500 feet wide by 2,100 feet long using mobile metal ion techniques) intersected two zones of gold mineralization in brecciated and sheared schist and marble—178 feet of 0.013 ounces of gold per ton and 61 feet of 0.015 ounces of

gold per ton at the Fred Creek prospect. The two core holes at Steep Creek were at best weakly anomalous in gold.

A mobile metal ion soil survey by Consolidated Aston on the Energizer claim block (approximately 4,800 feet along strike from the Fred Prospect) identified a 660-foot by 1,310-foot gold target at Boulder Creek with extremely elevated levels of silver and a coincident lead anomaly. Consolidated Aston also identified a base metal target with coincident geochemical, geophysical, and geological anomalies. The base metal target area measures 3,000 feet by 7,000 feet (open in several directions) and is zoned with anomalous copper, lead, and zinc values.

Altar Resources continued exploration for gold at the Bulk Gold prospect 23 miles north of Nome and collected four bulk samples that were analyzed to contain between 0.017 and 0.035 ounces of gold per ton. A 3,800-foot by 1,600-foot gold-in-soil anomaly was identified by Altar Resources on their Wild Bunch property 150 miles northeast of Nome near Candle. Altar also conducted a soil-sampling survey on their Think Zinc property 54 miles northeast of Nome. Base and precious metal soil anomalies were identified in a 1,600-foot by 800-foot area, and another area had coincident gold and silver soil anomalies along a 5,000+ foot northeast-trending structure.

Arctic Whitney Inc. prospected for placer gold in Norton Sound and Andy Hehnlin prospected on Nome Beach. Sitnasuak Native Corp. signed an agreement with Bering Straits Native Corp. for properties in the Nome area and plans to have a shareholder placer program operating for 1999. Scotti Mining Co. explored their gold placer claims on Auburn Ravine in the Council mining district. The gold placer is concentrated on highly irregular and cavernous limestone. Scotti Mining also staked claims on Garfield Creek in the Kougarok mining district, where historic mining produced approximately 10,000 ounces of placer gold terminating against an upstream shear zone.

At Real del Monte Mining Corp.'s Nixon Fork Mine northeast of McGrath, underground drilling added new gold reserves beneath the C-3300 orebody and replaced as many ounces as mined during 1998. Reserves were increased to 55,000 ounces at an average gold grade of 0.87 ounces per ton. Surface exploration included soil sampling and trenching near the Mystery Mine that located skarn bodies anomalous in gold and copper mineralization.

North Star Exploration Inc. had a modest exploration program in the northern Kuskokwim Mountains near Colorado Creek. NovaGold Resources Inc. also had a small reconnaissance program in the same area.

In 1998 DGGS released the results from an airborne geophysical survey flown in the Ruby–Poorman area during 1997, as well as a geologic map of the same area from previous mapping by Anaconda geologists.

No expenditures for coal or industrial minerals exploration were reported from this region in 1998.

EASTERN INTERIOR REGION

Reported exploration expenditures in the eastern interior region were $36.0 million in 1998. This is an 18 percent increase from the $30.3 million spent during 1997. The eastern interior region had more than 60 percent of the Alaska exploration activity in 1998, mainly in the Yukon–Tanana Uplands east of Fairbanks, and in the Bonnifield mining district along the north flank of the Alaska Range between Healy and Delta.

METALS

Most staking activity for this region, estimated at approximately 150,000 acres of new claims and prospect sites, was in a northwest–southeast corridor extending from Fairbanks to the Canadian border, with Teck–Sumitomo's Pogo deposit at the approximate midpoint. The staking activity in the Goodpaster area near Pogo, approximately 40 miles northeast of Delta Junction, is currently one of the hottest area "plays" in North America. Figure 6 is a schematic map of claimstaking in a portion of the eastern interior region.

After a 93,000-foot core-drill program at the Pogo property in 1998, Teck revised the resource estimate of the Upper and Lower Liese Zones to approximately 10 million tons at a grade of 0.52 ounces of gold per ton using a 0.1 ounce per ton cutoff grade (5.21 million ounce gold resource). The result of the 1998 drill program was to increase the grade at Pogo by 27 percent and the contained ounces of gold by 16 percent. A third, deeper and higher-grade zone was encountered in two drill holes, and the Upper Liese Zone was extended to the north. The deposit is open to the southeast and the northwest. Drilling at the Pogo property focused at the northwest end of an 8-mile zone of high-grade rock and soil samples.

In early 1998, a winter road was constructed to move a 50-person camp and heavy equipment to the site to support exploration activities during the 1998 field season. This season's work included a surface drilling program and continuation of baseline environmental studies that focused on gathering data on possible tailings and plant site areas. In addition, surface exploration on the property yielded a number of anomalous zones requiring further study. One of these zones near Sonora Creek produced a surface rock sample with 28.8 ounces of gold per ton.

The Liese zones at the Pogo deposit consist of two tabular, gently dipping quartz vein systems spaced approximately 500 feet apart vertically. The quartz bodies range from 3 to over 65 feet thick, with an average thickness of 23 feet. Two deep drill holes have indicated the possibility of a third lens 400 feet below the "L2" zone.

Plans for 1999 include additional surface drilling as well as drilling from underground, accessed by an adit to be driven in the spring. The underground program will also provide further information on mining conditions and a bulk sample for metallurgical testing.

WGM Inc. and Sumitomo Corp. continued exploration, including soil sampling and drilling, in the Black Mountain and Brink areas to the southeast of the Pogo property. North Star Exploration Inc. had a joint-venture agreement with Doyon Ltd., an Alaska Native (First Nations) corporation, for lands around the Pogo block. Alaska Earth Sciences Inc. conducted North Star's exploration on this and other North Star programs on Doyon lands. Other companies, including a large number of junior Canadian mining companies, acquiring land positions near Teck's Pogo property in 1998 included NovaGold Resources, Western Keltic Mines Alaska Inc., Rimfire Minerals Corp., Hyder Gold Inc., Anglo Alaska Gold, Almaden Resources Corp., Williams Creek Explorations, Engineer Mining Corp., Fairfield Minerals Ltd., Pacific Bay Minerals Ltd., Bear Mountain Exploration Services, Achieva Development Corp., Snowfield Resources Ltd., Kennecott Exploration Co., and Newmont Exploration Ltd. Western Keltic reported mapping and geochemical sampling activities on their California claim group near Pogo. Equity Engineering Ltd. spent $50,000 on geochemical sampling and geological mapping in the Goodpaster River area and announced a joint venture agreement with Western Keltic for the California, Surf, and Boogie properties.

Ventures Resource Corp., in a joint venture with Doyon Ltd., with equity funding from Teck, continued exploration of its strategically located Carrie and Veta mid-stage targets near the Pogo property. A 1,900-foot core drilling program within one of four parallel 2.5-mile-long by 1,000-foot-wide gold-in-soil anomaly zones at the Carrie Creek prospect cut mineralization with anomalous gold values. Surface samples of up to 1.6 ounces of gold per ton have been reported from these zones at higher elevations on the property.

NovaGold Resources Inc. focused exploration programs totaling $250,000 in expenditures in the Caribou Creek and Pasco Creek areas of the Salcha region, north of Pogo.

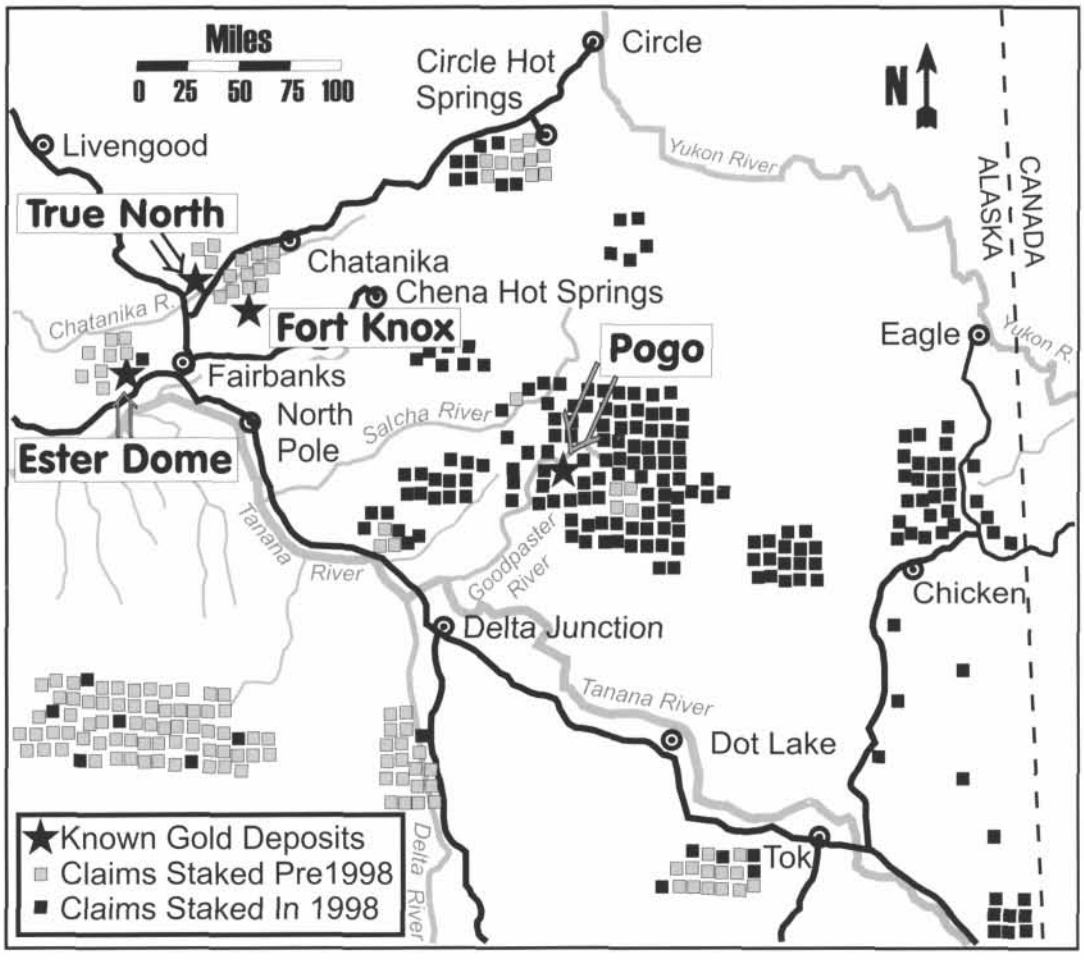


Figure 6. *Schematic map of claimstaking in a portion of the eastern interior region.*

Geochemical sampling over these properties identified areas with intrusion-related geochemical anomalies. Geochemical anomalies in soils from this program range up to 0.03 ounces per ton gold, greater than 1 percent arsenic, 340 parts per million antimony, and 13.8 parts per million bismuth.

The Alaska Division of Geological & Geophysical Surveys contracted for an extensive airborne geophysical survey of a portion of the Fortymile mining district, which created a mini staking rush in March, well before results were released in January 1999. Numerous individuals participated in the staking rush, which has reportedly spread eastward into the Yukon Territory.

Kennecott Exploration conducted a regional exploration program in the Fortymile and Goodpaster mining districts and staked a large claim block in the Fortymile district based on this program. GeoQuest trenched and geochemically sampled two properties in the Fortymile district. North River Gold Inc. explored and dredged for gold on the South Fork of the Fortymile River.

In the Richardson district east of Fairbanks, Tri-Valley Corp. discovered widespread gold mineralization in two new zones near the Democrat Dike prospect. Tri-Valley processed a 100,000-ton bulk sample from the Democrat Dike prospect to define grade and size distribution of gold mineralization. Analytical results from this sample have not been released. Tri-Valley optioned a portion of their 44-square-mile claim block to Redstar Resources Corp. during early 1998. After Re... defaulted on the agreement, Tri-Valley reached a letter of agreement with Placer Dome Exploration Inc. for further exploration. Kinross Gold Corp. also acquired a land position in the Richardson district and conducted an integrated geological mapping and geochemical sampling program. Golden Phoenix Minerals Inc. had a modest geochemical sampling program in the Richardson district and, late in the year, Golden Phoenix and Kennecott Exploration Co. agreed to land-consolidation measures in the same area.

Kinross Gold Corp. merged with Amax Gold Inc. in June, and also merged with La Teko Resources Ltd. by February 1999. These mergers are consolidating land packages throughout the Fairbanks mining district. In the Fairbanks area, joint-venture partners Kinross Gold Corp. (80 percent) and Teryl Resource Corp.(20 percent) spent $500,000 on the Gil claims located near the Fort Knox open pit. The exploration program in 1998 focused on the eastern portion of the claim block and included soil sampling, trenching and sampling eight trenches, and drilling. The drill program comprised 29 reverse-circulation holes totaling 10,000 feet, and four core holes totaling 3,225 feet.

Mineralization at Gil lies within calc-silicate horizons in schist. There is typically some gold enrichment along iron-stained shears and within quartz-calcite veinlets. Sulfides are rare. Gold occurs in two zones: a thin, higher grade upper horizon and a thicker, lower grade deeper horizon. Drilling during 1998 produced encouraging results, with up to 160 feet of 0.09 ounces of gold per ton. An in-place mineral resource without inferring economic parameters was calculated using polygonal methods at the end of 1998. The indicated and inferred resource at the Gil prospects is 10.7 million tons at 0.04 ounces gold per ton (433,000 ounces). The deposit remains open along strike and there are several targets yet to be drilled.

International Freegold Mineral Development Inc. conducted a $1.5 million soil sampling, trenching, and drilling exploration program on the large Golden Summit property, located north of Fairbanks and the Fort Knox Mine, with equity investment from Barrick Gold Corp. Several new targets were identified, and drilling on these and existing targets encountered gold grades of 0.1 to 0.3 ounces per ton over significant widths. Freegold drilled 24,787 feet in a three-phase drilling program for a total of 60 reverse-circulation and core holes (2,398 feet core, 22,389 feet reverse circulation). The area between the Cleary, Tamarack, and Dolphin prospects (approximately 3,800 feet east-west by 2,000 feet north-south) contains high-grade veins and bulk tonnage disseminated occurrences as envelopes around these veins. A vertical core drill hole at the Dolphin prospect produced a continuous 800-foot section averaging 0.021 ounces of gold per ton in altered and variably mineralized intrusive rock. Freegold estimates total resources of the Golden Summit property at 1.6 million ounces of gold, with 50 percent of the reserves in the proven/probable category.

Placer Dome Exploration Inc. leased part of the Ester Dome holdings of Silverado Gold Mines Ltd. during 1998. Placer Dome spent approximately $1.4 million on geochemical sampling, trenching, and 11,480 feet of core drilling, and 3,280 feet of reverse-circulation drilling. Drilling by Placer Dome confirmed depth extensions of the Ready Bullion and Silver Dollar veins on the southwest part of the hill, and encountered gold intercepts as high as 2.66 ounces per ton over 19.7 feet at the Rhyolite prospect on the north side of Ester Dome.

Newmont Exploration Ltd. concentrated on engineering and metallurgical studies of La Teko Resources Inc.'s True North property. Metallurgical tests found gold recoveries were between 85 and 95 percent for non-sulfide coarse material from the 1.3-million-ounce gold resource oxide zones at the Hindenburg and Shepard prospects. Deeper, more sulfide-rich samples from the Hindenburg and the Shepard prospects had gold recoveries ranging from 61 to 68 percent. Exploration activities on the True North property during 1998 were largely auger soil sampling programs. Of particular interest is a 400-foot by 1,000-foot gold–arsenic–antimony anomaly occurring southwest of the True North trend. La Teko Resources Inc. also conducted reclamation activities at the Ryan Lode Mine and geochemical surveys in the Twin Buttes and Juniper claim blocks in the Fairbanks district.

Cripple Creek Joint Venture continued to assess the gold potential of mineralized intrusive rock found in the floor of its Yellow Eagle placer operation at Ester, west of Fairbanks.

During 1998, Grayd Resource Corp. carried out exploration on two projects in the Bonnifield mining district; funded a portion of work done by Inmet on another Bonnifield district property; and funded work performed by American Copper & Nickel Co. on Delta belt volcanogenic massive sulfide (VMS) properties. Overall, Grayd drilled 21,976 feet in the Bonnifield district.

Grayd Resource Corp. had the most active exploration program at its Dry Creek project in the Bonnifield mining district east of Healy. Grayd's 11,894-foot drilling program extended the VMS zone at Red Mountain to almost 5,000 feet of drill-tested extent, within a 15,000-foot trend indicated by geology and geophysics. This DC North zone includes the Fosters Creek, Lago Creek, and Discovery areas, where high-grade zones up to 40 feet thick with 10 percent combined lead–zinc and several ounces of silver have been drilled. Some drill holes cut over 200 feet of mineralization in the central part of the trend. An inferred resource of 3.2 million tons of 4.4 percent zinc, 1.9 percent lead, 0.2 percent copper, 3.01 ounces per ton silver and 0.018 ounces per ton gold has been calculated for the DC North horizon. Metallurgical tests show excellent recovery potential. Grayd also completed ground max/min and down-hole electromagnetic (EM) geophysical surveys, soil and rock sampling, and geologic mapping on several properties.

About 2 miles to the northeast of the Dry Creek property is the WTF zone, where a resource of 3.09 million tons of 6 percent zinc, 2.5 percent lead, 0.1 percent copper, 5.73 ounces of silver, and 0.029 ounces per ton gold has been identified by Grayd. The relationship between the two deposits, if any, remains unknown.

The Inmet Mining Corp./Grayd Resource Corp. joint venture worked on the Glacier Creek, Westfork, Virginia Creek, and Copper Creek properties. Diamond drilling in five holes totaling 4,016 feet and down-hole geophysics were completed on the Glacier Creek and Westfork properties. The best intercept was on the Glacier Creek property, where a 25.6 foot pyrite–sphalerite stringer zone in silicified felsic pyroclastic rocks contained 15 parts per million copper, 763 parts per million lead, 6,438 parts per million zinc, less than 0.3 parts per million silver, and less than 1 part per billion gold. Ground EM geophysical surveys were done on the Westfork, Virginia Creek, and Copper Creek properties. Geological mapping was done on the Westfork, Glacier Creek, and Copper Creek properties.

Other companies active in the Bonnifield area include Camnor Resources Ltd. and Golden Phoenix Minerals Inc.

Farther east near Tok, Grayd Resource Corp. funded a joint venture with American Copper & Nickel Co. (ACNC). Ten diamond drill holes, totaling 8,770 feet, were drilled on the Delta property; 367 claims were staked in the area to cover unprotected targets and prospective geology. One hole intersected 2.8 feet of massive sulfide grading 1.7 percent lead, 3.7 percent zinc, 2.12 ounces per ton silver, and 0.036 ounces per ton gold. The joint venture exploration program increased total resources for several Delta Belt VMS deposits to 19 million tons of 4 percent zinc, 2.7 percent lead, 0.6 percent copper, 2.13 ounces per ton silver and 0.055 ounces per ton gold. In the adjacent Rumble Zone, the Grayd–ACNC joint venture found samples with up to 0.6 ounces gold per ton in the 5-mile-long White Gold trend.

Nevada Star Resource Corp. continued platinum-group element exploration activities on its PGM property near Paxson. Nevada Star conducted a ground magnetic survey and geochemical sampling over their 8,580 acre property. ACNC also explored for platinum-group elements and copper and nickel on the south flank of the central Alaska Range in its Nikolai joint venture funded by Fort Knox Gold Resources Ltd. ACNC drilled 2,910 feet of core on the Ice prospect, 400 feet of core on the Fish Lake prospect and 250 feet of core on the Rainy prospect. Unfortunately, ACNC announced the closure of their Anchorage exploration office at the end of 1998.

In the Circle mining district, Newmont Exploration Ltd. and Golden Phoenix Minerals Inc. staked numerous claims and consolidated some claim groups. Camnor Resources Ltd., in a joint venture agreement with La Teko Resources, had the most active program in the Circle district and reported 20 feet of 0.044 ounces per ton gold mineralization in a trench at the Switch Creek area of the 3,000-acre Discovery Gulch property.

On-Line Exploration Services was busy throughout interior Alaska. On-Line conducted a soil-and-rock geochemical program in the Circle district, a geochemical sampling program in the Eureka area, and placer gold sampling in the Livengood district.

SOUTHCENTRAL REGION

Exploration investment in the southcentral region in 1998 was only $526,000, compared to $915,000 in 1997.

METALS

Exploration was minimal in the southcentral region of Alaska during 1998, with small programs by Diamond Gold Corp. for copper and gold in the Yenlo Hills (Yentna mining district) north of Anchorage; by Kennecott Exploration Co. at Iron Creek in the Talkeetna Mountains; and by Fort Knox Gold Resources Ltd. at the Gunsite gold property east of Talkeetna. Several prospects occur within the Gunsite property, including the Sheep Creek showing at Prescott Point, quartz–bornite–chalcopyrite veins on Penger Mountain, and both veins and disseminated

copper at Gunsite Pass. Grab samples of the veins at the Penger and Gunsite prospects analyze up to 10.9 percent copper, 1.6 ounces per ton silver, and about 0.16 ounces per ton gold.

Diamond Gold Corp. discovered a hornfels zone with disseminated sulfide mineralization surrounding a gabbroic intrusion. The intrusion is being explored for platinum-group-element mineralization, as well as the size and grade of recently discovered gold-bearing arsenopyrite veins.

On-Line Exploration Services sampled for placer gold on Specimen Creek and conducted a geochemical rock sampling program throughout the Valdez Creek mining district. B&T Mining Co. mapped and conducted a geophysical survey on their Bear Creek property in the Hope/Sunrise area.

Eric Treider and Mike Nappier rebuilt the road and reopened the historic Gilpatrick Mine on the northern Kenai Peninsula northwest of Seward. The adit on the 2,850-foot level was opened and channel and bulk samples were taken for geochemical analysis. The exposed quartz vein averages 18 to 36 inches wide along the 200-foot-long adit. Historic gold production was from quartz veins in fault zones within altered phyllite of the Upper Cretaceous Valdez Group.

The Alaska Division of Geological & Geophysical Surveys conducted geologic mapping and geochemical sampling projects in areas previously covered by airborne geophysical surveys in the Chulitna and Petersville mining districts. Late-season snow and poor weather hampered the Petersville activities. Geologic maps resulting from the 1998 programs will be released by late 1999.

No expenditures for coal or industrial minerals exploration were reported from this region in 1998.

Industrial Minerals

Usibelli Coal Inc. explored for coal on the Wishbone Hill property. Exploration work included reverse-circulation drilling and geologic mapping.

SOUTHWESTERN REGION

Exploration expenditures in the southwestern region in 1998 were $10.2 million, less than the $11.3 million reported for the region in 1997. Placer Dome Exploration Inc. continued to spend the most money and exploration effort in this region, but newcomer NovaGold Resources Inc. had an aggressive exploration program in the Shotgun Hills.

Metals

Exploration activity in the southwestern region of Alaska included work by Placer Dome Exploration Inc. at Calista Corp.'s (a regional Native [First Nations] corporation) Donlin Creek property, and by NovaGold Resources Inc. at Cominco American Inc.'s Shotgun Hills property, located about 80 miles to the south. Gold at both properties is associated with 60–73 million-year-old, high-level, granitic bodies; these bodies intrude Cretaceous shale, siltstone, and graywacke.

NovaGold Resources Inc. drilled 19 HQ-size core holes totaling about 10,200 feet at the Mose target on the Shotgun property as part of a joint venture with Cominco American Inc. NovaGold spent over $2.6 million ($4 million Canadian) on exploration at the Shotgun property. Gold mineralization at the Shotgun property is hosted by stockwork veins and breccia within a Late Cretaceous/early Tertiary quartz porphyry intruding and hornfelsing upper Cretaceous shale and graywacke. The first core hole drilled in the 1998 program intersected 557 feet of gold mineralization hosted by stockwork quartz veining and disseminated sulfides grading 0.036 ounces of gold per ton beginning at the surface. NovaGold estimated an inferred 980,000-ounce gold resource with a grade of 0.03 ounces per ton, at a cutoff grade of 0.014 ounces per ton. Preliminary metallurgical tests indicate that gold is easily extracted (greater than 90 percent recoveries in 24-hour cold cyanide shake tests and bottle roll tests) using cyanide leaching. A number of other porphyry-related gold targets were also identified in the Shotgun Hills area and NovaGold plans to evaluate these targets during 1999. NovaGold also fielded a robust regional exploration program in the Kuskokwim Mountains at Colorado Creek, Julian Creek, and the Donlin North property (2.5 miles northeast of the northern boundary of Placer Dome's Donlin Creek property).

Placer Dome Exploration Inc. spent approximately $7 million on diamond core drilling, geological mapping, and geochemical sampling at its Donlin Creek project in 1998. Prior to the 78,720-foot drill program in 1998, Placer Dome Exploration Inc. announced a 6.76-million-ounce gold resource in 67 million tons at its Donlin Creek project. Most of the resource is in the southwestern portion of the mineralized complex, but there are several other areas yet to be explored. The gold resource was increased by the 1998 core drilling program to 11.5 million ounces in 63 million tons, with 5.4 million ounces in the measured and indicated category. The Placer Dome team is currently completing new engineering and economic studies.

Ventures Resource Corp. drilled seven holes, for a total of approximately 1,500 feet, at its Chicken Mountain prospect near Flat and also dug, mapped, and geochemically sampled some trenches. The core drilling encountered anomalous gold mineralization in five drill holes, including a 25-foot interval of 0.1 ounces per ton and a 20-foot interval grading 0.086 ounces per ton.

The Wylie operation trenched at the Mountain Top mercury deposit in the Kuskokwim area. Larry Wilmarth continued placer exploration on Julian Creek.

Calista Corp.'s land department was active on their lands throughout the summer. Calista geologists spent three weeks examining mineral prospects between the Holitna

River and Napaimiut via riverboat and numerous short foot traverses. One week was spent in the Nyac area defining prospects worthy of further testing via grid sampling and other methods. Several days were also spent on reconnaissance sampling in the Sleetmute Quadrangle.

Cominco did not report any exploration activity for its Pebble Copper property located north of Iliamna Lake. No expenditures for coal or industrial minerals exploration were reported from the southwestern region of Alaska in 1998.

ALASKA PENINSULA REGION

There was no reported exploration activity in the Alaska Peninsula region during 1998.

SOUTHEASTERN REGION

Exploration expenditures in the southeastern region of Alaska during 1998 were $6.4 million, about $2.5 million less than spent in the region during 1997.

METALS

There was renewed interest in the Duncan Canal area near Wrangell following release of a geophysical survey in the area contracted by DGGS in cooperation with BLM and the City of Wrangell. BLM and USGS conducted geologic mapping and geochemical sampling within the geophysical survey area.

Coeur Alaska Inc. drilled some deeper reserves at the Kensington gold mine about 50 miles north of Juneau, and Kennecott Minerals Co. drilled both underground and on surface near the Greens Creek Mine about 20 miles west of Juneau. Kennecott's exploration at the Greens Creek Mine identified significant ore-grade mineralization in the 200S Extension area (adjacent to the Southwest Ore Zone) and in the West Bench area. Kennecott Exploration Co. had an independent regional program in the vicinity of Duncan Canal.

A joint venture between Atna Resources Ltd. and Rubicon Minerals Corp. began exploration of the large Palmer claim group near Haines for volcanogenic massive sulfide mineralization. The 1998 field program consisted of geologic mapping, geophysical surveys, and drilling. Four diamond drill holes totaling 3,256 feet were drilled to test continuity of previously identified base-metal mineralization. Abacus Minerals Corp. secured permits in June for underground exploration of its Niblack property near Ketchikan and conducted an environmental assessment.

Westmin Resources Ltd. (acquired by Boliden Ltd. in early 1998) conducted a reconnaissance exploration program on Woewodski Island. Stealth Ventures Ltd. explored near the past-producing Rush and Brown Mine on the Kasaan Peninsula, Prince of Wales Island. Four holes were drilled for a total of 1,460 feet, but only narrow zones of precious-metal mineralization were encountered. Stealth Ventures allowed 64 of its 74 federal mineral claims to lapse and the company is evaluating its options, including joint venturing the property.

Grizzly Bar Development LLC explored for placer gold at the Grizzly Bar on the Taku River south of Juneau, and both the Foster Operation and Snow Lion Mining Co. continued exploration at their placer operations on Porcupine Creek near Haines. Snow Lion Mining trenched along a mineralized fault zone.

INDUSTRIAL MINERALS

Northwest Land Resources explored for rare earth elements (REE) on Prince of Wales Island. Hyak Mining Co. conducted minor exploration work on Chichagof Island exploring for clay and other industrial minerals.

DEVELOPMENT

Development expenditures in 1998 dropped sharply—from $167.4 million spent in 1997 to $55.4 million spent in 1998. The drop in development expenditures reflects the lack of many large mineral development projects in Alaska during 1998. Table 7 shows reported employment and development expenditures by region in 1998, and table 8 shows cumulative development expenditures since 1982. Locations of selected development projects are shown in figure 7. There were no development expenditures reported for the southwestern and Alaska Peninsula regions during 1998.

NORTHERN REGION

The only major development in the area was completion of the Red Dog Mine Production Rate Increase project, which, by September 1998, contributed to a 35 percent increase in production from 1997 levels. The project increased fuel storage capacity at both the mine and port, increased concentrate storage at the port, increased accommodation space at the mine, added more mining equipment, added a new gyratory crusher, and upgraded the mine's recovery system. Figure 8 is a view of some of the expanded port facilities. About 200 people worked for over half of the year on the project.

Tri-Con Mining reported a modest amount of development activity at its placer operation on Nolan Creek, as did Gold Dust Mines at its placer operation near Chandalar.

WESTERN REGION

Most development work in the region was in drilling and drifting at Real del Monte Mining Corp.'s Nixon Fork Mine, but work was hampered by wet conditions. Mine

Table 7. *Reported mineral development expenditures and employment in Alaska by commodity and region, 1998*

	Northern	Western	Eastern interior	South-central	South-eastern	Total
			Development expenditures			
Base metals	$28,000,000	$ - -	$ - -	$ - -	$ - -	**$28,000,000**
Polymetallic	- -	- -	- -	- -	5,600,000	**5,600,000**
Precious metals						
Placer	267,000	8,000	208,000	110,000	- -	**593,000**
Lode	- -	3,100,000	9,894,000	15,000	2,000,000	**15,009,000**
Coal and peat	- -	- -	750,000	100,000	- -	**850,000**
Industrial minerals	- -	- -	100,000	255,000	5,000,000	**5,355,000**
TOTAL	**$28,267,000**	**$3,108,000**	**$10,952,000**	**$480,000**	**$12,600,000**	**$55,407,000**
			Development employment			
Employment						
Workdays	24,490	1,040	10,155	688	9,600	**45,973**
Workyears[a]	94	4	39	3	37	**177**
Number of companies reporting[b]	3	2	13	6	4	**28**

- - No expenditures reported.
[a]Based on 260-day workyear.
[b]Some companies active in more than one area.
No development expenditures or employment reported for southwestern and Alaska Peninsula regions in 1998.

Table 8. *Reported mineral development expenditures in Alaska by commodity, 1982–98*

	Base metals	Polymetallics	Precious metals	Industrial minerals	Coal and peat	Total
1982	$ 10,270,000	$ N/A	$ 19,320,000	$ 4,251,000	$ 7,750,000	**$ 41,591,000**
1983	19,500,000	N/A	7,112,500	1,000,000	250,000	**27,862,500**
1984	10,710,500	N/A	15,058,555	579,000	27,000,000	**53,348,055**
1985	13,000,000	N/A	16,890,755	1,830,000	2,400,000	**34,120,755**
1986	3,260,800	8,000,000	12,417,172	124,000	530,000	**24,331,972**
1987	38,080,000	48,000,000	13,640,848	188,000	342,000	**100,250,848**
1988	165,500,000	69,000,000	40,445,400	- -	- -	**274,945,400**
1989	118,200,000	411,000	6,465,350	7,000,000	2,196,000	**134,272,350**
1990	- -	4,101,000	7,136,500	30,000	3,079,000	**14,346,500**
1991	- -	8,000,000	14,994,350	262,000	2,318,000	**25,574,350**
1992	80,000	4,300,000	23,151,300	404,000	1,655,000	**29,590,300**
1993	- -	10,731,136	15,103,000	433,500	1,400,000	**27,667,636**
1994	10,000,000	5,000,000	27,392,850	5,000	2,545,000	**44,942,850**
1995	11,200,000	9,590,000	127,165,750	426,000	200,000	**148,581,750**
1996	60,000,000	60,100,000	273,042,000	495,000	400,000	**394,037,000**
1997	133,880,000	7,300,000	26,299,000	500,000	410,000	**168,389,000**
1998	28,000,000	5,600,000	15,602,000	5,355,000	850,000	**55,407,000**
TOTAL	**$621,681,300**	**$240,133,136**	**$661,237,330**	**$22,882,500**	**$53,325,000**	**$1,599,259,266**

N/A = Figures not available prior to 1986.
- - Not reported.

personnel drove 2,950 feet of development drifts, raises, and ramps to access underground ore bodies. Three placer mines in the region also reported a minor amount of stripping and road construction.

EASTERN INTERIOR REGION

Many placer mines in this region reported some development work, mainly rehabilitation of roads and buildings, or stripping frozen muck, but the major development work in the region was at Kinross Gold's Fort Knox Mine. After the merger with Amax Gold Inc. in June, Kinross added a 120-ton SAG recycle crusher to increase mill throughput by about 10 percent to 45,000 tons per day. In-pit development drilling of 10,000 feet of reverse circulation and 22,000 feet of core added to the proven and probable reserves. Other projects included dewatering of tailings and increasing the height of the tailings dam.

Reclamation continued at La Teko Resources Inc.'s Ryan Lode Mine near Fairbanks. Reclamation of a 155,000-ton leach pad was a major focal point of this effort. Several placer mines in the region also reported reclamation work.

Development work at Usibelli Coal Mine Inc. near Healy consisted of road construction for the Two Bull Ridge operation at Healy. Usibelli also applied for permits for a new 6.7-million-ton operation at the 684-acre Rosalie Mine in the Healy River valley south of its existing Poker Flats, Two Bull Ridge, and Gold Run Pass operations.

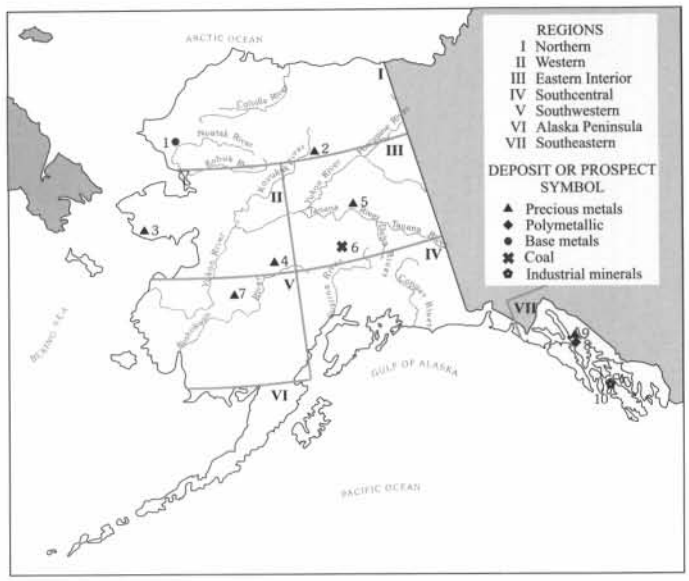
SOUTHCENTRAL REGION

Diamond Gold Corp. applied for a 26-mile road right-of-way with the Alaska Department of Natural Resources to construct a winter freight road from Oil Well Road near Trapper Creek to their Yenlo Hills hardrock mining property.

Several of the numerous sand and gravel operations in this region reported some development including Beaver Loop Sand and Gravel, and Dibble Creek Rock on the Kenai Peninsula. The Chuitna Group was involved in market development for coal in the Beluga Field at its Chuitna Coal Mine.

SOUTHEASTERN REGION

Development work at Kennecott Minerals Co.'s/ Hecla Mining Co.'s Greens Creek Mine consisted of underground drilling and drifting to continue access to the Southwest Orebody, and to better define existing reserves. Sealaska Corp. finished development of its Calder Bay limestone quarry, access road, and a port facility capable of handling freighters up to 680 feet long. The $14 million project began in 1996, and is now ready to begin shipments either in dedicated or split-load vessels. Kvaerner Environmental, as an agent of Echo Bay Alaska Inc., continued reclamation of the A–J Mine site in preparation for ultimate closure.



I Northern Region

1. Red Dog Mine—Cominco Alaska Inc. (mill circuit/port storage)
2. Nolan Creek—TriCon Mining Alaska Inc. (surface and underground)

II Western Region

3. Nome area—Alaska Gold Co. (stripping pit)
4. Nixon Fork Mine—Real del Monte Mining Corp. (underground)

III Eastern Interior Region

5. Fairbanks area
   a. Fort Knox Mine—Kinross Gold Corp. (drilling, tailing dam construction, SAG crusher)
   b. Several open-pit and underground placer mines
   c. Ryan Lode Mine—La Teko Resources Inc. (reclamation)
6. Two Bull Ridge operation—Usibelli Coal Mine Inc. (drilling, road construction)

IV Southcentral Region

V Southwestern Region

7. Several placer mines (stripping overburden)

VI Alaska Peninsula Region

VII Southeastern Region

8. Greens Creek Mine—Kennecott Mineral Co./Hecla Mining Co. (access drifting, underground drilling)
9. A-J Mine—Kvaerner Environmental (reclamation)
10. Calder Bay Mine—Sealaska Corp. (pit preparation, port facility, access roads)

Figure 7. *Selected mineral development projects in Alaska, 1998.*

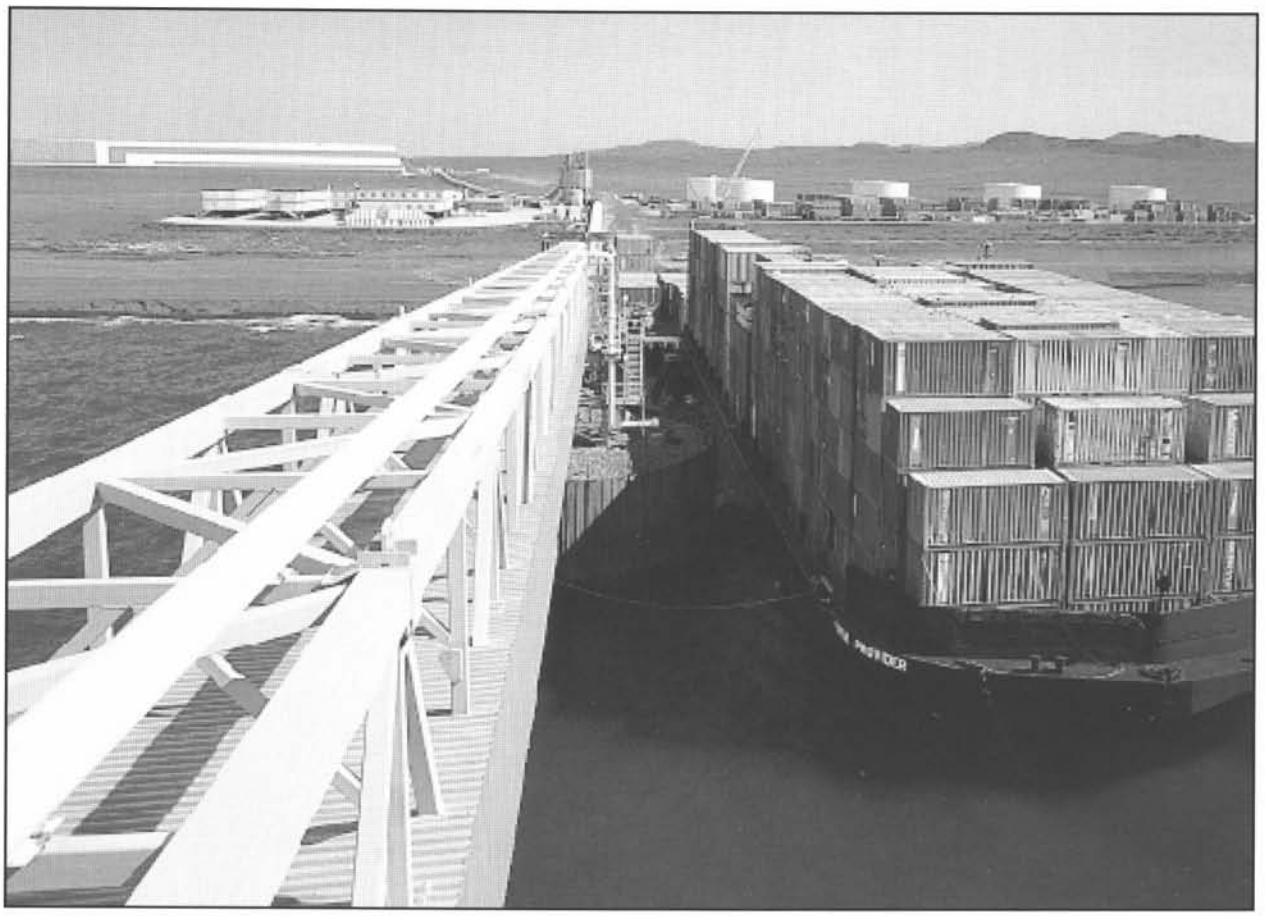


Figure 8. *Expansion of port facilities at Red Dog Mine was completed in 1998. (Photo courtesy of Cominco Ltd.)*

PRODUCTION

In 1998 the total value of mineral production in Alaska was $920.2 million, down 1.7 percent from $936.2 million recorded in 1997. This decrease was predominantly due to substantially lower metal prices in 1998 than in the previous year, though production of coal and rock also decreased from 1997 levels. The Red Dog zinc–lead–silver mine increased production during 1998, and the Greens Creek polymetallic mine continued at full production. The Fort Knox, Illinois Creek, and Nixon Fork hardrock gold mines produced about the same amount of gold as in 1997, but there were fewer placer gold mines in 1998, and production of gold from each placer mine was generally less than in the previous year. Coal production was limited by the demand from Korea, and with completion of several road projects in southcentral Alaska, the demand for rock was also down from the previous year.

Table 9 shows the quantity and value of metals and materials produced from 1996 to 1998. Table 10 lists metal mines reporting production or identified by the Division of Mining, Land & Water as producers. Figures 10, 11, and 12 show historic production of sand and gravel, gold, and coal.

Metals, valued at $814.4 million, account for 88 percent of the total value of 1998 Alaska minerals production; followed by rock, sand, and gravel, $71.4 million and 8 percent; and coal and peat, $35.4 million and 4 percent. Of the metals, zinc is by far the most valuable ($505.4 million, 62 percent), followed by gold ($174.7 million, 21.5 percent), silver ($82.2 million, 10 percent), lead ($49.4 million, 6.1 percent), and copper ($2.9 million, 0.4 percent). Gold and silver production was almost the same as in 1997, but the cumulative value of Alaska's gold production was 11 percent less than a year ago. Zinc production increased 31 percent over the 1997 levels, but the zinc price was 28 percent higher in 1997 than in 1998, so the net gain in value in 1998 was diminished. A similar situation caused total produced lead value to be almost the same in 1998 as in 1997 despite increased production tonnage.

Table 9. *Estimated mineral production in Alaska, 1996–98*[a]

	Quantity			Estimated values[b]		
Metals	**1996**	**1997**	**1998**	**1996**	**1997**	**1998**
Gold (ounces)	161,565	590,516	594,191	$ 62,622,594	$207,287,000	$174,621,000
Silver (ounces)	3,676,000	14,401,165	14,856,000	19,078,440	70,710,000	82,154,000
Copper (tons)	390	1,720	1,900	803,400	3,543,000	2,850,000
Lead (tons)	70,086	88,560	102,887	52,284,000	49,593,000	49,386,000
Zinc (tons)	366,780	419,097	549,348	361,646,000	494,888,000	505,400,000
Subtotal				**$496,434,434**	**$826,021,000**	**$814,411,000**
Industrial minerals						
Jade and soapstone (tons)	2.0	2.0	2.00	$ 25,000	$ 25,000	$ 25,000
Sand and gravel (million tons)	9.9	13.8	12.40	32,203,260	51,913,000	57,280,000
Rock (million tons)	3.0	3.2	1.64	23,557,637	20,000,000	14,041,000
Subtotal				**$ 55,785,897**	**$ 71,938,000**	**$ 71,346,000**
Energy minerals						
Coal (tons)	1,481,000	1,446,000	1,339,000	$ 38,000,000	$ 38,048,000	$ 35,233,000
Peat (cubic yards)	38,000	38,500	38,000	175,000	192,000	190,000
Subtotal				**$ 38,175,000**	**$ 38,240,000**	**$ 35,423,000**
TOTAL				**$590,395,331**	**$936,199,000**	**$920,180,000**

[a]Production data from DGGS questionnaires, phone interviews with mine and quarry operators, Alaska Department of Transportation and Public Facilities, and federal land management agencies.
[b]Values for selected metal production based on average prices for each year; for 1998—gold ($293.88/ounce) unless other value provided by operator; silver ($5.53/ounce); copper ($0.75/lb); zinc ($0.46/lb); lead ($0.24/lb). All other values provided by mine operators. Value rounded to nearest $1,000.

Table 10. *Companies and individuals reported to be producing metal in Alaska, 1998*

Operator	Creek	District	Type[a]
	Northern Region		
Gold Dust Mines	Big	Chandalar	O/P Placer
Lounsbury, Jim	Union Gulch	Koyukuk	O/P Placer
Paradise Mining	Birch	Koyukuk	O/P Placer
Tri-Con Mining	Nolan	Koyukuk	O/P and U/G Placer
Cominco Alaska Inc.	Red Dog Mine	Noatak	HR O/P (zinc-lead-silver)
	Western Region		
Vial, Dave	Mudd	Fairhaven	O/P Placer
Vial, Mike	Kawalik	Fairhaven	O/P Placer
Taiga Mining	Dry	Hughes	O/P Placer
Rosander, Ron	Colorado	Innoko	O/P Placer
Dakota Mining Corp.	Illinois Creek Mine	Kaiyuh	HR O/P (gold-silver)
Benesch, George	Coffee	Kougarok	O/P Placer
Mullikin, Donald	Noxapaga	Kougarok	O/P Placer
Redmond, Richard	Macklin	Kougarok	O/P Placer
Magnuson, Manzie	Candle	McGrath	O/P Placer
Real del Monte Mining Corp.	Nixon Fork Mine	McGrath	HR U/G (gold-copper)

[a]O/P=Open-pit; HR=Hard-rock; U/G=Underground.

Operator	Creek	District	Type
Gibson, Wayne	Golden	Melotzitna	O/P Placer
Alaska Gold	Submarine Beach	Nome	O/P Placer
High Bench	Anvil	Nome	O/P Placer
Krutzsch, Betty	Specimen Gulch	Nome	O/P Placer
Massie, Perry	Cripple	Nome	O/P Placer
Olsen, Dave	Canyon	Nome	O/P Placer
Pettigrew	Anvil	Nome	O/P Placer
Pomrenke, Steve	Tripple	Nome	O/P Placer
Walsh, Paul	Gold Run	Nome	O/P Placer
Bartholomae, Bill	Gold Run	Port Clarence	O/P Placer
Kralik, Janos	Gold Run	Port Clarence	O/P Placer
Tweet, Bruce & Doug	Windy	Port Clarence	O/P Placer
Clay, Barry	Swift	Ruby	O/P Placer
Tryck, Keith	Ophir	Ruby	O/P Placer
	Eastern Interior Region		
Decker, James	Sheep	Bonnifield	O/P Placer
Kiehl, Don	Gold King	Bonnifield	O/P Placer
Tatchick, Wayne	Moose	Bonnifield	O/P Placer
Totat Mining	Totatlanika	Bonnifield	O/P Placer
Traxler, Roy	Totatlanika	Bonnifield	O/P Placer
Catt, Bruce	Crooked	Circle	O/P Placer
Cole, John	Portage	Circle	O/P Placer
Fulton, Gordon	Switch	Circle	O/P Placer
Gelvin, Stan	Crooked	Circle	O/P Placer
Glassburn, Don	Gold Dust	Circle	O/P Placer
Koppenberg, Sam	Sourdough	Circle	O/P Placer
Lapp, Ed & Sons	Ketchum	Circle	O/P Placer
Lines, Lester	North Fork Harrison	Circle	O/P Placer
Olsen, Steven	Eagle	Circle	O/P Placer
Paul & Co.	Eagle	Circle	O/P Placer
Smith, David Jr.	Switch/Deadwood	Circle	O/P Placer
Stepp, Vernon	Bottom Dollar	Circle	O/P Placer
Stone, James	Porcupine	Circle	O/P Placer
The Mining Co.	Ketchum	Circle	O/P Placer
Willis Mine Service	Circle	Circle	O/P Placer
Wrede, Ronald	Switch	Circle	O/P Placer
Jensen, Dan	McCumber	Delta River	O/P Placer
Andresen, John	Dome	Fairbanks	O/P Placer
Bergman, Kevin	Ester	Fairbanks	O/P Placer
Cook's Mining	Fairbanks	Fairbanks	O/P Placer
Cornelius, Fred	Fox	Fairbanks	O/P Placer
Fairbanks Gold Mining Inc.	Fort Knox Mine	Fairbanks	H/R O/P (gold)
Goodwin, Robert	Twin	Fairbanks	O/P Placer
Hassel, Jerry	Ready Bullion	Fairbanks	O/P Placer
Holland, Lee	Ester	Fairbanks	O/P Placer
Hopen, Alf	Cleary	Fairbanks	O/P Placer
Jobaric Enterprises	Wildcat	Fairbanks	O/P Placer
Knudsen, Richard	Specimen	Fairbanks	O/P Placer
Krzykoski, Ben	Big Eldorado	Fairbanks	O/P Placer
Largent, Walter	Ester	Fairbanks	O/P Placer
Las, Allen	No Grub	Fairbanks	O/P Placer
Loud, Dick	Chatanika	Fairbanks	O/P Placer
Miscovich, Andy	Wolf	Fairbanks	O/P Placer
Moore, Roger	Ready Bullion	Fairbanks	O/P Placer
Polar Mining	Fox Goldstream	Fairbanks	O/P Placer

[a]O/P=Open-pit; HR=Hard-rock; U/G=Underground.

Operator	Creek	District	Type
Read, Donald	Treasure	Fairbanks	U/G Placer
Roberts, Mike	Dome/ Little Eldorado	Fairbanks	U/G Placer
Roman, Ron	Last Chance	Fairbanks	O/P Placer
Stein, Don	Dome	Fairbanks	O/P Placer
Tweiten, Oscar	Chatham	Fairbanks	O/P Placer
Yellow Eagle	Cripple	Fairbanks	O/P Placer
45-Pup Mining	Fortymile	Fortymile	O/P Placer
Bickell, Harvey	Walker Fork	Fortymile	O/P Placer
Carr, Brad	Chicken	Fortymile	O/P Placer
GeoQuest	Chicken	Fortymile	O/P Placer
Hayden, Forest	Kal	Fortymile	O/P Placer
Maxwell Mining	Kal	Fortymile	O/P Placer
North River Gold	South Fork	Fortymile	O/P Placer
Reed, Scott	40-Mile	Fortymile	O/P Placer
Regner, Leo	Lilliwig	Fortymile	O/P Placer
Roberts, Robert	Chicken	Fortymile	O/P Placer
Schofield, Walter	Fortymile	Fortymile	O/P Placer
Seuffert, George Jr.	Chicken	Fortymile	O/P Placer
Tallini, Roger	South Fork	Fortymile	O/P Placer
Taylor's Mining	Fortymile	Fortymile	O/P Placer
Cassiterite Placers	Tofty	Hot Springs	O/P Placer
DeLima Placers	Quartz	Hot Springs	O/P Placer
Hodges, Jay	American	Hot Springs	O/P Placer
Ott, Richard	Omega	Hot Springs	O/P Placer
Wilder, Richard	Boulder	Hot Springs	O/P Placer
Wood, James	Little Boulder	Hot Springs	O/P Placer
Slate Creek	Slate	Rampart	O/P Placer
Willford, Frank	Hoosier	Rampart	O/P Placer
AK Placer Dev.	Livengood	Tolovana	O/P Placer
Eaves, Samuel	Warwick Gulch	Tolovana	O/P Placer
	Southcentral Region		
Crow Creek Mining	Crow	Anchorage	O/P Placer
Girdwood Mining Co.	Crow	Anchorage	O/P Placer
Hoffman Mining	Chistochina	Chistochina	O/P Placer
Treesh, James	Cherry/No Name	Fortymile	O/P Placer
Willard, Gerald	Bear	Hope	O/P Placer
Miller, Jerry	Willow/Homestake	Willow Creek	O/P Placer
Mrak Placer Mine	Willow	Willow Creek	O/P Placer
LaCross, Jack	Willow	Yentna	O/P Placer
Lake Creek Placers	Lake	Yentna	O/P Placer
	Southwestern Region		
Chase Bros	Flat	Anvik	O/P Placer
Matter, Mark	Marvel	Aniak	O/P Placer
Nyac Placer	Bear	Aniak	O/P Placer
Wilmarth, Richard	Chicken	Iditarod	O/P Placer
Clarke-Wiltz	Podesie/Ganes	Innoko	O/P Placer
Little Creek	Little	Innoko	O/P Placer
Plano, Ed	Anvil	Innoko	O/P Placer
	Southeastern Region		
Kennecott/Hecla	Greens Creek Mine	Admiralty Island	U/G (zinc-lead-silver-gold)

[a]O/P=Open-pit; HR=Hard-rock; U/G=Underground.

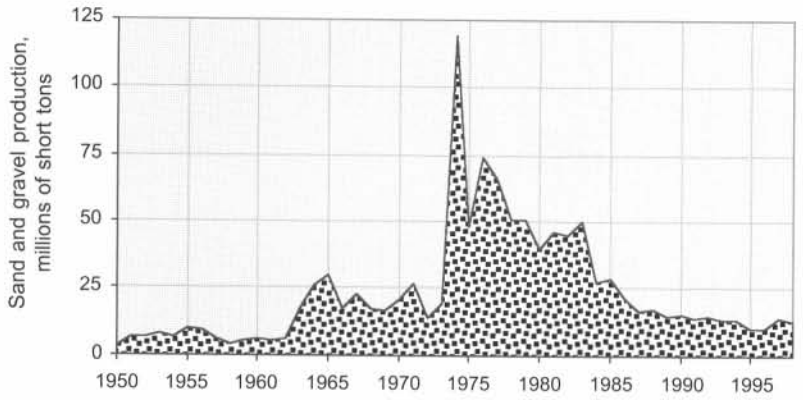


Figure 10. *Sand and gravel production in Alaska, 1950–98.*

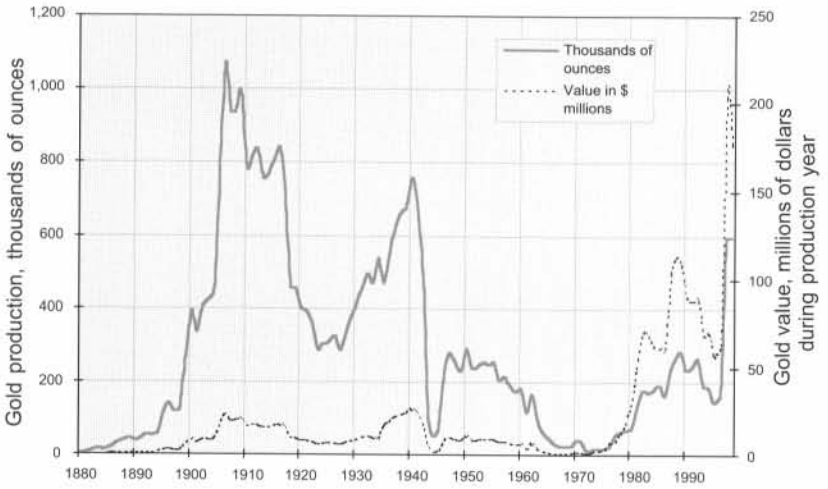


Figure 11. *Amount and value of gold production in Alaska, 1880–1998.*

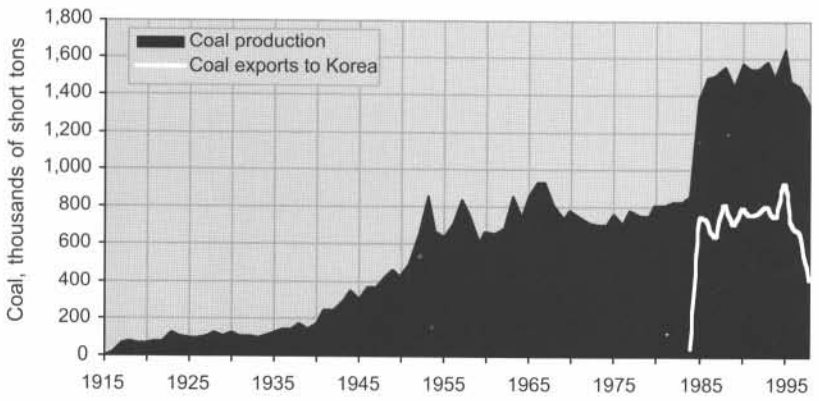


Figure 12. *Coal production in Alaska, 1915–98, including exports to Korea.*

Zinc, lead, and silver were produced at Red Dog Mine near Kotzebue and Greens Creek Mine near Juneau. Copper and gold were produced at Greens Creek Mine and Nixon Fork Mine (near McGrath). Gold and silver were produced at Fort Knox Mine near Fairbanks and Illinois Creek Mine near Galena, and gold was recovered at about 113 placer mines statewide. On a negative note, Illinois Creek Mine ceased active mining during 1998 and was placed in receivership late in the year. The only coal mine in Alaska was Usibelli Coal Mine at Healy; and rock, sand, and gravel were produced statewide. Locations of some operations are shown in figure 13.

These production estimates are from 209 DGGS questionnaires returned from miners, Native corporations and municipalities, supplemented by about 80 phone surveys. Additional information was derived from Alaska Placer Mining Applications (APMAs) submitted to the Division of Mining, Land & Water, but a number of placer miners could not be contacted, so the total placer mine production is estimated to be conservative. Table 10 may also contain some operations that decided not to mine due to the falling price of gold during 1998.

The authors wish to thank the Alaska Railroad Corp. (ARR), the Alaska Department of Natural Resources Division of Mining, Land & Water (DMLW), the Department of Transportation & Public Facilities (DOTPF), and the U.S. Forest Service (USFS) for providing information for this section of the report.

Some respondents reported costs and unit values, but unless selling costs were expressly provided, the metal values were computed from the weekly averages on the London exchange. Values reported in table 9 do not take into account mining, shipping, smelting, or other costs incurred by the reporting company.

I Northern Region

1. Cominco Alaska Inc. Red Dog Mine, Noatak district—zinc–lead–silver (germanium)
2. Tri-Con Mining Alaska Inc. Swede Bench Nolan Creek placer property, Koyukuk-Nolan district—gold
3. Prudhoe Bay and Kuparuk pits (numerous)—sand and gravel

II Western Region

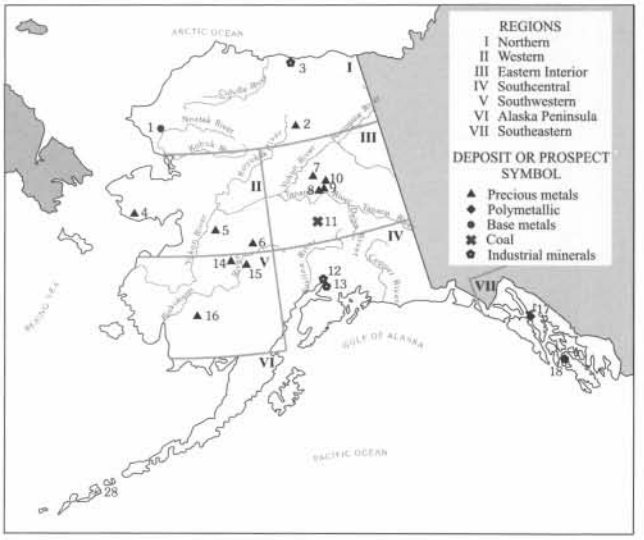
4. Alaska Gold Co. open pit placer mines, Cape Nome district—gold–silver
5. Dakota Mining Co. Illinois Creek Mine, Koyukuk–Hughes district—gold–silver
6. Real del Monte Mining Corp., Nixon Fork Mine McGrath–McKinley district—gold–copper–silver–bismuth

III Eastern Interior Region

7. Alaska Placer Development, Livengood–Tolovana district—gold–silver
8. Yellow Eagle Mining Inc., Fairbanks district—gold–silver
9. Polar Mining Inc., Fairbanks district—gold–silver–screened aggregate
10. Kinross Gold Corp. Fort Knox Mine, Fairbanks district—gold–silver
11. Usibelli Coal Mine Inc., Bonnifield district—coal

IV Southcentral Region

12. Landscape Supply Corp., Hatcher Pass district—topsoil–peat
13. Hermon Brothers Construction Co., Anchorage district—sand and gravel



V Southwestern Region

14. Clark–Wiltz Partnership, Innoko district—gold–silver
15. Manzie Magnuson, McGrath–McKinley district—gold–silver
16. NYAC Mining Co., Nyac district—gold–silver

VI Alaska Peninsula Region

VII Southeastern Region

17. Kennecott Minerals Co./Hecla Mining Co., Greens Creek Mine, Juneau–Admiralty district—silver–zinc–gold–lead–copper
18. Sealaska Corp. SeaCal/Calder Mine, Ketchikan district—marble

Figure 13. *Selected production projects, 1998.*

Hardrock gold production (498,892 ounces) exceeded placer gold production more than five-fold (95,299 ounces), but the placer industry continued to provide much-needed jobs throughout the more remote parts of the state. Table 11 shows the relative importance of the six regions of Alaska where gold production was reported, and table 12 shows the proportion of gold produced by small (less than 650 ounces per year), medium (651–2,500 ounces per year), and large (over 2,500 ounces per year) placer mines. Lower average gold prices in 1998 ($293.88 per ounce compared with $330.76 in 1997) caused several long-time placer miners to sit out the 1998 mining season to wait for better markets. This report does not enumerate mining production costs for various sizes of placer operations because insufficient data was received to make these calculations.

Tables 13 and 14 document production amount and value of sand, gravel, and rock throughout the state, most of which is used in road construction. The total value of sand and gravel production was $57.3 million in 1998, computed for 12.4 million tons of material from values reported by several private operators and both state and federal agencies.

The amount of rock used in the state declined substantially, particularly in the southcentral and southeastern regions, due to completion of major road construction and maintenance projects. One of the major projects was the enlargement of the railway tunnel near the port of Whittier on the Gulf of Alaska, which will allow vehicular access to the ice-free port.

Coal production was down in 1998 due mainly to the continuing economic downturn in Korea. Coal exports through Seward were reduced to only 409,000 short tons, compared to 650,000 short tons shipped in 1997. Figure 12 shows the amount of coal produced and coal exports from 1915 to 1998. Production of peat was down slightly from the amount reported in 1997.

NORTHERN REGION

Metals

Red Dog zinc–lead–silver mine is the world's largest zinc reserve and it is owned by NANA Regional Corp., a Native (First Nations) corporation, and operated by Cominco Alaska Inc.

Table 11. *Reported refined gold production, number of operators, and industry employment in Alaska, 1996–98*[a]

Region	Number of operators			Production in ounces of gold			Number of employees		
	1996	1997	1998	1996	1997	1998	1996	1997	1998
Northern	5	4	4	1,450	537	731	14	12	9
Western	24	24	24	74,200	104,297	113,066	338	324	254
Eastern Interior	92	75	72	74,789	423,676	413,959	456	548	475
Southcentral	8	6	9	3,100	971	543	16	12	15
Southwestern	13	11	7	8,500	5,070	5,320	80	57	27
Southeastern	3	3	1	8,026	55,965	60,572	69	277	275
TOTAL	**145**	**123**	**117**	**170,065**	**590,516**	**594,191**	**973**	**1,230**	**1,055**

[a]1998 production includes 498,892 ounces gold from Nixon Fork, Illinois Creek, Fort Knox, and Greens Creek hardrock projects, and 95,299 ounces of placer gold.

Table 12. *Production for selected Alaska placer gold mines, 1992–98*

Mine size	1992	1993	1994	1995	1996	1997	1998
				Number of mines			
Small[a]	23	19	24	11	9	25	45
Medium[b]	6	4	6	5	5	6	11
Large[c]	5	2	4	4	4	4	7
TOTAL	**34**	**25**	**34**	**20**	**18**	**35**	**63**
				Production in ounces			
Small[a]	3,842	3,919	2,789	1,459	1,433	5,077	10,159
Medium[b]	5,759	5,825	7,471	5,890	5,058	9,373	12,833
Large[c]	128,992	25,335	48,864	43,390	49,240	65,682	72,307
TOTAL	**138,593**	**35,079**	**59,124**	**50,739**	**55,731**	**80,132**	**95,299**

[a]<650 oz gold/yr.
[b]650-2,500 oz gold/yr.
[c]>2,500 oz gold/yr.
NOTE: Mine cost estimates are discontinued due to lack of information.

Table 13. *Reported sand and gravel production and industry employment in Alaska by region, 1998*

Region	Companies and agencies reporting[a]	Tons	Estimated unit value ($/ton)[b]	Total value	Estimated number of employees
Northern	6	1,255,500	$4.60	$ 5,775,300	110
Western	3	168,000	5.60	980,800	25
Eastern Interior	5	2,340,000	4.50	10,530,000	173
Southcentral	13	8,091,550	4.47	36,169,228	292
Southwestern	4	238,000	5.16	1,228,080	19
Alaska Peninsula	3	17,000	12.35	209,950	7
Southeastern	6	253,400	9.42	2,387,028	32
TOTAL	**40**	**12,363,450**	**$4.63**	**$57,280,386**	**658**

[a]From 29 returned questionnaires and 10 phone canvass responses.
[b]Values are based on price and cost estimates from 18 producers.

The $200-million Production Rate Increase development project that began in 1997 was completed in mid 1998, and by September throughput in the mill was increased by 35 percent. Table 15 shows that 2.75 million tons of ore grading 21.4 percent zinc, 5.2 percent lead, and 2.7 ounces of silver per ton were mined in 1998, compared with 2.13 million tons in the previous year. The mine recovered 880,541 dry short tons of zinc concentrate and 135,232 dry short tons of lead concentrate, containing 490,460 tons of zinc, 80,193 tons of lead, and an estimated 5.2 million ounces of silver. Mineral reserves in the four deposits explored to date at the mine are about 158 million tons with grades of 15.8 percent zinc, 4.4 percent lead and 2.40 ounces per ton silver, sufficient for about 50 years of production at present rates. Because of the lower prices for metals, operating profit for Red Dog Mine during 1998 was only $60 million, compared to $102 million in 1997. Cominco expects to produce 990,000 tons of zinc concentrate and 165,000 tons of lead concentrate from about 3 million tons of ore at Red Dog in 1999, which should translate to greater profitability.

Tri-Con Mining Alaska Inc. began mining on the Swede Bench of the Nolan Creek placer gold property owned by Silverado Gold Mines Ltd., near Wiseman in the Brooks Range. During 1998, the company started open-pit

Table 14. *Reported rock production and industry employment in Alaska by region, 1998*[a]

Region	Companies and agencies reporting[b]	Tons	Estimated unit value ($/ton)[c]	Total value	Estimated number of employees
Northern	0	0	0	$ 0	0
Western	2	20,000	10.00	200,000	12
Eastern Interior	3	158,200	9.15	1,447,530	25
Southcentral	3	220,000	7.60	1,672,000	43
Southwestern	0	- -	- -	- -	- -
Alaska Peninsula	0	- -	- -	- -	- -
Southeastern	3	1,238,000	8.66	10,721,080	41
TOTAL	**11**	**1,636,200**	**$8.58**	**$14,040,610**	**121**

[a]Includes shot rock, crushed stone, D-1, riprap, and modest quantities of ornamental stone.
[b]Derived from 7 questionnaires, 8 phone canvass responses.
[c]Unit value based on data supplied by 8 operations. Unit values for different stone products vary widely.
- - Not reported.

Table 15. *Cominco Alaska's Red Dog Mine, production statistics, 1991–98*[a]

	1991	1992	1993	1994	1995	1996	1997	1998
Ore milled (tons)	1,599,300[a]	1,582,000	1,874,600[a]	2,339,500	2,485,900	2,312,600	2,127,000	2,752,587
Ore grade								
Zinc	22.5%	19.9%	18.4%	18.8%	19.0%	18.7%	20.3%	21.4%
Lead	6.6%[a]	6.0%	5.7%[a]	5.7%	5.8%	5.0%	5.2%	5.2%
Silver (oz/ton)	2.8[a]	2.9	2.8	2.8	2.8	2.8	2.87	2.7
Concentrate								
Zinc								
(dry short tons)	410,700	405,900	465,600	588,100	645,100	646,800	675,900	880,541
(grade)	57.1%[a]	57.0%	54.8%	55.8%	55.6%	55.3%	55.2%	55.7%
Lead								
(dry short tons)	76,600[a]	28,000[a]	48,700	59,700	101,300	118,500	123,500	135,232
(grade)	57.2%	57.0%	50.9%	54.9%	55.0%	55.6%	56.1%	59.3%
Silver Mill Recovery	- -	- -	- -	- -	53%	66.9%	70%	70%[b]
(million ounces)	- -	- -	- -	- -	3.615	4.304	4.273	5.202[b]
Total concentrate (tons)[c]	521,400	474,900	539,800	658,000	753,600	765,300	799,400	1,015,773
Employees	331	349	376[a]	311	397	417	478	466

[a]Revised slightly from Bundtzen and others (1996) based on new company data.
- - = No data.
[b]Estimate based on grade and tonnage.
[c]Totals for years 1990 through 1995 include bulk concentrate.
SOURCE: Gary Coulter and Jim Kulas, Cominco Alaska Inc.

operations, and went underground in the late summer to extract pay gravel for sluicing in the spring of 1999. This area is renowned for large nuggets present in the bench gravels.

Paradise Mining continued its combination mine/tourist facility at Birch Creek west of Wiseman, and Gold Dust Mines operated on Big Creek near Chandalar Lake to the east.

Industrial and Other Minerals

Arco and BP used only small amounts of sand and gravel in support of their oil operations on the North Slope in 1998, and DOTPF used sand and gravel derived from DMLW leases throughout the region for road maintenance. The North Slope Borough also extracted material from the Chukchi Sea for beach nourishment at Barrow and Wainwright.

Stewarts Jewel Jade Mine continued lapidary work to convert their 100,000 pound jade stockpile into marketable products.

WESTERN REGION

Metals

Two hardrock gold mines, one large open-pit gold placer, and 21 smaller placer operations produced a total of 113,066 fine ounces of gold during 1998 from western Alaska.

Alaska Gold Co.'s open-pit placer mine on the Submarine Beach at Nome was the largest of the 22 gold placer mines that operated in the region in 1998. Alaska Gold employed approximately 70 people in the Nome area. The company processed 832,000 cubic yards of gravel, and moved 3.2 million cubic yards in total to recover 26,500 ounces of gold. Late in the year, NovaGold Resources Inc. of Nova Scotia announced an agreement to purchase all assets of Alaska Gold Co. from Mueller Industries Inc. of Memphis for $8 million. These assets include the Rock Creek lode gold prospect near Nome (750,000-ounce gold resource), 14,000 patented acres near Nome, 8,500 patented acres near Fairbanks, royalty incomes from producing placers (2,000 ounces per year), revenues from gravel production, and more than $7 million in plant, equipment, parts, and supplies.

Illinois Creek Mine, located about 40 miles south of Galena, continued leaching 1.35 million tons of gold ore left on the leach pads from 1997 operations. The mine produced 29,998 ounces of gold and 155,235 ounces of silver during 1998. The operator, USMX of Alaska Inc., filed for Chapter 11 bankruptcy in May and was put into receivership in November. Dakota Mining Co., the parent company, was struggling during the latter part of the year against foreclosure by the N.M. Rothschild & Sons Bank. There was no new mining, but if a buyer can be found it is anticipated that mining will resume in 1999.

Nixon Fork Mine, an underground gold–copper skarn deposit near McGrath, is operated by Real del Monte Mining Corp. Oxidized ore produces a concentrate containing up to 22 ounces of gold per ton, while the sulfide ore concentrate contains about half that amount and 16 percent copper. During the past year of low metal prices, oxide ore was mined selectively to minimize shipping and smelting costs. The main sulfides are chalcopyrite, arsenopyrite, pyrite, and bismuthinite. Magnetite is also locally abundant. During the last two years most of the mining has been in the Crystal/Garnet 3000 oreshoot, but in 1998 a cross-cut was driven to the C-3300 orebody, about 900 feet below surface and at the local water table level. New reserves have been discovered in the 3300 deposit, and there are also reserves in the Crystal/Garnet 3004 and 5500 oreshoots. The nearby Mystery Mine also contains reserves for the future.

Stopes are mined by a "slice and fill" method with drifting on the sill (horizontal) level to establish the cross-sectional footprint of the ore, and then 50-foot vertical raises are driven sill to sill on the footwall of the ore. The ore is transported from the mine by 2-cubic-yard load-haul-dump units matched to 13-ton trucks.

Mining and milling is a round-the-clock operation with a 50-person workforce. Over 2,700 feet of development drifts, raises, and ramps were driven to access the skarn ore bodies. Mining was hampered during 1998 by water inflow due to extremely wet weather, but this is expected to be a temporary setback. The gravity/flotation mill processed 37,500 tons of ore in 1998 to produce a copper sulfide concentrate containing about 40,000 ounces of gold, 20,000 ounces of silver, 500 tons of copper and by-product bismuth (taken as a deduction at the smelter). The product is transported by air to the Anchorage area en route to smelting facilities in Kosaka, Japan.

About 15 smaller conventional placer mines operated on the Seward Peninsula including Anderson & Sons Mining on Coffee Creek. Half a dozen small gold placer mines also reported production in the Ruby–Poorman and McGrath areas. A 294.5-ounce gold nugget was reportedly found in the Ruby area during the summer. This nugget is almost twice the weight of the largest placer nugget previously reported from Alaska and it may be one of the largest nuggets ever found in North America.

Industrial Minerals

Cape Nome Products, a joint venture between Knik Construction Co. and Sound Quarry Inc., a subsidiary of the Bering Straits Native Corp., produced granite orthogneiss from the Cape Nome quarry for stream bank armor stone for the village of Emmonak, and for water and sewer projects by the City of Nome. Future plans include extending the present load-out facility, and production of

armor rock for the St. Paul Harbor Improvement project. Board of Trade Inc. and Knik Construction Co. also produced sand and gravel for construction projects in the Nome area.

EASTERN INTERIOR REGION

This region was the most active in Alaska during 1998, with 73 small- and medium-sized placer gold mines, one large open-pit gold mine, a coal mine, three peat operations, three rock quarries, and about 15 sand and gravel pits. Total gold production in this region was 413,959 ounces in 1998, or about 10,000 ounces less than in 1997.

Metals

The largest mining operation in the area is Fort Knox Mine, a gold producer located about 15 miles northeast of Fairbanks. The mine employs 260 people, and produces about 1,000 ounces of gold per day from 36,000 to 44,000 tons of ore. In June 1998, Kinross Gold Corp. merged with Amax Gold Inc., the operator since 1996. Kinross is now the fifth largest North American gold producer. Amax's parent company, Cyprus Amax Minerals Co., holds 31 percent of the outstanding shares of Kinross Gold Corp. Fort Knox Mine contains a 5.24-million-ounce gold resource (including proven, probable, and possible reserves, and measured, indicated, and inferred resources) according to ore reserves and resource data by Kinross Gold Co. as of December 31, 1998.

Kinross now operates Fort Knox Mine, and has added new equipment to optimize production. A recent study shows that the mine creates a total of $107 million in local purchases including $35 million directly, and creates 312 indirect jobs in the Fairbanks area. About $4.4 million of local property taxes are generated annually by the mine and its employees, and average residential electricity rates in the Fairbanks area have been reduced by about 7 percent by the mine. Fort Knox Mine was the second runner-up for the Sentinels of Safety Award in October in the open-pit metal mine category, with 258,989 work hours without a fatality or lost-time accident in 1997.

Three medium-sized placer gold mines and about 70 smaller operations continued to mine throughout ten interior mining districts despite historically low gold prices. Polar Mining's Goldstream operation, Yellow Eagle Mining's Cripple Creek Joint Venture with Exploration Orbite V.S.P.A. Inc, and Alaska Placer Development's Livengood operation, are among the largest placer operations in the state. All placer miners mentioned that profit margins are low. Several long-time placer miners decided to put their operations on hold pending a rise in the price of gold. George Seuffert purchased patented mining claims on Chicken Creek and along Mosquito Fork, including the Goldpanner mercantile on the Taylor Highway in Chicken.

Coal and Peat

Low coal prices continued to plague Usibelli Coal Mine at Healy. Production by 125 workers in 1998 was 1,339,000 tons, with only 409,000 short tons shipped to Honan, South Korea. No coal was shipped to Korea on the Alaska Railroad after October. Offsetting this decline, mine-mouth power plants used 300,000 short tons, with the new Clean Coal Plant using 154,000 tons of this total. Much of the 50 megawatt capacity of the Clean Coal Plant is used by Fort Knox Mine. Figure 12 shows Alaska's coal production and exports from 1915 to 1998.

Peat production from several small pits in the Fairbanks area, including production from Great Northwest Inc.'s pit on College Road in Fairbanks, was down slightly from the previous year. Peat was used for local horticultural purposes.

Industrial Minerals

Several rock, sand, and gravel operations were active in the eastern interior in 1998. These operations provided material for road maintenance on the Taylor Highway, and on the Alaska Highway east of Tok. Lesser amounts were used on the Elliott and Steese highways. Several companies involved in rock, sand, and gravel production include Rolling Stone Inc. near Salcha on the Richardson Highway and Nugget Construction Inc. of Tok on the Alaska Highway.

SOUTHCENTRAL REGION

Metals

Nine small placer mines applied for permits in 1998, but production was down to only 543 ounces of gold. At least one of these mines will close for lack of reserves.

Coal and Peat

Three peat operations reported production in 1998. Landscape Supply Corp. produced 8,700 cubic yards of peat from their open-pit operation in Palmer along Palmer-Fishhook Road.

Industrial Minerals

Five industrial pits (sand and gravel) reported production in 1998. Most of the sand and gravel was used in road construction on the Richardson Highway near Summit Lake, Paxson and Phelan creeks, and on the Glenn Highway, especially near Lake Louise. Sand and gravel produced by AAA Valley Gravel Inc. and Herman Brothers Construction from the Palmer–Wasilla area was transported by the Alaska Railroad for various construction projects in the Anchorage area.

The Department of Transportation and Public Facilities continued the project to widen the railroad tunnel that connects Whittier to Portage. The expansion will provide,

for the first time, a road to connect this ice-free port on the Gulf of Alaska with the main road system. Whittier's topography will prevent much expansion of the port facility or the city. The tunnel expansion had been delayed by litigation, but should be completed by 2000.

Jackson Construction Co. in Soldotna produced 15,000 yards of gravel and announced a 200,000-yard reserve. Chugach Alaska Corp. mined gravel and riprap in the Cordova and Tonsina areas. Harris Sand & Gravel Inc. of Valdez produced construction materials from the Valdez Glacier and Lowe River mine sites.

SOUTHWESTERN REGION

Metals

Two medium-sized and five small placer gold mines reported total production of 5,320 fine ounces of gold in 1998, but all were hampered by weather and the low price for gold.

Industrial Minerals

Calista Native Corp. and Knik Construction teamed up to mine a small amount of sand and gravel at Platinum and Kalskag from village gravel pits and 151,400 tons from the Kalskag quarry for local construction. Part of the revenue from construction materials sales was redistributed to the village corporations as recompense for surface disturbance.

ALASKA PENINSULA REGION

Industrial Minerals

Small amounts of gravel were quarried from the Ugadaga Quarry on Unalaska Island by Marine Construction and Engineering Co. There were also two small gravel sales in the King Salmon area for local road work.

SOUTHEASTERN REGION

Metals

Production at Kennecott Minerals Co.'s Greens Creek Mine, which is 29.73 percent owned by Hecla Mining Co., increased to 540,000 tons in 1998, from which 9.5 million ounces of silver, 60,572 ounces of gold, 58,900 tons of zinc, and 22,700 tons of lead were recovered. The mine, located 20 miles west of Juneau, directly employs 275 people. Kennecott anticipates an increased throughput for 1999.

A long-awaited land swap between Kennecott Minerals Co. and the U.S. government was completed during 1998. Kennecott received rights to 7,500 acres in Misty Fjords National Monument immediately adjacent to the Greens Creek Mine in exchange for 189 acres of purchased private inholdings in other National Monuments. After mining is completed, all acreage at the mine, including patented acreage, will revert to the federal government. A royalty will be paid during mining of the exchanged land formerly within Misty Fjords National Monument.

Kennecott also received first place in October in the Sentinels of Safety Award for underground metal mines. Greens Creek Mine operated 434,236 work hours without a fatality or lost-time accident in 1997.

There was no reported production from the three or four gold placer mines in the Haines area in 1998, but two of these placer mines were preparing for production in 1999, despite low gold prices.

Industrial Minerals

At the northwest end of Prince of Wales Island, Sealaska Native Corp., an Alaska Native (First Nations) corporation, mined 150,000 tons of high-grade calcite at its Calder Bay limestone quarry, and shipped 20,000 tons for testing at several facilities outside Alaska. This production is the culmination of several years of testing and development by the corporation, which has created a subsidiary, Sea-Cal LLC, to manage the operations. In turn, Sea-Cal has contracted the actual mining to Eastwind, a division of Norcon Inc., itself a subsidiary of VECO Inc. The mine employs 15 full-time workers, and can draw upon a trained shareholder workforce when necessary for shiploading.

The product is a very bright and pure calcium carbonate suitable for high-quality paper coatings and paint, as well as many other potential applications. A great deal of effort is made to avoid contamination by the mining equipment, which consists of an excavator, crusher, conveyors, and 35-ton trucks to haul the crushed material to the load-out dock. Shipping is by barge or ship, and the dock can handle ships up to 40,000 tons and up to 680 feet long. Sealaska does not have to share any revenues with the other 12 Native corporations because the site is not on land owned by Sealaska.

Sand and gravel was quarried from pits in the Juneau area and shot-rock was produced from numerous pits throughout the region by Hildre Sand and Gravel Co. and RSH Co. David M. Hunz produced material in Skagway and Pate Construction Inc. mined sand and gravel in Yakataga. As in past years, the U.S. Forest Service was the major user of rock for road maintenance, but with the decline of the forest products industry the quantity required in 1998 was down considerably from past years.

DRILLING

Table 16 is a listing of companies with significant drill programs in 1998. Tables 17 and 18 summarize the drilling activity in the state during 1998 by region and type of drilling. Falling metal prices throughout 1998—to historically low levels—significantly affected the amount of money available for exploration drilling programs. There was a rather sharp decline in the total footage drilled, from 757,488 feet in 1997 to 586,628 feet in 1998. The decline in hardrock reverse-circulation drilling, from 180,834 feet in 1997 to only 45,670 feet in 1998, is particularly dramatic. The decline reflects, in part, the maturing of a number of prospects into advanced exploration where it is necessary to acquire the additional information that core drilling provides, and drilling in more remote locations in Alaska where there is not easy access for reverse-circulation drill rigs.

Table 16. *Companies reporting significant drilling programs in Alaska, 1998*

Alaska Gold Co.
Alaska Placer Development
American Copper & Nickel Co.
Consolidated Aston Resources Ltd.
Cominco Alaska Inc.
Coeur Alaska Inc.
Grayd Resource Corp.
Inmet Mining Corp.
International Freegold Mineral Development Inc.
Kennecott Exploration Co.
Kennecott Greens Creek Mining Co.
Kennecott Mining Co.
Kinross Gold Corp.
Newmont Exploration Ltd.
NovaGold Resources Inc.
Placer Dome Exploration Inc.
Real del Monte Mining Corp.
Rubicon Minerals Corp./Atna Resources Ltd.
Sumitomo Metal Mining America Inc.
Teck Corp.
Tri-Con Mining Alaska Inc.
Usibelli Coal Mine Inc.
Ventures Resource Alaska Corp.
WGM Inc.

Table 17. *Drilling footage by region in Alaska, 1998*

Type of drilling	Northern	Western	Eastern interior	South-central	South-western	South-eastern	TOTAL
Placer subtotal	**2,000**	**1,000**	**30,250**	**--**	**--**	**--**	**33,250**
Coal subtotal	**--**	**--**	**--**	**2,300**	**--**	**--**	**2,300**
Hardrock core	18,578	14,855	188,443	--	90,916	192,616	**505,408**[a]
Hardrock rotary	--	--	45,670	--	--	--	**45,670**
Hardrock subtotal	**18,578**	**14,855**	**234,113**	**--**	**90,916**	**192,616**	**551,078**
TOTAL (feet)	**20,578**	**15,855**	**264,363**	**2,300**	**90,916**	**192,616**	**586,628**

-- = Not reported.
[a]183,655 feet of core drilling was underground.
Note: Blasthole drilling not reported. Approximately 2,500,000 feet in 1998.
No drilling footage reported for Alaska Peninsula in 1998.

Table 18. *Drilling footage reported in Alaska, 1982–98*

Year	Placer Exploration	Placer Thawing	**TOTAL PLACER**	**TOTAL COAL**	**TOTAL HARDROCK**	Hardrock Core[a]	Hardrock Rotary[a]	**TOTAL FEET**
1982	30,000	94,000	**124,000**	**80,000**	**200,000**	--	--	**404,000**
1983	23,000	30,000	**53,000**	**12,000**	**180,500**	--	--	**245,500**
1984	31,000	98,000	**129,000**	**25,700**	**176,000**	--	--	**330,700**
1985	46,000	34,000	**80,000**	**8,700**	**131,700**	--	--	**220,400**
1986	32,400	227,000	**259,400**	**28,800**	**50,200**	--	--	**338,400**
1987	50,250	130,000	**180,250**	**19,900**	**115,100**	95,600	19,500	**315,250**
1988	152,000	300,000	**452,000**	**26,150**	**353,860**	223,630	130,230	**832,010**
1989	97,250	210,000	**307,250**	**38,670**	**332,230**	242,440	89,790	**678,150**
1990	78,930	105,000	**183,930**	**18,195**	**760,955**	648,600	112,355	**963,080**
1991	51,247	130,000	**181,247**	**16,894**	**316,655**	205,805	110,850	**514,796**
1992	6,740	65,000	**71,740**	**12,875**	**359,834**	211,812	148,022	**444,449**
1993	25,216	--	**25,216**	--	**252,315**	124,325	127,990	**277,531**
1994	21,000	--	**21,000**	**8,168**	**438,710**	347,018	91,692	**467,878**
1995	27,570	--	**27,570**	--	**415,485**	363,690	51,795	**443,055**
1996	61,780	--	**61,780**	**8,500**	**658,857**	524,330	134,527	**729,137**
1997	38,980	--	**38,980**	**13,998**	**704,510**	523,676	180,834	**757,488**
1998	33,250	--	**33,250**	**2,300**	**551,078**	505,408[b]	45,670	**586,628**

[a]Core and rotary drilling not differentiated prior to 1987.
[b]183,655 feet of core drilling was underground.
- - = Not reported.
Note: Blasthole drilling not reported. Approximately 2,500,000 feet in 1998.

GOVERNMENT ACTIONS

Table 19 lists revenues derived from the mining industry by the State of Alaska and by municipalities.

The DGGS Airborne Geophysical/Geological Mineral Inventory project was first funded in FY93 as a multi-year investment to expand the knowledge base of Alaska's mineral resources and catalyze private-sector mineral development. The first mineral district surveys were flown in 1993. As of December 1998, 3.97 million acres of geophysical surveys in 13 areas across Alaska had been released (table 20).

During 1998, DGGS released maps of the results of airborne magnetic and electromagnetic surveys of the Talkeetna Mountains and Ruby areas, and also of BLM surveys of the Wrangell and Wiseman areas. DGGS also contracted for geophysical surveys of the Fortymile River area east of the Pogo property and of the Livengood area northwest of Fairbanks. These maps were released in January 1999. DGGS mineral geologists conducted geologic mapping programs in the Chulitna and Petersville areas of southcentral Alaska. Airborne geophysical surveys had previously been flown in both of these areas.

The Alaska Geologic Materials Center (GMC), a facility operated by DGGS in cooperation with BLM, the USGS, the U.S. Minerals Management Service, and the Alaska Oil & Gas Conservation Commission, expanded its capacity during 1998. The GMC added thirty 40-foot Conex containers for additional rock storage. A new Microsoft Access inventory database is being created, and will be accessible via the Internet.

In addition to extensive oil and gas well sample holdings (over 9.8 million feet of cuttings and core from 1,204 wells), the GMC also has over 128,160 feet of diamond drill core donated by BLM and the mining industry. This drill core represents 838 holes from 133 mining properties throughout Alaska. The GMC has the entire BLM Alaska rock collection with corresponding chemical data, including rock reject and geochemical pulp samples. The BLM collection also includes 2,135 petrographic and polished reflective-light thin sections.

During 1998, the GMC facility had 457 visitations, compared to 479 visitations in 1997. Approximately 15 percent of these visitations were by hard-rock mineral interests. The percentage of visitations by mineral interests has increased in recent years.

BLM continued a five-year study of the mineral resources of the Koyukuk mining district that it began in 1997. The BLM team field checked an airborne geophysical survey flown over the northeast portion of the Koyukuk mining district with ground magnetic gradiometer and

electromagnetic conductivity measurements. Ground-penetrating radar studies were also conducted at three placer deposits to identify channel locations and bedrock depth.

The U.S. Geological Survey continued work with the Alaska Division of Mining, Land & Water (DMLW) on water-quality baseline studies in the Fortymile River drainage. Preliminary results of these studies were released and a similar joint effort was proposed to begin baseline studies in 1999 for the Goodpaster River drainage.

During June and July, a team of U.S. Geological Survey (USGS) geologists led by Marti Miller conducted their second consecutive year of geological and geochemical studies in the Sleetmute Quadrangle within the Kuskokwim mineral belt. In addition to completing regional studies Rich Goldfarb, Robert Ayuso, and Marti Miller collected mineralized samples from the Donlin Creek prospects, DeCourcy Mountain, Red Devil Mine, and Stuyahok prospect for isotopic studies.

Two mines in Alaska received safety awards in 1998. Greens Creek Mine won first place for underground mines in the Sentinels of Safety Award, with 434,236 work hours without a fatality or lost-time accident in 1997. Fort Knox Mine was second runner up for open-pit mines in the same contest, with 258,989 work hours without a fatality or lost-time accident in 1997. Jon Vander Wal received the 1998 Reclamation Award for Excellent Mine Reclamation from the Alaska Department of Natural Resources for his work on Thistle Creek in the Bonnifield mining district near Healy.

In 1996 Congress passed and President Clinton signed into law a land exchange between Kennecott Minerals Co. and the U.S. Forest Service that would provide Greens Creek Mine with access and mineral rights to an additional 7,500 acres surrounding the Greens Creek property. The land exchange was finally consummated in 1998. The land surrounding Greens Creek Mine, which was previously closed to exploration, has excellent mineral potential and may substantially extend Greens Creek's reserves and mine life.

The U.S. Army is asking the U.S. Congress for extensions of military land withdrawals covering 871,537 acres of interior Alaska. Many of these lands have a high potential for gold mineralization and are currently closed to mineral activities. The U.S. Army is seeking 50-year extensions to the military withdrawals. Decisions on the extensions are pending.

Table 19. *Revenues paid to the State of Alaska and municipalities by Alaska's mineral industry, 1993–98*[a]

	1993	1994	1995	1996	1997	1998
State mineral rents and royalties						
State claim rentals[b]	$ 523,661	$ 709,568	$ 712,559	$ 929,744	$ 1,115,591	$ 1,233,786
Production royalties	7,917	12,015	6,762	6,208	8,358	16,259
Mining license[c]	425,607	481,907	484,035	481,000	1,900,000	2,037,226
Annual labor	- -	- -	- -	62,900	89,500	128,725
Subtotal	**957,185**	**1,203,490**	**1,203,356**	**1,479,852**	**3,113,449**	**3,415,996**
State coal rents and royalties						
Royalties	1,486,100	1,399,912	1,866,952	1,348,841	1,250,000	1,080,369
Rents	198,835	198,835	172,024	206,515	205,500	212,325
Subtotal	**1,684,935**	**1,598,747**	**2,038,976**	**1,555,356**	**1,455,500**	**1,292,694**
State material sales						
Mental Health	5,300	54,772	106,505	126,000	299,000	62,000
Division of Land	561,414	174,484	351,094	431,815	403,169	971,000
SPCO	150,000	136,752	115,744	44,403	30,110	N/A
School fund	3,011	1,564	8,812	N/A	N/A	N/A
Subtotal	**719,725**	**367,572**	**582,155**	**602,218**	**732,279**	**1,033,000**
State total	**3,361,845**	**3,169,809**	**3,824,487**	**3,637,426**	**5,301,228**	**5,741,690**
Payments to Municipalities	**N/A**	**N/A**	**N/A**	**N/A**	**8,386,000**	**7,934,000**
TOTAL	**$3,361,845**	**$3,169,809**	**$3,824,487**	**$3,637,426**	**$13,687,228**	**$13,675,690**

[a]Does not include state corporate income taxes, which were not released for this study.
[b]Includes upland lease and offshore lease rentals.
[c]Includes metals, coal, and material.
N/A = not available.
- - = not reported.

ALASKA INDUSTRIAL DEVELOPMENT AND EXPORT AUTHORITY (AIDEA)

The Alaska Industrial Development and Export Authority (AIDEA) was established by the Alaska Legislature in 1967 to provide business financing assistance for Alaskans. Over the years AIDEA's programs have changed based on Alaska's economy and the needs of Alaskans, but its mission has remained the same—to encourage economic growth and diversification in Alaska, creating or retaining jobs for Alaskans. By focusing on economic diversification and jobs for Alaskans, AIDEA is helping finance Alaska's future.

AIDEA provides capital to finance economic growth all over Alaska—from multi-million dollar mining projects to small, family-owned businesses; from urban centers to small towns and rural villages. Regardless of project size or location or business type, all AIDEA-financed projects must enhance the state's economy and provide or maintain jobs for Alaskans. AIDEA's financing assistance programs have played an important role in Alaska's mineral development. These programs are divided into the Credit Program and the Development Finance Program. The Credit Program includes the Loan Participation, Business and Export Assistance loan guarantee, and the Tax-Exempt Revenue Bond programs.

The Loan Participation Program can be either a tax-exempt program or a taxable program. AIDEA can purchase up to an 80 percent participation in a bank-originated loan providing long-term financing to develop, acquire or enhance Alaska business enterprises. AIDEA's participation may not exceed $10 million. Both fixed and variable rates are available.

Under the Business and Export Assistance Program, AIDEA can guarantee up to 80 percent of a bank-originated loan, not to exceed $1 million, to an Alaskan business, for project financing, refinancing, working capital, and export transactions. Maximum interest rate to be charged by the bank is Wall Street Prime Rate plus 2.75 percent. On guarantees of $100,000 or less, AIDEA offers a streamlined application process and may consider a waiver of collateral. AIDEA is a City/State Partner with the Export-Import (Ex-Im) Bank of the U.S. that provides local access to a wide range of export finance programs such as working capital guarantees, export credit insurance, guarantees (medium and long term), and direct loans to foreign buyers.

AIDEA acts as a conduit for the issuance of tax-exempt bonds for eligible projects under the Tax-Exempt Revenue Bond Program. Neither the assets nor credit of AIDEA are at risk under this program. The project and the applicant's credit enhancements are the basis for the issuance of the bonds.

AIDEA's Development Finance Program allows AIDEA to develop, own, and operate facilities within Alaska such as roads, ports, and utilities which are essential to the economic well-being of an area; are financially feasible; and are supported by the community in which they are located.

Table 20. *Airborne geophysical survey work released by DGGS as of December 1998*

Nome District western core area	494 sq. miles	Airborne geophysical/ground-truth geological mapping
Nyac District core area	183 sq. miles	Airborne aeromagnetic mapping
Circle District core area	338 sq. miles	Airborne geophysical mapping/ground-truth geologic map
Valdez Creek District	75 sq. miles	Airborne geophysical mapping
Fairbanks District	626 sq. miles	Airborne geophysical mapping/ground-truth geologic map
Richardson District	137 sq. miles	Airborne geophysical mapping
Rampart/Manley-Tofty	1,026 sq. miles	Airborne geophysical mapping/ground-truth geologic map
Upper Chulitna District	364 sq. miles	Airborne geophysical mapping/ground-truth geologic map
Petersville-Collinsville District	415 sq. miles	Airborne geophysical mapping/ground-truth geologic map
Iron Creek District	689 sq. miles	Airborne geophysical mapping/ground-truth geologic map (ground-truth begins FY00; 3-year project)
Ruby District	591 sq. miles	Airborne geophysical mapping/ground-truth geologic map
Fortymile District	1,036 sq. miles	Airborne geophysical mapping/ground-truth geologic map (ground-truth begins FY00; 3-year project)
Livengood District	229 sq. miles	Airborne geophysical mapping
Total: 7 years $3.6 million	**6,203 sq. miles**	**1.1% of Alaska's total area**

Note: Surveys listed above are complete except where noted. Additional areas will be scheduled for surveying at later dates contingent on future funding.

AIDEA refers to these facilities as "projects" and manages them through private-sector users. This program was created by the Legislature in 1986 to meet specific needs in expanding Alaska's economy. The Legislature must approve any project over $10 million.

The State of Alaska, through AIDEA, is able to participate as an equity partner in mineral development, providing infrastructure development and financing assistance.

AIDEA's Role In Mineral Development

In the past decade AIDEA has assisted the mining industry in the following areas:

- In 1987 AIDEA sold bonds to finance the DeLong Mountain Regional Transportation System (DMTS),a 52-mile road and port that serves the northwestern Arctic region, including the Red Dog Mine. AIDEA owns the transportation system and Cominco Alaska, a wholly owned subsidiary of Cominco Ltd., has a nonexclusive priority right to use the system for 50 years, plus extensions, to ship concentrates over the road, store concentrates in the storage buildings, and transload concentrates onto ore ships. Cominco pays a toll for the use of the facilities and operates and maintains the system.
- In 1990 AIDEA purchased the Skagway Ore Terminal and financed environmental upgrades to the facility that has served Yukon base metal mines through the Alaska port city of Skagway.
- AIDEA assumed a 49 percent equity interest in Alaska's only export coal terminal, located in Seward. The 1995 purchase helped ease the operator's debt obligations and retain approximately 100 jobs associated with the export of coal.
- In 1995 construction began on the innovative Healy Clean Coal Project (HCCP), a new 50 (nominal) megawatt advanced coal-fired power plant located near Denali National Park. The HCCP is owned by AIDEA and was financed by AIDEA and through a grant from the U.S. Department of Energy—Clean Coal Technology Program. The HCCP will use annually approximately 330,000 tons of run-of-mine and waste coal from the Usibelli Coal Mine.
- In 1997, through the Tax-Exempt Revenue Bond Program, AIDEA lowered the cost financing of the tailings facility at the Fort Knox gold mine near Fairbanks.
- In 1997 AIDEA financed improvements to the DMTS port facilities to accommodate Cominco Alaska's production rate increase at Red Dog. Improvements included construction of a new concentrate storage building, a housing facility for employees, an expanded powerhouse, and other improvements.

In addition, in 1996 AIDEA helped facilitate the transportation of large mining equipment to the remote Illinois Creek deposit by acting as an intermediary for the private sector to obtain necessary approvals from the Federal Aviation Administration (FAA) to use a C-133 aircraft.

In all instances AIDEA recovers its investment and a modest rate of return through user fees negotiated with the mineral company using the facilities. For further information, please contact AIDEA at 907-269-3000 or http://www.aidea.org.

APPENDIX A

New claims staked in Alaska 1994-1998

Quad no.	Quadrangle name	New federal mining claims					New state mining claims				
		1994	1995	1996	1997	1998	1994	1995	1996	1997	1998
17	Point Hope	0	0	0	0	0	0	0	43	0	0
18	De Long Mountains	0	0	0	0	0	144	28	0	0	0
23	Philip Smith Mountains	0	0	0	0	0	0	0	0	0	0
26	Noatak	0	0	0	0	0	0	61	634	96	0
27	Baird Mountains	0	1	0	1	0	0	18	1	0	1
28	Ambler River	0	0	0	0	0	189	95	0	1,333	6
29	Survey Pass	0	0	0	0	0	0	0	0	722	0
30	Wiseman	39	20	0	47	90	55	34	6	44	108
31	Chandalar	9	12	3	17	1	21	502	118	75	37
32	Christian	0	0	0	0	0	0	0	0	0	0
35	Kotzebue	0	0	0	0	0	0	4	0	28	0
37	Shungnak	0	0	0	0	0	0	0	0	0	0
38	Hughes	0	0	0	0	0	0	0	0	72	1
39	Bettles	15	7	0	56	28	6	4	0	0	2
43	Teller	0	0	0	0	0	0	42	0	0	0
44	Bendeleben	0	0	0	0	0	4	31	55	67	45
45	Candle	0	0	0	0	0	11	21	16	201	10
47	Melozitna	0	0	0	0	0	6	4	4	0	0
48	Tanana	0	0	0	0	0	177	53	76	99	87
49	Livengood	0	0	0	1	0	146	545	1,838	352	32
50	Circle	0	0	0	0	0	256	413	100	658	698
51	Charley River	0	0	0	0	0	0	0	0	0	0
52	Nome	0	0	0	0	0	43	168	195	78	42
53	Solomon	0	0	0	0	0	56	39	31	29	10
54	Norton Bay	0	0	0	0	0	0	25	0	0	0
55	Nulato	0	0	0	0	0	0	0	0	0	0
56	Ruby	0	0	0	0	0	29	12	405	200	718
57	Kantishna River	0	0	0	1	0	0	14	0	0	0
58	Fairbanks	0	0	0	0	0	143	364	360	546	111
59	Big Delta	0	0	0	0	0	408	421	637	1,010	4,595
60	Eagle	0	0	0	0	0	171	116	122	171	722
64	Ophir	0	0	0	0	0	109	8	13	47	3
65	Medfra	0	0	0	0	0	30	0	0	128	46
66	Mt. McKinley	0	0	0	0	0	0	0	0	0	0
67	Healy	0	0	0	0	0	195	335	80	388	641
68	Mt. Hayes	12	171	124	772	2	163	858	622	1,185	975
69	Tanacross	0	0	0	0	0	18	69	236	112	748
72	Holy Cross	0	0	0	0	0	0	0	0	0	0
73	Iditarod	0	0	70	0	0	13	223	414	296	94
74	McGrath	0	0	0	0	0	0	0	0	0	0
75	Talkeetna	0	3	0	0	0	120	48	129	117	111
76	Talkeetna Mountains	0	0	0	4	0	45	48	234	50	131
77	Gulkana	0	0	0	0	0	0	0	0	192	7
78	Nabesna	0	0	0	0	0	0	0	0	2	0
81	Russian Mission	0	0	0	0	0	0	0	0	0	0
82	Sleetmute	0	0	0	0	0	8	22	0	0	0
83	Lime Hills	0	0	0	0	0	2	8	2	238	26
84	Tyonek	0	0	0	0	0	0	8	0	10	34
85	Anchorage	3	0	0	0	0	56	79	18	97	88
86	Valdez	0	0	0	0	0	2	20	11	8	0
87	McCarthy	0	0	0	0	0	0	0	0	0	52
91	Bethel	0	0	0	0	0	1	0	0	98	0
92	Taylor Mountains	0	0	0	0	0	0	5	0	142	37
93	Lake Clark	0	0	0	0	0	66	0	0	0	0

Quad no.	Quadrangle name	New federal mining claims 1994	1995	1996	1997	1998	New state mining claims 1994	1995	1996	1997	1998
94	Kenai	0	0	0	0	0	0	0	0	0	0
95	Seward	51	58	0	108	44	32	21	23	26	22
96	Cordova	0	0	0	1	0	0	0	0	0	3
97	Bering Glacier	0	0	0	0	0	1	0	2	3	2
102	Dillingham	0	0	0	0	0	219	4	7	32	0
103	Iliamna	0	0	0	0	0	0	1	1	325	1
104	Seldovia	0	0	0	0	0	2	0	0	0	0
107	Icy Bay	0	0	0	0	0	0	0	0	3	0
108	Yakutat	0	0	0	0	0	0	0	0	0	0
109	Skagway	1	2	0	4	0	318	36	8	5	1
111	Mt. Fairweather	0	0	0	0	0	0	0	0	0	0
112	Juneau	27	63	199	263	52	3	10	20	2	0
114	Sitka	39	2	0	7	10	0	2	0	0	3
115	Sumdum	0	0	0	0	0	0	0	0	0	0
116	Port Alexander	1	0	0	0	0	0	0	0	0	0
117	Petersburg	1	23	267	485	183	0	0	0	0	180
118	Bradfield Canal	0	0	0	0	0	0	0	0	0	0
119	Craig	89	14	18	101	3	1	0	48	0	6
120	Ketchikan	0	0	0	2	0	0	0	0	0	3
121	Dixon Entrance	9	0	0	1	14	2	0	0	0	0
123	Hagemeister Island	0	0	0	0	0	0	0	0	0	0
127	Afognak	45	0	0	0	0	0	32	0	0	0
133	Chignik	0	0	0	0	0	0	0	0	0	0
135	Trinity Islands	0	0	0	0	0	1	38	35	5	0
138	Port Moller	0	0	0	0	0	93	0	0	0	0
	TOTALS	**341**	**376**	**681**	**1,871**	**427**	**3,365**	**4,889**	**6,544**	**9,292**	**10,439**

SOURCE: State of Alaska Division of Mining, Land & Water Kardex file.

APPENDIX B
Prospecting sites in Alaska 1994-1998

Quad no.	Quad name	1994 New	1994 Extended	1994 Total	1995 New	1995 Extended	1995 Total	1996 New	1996 Extended	1996 Total	1997 New	1997 Extended	1997 Total	1998 New	1998 Extended	1998 Total
17	Point Hope	0	0	**0**	9	0	**9**	0	0	**0**	0	0	**0**	0	0	**0**
19	Misheguk Mts.	1	0	**1**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
26	Noatak	0	0	**0**	16	0	**16**	32	0	**32**	0	0	**0**	0	0	**0**
27	Baird Mts.	10	0	**10**	6	0	**6**	9	0	**9**	0	0	**0**	0	0	**0**
28	Ambler River	--	--	--	--	--	--	--	--	--	--	--	--	0	10	**10**
30	Wiseman	7	8	**15**	10	0	**10**	61	0	**61**	10	5	**15**	25	0	**25**
31	Chandalar	3	18	**21**	2	5	**7**	28	0	**28**	34	0	**34**	15	0	**15**
33	Coleen	--	--	--	--	--	--	--	--	--	--	--	--	0	13	**13**
36	Selawik	--	--	--	--	--	--	--	--	--	--	--	--	3	0	**3**
38	Hughes	--	--	--	--	--	--	--	--	--	--	--	--	0	4	**4**
44	Bendeleben	7	0	**7**	5	4	**9**	48	0	**48**	28	16	**44**	0	26	**26**
45	Candle	0	0	**0**	5	0	**5**	8	0	**8**	91	0	**91**	0	27	**27**
47	Melozitna	7	0	**7**	0	0	**0**	222	128	**350**	0	96	**96**	0	6	**6**
48	Tanana	41	7	**48**	54	15	**69**	309	133	**442**	21	193	**214**	2	0	**2**
49	Livengood	82	22	**104**	324	38	**362**	43	194	**237**	162	34	**196**	162	0	**162**
50	Circle	113	444	**557**	169	85	**254**	136	166	**302**	189	110	**299**	276	142	**418**
52	Nome	13	22	**35**	45	10	**55**	96	34	**130**	52	45	**97**	16	28	**44**
53	Solomon	9	3	**12**	19	1	**20**	29	5	**34**	11	38	**49**	8	12	**20**
55	Nulato	0	0	**0**	0	0	**0**	4	0	**4**	6	0	**6**	0	0	**0**
56	Ruby	0	0	**0**	0	0	**0**	21	0	**21**	70	18	**88**	47	31	**78**
57	Kantishna River	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	5	**5**
58	Fairbanks	45	5	**50**	85	17	**102**	124	20	**144**	58	33	**91**	77	20	**97**
59	Big Delta	46	23	**69**	45	33	**78**	102	42	**144**	286	16	**302**	1,849	230	**2,079**
60	Eagle	21	12	**33**	34	7	**41**	48	11	**59**	67	48	**115**	263	88	**351**
64	Ophir	2	0	**2**	0	0	**0**	0	0	**0**	33	0	**33**	0	43	**43**
65	Medfra	0	8	**8**	3	0	**3**	16	0	**16**	28	8	**36**	0	0	**0**
67	Healy	36	49	**85**	12	0	**12**	112	7	**119**	472	119	**591**	260	355	**615**
68	Mt. Hayes	14	6	**20**	2	12	**14**	236	12	**248**	230	30	**260**	81	97	**178**
69	Tanacross	169	16	**185**	6	166	**172**	68	0	**68**	38	15	**53**	53	38	**91**
73	Iditarod	0	0	**0**	0	0	**0**	182	0	**182**	4	66	**70**	16	7	**23**
74	McGrath	0	0	**0**	6	0	**6**	13	6	**19**	203	12	**215**	53	89	**142**
75	Talkeetna	4	15	**19**	14	3	**17**	37	5	**42**	390	39	**429**	99	92	**191**
76	Talkeetna Mts.	8	0	**8**	41	40	**81**	17	21	**38**	18	0	**18**	43	15	**58**

APPENDIX B
Prospecting sites in Alaska 1994-1998
(continued)

Quad #	Quad name	1994 New	1994 Extend	1994 Total	1995 New	1995 Extend	1995 Total	1996 New	1996 Extend	1996 Total	1997 New	1997 Extend	1997 Total	1998 New	1998 Extend	1998 Total
77	Gulkana	0	0	**0**	0	0	**0**	0	0	**0**	8	0	**8**	0	0	**0**
78	Nabesna	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -	0	8	**8**
81	Russian Mission	0	0	**0**	0	0	**0**	0	0	**0**	45	0	**45**	0	0	**0**
82	Sleetmute	0	0	**0**	0	0	**0**	0	0	**0**	46	0	**46**	0	20	**20**
83	Lime Hills	2	0	**2**	0	0	**0**	0	0	**0**	5	0	**5**	1	0	**1**
84	Tyonek	6	18	**24**	0	0	**0**	0	0	**0**	6	14	**20**	1	0	**1**
85	Anchorage	14	2	**16**	16	9	**25**	18	7	**25**	22	0	**22**	8	0	**8**
86	Valdez	13	4	**17**	13	0	**13**	9	15	**24**	0	0	**0**	0	0	**0**
91	Bethel	0	0	**0**	0	0	**0**	12	6	**18**	4	8	**12**	0	0	**0**
92	Taylor Mts.	0	0	**0**	0	0	**0**	14	0	**14**	6	6	**12**	32	0	**32**
94	Kenai	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
95	Seward	0	0	**0**	1	0	**1**	73	40	**113**	2	24	**26**	8	5	**13**
97	Bering Glacier	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
102	Dillingham	0	0	**0**	0	0	**0**	0	0	**0**	48	0	**48**	0	20	**20**
103	Iliamna	4	0	**4**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
104	Seldovia	0	0	**0**	0	0	**0**	1	0	**1**	0	0	**0**	0	0	**0**
109	Skagway	8	16	**24**	0	0	**0**	13	0	**13**	6	0	**6**	4	0	**4**
112	Juneau	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
119	Craig	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**	0	0	**0**
120	Ketchikan	0	0	**0**	0	0	**0**	2	0	**2**	0	0	**0**	0	0	**0**
135	Trinity Islands	25	0	**25**	1	2	**3**	14	0	**14**	0	0	**0**	17	0	**17**
	TOTALS	**710**	**698**	**1,408**	**943**	**447**	**1,390**	**2,157**	**852**	**3,009**	**2,699**	**993**	**3,692**	**3,419**	**1,431**	**4,850**

SOURCE: State of Alaska Division of Mining, Land & Water Kardex file.
- -Data not available.

APPENDIX C

Mining licenses issued by and received from the Alaska Department of Revenue and the Alaska Division of Mining, Land & Water, 1998

Entries include in this order: company name (region), address, resource, site of operation, mining district, and license number. Alaska Peninsula Region (APR), Eastern Interior Region (EIR), Northern Region (NR), Southcentral Region (SCR), Southwestern Region (SWR), Southeastern Region (SER), Undistributed (UR), Western Region (WR), and not given (NG).

A.L.L Co. (EIR)
R.N. Krons
PO Box 274
Delta Junction, AK 99737-0274
Gold
Rainy Creek
Delta River district

Achman, Roland F. (EIR)
17435 Orchid Ct
Avon, MN 56310-9589
Gold
Harrison Creek
Circle district

Alaska Gold Co. (WR)
PO Box 640
Nome, AK 99762-0640
Gold
Anvil Creek
Nome district

Alaska Gold Co. (WR)
PO Box 640
Nome, AK 99762-0640
Gold
Specimen Gulch
Nome district

Alaska Gold Co. (WR)
PO Box 640
Nome, AK 99762-0640
Gold
Dry Creek
Nome district

Alaska Gold Co. (WR)
PO Box 640
Nome, AK 99762-0640
Gold
Submarine Beach
Nome district

Alaska Gold Co. (WR)
PO Box 640
Nome, AK 99762-0640
Gold
Center Creek
Nome district

Alaska Gold Co. (EIR)
PO Box 71170
Fairbanks, AK 99707-1170
Gold
Cleary Creek
Fairbanks district

Alaska Gold Co. (EIR)
PO Box 71170
Fairbanks, AK 99707-1170
Gold
Ester Creek
Fairbanks district

Alaska Gold Co. (EIR)
PO Box 71170
Fairbanks, AK 99707-1170
Gold
Goldstream Creek
Fairbanks district

Alaska Gold Co. (WR)
PO Box 71170
Fairbanks, AK 99707-1170
Gold
Bear Creek
Hughes district

Alaska Gold Co. (WR)
PO Box 640
Nome, AK 99762-0640
Gold
Dry Creek
Hughes district

Alaska Gold Company (EIR)
PO Box 71170
Fairbanks, AK 99707-1170
Gold
N/A
Fairbanks district

Alaska Lime Co. (EIR)
Joe Caswell
PO Box 196
Cantwell, AK 99729-0196
Industrial
N/A
Bonnifield district

Alaska Lime Co. (EIR)
James W. Caswell
PO Box 196
Cantwell, AK 99729-0196
Industrial
N/A
Bonnifield district

Alaska Lime Co. (EIR)
John Caswell
PO Box 196
Cantwell, AK 99729-0196
Industrial
N/A
Bonnifield district

Alaska Pacific Trust Co. (EIR)
PO Box 71230
Fairbanks, AK 99707-1230
Gold
Goldstream Creek
Fairbanks district

Alaska Placer Development Inc. (EIR)
626 Second St Ste 202a
Fairbanks, AK 99701-3466
Gold
Livengood Creek
Tolovana district

Alaska/Nevada Gold Mines Ltd. (EIR)
626 Second St Ste 202
Fairbanks, AK 99701-3466
Gold
Livengood Creek
Tolovana district

Aldridge, Shirley B. (EIR)
PO Box 1334
Palmer, AK 99645-1334
Gold
Poker Creek
Fortymile district

Aldridge, William J. (EIR)
PO Box 1334
Palmer, AK 99645-1334
Gold
Poker Creek
Fortymile district

Allen, Ray (NR)
PO Box 9026
Coldfoot, AK 99701-9026
Gold
Myrtle Creek
Koyukuk district

AM Mining Ltd. (EIR)
John R. Andresen
PO Box 10263
Fairbanks, AK 99710-0263
Gold
Dome Creek
Fairbanks district

AM Mining Ltd. (EIR)
Richard B. Minder
PO Box 10263
Fairbanks, AK 99710-0263
Gold
Dome Creek
Fairbanks district

Ammi Family Ltd. Partnership (NR)
Paradise Valley Via
Bettles, AK 99726
Gold
Birch Creek
Koyukuk district

Anderson, Allan (SWR)
PO Box 37
McGrath, AK 99627-0037
Gold
Dodge Creek
Innoko district

Anderson, Allan G. (SWR)
PO Box 277
McGrath, AK 99627-0277
Gold
Yankee Creek
Innoko district

Anderson, Bud (NR)
1161 Dolphin Way
Fairbanks, AK 99709-2548
Gold
Gold Creek
Koyukuk district

Anderson, Gerald I. (SCR)
11920 Northern Raven Drive
Anchorage, AK 99516-1935
Gold
Yacko Creek
Nelchina district

Anderson, Ralph (WR)
PO Box 1974
Nome, AK 99762-1974
Gold
Coffee Creek
Kougarok district

Anderson, Randi M. (EIR)
1901 Cheechako Dr
Fairbanks, AK 99709-6542
Gold
Tenderfoot Creek
Fairbanks district

Anderson, Wayne S. (EIR)
1901 Cheechako Dr
Fairbanks, AK 99709-6542
Gold
Tenderfoot Creek
Fairbanks district

Apollo Resources Inc. (EIR)
310 1859 152nd St
Surrey, B.C., CANADA
V4A 9E3
Gemstones
Volcano Creek
Fairbanks district

APP Mining (WR)
Bert Pettigrew
PO Box 38
Ellensburg, WA 98926-0038

Gold
Anvil Creek
Nome district

Arctic Mining (EIR)
Morris Wolters
622-E, Sr 4
Cathlamet, WA 98612
Gold
Crooked Creek
Circle district

Arctic Whitney Inc. (WR)
Dale Whitney
PO Box 782
Nome, AK 99762-0782
Gold
Norton Sound
Nome district

Arctic Whitney Inc. (WR)
PO Box 782
Nome, AK 99762-0782
Gold
Norton Sound
Nome district

Argo, Adam T. (EIR)
3705 Arctic Blvd # 957
Anchorage, AK 99503-5774
Gold
Mosquito Fork
Fortymile district

AU & AK Underground Mining (EIR)
Brad Ramier
PO Box 10570
Fairbanks, AK 99710-0570
Gold
(Underground)
Fairbanks district

AU & AK Underground Mining (EIR)
Richard L. Loud
769 Donahue Drive
Fairbanks, AK 99712-2623
Gold
(Underground)
Fairbanks district

AU Mining (WR)
Michael L. Vial
PO Box 292
Willow, AK 99688-0292
Gold
Candle Creek
Fairhaven district

Aurora Mining Co. (EIR)
Lester E. Lines
PO Box 103820
Anchorage, AK 99510-3820
Gold
North Fork Harrison Creek
Circle district

Averett, Kent G. (NR)
1463 Wescott Garden Lane
North Pole, AK 99705
Gold
Jennie Creek
Koyukuk district

Awe, Charles J. (SWR)
1113 W Fireweed Lane # 701
Anchorage, AK 99503-1777
Gold
Marvel Creek
Aniak district

Baan 'O' Yeel Kon Corp. (EIR)
514 Second Ave., Ste 101
Fairbanks, AK 99701-4729
Gold
Hoosier Creek
Rampart district

Babcock, Jack G. (EIR)
1650 Appaloosa Ln
Fairbanks, AK 99709-6729
Gold
Switch Creek
Circle district

Babcock, Patricia R. (EIR)
1650 Appaloosa Ln
Fairbanks, AK 99709-6729
Gold
Switch Creek
Circle district

Barron, Dennis L. (WR)
PO Box 923
Nome, AK 99762-0923
Gold
Goose Creek
Nome district

Barron, May (WR)
PO Box 923
Nome, AK 99762-0923
Gold
Goose Creek
Nome district

Bartholomae, Bill A. (WR)
PO Box 2701
Orange, CA 92859-2701
Gold
Gold Run Creek
Port Clarence district

Bartholomae, Bill A. (WR)
PO Box 2701
Orange, CA 92859-2701
Gold
Gold Run Creek
Port Clarence district

Bauer, Tod A. (SCR)
PO Box 871502
Wasilla, AK 99687-1502
Gold
Eldorado Creek
Valdez Creek district

Baughman, Errol G. (EIR)
HC 69 Box 91
Belle Fourche, SD 57717-8801
Gold
Fish Creek
Fairbanks district

Bedrock Mining Co. (EIR)
Robert J. Cacy
4616 W Sahara Ave #302
Las Vegas, NV 89102-3796
Gold
Gilmore Creek
Fairbanks district

Beerman, William J. (SCR)
2416 S 1st Street
Yakima, WA 98903-1552
Gold
Big Four Creek
Chistochina district

Beerman, William J., Jr (SCR)
2416 S 1st Street
Yakima, WA 98903-1552
Gold
Big Four Creek
Chistochina district

Beistline, Earl H. (EIR)
PO Box 80148
Fairbanks, AK 99708-0148
Gold
Eagle Creek
Circle district

Beistline, Earl H. (EIR)
PO Box 80148
Fairbanks, AK 99708-0148
Gold
Eagle Creek
Circle district

Beistline, Earl H. (EIR)
PO Box 80148
Fairbanks, AK 99708-0148
Gold
Goldstream Creek
Fairbanks district

Berg & Wettlesen (WR)
Rhinehart M. Berg Estate
325 Garrison Way
Gulph Mills, PA 19428
Gold
Candle Creek
Fairhaven district

Berg, Carol B. (EIR)
450 Westridge Dr
Portola Valley, CA 94028-7719
Gold
Ester Creek
Fairbanks district

Berg, Rhinehart M. (WR)
Estate
325 Garrison Way
Gulph Mills, PA 19428
Gold
Candle Creek
Fairhaven district

Berg, Rhinehart M. (WR)
Estate
325 Garrison Way
Gulph Mills, PA 19428
Gold
Candle Creek
Fairhaven district

Bering Straits Native Corp. (WR)
PO Box 1008
Nome, AK 99762-1008
Gold
Dry Creek
Nome district

Bergman, Kevin M. (EIR)
PO Box 71488
Fairbanks, AK 99707-1488
Gold
Ester Creek
Fairbanks district

Berry Enterprises (EIR)
1101 Barnette Street
Fairbanks, AK 99701-4503
Gold
Ketchum Creek
Circle district

Berry, William F. (EIR)
450 Westridge Dr
Portola Valley, CA 94028-7719
Gold
Ester Creek
Fairbanks district

Bickell, D.H. (EIR)
Bickell
Rr1 Site 7
Gabriola, B.C., CANADA
V0R 1X0
Gold
Walker Fork
Fortymile district

Big G Mining (EIR)
Hank Gradney
PO Box 74400
Fairbanks, AK 99707-4400
Gold
Deadwood Creek
Circle district

Birklid, Naimy (EIR)
Estate
925 3rd Ave
Fairbanks, AK 99701-4356
Gold
Totatlanika River
Bonnifield district

Blair, Patricia A. (SCR)
PO Box 572
Cooper Landing, AK 99572
Gold
Quartz Creek
Seward district

Blue Ribbon Inc. (SCR)
PO Box 871906
Wasilla, AK 99687-1906
Gold
Willow Creek
Yentna district

Bluestone Mining Co. (WR)
Daniel P. Walsh
PO Box 190941
Anchorage, AK 99519-0941
Gold
Dexter Creek
Nome district

Bluestone Mining Co. (WR)
Daniel P. Walsh
PO Box 190941
Anchorage, AK 99519-0941
Gold
Gold Run Creek
Port Clarence district

Boucher, Bill (WR)
PO Box 60174
Fairbanks, AK 99706-0174
Gold
Osborne Creek
Nome district

Boucher, Bill (WR)
PO Box 60174
Fairbanks, AK 99706-0174
Gold
Washington Creek
Nome district

Bracale, Carl A. (WR)
PO Box 858
Gig Harbor, WA 98335-0858
Gold
Camp Creek
Kaiyuh district

Bradley, Joe (SCR)
529 Lynwood Dr
Anchorage, AK 99518-1856
Gold
Skookum Creek
Yentna district

Bras, Cy (EIR)
703 Swires Rd.
Kenai, AK 99611-8391
Gold
Canyon Creek
Fortymile district

Briley, Robert A. (EIR)
292 Thunder Rd.
Fairbanks, AK 99712-1044
Gold
Nugget Creek
Fairbanks district

Brittain, John (WR)
General Delivery
Nome, AK 99762-9999
Gold
Norton Sound
Nome district

Brooks Range Ventures Inc. (NR)
424 K St
Anchorage, AK 99501-2016
Gold
Lake Creek
Koyukuk district

Brooks, Wallis (WR)
Berg/Wetlesen Estate
Gulph Mills, PA 19428
Gold
Candle Creek
Fairhaven district

Bucy, Michael (EIR)
3638 Dunkirk Dr
Anchorage, AK 99502-3060
Gold
Warner Creek
Fortymile district

Busk, Leroy (SWR)
PO Box 190649
Anchorage, AK 99519-0649
Gold
Syneva Creek
Aniak district

Busk, Richard L. (SWR)
PO Box 190649
Anchorage, AK 99519-0649
Gold
Syneva Creek
Aniak district

Calista Corp. (SWR)
601 W 5th Ave. Ste 200
Anchorage, AK 99501-2295
Gold
Spruce Creek
Aniak district

Calista Corp. (WR)
601 W 5th Ave. Ste 200
Anchorage, AK 99501—2295
Gold
Flat Creek
Anvik district

Camp Creek Mining (EIR)
Alvin L. Kile
PO Box 140424
Anchorage, AK 99514-0424
Gold
Canyon Creek
Fortymile district

Camp Creek Mining (EIR)
Eric E. Kile
PO Box 140424
Anchorage, AK 99514-0424
Gold
Canyon Creek
Fortymile district

Candle Creek Mining (WR)
Lloyd Magnuson
PO Box 1845
Hawthorne, NV 89415-1845
Gold
Candle Creek
McGrath district

Candle Creek Mining (WR)
Robert L. Magnuson
PO Box 87
McGrath, AK 99627-0087
Gold
Candle Creek
McGrath district

Carlson, Robert D. (SCR)
PO Box 771375
Eagle River, AK 99577-1375
Gold
Upper Cache Creek
Yentna district

Carr, Brad (EIR)
PO Box 25
Chicken, AK 99732-0025
Gold
South Fork Fortymile River
Fortymile district

Carroll, Tess J. (EIR)
811 Rita St
Sedro Woolley, WA 98284-1441
Gold
South Fork Fortymile River
Fortymile district

Chaney, Steve (SCR)
PO Box 2535
Pullman, WA 99165-2535
Gold
Caribou Creek
Willow Creek district

Chase, Ernest M. (WR)
PO Box 141
Anvik, AK 99558-0141
Gold
Flat Creek
Anvik district

Chase, Kenneth R. (WR)
2648 Livingston Loop
Fairbanks, AK 99709-2234
Gold
Flat Creek
Anvik district

Christensen, Kathleen (SCR)
PO Box 871075
Wasilla, AK 99687-1075
Gold, heavy metals
N/A — beach sands
Yakataga district

Christensen, Robert E. (SCR)
PO Box 871075
Wasilla, AK 99687-1075
Gold, heavy metals
N/A — beach sands
Yakataga district

Chukchi Contracting Inc. (WR)
PO Box 778
Kotzebue, AK 99752-0778
Gold
Old Glory Creek
Fairhaven district

Chukchi Contracting Inc. (WR)
PO Box 830
Kotzebue, AK 99752-0830

Daglow Exploration Inc. (NR)
PO Box 80930
Fairbanks, AK 99708-0930
Gold
Big Creek
Chandalar district

Daugherty, Joe A. (SWR)
HC 05, Box 9749
Palmer, AK 99645-9509
Gold
Taylor Creek
Aniak district

Day Creek Mining Co. (WR)
Dennis Black
PO Box 80930
Fairbanks, AK 99708-0930
Gold
Little Squaw Creek
Chandalar district

Deitchel, Joseph J. (EIR)
PO Box 81230
Fairbanks, AK 99708-1230
Gold
North Fork Harrison Creek
Circle district

Depem (EIR)
Donald R. Stein
105 Dunbar Ave.
Fairbanks, AK 99701-3658
Gold
Gilmore Creek
Fairbanks district

Depem (EIR)
Donald R. Stein
105 Dunbar Ave.
Fairbanks, AK 99701-3658
Gold
Dome Creek
Fairbanks district

DePue, Dale E., Sr. (EIR)
3545 Holt Rd.
Fairbanks, AK 99701-7411
Gold
Faith Creek
Fairbanks district

Devore, Wesley (EIR)
665 3rd Ave.
Redwood City, CA 94063-3814
Gold
South Fork Fortymile River
Fortymile district

Dewitt, Estill (SCR)
200 W 34th Ave. # 843
Anchorage, AK 99503-3969
Gold
Alfred Creek
Willow Creek district

Dewitt, Estill (SCR)
200 W 34th Ave. # 843
Anchorage, AK 99503-3969
Gold

Caribou Creek
Willow Creek district

Double J Mining (EIR)
Judd Edgerton
PO Box 34
Chicken, AK 99732-0034
Gold
Napoleon Creek
Fortymile district

Doyon Ltd. (SCR)
201 First Ave Ste 300
Fairbanks, AK 99701-4848
Gold
Candle Creek
McGrath district

Doyon Ltd. (EIR)
201 First Ave Ste 300
Fairbanks, AK 99701-4848
Gold
Hoosier Creek
Rampart district

Doyon Ltd. (SWR)
201 First Ave Ste 300
Fairbanks, AK 99701-4848
Gold
Yankee Creek
Innoko district

Duncan, Lonnie G. (EIR)
2049 Old Steese Hwy N
Fairbanks, AK 99712-1020
Gold
Treasure Creek
Fairbanks district

Eagan, Daniel F. (EIR)
1564 Hilton Ave.
Fairbanks, AK 99701-4016
Gold
Goldstream Creek
Fairbanks district

Eagle Creek Mining Inc. (EIR)
Joe I. Gurule
PO Box 2878
Aiea, HI 96701-8280
Gold
Eagle Creek
Fortymile district

Ellet Management Co. Inc. (EIR)
Michael J. Kingsbury
3535 Lansing Road
Charlotte, MI 48813-8446
Gold
Olive Creek
Tolovana district

Ellingson, Alice (EIR)
1890 Steese Hwy
Fairbanks, AK 99712-1727
Gold
Goldstream Creek
Fairbanks district

Ellingson, Harold M. (EIR)
1890 Steese Hwy
Fairbanks, AK 99712-1727
Gold
Goldstream Creek
Fairbanks district

Excavo Mining (SCR)
Steven C. Amidon
1925 Buckeye Ln
Wasilla, AK 99654-3125
Gold
Thunder Creek
Yentna district

Faa, Thomas E. (EIR)
PO Box 10906
Fairbanks, AK 99710-0906
Gold
Moose Creek
Bonnifield district

Fairbanks Exploration Inc. (EIR)
PO Box 73795
Fairbanks, AK 99707-3795
Industrial
Globe Creek
Fairbanks district

Fairbanks Exploration Inc. (EIR)
PO Box 73795
Fairbanks, AK 99707-3795
Industrial
Globe Creek
Fairbanks district

Fairbanks Gold Mining Inc. (EIR)
PO Box 73726
Fairbanks, AK 99707-3726
Gold
Last Chance Creek
Fairbanks district

Fairbanks Gold Mining Inc. (EIR)
Fort Knox Mine
PO Box 73726
Fairbanks, AK 99707-3726
Gold
Fish Creek
Fairbanks district

Fejes, William C. (NR)
PO Box 430
Homer, AK 99603
Gold
Boulder Creek
Koyukuk district

Ficheltman, Guy (EIR)
414 Hawk Eye Downs Dr.
Fairbanks, AK 99712-1213
Gold
Mosquito Fork
Fortymile district

Flat Pick Mining (EIR)
Gordon Fulton
5907 Hwy 93
Mackay, ID 83251
Gold
Switch Creek
Circle district

Fleming, Michael (NR)
PO Box 9026
Coldfoot, AK 99701-9026
Gold
Myrtle Creek
Koyukuk district

Fleming, Mitch (NR)
PO Box 9026
Coldfoot, AK 99701-9026
Gold
Myrtle Creek
Koyukuk district

Fogarty, James L., Sr (EIR)
3498 Laurance Road
North Pole, AK 99705-6705
Gold
Flume Creek
Fairbanks district

Fogarty, Sharon L. (EIR)
3498 Laurance Road
North Pole, AK 99705-6705
Gold
Flume Creek
Fairbanks district

Four Brothers Mining (EIR)
Henry C. Billings
80 W Gibson St
Canandaigua, NY 14424-1453
Gold
Totatlanika River
Fairbanks district

Franklin, Patricia S. (EIR)
1213 Coppet St
Fairbanks, AK 99709-4724
Gold
Fairbanks Creek
Fairbanks district

Frantz, Peter S. (NR)
PO Box 83172
Fairbanks, AK 99708-3172
Gold
Linda Creek
Koyukuk district

Frost, Dennis (EIR)
PO Box 61308
Fairbanks, AK 99706-1308
Gold
Slate Creek
Rampart district

Fullerton, John E. (SWR)
16935 Maplewild Ave. SW
Seattle, WA 98166-3165
Gold
Flat Creek
Iditarod district

Fullerton, John R. (SWR)
General Delivery
Flat, AK 99584
Gold
Flat Creek
Iditarod district

Funkhouser, Gladys A. (EIR)
1336 W 6th Avenue
Anchorage, AK 99501-1912
Gold
(Underground)
Fairbanks district

Funkhouser, Peter J. (EIR)
1336 W 6th Avenue
Anchorage, AK 99501-1912
Gold
(Underground)
Fairbanks district

G A Hanks & Sons (EIR)
713 Fairview Dr
Woodland, CA 95695-6805
Gold
Lost Chicken Creek
Fortymile district

Galleher, Joyce (WR)
PO Box 292
Poulsbo, WA 98370-0292
Gold
Osborn Creek
Nome district

Galleher, Richard F. (WR)
PO Box 292
Poulsbo, WA 98370-0292
Gold
Osborn Creek
Nome district

Garber, John P. (AP)
PO Box Alz - Alitak
Kodiak, AK 99697-0210
Gold
N/A beach sands
Kodiak district

Garber, Mildred (AP)
PO Box Alz - Alitak
Kodiak, AK 99697-0210
Gold
N/A beach sands
Kodiak district

Gavora, Steve (EIR)
1967 Camomile Ln.
Fairbanks, AK 99712-2926
Gold
Fairbanks Creek
Fairbanks district

Gelvin, Stanley M. (EIR)
PO Box 30149
Central, AK 99730-0149
Gold
Crooked Creek
Circle district

Gelvin, Stanley M. (EIR)
PO Box 30149
Central, AK 99730-0149

Gold
Greenhorn Creek
Circle district

GeoQuest (EIR)
Michael R. Busby
4481 W Hill Rd.
Homer, AK 99603-8302
Gold
Chicken Creek
Fortymile district

Gerth, James R. (EIR)
1182 Copper St
North Pole, AK 99705-5777
Gold
Younger Creek
Fortymile district

Gibson, Wayne, E. (EIR)
1610 Southern Ave.
Fairbanks, AK 99709-4229
Gold
Golden Creek
Melozitna district

Girdwood Mining Co. (SCR)
PO Box 1089
Girdwood, AK 99587-1089
Gold
Crow Creek
Anchorage district

Glacier Six Enterprises (EIR)
Vic E. Justis
10735 Stone Ave. N
Seattle, WA 98133-8923
Gold-platinum
Broxson Gulch
Bonnifield district

Glassburn, Don (EIR)
PO Box 107
Central, AK 99730-0107
Gold
Gold Dust Creek
Circle district

Global Outdoors Inc. (WR)
43445 Business Park Dr. Ste. 113
Temecula, CA 92590-3671
Gold
Cripple River
Nome district

Globe Creek Mining Inc. (EIR)
1684 Chena Ridge Road
Fairbanks, AK 99709-2611
Limestone
Globe Creek
Fairbanks district

Gold Dust Mines (WR)
Del Ackels
PO Box 61520
Fairbanks, AK 99706-1520
Gold
Big Creek
Chandalar district

Gold Hill Mining Co. (EIR)
Ray D. Wolf
30033 Redwood Hwy
Cave Junction, OR 97523-9360
Gold
Harrison Creek
Circle district

Goldstream Exploration LLC (EIR)
John T. Larson
1302 Dolphin Way
Fairbanks, AK 99709-2551
Gold
Glenn, Eureka creeks
Hot Springs district

Goodson, Richard (EIR)
PO Box 12
Chicken, AK 99732-0012
Gold
South Fork Fortymile River
Fortymile district

Goodwin, Robert E. (EIR)
908 Smythe St
Fairbanks, AK 99701-4319
Gold
Twin Creek
Fairbanks district

Goresen, Dolores A. (SCR)
PO Box 91
Seward, AK 99664-0091
Gold
Tonsina Creek
Seward district

Goresen, Edmund J. (SCR)
PO Box 91
Seward, AK 99664-0091
Gold
Tonsina Creek
Seward district

Great Divide Mining Co. LLC (EIR)
James L. Wood
13302-1/2 S Bridge Ave.
Yuma, AZ 85365-9772
Gold
Little Boulder Creek
Hot Springs district

Great Northern Investors Inc. (WR)
John Henning
630 B Jack St
Anchorage, AK 99515-3431
Gold
N/A
Nome district

Great Northern Investors Inc. (WR)
Roger O Riley
PO Box 603
Willamina, OR 97396-0603
Gold
N/A
Nome district

Greatland Exploration Ltd. (WR)
3512 Campbell Airstrip Rd.
Anchorage, AK 99504-3838
Gold
Norton Sound
Nome district

Greenhorn Mining (EIR)
Stanley M. Gelvin
PO Box 30149
Central, AK 99730-0149
Gold
Crooked Creek
Circle district

Groethe, Lenhart (WR)
PO Box 1504
Kodiak, AK 99615-1504
Gold
Tripple Creek
Nome district

Groppel, Chris L. (EIR)
PO Box 1060
Delta Junction, AK 99737-1060
Gold
Tenderfoot Creek
Fairbanks district

Gumaer, Mark (WR)
PO Box 1682
Nome, AK 99762-1682
Gold
Dick Creek
Kougarok district

Gumaer, Mariann (WR)
PO Box 1682
Nome, AK 99762-1682
Gold
Dick Creek
Kougarok district

Hall, Ethel (NR)
PO Box 72700
Fairbanks, AK 99707-2700
Gold
Linda Creek
Koyukuk district

Hall, John B. (NR)
PO Box 72700
Fairbanks, AK 99707-2700
Gold
Linda Creek
Koyukuk district

Ham Mining (EIR)
Harold Mitchell
Rr 1 Box 287
Baraga, MI 49908-9749
Gold
Mosquito Fork
Fortymile district

Hammond, Charles R. (EIR)
PO Box 7
Chicken, AK 99732-0007
Gold
45 Pup
Fortymile district

Harris, Donald (SWR)
PO Box 49
McGrath, AK 99627-0049
Gold
Moore Creek
Iditarod district

Harris, Donald D. (EIR)
315 S Pearl St
Centralia, WA 98531-4010
Gold
Slate Creek
Rampart district

Hasking, Laren S. (EIR)
PO Box 71777
Fairbanks, AK 99707-1777
Gold
Goldstream Creek
Fairbanks district

Haskins, George R. (EIR)
PO Box 171
Healy, AK 99743
Gold
Goldstream Creek
Fairbanks district

Hassel, Gerald (EIR)
PO Box 49
Ester, AK 99725-0049
Gold
Ready Bullion Creek
Fairbanks district

Hayden Exploration & Mining (EIR)
Barbara M. Hayden
PO Box 110930
Anchorage, AK 99511-0930
Gold
Kal Creek; Baby Creek
Fortymile district

Hayden Exploration & Mining (EIR)
Forest A. Hayden
PO Box 110930
Anchorage, AK 99511-0930
Gold
Kal Creek, Baby Creek
Fortymile district

Hayden Exploration & Mining (EIR)
Forest A. Hayden
PO Box 110930
Anchorage, AK 99511-0930
Gold
Squaw Gulch
Fortymile district

Hayes, Carol L. (EIR)
231 Pilgrim Creek
Noxon, MT 59853-9705
Gold
Little Moose Creek
Bonnifield district

Hayes, Jan F. (EIR)
231 Pilgrim Creek

Noxon, MT 59853-9705
Gold
Little Moose Creek
Bonnifield district

Heflinger, Fred (EIR)
PO Box 82390
Fairbanks, AK 99708-2390
Gold
Walker Fork
Fortymile district

Hendrickson, Agnes (SCR)
3549 Dunkirk Drive
Anchorage, AK 99502-3059
Gold
Falls Creek
Seward district

Hendrickson, Mike (SCR)
3549 Dunkirk Drive
Anchorage, AK 99502-3059
Gold
Falls Creek
Seward district

Herzog, Jean A. (SCR)
1018 Lower Court
Fairbanks, AK 99712-1323
Gold
Cache Creek
Yentna district

Herzog, Martin M. (SCR)
1018 Lower Court
Fairbanks, AK 99712-1323
Gold
Cache Creek
Yentna district

Hess, Luther C. (EIR)
Estate
PO Box 900
Anchorage, AK 99510-0900
Gold
Goldstream Creek
Fairbanks district

Hill, C.J. (EIR)
713 Fairview Dr
Woodland, CA 95695-6805
Gold
Lost Chicken Creek
Fortymile district

Hill, David (EIR)
2890 Indian Hills Dr
Provo, UT 84604-4327
Gold
Volcano Creek
Fairbanks district

Hill, Lenaya (EIR)
26196 Bluebell St
Sun City, CA 92586-3774
Gold
Totatlanika River
Bonnifield district

Hooper, Diane E. (NR)
PO Box 71
Soldotna, AK 99669-0071
Gold
Swift Creek
Koyukuk district

Hooper, Gerald W. (NR)
PO Box 71
Soldotna, AK 99669-0071
Gold
Swift Creek
Koyukuk district

Hope Mining Company (SCR)
PO Box 101827
Anchorage, AK 99510-1827
Gold
Resurrection Creek
Hope district

Hopen, Alf (EIR)
PO Box 74246
Fairbanks, AK 99707-4246
Gold
Cleary Creek
Fairbanks district

Hopper, Michael S. (NR)
PO Box 71
Soldotna, AK 99669-0071
Gold
Swift Creek
Koyukuk district

Horner, George R. (EIR)
Trust
PO Box 60610
Fairbanks, AK 99706-0610
Gold
Goldstream Creek
Fairbanks district

Horner, Joann E. (EIR)
PO Box 60610
Fairbanks, AK 99706-0610
Gold
Goldstream Creek
Fairbanks district

Interior Alaskana Associated (EIR)
Richard L. Loud
PO Box 10570
Fairbanks, AK 99710-0570
Gold
Harrison Creek
Circle district

Interior Alaskana Associated (EIR)
Richard L. Loud
PO Box 10570
Fairbanks, AK 99710-0570
Gold
(Underground)
Fairbanks district

Ison, Robert (NR)
1463 Wescott Garden Lane
North Pole, AK 99705
Gold
Jennie Creek
Koyukuk district

J. Star Mining Co. (WR)
Randall E. Smith
1982 N 205 W
Orem, UT 84057-2124
Gold
Norton Sound
Nome district

Jackson Mining Co. (EIR)
Roy E. Traxler
950 Tok St
Fairbanks, AK 99709-4808
Gold
Totatlanika River
Bonnifield district

Jackson, O.L. (NR)
1463 Wescott Garden Lane
North Pole, AK 99705
Gold
Jennie Creek
Koyukuk district

Jacobs, David (EIR)
HC 1 Box 3090
Healy, AK 99743-9603
Gold
Rex Creek
Bonnifield district

James, Lea A. (SCR)
PO Box 142593
Anchorage, AK 99514-2593
Gold
Willow Creek
Yentna district

Jensen, Daniel D. (EIR)
PO Box 12
Delta Junction, AK 99737-0012
Gold
McCumber Creek
Delta River district

Jensen, Lillian P. (EIR)
PO Box 12
Delta Junction, AK 99737-0012
Gold
McCumber Creek
Delta River district

Jiles, Overton J. (NR)
5250 Auburn-Folsom Rd.
Loomis, CA 95650
Gold
Gold Bottom Gulch
Koyukuk district

Jim Mar Mining Ventures (SCR)
James G. Luhrs
3333 Lakeshore Drive, #8
Anchorage, AK 99517
Gold
Alfred Creek
Willow Creek district

Johnson, Alfred L. (WR)
HC 1 Box 1214-3
Kenai, AK 99611-9710
Gold
Norton Sound
Nome district

Johnson, Ernest O. (EIR)
222 Kern St
Taft, CA 93268-3213
Gold
Glenn, Eureka creeks
Hot Springs district

K C Mining Co. (EIR)
Kenneth C. Hanson
PO Box 10657
Fairbanks, AK 99710-0657
Gold
Faith Creek
Circle district

Kaltenekker, Bill (EIR)
1201 11th Street
Hermosa Beach, CA 90254-4356
Gold
Mosquito Fork
Fortymile district

Keller, George (EIR)
PO Box 74051
Fairbanks, AK 99707-4051
Gold
Fortymile River
Fortymile district

Keller, Robert W. (EIR)
PO Box 385
Huntington, OR 97907-0385
Gold
Totatlanika River
Bonnifield district

Keller, Sue J. (EIR)
PO Box 385
Huntington, OR 97907-0385
Gold
Totatlanika River
Bonnifield district

Kelly Mining Co. (EIR)
Timothy J. Kelly
1719 Northwestern Ave.
Anchorage, AK 99508-4426
Gold
North Fork Creek
Hot Springs district

Kennecott Greens Creek Mine (SER)
PO Box 32199
Juneau, AK 99803-2199
Polymetallic
Greens Creek
Juneau district

Kiehl, Donald T. (EIR)
3210 Marneet Lane
North Pole, AK 99705-6726
Gold
Gold King Creek
Bonnifield district

Killion, M.T. (EIR)
PO Box 70195
Fairbanks, AK 99707-0195
Gold
Goldstream Creek
Fairbanks district

Kirkendall, Dave (WR)
PO Box 254
Winthrop, WA 98862-0254
Gold
Norton Sound
Nome district

Klopman, Jamin (Ken) (SWR)
HC 05, Box 9749
Palmer, AK 99645-9509
Gold
Taylor Creek
Aniak district

Koppenberg Mining & Mfg (EIR)
Samuel A. Koppenberg
PO Box 80067
Fairbanks, AK 99708-0067
Gold
Faith Creek
Circle district

Kralik, Janos (WR)
PO Box 1793
Nome, AK 99762-1793
Gold
Norton Sound
Nome district

Kralik, Janos (WR)
PO Box 1793
Nome, AK 99762-1793
Gold
Gold Run Creek
Port Clarence district

Krutzsch, Betty W. (WR)
PO Box 1567
Nome, AK 99762-1567
Gold
Specimen Gulch
Nome district

Lake Creek Mine (SCR)
Edward E. Ellis
PO Box 13443
Trapper Creek, AK 99683-0443
Gold-platinum
Placer
Yentna district

Lambert, Howard C. (EIR)
PO Box 684
Aspen, CO 81612-0684
Gold
Warner Creek
Fortymile district

Lambeth, Barry W. (NR)
1463 Wescott Garden Lane
North Pole, AK 99705
Gold
Jennie Creek
Koyukuk district

Lankford, Steve E. (SCR)
HC 89 Box 540
Willow, AK 99688-9707
Gold
Albert Creek
Nelchina district

Lapp & Son (EIR)
Ed Lapp
13482 E 42nd St
Yuma, AZ 85367-6102
Gold
Ketchum Creek
Circle district

Largent, Walter S. (EIR)
PO Box 72334
Fairbanks, AK 99707-2334
Gold
Ester Creek
Fairbanks district

Leach, Ann (EIR)
PO Box 520682
Big Lake, AK 99652-0682
Gold
Fortymile River
Fortymile district

Likins, David W. (EIR)
PO Box 106
Eagle, AK 99738-0106
Gold
Fortymile River
Fortymile district

Liller, James (SCR)
HC 89, Box 469
Willow, AK 99688-9705
Gold
Falls Creek
Yentna district

Little Eldorado Gp (EIR)
Michael D. Roberts
PO Box 82182
Fairbanks, AK 99708-2182
Gold
N/A
Fairbanks district

Little Squaw Gold Mining Co. (NR)
Eskil Anderson
PO Box 184
Spokane, WA 99210-0184
Gold
Big Creek
Chandalar district

Little Squaw Gold Mining Co. (NR)
Eskil Anderson
PO Box 184
Spokane, WA 99210-0184
Gold
Little Squaw Creek
Chandalar district

Livengood Placers Inc. (EIR)
626 Second St Ste 202a
Fairbanks, AK 99701-3466
Gold
Livengood Creek
Tolovana district

LJ Mining (EIR)
Jon Vander Wal
E 171 Cranberry Creek Rd.
Shelton, WA 98584-7527
Gold
Thistle Creek
Bonnifield district

Lohman Mining & Commercial Inc. (WR)
George Benesch
PO Box 101558
Anchorage, AK 99510-1558
Gold
Coffee Creek
Kougarok district

Lounsbury, James G. (NR)
365 Henderson Rd.
Fairbanks, AK 99709-2347
Gold–antimony
Union Gulch
Koyukuk district

Loveless, Robert M. (EIR)
6665 Richardson Hwy
Salcha, AK 99714-9733
Sand and gravel
Banner Creek
Fairbanks district

Loyer, Victor E. (WR)
PO Box 580
Palmer, AK 99645-0580
Gold
Candle Creek
Fairhaven district

Lucky Seven Mining Co. (EIR)
Ronald L. Roman
PO Box 71614
Fairbanks, AK 99707-1614
Gold
Last Chance Creek
Fairbanks district

Lucky Seven Mining Co. (EIR)
Ronald L. Roman
PO Box 71614
Fairbanks, AK 99707-1614
Gold
Gilmore Creek
Fairbanks district

Lundgren, James (EIR)
Trust
PO Box 71051
Fairbanks, AK 99707-1051
Gold
Goldstream Creek
Fairbanks district

M C Mining Co. (SCR)
PO Box 671727
Chugiak, AK 99567-1727
Gold
White Creek
Valdez Creek district

Marchuk, Nikolaj (EIR)
PO Box 89
Delta Junction, AK 99737-0089
Gold–PGM
Rainy Creek
Delta River district

Marchuk, Vera (EIR)
PO Box 89
Delta Junction, AK 99737-0089
Gold–PGM
Rainy Creek
Delta River district

Martin Mining (SCR)
Edward D. Martin
PO Box 521
Cooper Landing, AK 99572-0521
Gold
Hargood Creek
Hope district

Mastel, Fred W. (SCR)
6400 O'Malley Road
Anchorage, AK 99516-1803
Gold
Quartz Creek
Hope district

Matter, Mark D. (SWR)
Box 44
Aniak, AK 99557-0044
Gold
Marvel Creek
Aniak district

Matthews, Guy A. (EIR)
PO Box 241
Tok, AK 99780-0241
Gold
Kenyon Creek
Fortymile district

Maxwell, Barbara M. (EIR)
14633 Maxwell Place
Anchorage, AK 99516-4065
Gold
Squaw Gulch
Fortymile district

Maxwell, Leslie L. (EIR)
14633 Maxwell Place
Anchorage, AK 99516-4065
Gold
Kal Creek; Baby Creek
Fortymile district

Maxwell, Leslie L. (EIR)
14633 Maxwell Place
Anchorage, AK 99516-4065
Gold
Squaw Gulch
Fortymile district

McCallum, Becky (EIR)
537 West Yoakum Ave.
Chaffee, MO 63740-1825
Gold
Gold Dust Creek
Circle district

McGriff, Gordon (EIR)
230 NE Oakdale Dr
Grants Pass, OR 97526-3434
Gold
Harrison Creek
Circle district

McKibben, H.R. (EIR)
Estate
C/O Allen McKibben
Grass Range, MT 59032-0096
Gold
Cleary Creek
Fairbanks district

Melba Creek Mining Co. (EIR)
PO Box 73726
Fairbanks, AK 99707-3726
Gold
Last Chance Creek
Fairbanks district

Melba Creek Mining Inc. (EIR)
PO Box 73726
Fairbanks, AK 99707-3726
Gold
Fish Creek Et Al
Fairbanks district

Merrill, Bruce (SCR)
15411 Husky St
Eagle River, AK 99577-9246
Gold
Falls Creek
Seward district

Merrill, Ivan (SCR)
PO Box 3503
Seward, AK 99664-3503
Gold
Falls Creek
Seward district

Miller Creek Mining Co. (EIR)
Fred D. Wilkinson
PO Box 72702
Fairbanks, AK 99707-2702
Gold
Ketchum Creek
Circle district

Miller Creek Mining Co. (EIR)
Fred D. Wilkinson
PO Box 72702
Fairbanks, AK 99707-2702
Gold
Ketchum Creek
Circle district

Miller, Douglas L. (EIR)
7025 N 1st St
Mcallen, TX 78504-1929
Gold
Bonanza Creek
Circle district

Miller, Sadie (EIR)
7025 N 1st St
McAllen, TX 78504-1929
Gold
Bonanza Creek
Circle district

Millie Creek Mine (SWR)
Daniel C. Herman
1111 F St
Anchorage, AK 99501-4344
Gold
Millie Creek
Aniak district

Minex International Inc. (AP)
PO Box 103
Girdwood, AK 99587-0103
Gold
N/A beach sands
Kodiak district

Miscovich, Andrew W. (EIR)
PO Box 71489
Fairbanks, AK 99707-1489
Gold
Cleary Creek
Fairbanks district

Miscovich, Andrew W. (NR)
PO Box 71489
Fairbanks, AK 99707-1489
Gold
Porcupine Creek
Koyukuk district

Miscovich, Andy E. (EIR)
PO Box 71489
Fairbanks, AK 99707-1489
Gold
Fish Creek
Fairbanks district

Miscovich, Verda M. (EIR)
PO Box 71489
Fairbanks, AK 99707-1489
Gold
Fish Creek
Fairbanks district

Miscovich, Verda M. (NR)
PO Box 71489
Fairbanks, AK 99707-1489
Gold
Porcupine Creek
Koyukuk district

Mitchell, Joseph D. (EIR)
Rr 1 Box 322
Brookville, PA 15825-9721
Gold
Steel Creek
Fortymile district

Mitchell, Joseph D. (EIR)
Rr 1 Box 322
Brookville, PA 15825-9721
Gold
Fortymile River
Fortymile district

Mitchell, Mona (EIR)
Rr 1 Box 322
Brookville, PA 15825-9721
Gold
Steel Creek
Fortymile district

Mitchell, Rodney D. (EIR)
3133 Chena Hot Springs Rd.
Fairbanks, AK 99712-3304
Gold
Grubstake Creek
Bonnifield district

Montgomery, Melvin (EIR)
PO Box 572
Ephrata, WA 98823-0572
Gold
Jack Wade Creek
Fortymile district

Monzulla, Linda (EIR)
2920 Monzulla Ln.
Fairbanks, AK 99712-1737
Gold–tungsten
Fish Creek
Fairbanks district

Monzulla, Vincent C. (EIR)
Rt # 1 Box 659a Ave. I
Big Pine Key, FL 33043
Gold–tungsten
Fish Creek
Fairbanks district

Moore, Monty D. (EIR)
10735 Stone Ave. N
Seattle, WA 98133-8923
Gold–PGE
Broxson Gulch
Bonnifield district

Moore, Roger L. (EIR)
288 Rambling Rd. #26
Fairbanks, AK 99712-1502
Gold
Ester Creek
Fairbanks district

Moran Ted H. (SCR)
5611 Lionheart Dr
Anchorage, AK 99508
Gold
Quartz Creek
Hope district

Mrak Aklestad Hermon & Hermon (SCR)
PO Box 1963
Palmer, AK 99645-1963
Gold
Willow Creek
Willow Creek district

Mrak, William (SCR)
PO Box 1963
Palmer, AK 99645
Gold
Willow Creek
Willow Creek district

Mtnt Native Corp (SCR)
PO Box 309
McGrath, AK 99627-0309
Gold
Candle Creek
McGrath district

Mud Creek Mining Corp (WR)
HC 1 Box 109
White Bird, ID 83554-9709
Gold
Mud Creek
Fairhaven district

Mullikin, Donald E. (WR)
PO Box 790
Homer, AK 99603-0790
Gold
Osborne Creek
Nome district

Mullikin, Donald E. (WR)
PO Box 790
Homer, AK 99603-0790
Gold
Washington Creek
Nome district

N.B. Tweet & Sons (WR)
PO Box 1107
Nome, AK 99762-1107
Gold
Windy Creek
Port Clarence district

N.B. Tweet & Sons (WR)
PO Box 1107
Nome, AK 99762-1107
Gold
Kougarok River
Kougarok district

Nana Regional Corp. (NR)
1001 E Benson Blvd
Anchorage, AK 99508-4298
Base metals
Red Dog Creek
Noatak district

Nanook Mining Co. (WR)
Kenneth A. Hughes
PO Box 586
Teller, AK 99778-0586
Gold
Allene Creek
Port Clarence district

Neubauer, Jack A. (EIR)
413 Cowles St
Fairbanks, AK 99701-4434
Gold
Cache Creek
Hot Springs district

Neubauer, Jack A. (EIR)
413 Cowles St
Fairbanks, AK 99701-4434
Gold
Quartz Creek
Hot Springs district

Nevers, Harold A. (EIR)
8148 Pinewood Dr
Juneau, AK 99801-8906
Gold
American Creek
Fortymile district

New York Creek Associates Inc. (SWR)
PO Box 1106
Bethel, AK 99559-1106
Gold
Murray Creek
Aniak district

Newell, Wesley L. (SCR)
PO Box 521266
Big Lake, AK 99652-1266
Gold
Falls Creek
Yentna district

Nicholson, Douglas C. (NR)
3865 Ullrbahn
Fairbanks, AK 99709-6106
Gold
Linda Creek
Koyukuk district

Nielsen, Sheldon (EIR)
2890 Indian Hills Dr
Provo, UT 84604-4327
Gold
Volcano Creek
Fairbanks district

Norcross, Irene E. (WR)
PO Box 242
Willow, AK 99688-0242
Gold
Anvil Creek
Innoko district

Norcross, James H. (WR)
PO Box 242
Willow, AK 99688-0242
Gold
Anvil Creek
Innoko district

Nordeen, Claudene (NR)
887 Bouton Court
Fairbanks, AK 99712-1448
Gold
Emma Creek
Koyukuk district

Nordeen, William H. (NR)
887 Bouton Court
Fairbanks, AK 99712-1448
Gold
Emma Creek
Koyukuk district

Nordlum, Roger (WR)
PO Box 171
Kotzebue, AK 99752-0171
Gold
Glacier Creek
Fairhaven district

Northern Lights Mining Inc. (NR)
544 N 600 W
Cedar City, UT 84720-2111
Gold
Jay Creek; Rye Creek
Koyukuk district

Nyac Mining Co. (SWR)
1634 W 13th Ave.
Anchorage, AK 99501-4217
Gold
Spruce Creek
Aniak district

O'Carroll, Ellen (SWR)
Estate
1137 Hyde #2
San Francisco, CA 94109
Gold
Flat Creek
Iditarod district

Oldman, Albert R. (EIR)
1848 Badger Rd. # 6
North Pole, AK 99705-5054
Gold
Twin Creek
Fairbanks district

Olmstead, Jim (NR)
3910 Tilleson Way
North Pole, AK 99705-6555
Gold
Gold Creek
Koyukuk district

Olson, Alan G. (WR)
PO Box 145
Palmer, AK 99645-0145
Gold
Candle Creek
Fairhaven district

Olson, Dave (WR)
PO Box 2159
Homer, AK 99603-2159
Gold
Canyon Creek
Nome district

Olson, Gordon E. (EIR)
7100 N Milford Rd.
Holly, MI 48442-8563
Gold
Jack Wade Creek
Fortymile district

Olson, Stephen (Ole) G. (EIR)
PO Box 106
Tok, AK 99780-0106
Gold
Liberty Creek
Fortymile district

Olson, Steven L. (EIR)
PO Box 10655
Fairbanks, AK 99710-0655
Gold
Eagle Creek
Circle district

Omega Mining Co. (EIR)
Richard K. Ott
PO Box 72748
Fairbanks, AK 99707-2748
Gold
Omega Creek
Hot Springs district

Omega Mining Co. (EIR)
Wendy A. Ott
PO Box 72748
Fairbanks, AK 99707-2748
Gold
Omega Creek
Hot Springs district

Ostnes, Lawrence R. (EIR)
801 8th Ave.
Fairbanks, AK 99701-4403
Gold
Totatlanika River
Bonnifield district

Outsider Mining Company (SCR)
John J. Trautner
PO Box 909
Girdwood, AK 99587-0909
Gold
Canyon Creek
Hope district

Owen, Jeffrey (EIR)
3000 E Stillwater Way
Redding, CA 96003-9540
Gold
Younger Creek
Fortymile district

Owen, Ted (EIR)
12307 E Stillwater Way
Redding, CA 96003-8787
Gold
Walker Fork
Fortymile district

P & E Mining Inc. (EIR)
Samuel Eaves
PO Box 10357
Fairbanks, AK 99710-0357
Gold
Warwick Gulch
Tolovana district

Pacific Mining Inc. (EIR)
James T. Stone
PO Box 110842
Anchorage, AK 99511-0842
Gold
Porcupine Creek
Circle district

Pacific NW Resources Co. Inc. (EIR)
PO Box 4879
Vancouver, WA 98662-0879
Gold
Fish Creek
Fairbanks district

Paradise Valley Inc. (NR)
A. Mick Manns
Paradise Valley
Bettles, AK 99726
Gold
Birch Creek
Koyukuk district

Parr, Glen C. (EIR)
624 Maple Street
Shelton, WA 98584-4234
Gold
Little Moose Creek
Bonnifield district

Parr, Shirley B. (EIR)
624 Maple Street
Shelton, WA 98584-4234
Gold
Little Moose Creek
Bonnifield district

Patrick, Michael B. (EIR)
2015 S Main St
Corona, CA 91720-5345
Gold
Steel Creek
Fortymile district

Patscheck, Alvin (SCR)
HC 33 Box 3038a
Wasilla, AK 99654-9721
Gold
Yacko Creek
Nelchina district

Paul & Co. (EIR)
Paul Manuel
C/O Box 106
Central, AK 99730
Gold
Eagle Creek
Circle district

Pauley, Brian (NR)
PO Box 9026
Coldfoot, AK 99701-9026
Gold
Myrtle Creek
Koyukuk district

Pauley, David (NR)
PO Box 9026
Coldfoot, AK 99701-9026
Gold
Myrtle Creek
Koyukuk district

Pennel, Jack (EIR)
PO Box 1928
Grand Junction, CO 81502-1928
Gold
Little Boulder Creek
Hot Springs district

Penz, David (SWR)
Box 29
Russian Mission, AK 99657
Gold
Buster Creek
Marshall district

Peterson, Donald E. (SER)
PO Box 172
Haines, AK 99827-0172
Gold
Porcupine Creek
Juneau district

Petty, Jack (EIR)
2305 E Polar Bear Ct
North Pole, AK 99705-5500
Gold
Fish Creek
Fairbanks district

Petty, Jack (EIR)
2305 E Polar Bear Ct
North Pole, AK 99705-5500
Gold
Twin Creek
Fairbanks district

Philpott, Ellen (NR)
PO Box 72198
Fairbanks, AK 99707-2198
Gold
Smith Creek
Koyukuk district

Philpott, Roy (NR)
PO Box 72198
Fairbanks, AK 99707-2198
Gold
Smith Creek
Koyukuk district

Placer Mining Services (EIR)
Don P. Delima
PO Box 56106
Manley Hot Springs, AK 99756-0106
Gold
Quartz Creek
Hot Springs district

Plano, Cynthia L. (WR)
PO Box 878275
Wasilla, AK 99687-8275
Gold
Anvil Creek
Innoko district

Plano, Daniel W. (WR)
PO Box 878275
Wasilla, AK 99687-8275
Gold
Anvil Creek
Innoko district

Polar Mining Inc. (EIR)
4545 Woodriver Dr
Fairbanks, AK 99709-3404
Gold
Goldstream Creek
Fairbanks district

Pomrenke, Steve G. (WR)
PO Box 629
Nome, AK 99762-0629
Gold
Tripple Creek
Nome district

Prince Creek Mining Co. (SWR)
Alvin H. Agoff
PO Box 2791
Palmer, AK 99645-2791
Gold
Prince Creek
Iditarod district

Pushcar, Jerry (WR)
PO Box 1604
Nome, AK 99762-1604
Gold
Iron Creek
Kougarok district

Raines, Larry R. (EIR)
1313 Skyline Dr.
Fairbanks, AK 99712-1151
Gold
Lewis Creek
Fairbanks district

Raines, Lindy L. (EIR)
PO Box 10410
Fairbanks, AK 99710-0410
Gold
Lewis Creek
Fairbanks district

RCL Mining (EIR)
Ray A. Vogt
4200 Old Elliott Hwy
Fairbanks, AK 99712-1073
Gold
Dome Creek
Fairbanks district

Read, Donald M. (EIR)
PO Box 71638
Fairbanks, AK 99707-1638
Gold
Treasure Creek
Fairbanks district

Read, Donald M. (EIR)
PO Box 71638
Fairbanks, AK 99707-1638
Gold
Vault Creek Bench
Fairbanks district

Redmond, Richard J. (WR)
PO Box 8700
Indian, AK 99540-8700
Gold
Macklin Creek
Kougarok district

Reed, Scott C. (EIR)
PO Box 453
Crown King, AZ 86343-0453
Gold
North Fork Fortymile River
Fortymile district

Reeves, Ramona (EIR)
PO Box 81941
Fairbanks, AK 99708-1941
Gold
Goldstream Creek
Fairbanks district

Reeves, John (EIR)
PO Box 81941
Fairbanks, AK 99708-1941
Gold
Goldstream Creek
Fairbanks district

Regner, Leo A. (EIR)
PO Box 72733
Fairbanks, AK 99707-2733
Gold
Lilliwig Creek
Fortymile district

Renshaw, Anson L. (SCR)
PO Box 230407
Anchorage, AK 99523-0407
Gold
Yacko Creek
Nelchina district

Richardson, Ralph R. (EIR)
PO Box 4589
Palmer, AK 99645-4589
Gold
Hall Creek
Fortymile district

Roberts, Mary I. (EIR)
PO Box 225
Tok, AK 99780-0225
Gold
Chicken Creek
Fortymile district

Roberts, Robert W. (EIR)
PO Box 225
Tok, AK 99780-0225
Gold
Chicken Creek
Fortymile district

Rock Laundry Mining (EIR)
D.B. Catt
PO Box 45
Central, AK 99730-0045
Gold
Crooked Creek
Circle district

Rock Laundry Mining (EIR)
Barbara Catt
PO Box 45
Central, AK 99730-0045
Gold
Crooked Creek
Circle district

Roitsch, Alan R. (EIR)
811 Rita St
Sedro Woolley, WA 98284-1441
Gold
South Fork Fortymile River
Fortymile district

Roland, James G. (EIR)
710 McGrath Rd.
Fairbanks, AK 99712-1524
Gold
Rex Creek
Bonnifield district

Roop, John Sr. (EIR)
9499 Brayton Dr Lot 22
Anchorage, AK 99507-4004
Gold
Fortymile River
Fortymile district

Rosander Mining Company Inc. (WR)
Ronald Rosander
PO Box 129
McGrath, AK 99627-0129
Gold
Colorado Creek
Innoko district

Rowallan Alaska, Inc. (SCR)
PO Box 318
Clam Gulch, AK 99568-0318
Gold
Valdez Creek
Valdez Creek district

Rubel, John D. (EIR)
8183 Richardson Hwy
Salcha, AK 99714-9613
Gold
Banner Creek
Fairbanks district

Russell, Terry L. (EIR)
884 Dennis Road
North Pole, AK 99705-5301
Gold
Twin Creek
Fairbanks district

Sandberg, Ray E. (EIR)
1001 1st Ave.
Fairbanks, AK 99701-4351
Gold
Totatlanika River
Bonnifield district

Sanders, Kent (WR)
PO Box 2159
Homer, AK 99603-2159
Gold
Canyon Creek
Nome district

Sather, Norman M. (EIR)
1213 Coppet St
Fairbanks, AK 99709-4724
Gold
Fairbanks Creek
Fairbanks district

Sayer, Paul (WR)
PO Box 10
Homer, AK 99603-0010
Gold
Little Creek
Innoko district

Schaefer, Beatrice J. (EIR)
PO Box 55074
North Pole, AK 99705-0074
Gold
Twin Creek
Fairbanks district

Schafer, Marion H. (EIR)
PO Box 21755
Juneau, AK 99802-1755
Gold
Ready Bullion Creek
Fairbanks district

Schasteen, Dolly (EIR)
410 Frankton Rd.
Hood River, OR 97031-9737
Gold
Moose Creek
Bonnifield district

Schene, Earl L. (EIR)
PO Box 66
Chicken, AK 99732-0066
Gold
Uhler Creek
Fortymile district

Schnabel, John J. (SER)
PO Box 149
Haines, AK 99827-0149
Gold
Porcupine Creek
Juneau district

Schoppenhorst, Scott (NR)
N 2402 County Rd. XX
Berlin, WI 54923-9761
Gold
Shoppy Creek
Koyukuk district

Schoppenhorst, Wilmer (NR)
N 2402 County Rd. XX
Berlin, WI 54923-9761
Gold
Shoppy Creek
Koyukuk district

Scofield, Eva D. (EIR)
PO Box 945
Tok, AK 99780-0945
Gold
South Fork Fortymile River
Fortymile district

Scofield, Walter P. (EIR)
PO Box 945
Tok, AK 99780-0945
Gold
South Fork Fortymile River
Fortymile district

Seacal LLC (SER)
1 Sealaska Plz Ste 300
Juneau, AK 99801-1245
Limestone–marble
N/A
Ketchikan district

Sebens, Mark W. (SER)
PO Box 1107
Haines, AK 99827-1107
Gold
Porcupine Creek
Juneau district

Seuffert Mining (EIR)
George W. Seuffert
PO Box 68
Chicken, AK 99732-0068
Gold
Chicken Creek
Fortymile district

Seuffert Mining (EIR)
George W. Seuffert
8191 E Del Joya Dr
Scottsdale, AZ 85258-2337
Gold
Chicken Creek
Fortymile district

Shilling, John A. (EIR)
924 W Chestnut St
Houston, MO 65483-1820
Gold-tin
Thanksgiving Creek
Hot Springs district

Shorty Jack Mining (EIR)
Jack Hendrickson
PO Box 30153
Central, AK 99730-0153
Gold
Bottom Dollar Creek
Circle district

Shupe, Michael C. (NR)
1035 W. Northern Lights Blvd
Anchorage, AK 99503-2409
Gold
Boulder Creek
Koyukuk district

Simmons, Shianne (EIR)
PO Box 56331
North Pole, AK 99705-1331
Gold
Walker Fork
Fortymile district

Sitnasuak Native Corp. (WR)
PO Box 905
Nome, AK 99762-0905
Gold
Dry Creek
Nome district

Skidmore, Donna G. (EIR)
PO Box 70470
Fairbanks, AK 99707-0470
Gold
Vault Creek Bench
Fairbanks district

Skidmore, Samuel C. (EIR)
PO Box 70470
Fairbanks, AK 99707-0470
Gold
Vault Creek Bench
Fairbanks district

Skookum Mining (EIR)
John H. Cole
PO Box 10139
Fairbanks, AK 99710-0139
Gold
Portage Creek
Circle district

Slisco Inc. (NR)
Ralph Hamm
4843 Rose Valley Rd.
Kelso, WA 98626-9431
Gold
Porcupine Creek
Koyukuk district

Smith, David B. (EIR)
9235 W Harbor Isle Ct
Crystal River, FL 34429-5355
Gold
Deadwood Creek
Circle district

Smith, Lynda K. (SCR)
PO Box 770
Cooper Landing, AK 99572
Gold
N/A
Hope district

Smith, Sherman C. (SCR)
PO Box 770
Cooper Landing, AK 99572-0770
Gold
N/A
Hope district

Smith, William L. (SCR)
906 Cunningham St
Anchorage, AK 99501-1133
Gold
Silvertip Creek
Hope district

Soule, Betty M. (SCR)
2840 E 142nd Ave.
Anchorage, AK 99516-3903
Gold
Windy Creek
Yentna district

Soule, Harold L. (SCR)
2840 E 142nd Ave.
Anchorage, AK 99516-3903
Gold
Windy Creek
Yentna district

Stein, Evelyn J. (EIR)
105 Dunbar Ave.
Fairbanks, AK 99701-3658
Gold
Gilmore Creek
Fairbanks district

Stepp-A-Long (EIR)
Vernon E. Stepp
3778 Boones Mill Road
Boones Mill, VA 24065-4810
Gold
Bottom Dollar Creek
Circle district

Sternberg, Thomas H. (SCR)
3154 E 19th Ct
Anchorage, AK 99508-3383
Gold
Quartz Creek
Hope district

Stevens, Michele (SCR)
PO Box 20
Talkeetna, AK 99676-0020
Gold
Willow Creek
Yentna district

Steward, William M. (EIR)
1777 Crosson Avenue
Fairbanks, AK 99701-4036
Gold
Pasco Creek
Fairbanks district

Stone, L.F. (EIR)
8196 East Cooper Lane
Floral City, FL 34436-2710
Gold
Deadwood Creek
Circle district

Stough, Richard B. (EIR)
PO Box 711
Wrangell, AK 99929-0711
Gold
Dome Creek
Fortymile district

Stultz, Donald D. (WR)
PO Box 700
Nome, AK 99762-0700
Gold
Osborn Creek
Nome district

Swan, James W. (NR)
452 Winter Ave.
Fairbanks, AK 99712-1933
Gold–PGM
Gold Creek
Koyukuk district

Swarthout, Ralph J. (SCR)
PO Box 141801
Anchorage, AK 99514-1801
Gold
N/A — beach sands
Yakataga district

Sweetsir, Michael A. (WR)
PO Box 51
Ruby, AK 99768
Gold
Trail Creek
Hughes district

Swenson, Lloyd D. (NR)
1843 Bridgewater Dr
Fairbanks, AK 99709-4102
Gold
Slate Creek
Koyukuk district

Swenson, Richard A. (EIR)
PO Box 16205
Two Rivers, AK 99716-0205
Gold
Doric Creek
Hot Springs district

Swift Creek Mining (WR)
Conrad H. House
3911 Tilleson Way
North Pole, AK 99705-6555
Gold
Swift Creek
Ruby district

Taiga Mining Co. (WR)
PO Box 113108
Anchorage, AK 99511-3108
Gold
Bear Creek
Hughes district

Taiga Mining Co. (WR)
PO Box 113108
Anchorage, AK 99511-3108
Gold
Dry Creek
Hughes district

Tallini, Roger P. (EIR)
PO Box 3474
Flagstaff, AZ 86003-3474
Gold
South Fork Fortymile River
Fortymile district

Tallini, Roger P. (EIR)
PO Box 3474
Flagstaff, AZ 86003-3474
Gold
South Fork Fortymile River
Fortymile district

Tatlow, Carl (SCR)
PO Box 1621
Palmer, AK 99645-1621
Gold
Peters Creek
Yentna district

Tatlow, Janice L. (SCR)
PO Box 1621
Palmer, AK 99645
Gold
Peters Creek
Yentna district

Taylor, June M. (EIR)
PO Box 101
Eagle, AK 99738-0101
Gold
Fortymile River
Fortymile district

Taylor, Larry R. (EIR)
PO Box 101
Eagle, AK 99738-0101
Gold
Fortymile River
Fortymile district

Teryl Resources Corp. (EIR)
185 - 10751 Shellbridge Way
Richmond, B.C., CANADA, V6X 2W8
Gold
Fish Creek
Fairbanks district

The Mining Co. (EIR)
John E. Mcclain
PO Box 436
Soldotna, AK 99669-0436
Gold
Ketchum Creek
Circle district

Three G Mining (SCR)
Jack P. Lacross
PO Box 387
Trapper Creek, AK 99683
Gold
Willow Creek
Yentna district

Thurman Oil And Mining Inc. (EIR)
925 Aurora Dr
Fairbanks, AK 99709-5506
Gold
Smallwood Creek
Fairbanks district

Thurman, James L. (EIR)
925 Aurora Dr
Fairbanks, AK 99709-5506
Gold
Goldstream Creek
Fairbanks district

Thurman, Leta (EIR)
925 Aurora Dr
Fairbanks, AK 99709-5506
Gold
Goldstream Creek
Fairbanks district

Tilleson, Harold C. (WR)
PO Box 55823
North Pole, AK 99705-5823
Gold
California Creek
Ruby district

Tilleson, Naomi R. (WR)
PO Box 55823
North Pole, AK 99705-5823
Gold
California Creek
Ruby district

Toohey, Camden W. (SCR)
PO Box 113
Girdwood, AK 99587-0113
Gold
Crow Creek
Anchorage district

Toohey, Cynthia (SCR)
2642 Forrest Park Dr
Anchorage, AK 99517-1326
Gold
Crow Creek
Anchorage district

Toohey, Sean (SCR)
PO Box 113
Girdwood, AK 99587-0113
Gold
Crow Creek
Anchorage district

Trans Alas-Can Gold (SCR)
3605 Arctic Blvd Box 1382
Anchorage, AK 99503-5789
Gold
White Creek
Valdez Creek district

Treesh, James W. (EIR)
18550 Man O War Rd.
Eagle River, AK 99577-8335
Gold
Unnamed Stream
Fortymile district

Trudeck Mining (EIR)
James L. Decker
PO Box 135
Healy, AK 99743-0135
Polymetallic
Sheep Creek
Bonnifield district

Trudeck Mining (EIR)
Paul L. Trudeau
PO Box 135
Healy, AK 99743-0135
Polymetallic
Sheep Creek
Bonnifield district

Tuluksak Dredging Ltd. (SWR)
1634 W 13th Ave.
Anchorage, AK 99501-4217
Gold
Spruce Creek
Aniak district

Turner, John L. (EIR)
172 Snowy Owl Lane
Fairbanks, AK 99712-1240
Gold
Fortymile River
Fortymile district

Twogood, Dorothy (EIR)
PO Box 60203
Fairbanks, AK 99706-0203
Gold
Goldstream Creek
Fairbanks district

Twogood, Ronald (EIR)
PO Box 60203
Fairbanks, AK 99706-0203
Gold
Goldstream Creek
Fairbanks district

Van Dyne, Rudd (EIR)
PO Box 110
Eagle, AK 99738-0110
Gold
Fortymile River
Fortymile district

Vegoren, Earl (EIR)
PO Box 274
Delta Junction, AK 99737-0274
Gold–PGM
Rainy Creek
Delta River district

Vetter, Adolph (EIR)
Estate
PO Box 70342
Fairbanks, AK 99707-0342
Gold
Fish Creek
Fairbanks district

Vetter, Adolph (EIR)
Estate
PO Box 70342
Fairbanks, AK 99707-0342
Gold
Cleary Creek
Fairbanks district

Vetter, Rudolph (EIR)
PO Box 70342
Fairbanks, AK 99707-0342
Gold
Cleary Creek
Fairbanks district

Vogler, Joseph (EIR)
Estate
PO Box 70040
Fairbanks, AK 99707-0040
Gold
Ketchum Creek
Circle district

Voytilla Mining (EIR)
Earl W. Voytilla
1209 Monterey Ct
North Pole, AK 99705-5961
Gold
Tenderfoot Creek
Fairbanks district

Walsh, Paul (WR)
PO Box 190941
Anchorage, AK 99519-0941
Gold
Dexter Creek
Nome district

Watts, Donald L. (EIR)
PO Box 81515
College, AK 99708-1515
Gold
Grubstake Creek
Bonnifield district

Weathers, Douglas L. (SCR)
PO Box 8082
Nikiski, AK 99635-8082

Gold
Cache Creek
Yentna district

Weathers, Edith (SCR)
PO Box 8082
Nikiski, AK 99635-8082
Gold
Cache Creek
Yentna district

Wegley, Jean (EIR)
71297 Northshore Dr
Birkenfeld, OR 97016-7281
Gold
North & South Forks Fortymile River
Fortymile district

Wegley, Mike H. (EIR)
71297 Northshore Dr
Birkenfeld, OR 97016-7281
Gold
North & South Forks Fortymile River
Fortymile district

Weston, Thomas A. (EIR)
PO Box 711
Wrangell, AK 99929-0711
Gold
Dome Creek
Fortymile district

White Bear Mining (SWR)
Harry Faulkner
PO Box 1307
Bethel, AK 99559-1307
Gold
Ophir Creek
Aniak district

White Bear Mining (SWR)
Jeannine D. Faulkner
PO Box 1307
Bethel, AK 99559-1307
Gold
Ophir Creek
Aniak district

White Bear Mining (SWR)
Eddie Faulkner
PO Box 1307
Bethel, AK 99559-1307
Gold
Ophir Creek
Aniak district

White Bear Mining (SWR)
Jeannine P. Faulkner
PO Box 1307
Bethel, AK 99559-1307
Gold
Ophir Creek
Aniak district

White Bear Mining (SWR)
Elizabeth Faulkner
PO Box 1307
Bethel, AK 99559-1307
Gold
Ophir Creek
Aniak district

Wicken, James T. (NR)
PO Box 58256
Fairbanks, AK 99711-0256
Gold
Gold Creek
Koyukuk district

Wigger, Walter P. (EIR)
PO Box 70078
Fairbanks, AK 99707-0078
Gold
Ester Creek
Fairbanks district

Wiggers, Dan A., Sr (NR)
HC 30 Box 5382
Wasilla, AK 99654-9712
Gold
Hammond River
Koyukuk district

Wilder, Karen (EIR)
117 Elray St
Fairbanks, AK 99709-2378
Gold
Little Boulder Creek
Hot Springs district

Wilder, Richard (EIR)
117 Elray St
Fairbanks, AK 99709-2378
Gold
Little Boulder Creek
Hot Springs district

Wilford, Frank E. (EIR)
PO Box 487
Cocolalla, ID 83813-0487
Gold
Hoosier Creek
Rampart district

Willard, Gerald I. (SCR)
PO Box 875532
Wasilla, AK 99687-5532
Gold
Bear Creek
Hope district

Williams, Michael A. (EIR)
PO Box 603
Tok, AK 99780-0603
Gold
Kenyon Creek
Fortymile district

Willis Mine Services (EIR)
Dean L. Willis
PO Box 30063
Central, AK 99730-0063
Gold
Crooked Creek
Circle district

Wilmarth, Richard C. (SWR)
PO Box 33
Red Devil, AK 99656-0033
Gold
Chicken Creek
Iditarod district

Winslow, Jefferey A. (SCR)
PO Box 521564
Big Lake, AK 99652-1564
Gold
Falls Creek
Yentna district

Winslow, Pamela L. (SCR)
PO Box 521564
Big Lake, AK 99652-1564
Gold
Falls Creek
Yentna district

Wolff, Flint (EIR)
PO Box 56331
North Pole, AK 99705-1331
Gold
Walker Fork
Fortymile district

Wolff, Margaret (EIR)
PO Box 56331
North Pole, AK 99705-1331
Gold
Walker Fork
Fortymile district

Wolff, Timber (EIR)
Box Bya Boundary
Tok, AK 99780
Gold
Walker Fork
Fortymile district

Wolff, Timber (EIR)
Box Bya Boundary
Tok, AK 99780
Gold
Walker Fork
Fortymile district

Wrede, Ronald J. (EIR)
2116 N E 80th St
Seattle, WA 98115-4538
Gold
Switch Creek
Circle district

Wright, Richard L. (NR)
3910 Tilleson Way
North Pole, AK 99705-6555
Gold
Gold Creek
Koyukuk district

Wright, Robert P., Jr. (EIR)
PO Box 60783
Fairbanks, AK 99706-0783
Gold
Last Chance Creek
Fairbanks district

Wyka, Wayne (EIR)
PO Box 74051
Fairbanks, AK 99707-4051
Gold
Fortymile River
Fortymile district

Wyrick, L.E. (SWR)
2440 E Tudor Rd. # 1033
Anchorage, AK 99507-1185
Gold
Granite Creek
Aniak district

Wyrick, Marilyn (SWR)
2440 E Tudor Rd. # 1033
Anchorage, AK 99507-1185
Gold
Granite Creek
Aniak district

Yellow Eagle Mining Inc. (EIR)
Frank L. Saunders
PO Box 449
Ester, AK 99725-0449
Gold
Ester Creek
Fairbanks district

Yellow Eagle Mining, Inc. (EIR)
PO Box 80566
Fairbanks, AK 99708
Gold
Ester Creek
Fairbanks district

Yentna Mining Co. (SCR)
Dennis R. Garrett
PO Box 423
Willow, AK 99688-0423
Gold
Thunder Creek
Yentna district

Yentna Mining Co. (SCR)
Dennis R. Garrett
PO Box 423
Willow, AK 99688-0423
Gold
Willow Creek
Yentna district

Yoder, Dale E. (EIR)
PO Box 70529
Fairbanks, AK 99707-0529
Gold
Goldstream Creek
Fairbanks district

Yoder, Darlene M. (EIR)
PO Box 70529
Fairbanks, AK 99707-0529
Gold
Goldstream Creek
Fairbanks district

Yoder, Paul L. (EIR)
PO Box 70529
Fairbanks, AK 99707-0529
Gold
Goldstream Creek
Fairbanks district

Young, Robert V. (SCR)
PO Box 211
Talkeetna, AK 99676-0211
Gold
Falls Creek
Yentna district

Ysen, Almo J. (WR)
PO Box 171
Kotzebue, AK 99752-0171
Gold
Glacier Creek
Fairhaven district

Zimmer, George W. (SCR)
PO Box 572
Cooper Landing, AK 99572-0572
Gold
Quartz Creek
Seward district

Zimmer, Lillian L. (SCR)
PO Box 572
Cooper Landing, AK 99572-0572
Gold
Quartz Creek
Seward district

Zimmerman, Charles J. (EIR)
PO Box 41
Manley Hot Springs, AK 99756
Gold
Killarney Creek
Hot Springs district

APPENDIX D

Selected significant mineral deposits and mineral districts in Alaska[a]

The alphabetized list of mineral deposits and mineral districts is keyed to the list of explanatory paragraphs that follow. For example, The Lik deposit in the alphabetized list is "**Lik,** 1, (fig. D-1)." This says that the location of Lik is shown as number 1 in figure D-1.

Alaska-Juneau, 100, (fig. D-3).
Anderson Mountain, 54, (fig. D-1).
Aniak district, 84, (fig D-3).
Apex-El Nido, 104, (fig. D-3).
Apollo-Sitka mines, 86, (fig. D-3).
Arctic, 9, (fig. D-1).
Avan Hills, 12, (Fig. D-3).
Baultoff, 75, (fig. D-2).
Bear Mountain, 21, (fig. D-2).
Big Creek/Ladue, 58, (fig. D-1).
Big Hurrah, 32, (fig. D-3).
Binocular and other prospects, 72, (fig. D-1).
Bohemia Basin, 103, (fig. D-3).
Bokan Mountain, 122, (fig. D-3).
Bonanza Creek, 45, (fig. D-2).
Bond Creek, 73, (fig. D-2).
Bonnifield district massive sulfide deposits, 54, (fig. D-1).
Bornite, 8, (fig. D-1).
Brady Glacier, 98, (fig. D-3).
BT, 54, (fig. D-1).
Buck Creek, 23, (fig. D-2).
Calder Mine, 133, (fig D-2).
Cape Creek, 22, (fig. D-2).
Carl Creek, 74, (fig. D-2).
Casca VABM, 53, (fig. D-1).
Castle Island, 111, (fig. D-1).
Chandalar mining district, 17, (fig. D-3).
Chichagof, 101, (fig. D-3).
Chistochina, 68, (figs. D-2, D-3).
Circle mining district, 52, (fig. D-3).
Claim Point, 82, (fig. D-3).
Coal Creek, 63, (fig. D-2).
Copper City, 119, (fig. D-1).
Cornwallis Peninsula, 110, (fig. D-1).
Council mining district, 33, (fig. D-3).
Delta massive sulfide belt, 55, (fig. D-1).
Denali prospect, 67, (fig. D-1).
Dolphin, 49e, (fig. D-3).
Donlin Creek, 137, (fig. D-3).
Drenchwater, 3, (fig. D-1).
Dry Creek, 54, (fig. D-1).
Eagle Creek, 34, (fig. D-3).
Ear Mountain, 25, (fig. D-2).
Ellamar, 78, (fig. D-1).
Ernie Lake (Ann Creek), 15, (fig. D-1).
Esotuk Glacier, 20, (fig. D-2).
Fairbanks mining district, 49, (fig. D-3).
Fairhaven/Inmachuk district, 39, (fig. D-3).
Fort Knox, 49a, (fig. D-3).
Fortymile mining district, 60, (fig. D-3).
Frost, 7a, (fig. D-1).
Funter Bay mining district, 99, (fig. D-3).
Galena Creek, 21a, (fig. D-1).
Gil Claims, 49f, (fig. D-3).
Ginny Creek, 4, (fig. D-1).
Golden Zone mine, 64, (figs. D-1, D-3).
Goodnews Bay, 85, (fig. D-3).
Grant Mine, 49c, (fig. D-3).
Greens Creek, 105, (fig. D-1).
Groundhog Basin, 112, (fig. D-1).
Haines Barite/Palmer, 95, (fig. D-1).
Hannum, 27, (fig. D-1).
Hirst Chichagof, 101, (fig. D-3).
Horsfeld, 76, (fig. D-2).
Hot Springs mining district, 47, (figs. D-2, D-3).
Hyder mining district, 117, (figs. D-1, D-2).
Iditarod district, 43, (fig. D-3).
Illinois Creek, 132, (figs. D-1, D-3).
Independence, 79, (fig. D-3).
Independence Creek, 28, (fig. D-1).
Inmachuk River, 39, (fig. D-3).
Innoko-Tolstoi mining district, 44, (fig. D-3).
Ivanof, 88, (fig. D-2).
Jimmy Lake, 94, (fig. D-1).
Johnson River, 125, (fig. D-3).
Jualin, 128, (fig. D-3).
Jumbo, 118, (fig. D-1).
Kantishna mining district, 61, (fig. D-3).
Kasaan Peninsula, 114, (fig. D-1).
Kasna Creek, 92, (fig. D-1).
Kemuk Mountain, 123, (fig. D-3).
Kennecott deposits, 71, (fig. D-1).
Kensington, 127, (fig. D-3).
Kivliktort Mountain, 5a, (fig. D-1).
Klery Creek, 14, (fig. D-3).
Klukwan, 96, (fig. D-3).
Kougarok Mountain, 26, (fig. D-2).
Koyukuk-Hughes mining district, 42, (fig. D-3).
Koyukuk-Nolan mining district, 16, (fig. D-3).
Latouche, Beatson, 80, (fig. D-1).
Liberty Belle, 54, (fig. D-1).
Lik, 1, (fig. D-1).
Livengood-Tolovana mining district, 48, (fig. D-3).
Lost River, 24, (fig. D-2).
Lucky Shot, 79, (fig. D-3).
McLeod, 124, (fig. D-2).
Mertie Lode, 99, (fig. D-3).
Midas mine, 77, (fig. D-1).
Mike deposit, 90, (fig. D-2).
Mirror Harbor, 102, (fig. D-3).
Misheguk Mountain, 13, (fig. D-3).
Mosquito, Peternie, 56, (fig. D-2).
Mt. Prindle, 50, (fig. D-3).
Nabesna mine, 69, (fig. D-3).
Niblack, 121, (fig. D-1).
Nim prospect, 65, (fig. D-1).
Nimiuktuk River, 126, (fig. D-1).
Nixon Fork, 135, (fig. D-3).
Nome mining district, 30, (fig. D-3).
Nunatak, 97, (fig. D-2).
Omalik, 35, (fig. D-1).
Omar, 7, (fig. D-1).
Orange Hill, 73, (fig. D-2).
Pebble Copper, 129, (fig. D-1).
Placer River, 38, (fig. D-2).
Pleasant Creek, 53, (fig. D-1).
Pogo, 130, (fig. D-3).
Poovookpuk Mountain, 40, (fig. D-2).
Porcupine Lake, 18, (fig. D-2).
Purcell Mountain, 41, (fig. D-2).
Pyramid, 87, (fig. D-2).
Quartz Creek, 37, (fig. D-1).
Quartz Hill, 120, (fig. D-2).
Red Bluff Bay, 109, (fig. D-3).
Red Devil, 83, (fig. D-3).
Red Dog, 2, (fig. D-1).
Red Mountain, 82, (fig. D-3).
Rex deposit, 91, (fig. D-2).
Rock Creek, 31, (fig. D-3).
Rua Cove, 81, (fig. D-1).
Ruby mining district, 46, (fig. D-3).
Ryan Lode, 49b, (fig. D-3).
Salt Chuck, 115, (fig. D-3).
Sheep Creek, 54, (fig. D-1).
Shotgun Hills, 131, (fig. D-3).
Sinuk River region, 29, (fig. D-1).
Slate Creek, 59, (fig. D-3).
Sleitat Mountain, 93, (fig. D-2).
Smucker, 11, (fig. D-1).
Snettisham, 107, (fig. D-3).
Snipe Bay, 113, (fig. D-3).
Solomon mining district, 33, (fig. D-3).
Spirit Mountain, 70, (fig. D-3).
Stampede mine, 62, (fig. D-3).
Story Creek, 5, (fig. D-1).
Sumdum, 106, (fig. D-1).
Sun, 10, (fig. D-1).
Taurus, 57, (fig. D-2).
Three Castle Mountain, 53, (fig. D-1).
Tracy Arm, 108, (fig. D-1).
True North, 49d, (fig. D-3).
Twin Mountain, 51, (fig. D-2).
Union Bay, 116, (fig. D-3).
Valdez Creek district, 66, (fig. D-3).
Vinasale Mountain, 134, (fig. D-3).
Virginia Creek, 54, (fig. D-1).
Von Frank Mountain, 136, (fig. D-3).
War Baby, 79, (fig. D-3).
Weasel Mountain, Bee Creek, 89, (fig. D-2).
Whoopee Creek, 6, (fig. D-1).
Willow Creek, 79, (fig. D-3).
Wind River, 19, (fig. D-1).
Windy Creek, 36, (fig. D-2).
Zackly, 67a, (fig. D-1).

[a]This generalized summary does not describe all of the known 8,000 to 10,000 mineral deposits in Alaska.

NOTE: In cooperation with DGGS and the Russian Academy of Sciences, the USGS published Open-File Report 93-339 (Nokleberg and others, 1993), *Metallogenesis of mainland Alaska and the Russian northeast*, which describes 273 lode deposits and 43 significant placer districts in Alaska.

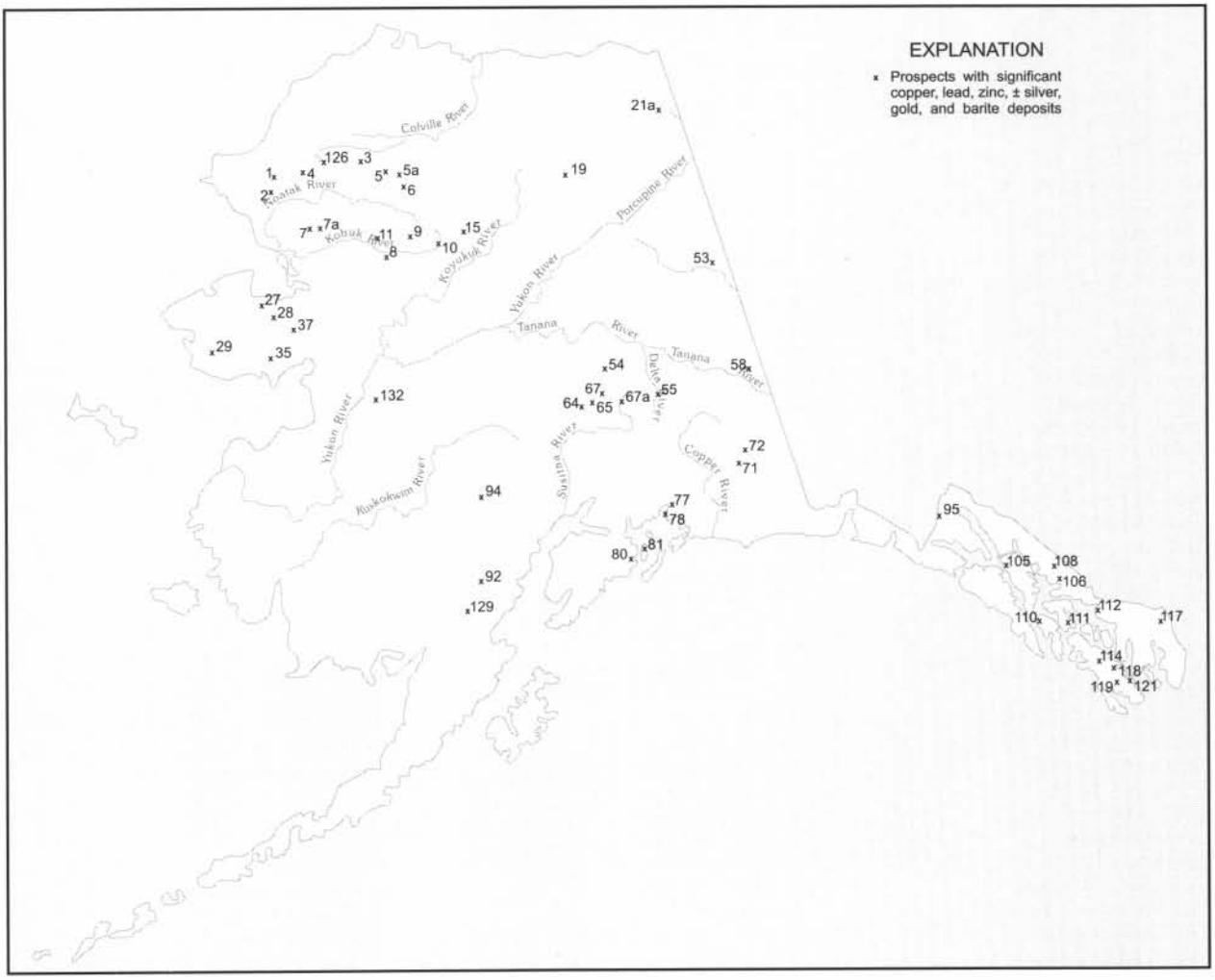


Figure D-1. *Significant copper, lead, zinc with credits of silver, gold, and barite deposits in Alaska, 1998.*

Map no.

1 **Lik**—Major stratabound massive sulfide (Zn–Pb–Ag–Ba) deposit in black shale and chert. Proven reserve (Lik) estimate of 24 million tons of 9% Zn, 3.1% Pb, and 1.4 oz/ton Ag (fig. D-1).

2 **Red Dog**—At least three major stratabound massive sulfide deposits hosted in Pennsylvanian or Mississippian shale; similar to locality 1. (a) The Main Deposit at Red Dog contains 52.5 million tons of measured and indicated ore grading 19.2% Zn, 5.2% Pb, with 3.2 oz/ton Ag. (b) The Aqqaluk Deposit contains 80.4 million tons grading 13.6% Zn, 3.7% Pb, and 2.1 oz/ton Ag. (c) The Hilltop Deposit with an indicated reserve is 10.6 million tons grading 17.8% Zn, 5.5% Pb, and 3.8 oz/ton Ag. (d) Inferred resource in the Paalaaq deposit is 14.3 million tons of 15.0% Zn, 4.0% Pb, and 2.9 oz/ton Ag. (fig. D-1).

3 **Drenchwater**—Mississippian and Pennsylvanian shales and cherts contain three stratabound base metal occurrences spatially related to acid volcanics. The lowest unit, a siliceous mudstone, contains a 2 ft layer with up to 23% Zn. An overlying gray chert contains up to 11% Zn and up to 5% Pb with some Ag in fracture fillings. At the top of the overlying tuffaceous layer, Ag-bearing Zn and Pb mineralization outcrops discontinuously for at least 6,500 ft, and contains up to 26% Zn and 51% Pb in grab samples (fig. D-1).

4 **Ginny Creek**—Epigenetic, disseminated Zn–Pb–Ag deposits with barite in sandstone and shale of Noatak Sandstone of Late Devonian through Early Mississippian age. Random grab samples of surface float contain 0.3% to 3.0% Zn and highly variable amounts of Pb and Ag (fig. D-1).

5 **Story Creek**—Epigenetic replacement deposits of Zn–Pb–Ag–Cu–Au hosted in brecciated zones in Devonian Kanayut Conglomerate or Lower Mississippian Kayak Shale. Grab samples of high-grade material contain up to 0.43% Cu, 34% Pb, 28.8% Zn, 0.04 oz/ton Au, and 30 oz/ton Ag (fig. D-1).

5a **Kivliktort Mountain**—Mineralized float is widespread on the north flanks of the mountain, apparently spatially

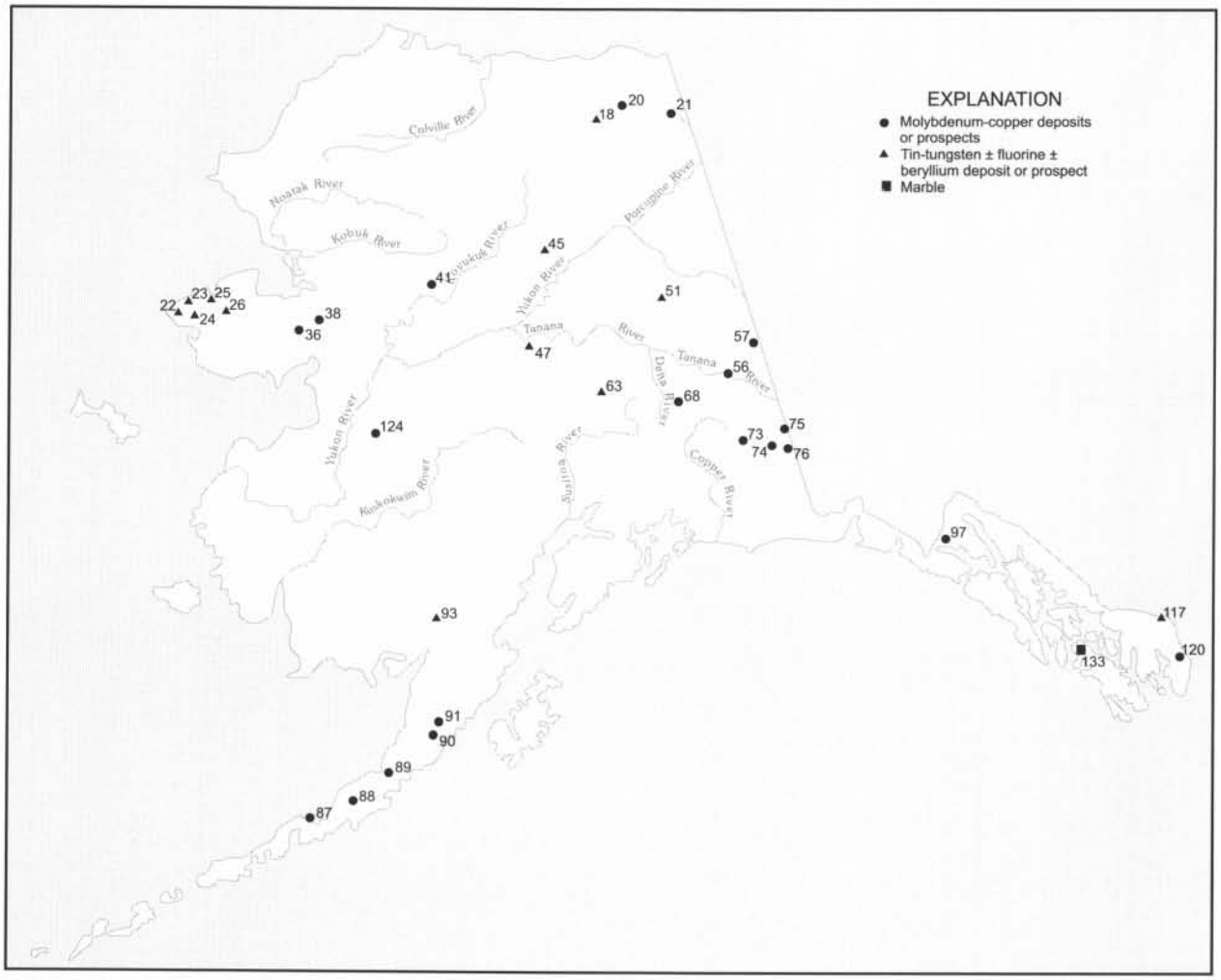


Figure D-2. *Significant molybdenum–copper and tin–tungsten with credits of fluorite and beryllium deposits in Alaska, 1998.*

related to the contact between shales at the base of the hills and coarse-grained siliceous clastic rocks on the upper slopes. Rock samples containing up to 30% Zn have been reported (fig. D-1).

6 **Whoopee Creek**—Epigenetic replacement deposits of Zn–Pb–Cu–Ag–Au–Cd in breccia zones in Devonian Kanayut Conglomerate or Lower Mississippian Kayak Shale. Random grab samples of mineralized material contain 0.24% Cu, 0.37% Cd, 46% Zn, 44% Pb, 0.14 oz/ton Au, and 14.8 oz/ton Ag (fig. D-1).

7 **Omar**—Epigenetic replacement deposits of Paleozoic age; include bedded barite occurrences. Grab samples contain 15.3% Cu, 0.15% Pb, 0.95% Zn, 0.05% Co, and 0.3 oz/ton Ag. BLM estimates 35 million tons of 4% Cu (fig. D-1).

7a **Frost**—Possible 9 million tons of barite in pods, lenses, and wavy-banded quartz-calcite-barite veins. Chalcopyrite and galena occur in the veins which cross cut Paleozoic limestone and dolomite for a minimum distance of 1 mi. Selected samples contain up to 13.2% Zn (fig. D-1).

8 **Bornite**—Major stratabound Cu–Zn deposit in brecciated carbonate rock of Devonian age; 5.0 million ton orebody contains 4.0% Cu and accessory Zn and Co. Larger reserve estimate of 40 million tons of about 2% Cu and undisclosed amount of Zn and Co. At grade of 1.2% Cu, reserves are 100 million tons (fig. D-1).

9 **Arctic**—Major volcanogenic (Cu–Zn) massive sulfide deposit hosted in sequence of metarhyolite, metatuff, and graphitic schist of Devonian age; indicated reserves of 40 million tons grade 4.0% Cu, 5.5% Zn, 0.8% Pb, 1.6 oz/ton Ag, and 0.02 oz/ton Au (fig. D-1).

10 **Sun**—Major (Cu–Pb–Zn–Ag) massive sulfide deposit in sequence of middle Paleozoic metarhyolite and metabasalt. Average grades are 1 to 4% Pb, 6 to 12% Zn, 0.5 to 7% Cu, 3 to 11 oz/ton Ag (fig. D-1).

11 **Smucker**—Middle Paleozoic volcanogenic massive sulfide deposit; 3,000 ft long and up to 190 ft wide; contains significant tonnage of Cu–Pb–Zn ore that grades 1.5% Pb, 5 to 10% Zn, 3 to 10 oz/ton Ag, with minor Au (fig. D-1).

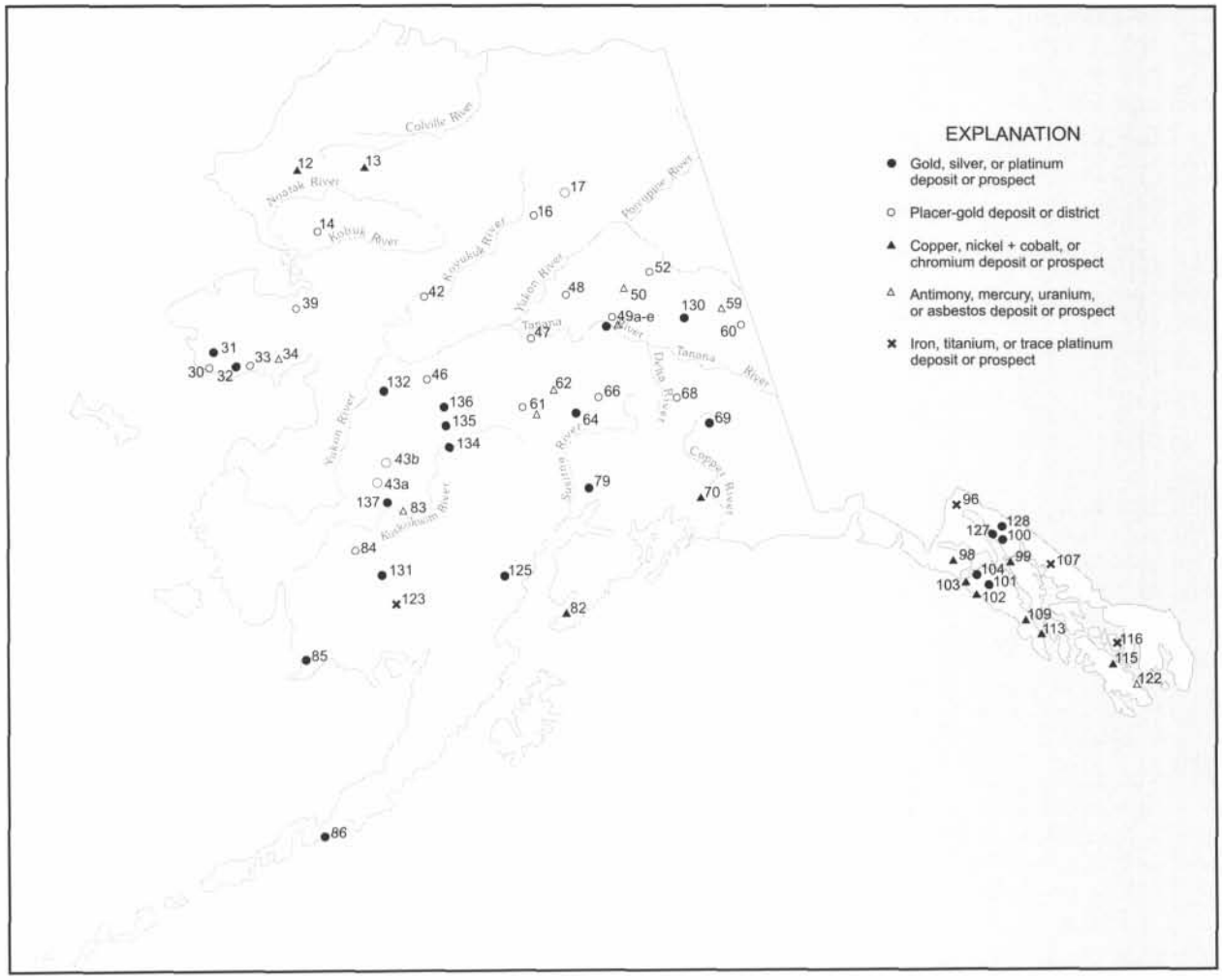


Figure D-3. *Significant gold, silver, platinum, and strategic mineral deposits in Alaska, 1998.*

12 **Avan Hills**—Disseminated chromite in layered ultramafic rocks; grab samples contain up to 4.3% Cr with 0.015 oz/ton PGM (fig. D-3).

13 **Misheguk Mountain**—Chromite occurrences similar to those in Avan Hills (fig. D-3).

14 **Klery Creek**—Lode and placer Au deposits worked intermittently from 1909 through 1930s. Total production through 1931, mostly from placer deposits, estimated at 31,320 oz Au (fig. D-3).

15 **Ernie Lake (Ann Creek)**—Stratabound massive sulfide occurrence in metarhyolite, metatuff, and marble. Gossan zones strongly anomalous in Cu–Pb–Zn and Ag (fig. D-1).

16 **Koyukuk–Nolan mining district**—Major placer Au district; from 1893 to 1995 produced an estimated 340,152 oz Au. Gold placers in Nolan Creek mined on surface and underground, both sources of large gold nuggets. Significant deep placer reserves remain (fig. D-3).

17 **Chandalar mining district**—Major Au-producing district; substantial production in excess of 64,367 oz Au through 1995 from lode and placer sources; lode Au found in crosscutting quartz veins that intrude schist and greenstone. Active development of placer deposits and lodes in progress. Inferred lode reserves estimated to be 45,000 tons with grade of 2 oz/ton Au (fig. D-3).

18 **Porcupine Lake**—Stratiform fluorite occurrences and argentiferous enargite, tetrahedrite associated with felsic volcanic rocks of late Paleozoic age. Reported grades of up to 30% fluorite (CaF_2) reported, with grab samples of 4.8% Cu (fig. D-2).

19 **Wind River**—Stratabound Pb–Zn massive sulfide prospects; reported grades of up to 5% Pb (fig. D-1).

20 **Esotuk Glacier**—Disseminated Mo–Sn–W–Pb–Zn mineralization in skarns associated with Devonian(?) schistose quartz monzonite. Grab samples contain up to 0.08% Sn and 0.15% W (fig. D-2).

21 **Bear Mountain**—Major stockwork Mo–W–Sn occurrence in intrusive breccia. Rock samples containing up to 0.8% Mo and 0.6% W occur within a 35-acre area where soil samples average more than 0.2% MoS_2, and an adjacent 25-acre area where rubble contains

wolframite has soils averaging greater than 0.12% WO_3. Rubble crop in this area indicates a Tertiary porphyry system as the source of the Mo and W (fig. D-2).

21a **Galena Creek**—Steeply dipping veins contain up to 21% Cu, 3.5% Zn, and 1.3% Pb with 5.5 oz/ton Ag on the east side of the creek, and on the ridge west of the creek a large area of disseminated mineralization and veinlets contains predominantly Zn (fig. D-1).

22 **Cape Creek**—Major placer Sn producer. More than 500 tons Sn produced from 1935 to 1941; from 1979 to 1990, produced 1,040 tons Sn. Derived from Cape Mountain in contact zone of Cretaceous granite and limestone (fig. D-2).

23 **Buck Creek**—Major placer Sn producer. More than 1,100 tons Sn produced from 1902 to 1953 (fig. D-2).

24 **Lost River**—Major Sn, fluorite, W, and Be deposit associated with Cretaceous Sn granite system. More than 350 tons Sn produced from skarn and greisen lode sources. Measured reserves amount to 24.6 million tons that grade 0.15% Sn, 16.3% CaF_2, and 0.03% WO_3, based on 45,000 ft of diamond drilling (fig. D-2).

25 **Ear Mountain**—Placer Sn district and Sn–Cu–Au–Ag–Pb–Zn skarn mineralization of Cretaceous age. Area also anomalous in U (fig. D-2).

26 **Kougarok Mountain**—Sn deposit hosted in quartz–tourmaline–topaz greisen of Cretaceous age. Grades may average 0.5% Sn and 0.01% Ta and Nb, but a high-grade resource of 150,000 tons grading 1% + Sn has been identified, with incrementally higher tonnage at lower grades (fig. D-2).

27 **Hannum**—Stratiform, carbonate-hosted Pb–Zn–Ag massive sulfide deposit of mid-Paleozoic age in heavily oxidized zone that ranges from 30 to 150 ft thick. Mineralized zone reported to assay up to 10% Pb, 2.2% Zn, 0.04 oz/ton Au, and 1.76 oz/ton Ag (fig. D-1).

28 **Independence Creek**—Pb–Zn–Ag massive sulfide deposit; high-grade ore shipped in 1921 contained 30% Pb, 5% Zn, up to 150 oz/ton Ag. Mineralization restricted to shear zone in carbonates (fig. D-1).

29 **Sinuk River region**—Several Pb–Zn–Ag–Ba–F bearing massive sulfide deposits and layered Fe deposits in carbonate and metavolcanic rocks of Nome Group. Mineralized zones extend for over 8,000 ft along strike (fig. D-1).

30 **Nome mining district**—Major placer Au producer. Production from 1897–1995 in excess of 4,874,449 oz Au all from placers. Sporadic Sb and W production in past (fig. D-3).

31 **Rock Creek**—750,000 oz Au resource, with about 10.2 million tons grading 0.074 oz/ton Au in vein swarms and stringers in an area 1,500 ft long, 500 ft maximum width and 300 ft deep (fig. D-3).

32 **Big Hurrah**—Epigenetic vein deposit in black slate and metasedimentary rocks of the Soloman schist. Deposit contains some W mineralization and has produced over 27,000 oz Au from nearly 50,000 tons milled ore. Proven, inferred, and indicated reserves total 104,000 tons that grade 0.61 oz/ton Au, 0.55 oz/ton Ag, and credits of WO_3 (fig. D-3).

33 **Solomon and Council mining districts**—Major placer Au districts; produced over 1,046,513 oz through 1995. Three structurally controlled Au deposits in Bluff area—Daniels Creek, Saddle, and Koyana Creek—contain minimum inferred reserves of 6.5 million tons grading 0.1 oz/ton Au (fig. D-3).

34 **Eagle Creek**—U prospect in Cretaceous Kachauik alkalic intrusive rocks. Highly anomalous geochemical values and U concentrations of 1,000 ppm reported (fig. D-3).

35 **Omalik**—Vein-type Pb–Zn–Ag massive sulfide prospect in Paleozoic carbonate rocks; from 1881 to 1900, produced 400 tons of Pb–Zn ore that averaged about 10% Pb and 40 oz/ton Ag. Grades of oxidized Zn ore reported to be up to 34% Zn (fig. D-1).

36 **Windy Creek**—Disseminated Mo–Pb–Zn mineralization in quartz veins and skarns with reported values as high as 0.15% Mo (fig. D-2).

37 **Quartz Creek**—Significant Pb–Zn–Ag mineralization; reported grades of 15% combined Pb–Zn and 10 oz/ton Ag (fig. D-1).

38 **Placer River**—Significant Mo–F mineralization disseminated in intrusive rocks. Reported values of 0.2% Mo (fig. D-2).

39 **Fairhaven/Inmachuk district**—Placer deposits with 347,671 oz production from 1902–1995; significant reserves remaining in a large ancestral channel system. Large base metal sulfide concentrations and U values in concentrates (fig. D-3).

40 **Poovookpuk Mountain**—Porphyry Mo mineralization. Reported grades of up to 0.25% Mo (fig. D-2).

41 **Purcell Mountain**—Mo and Ag occurrences associated with Cretaceous alkalic igneous plutons, alaskite, and bostonite dikes (fig. D-2).

42 **Koyukuk–Hughes mining district**—Production of 231,888 oz Au from 1930 to 1995, mainly from Alaska Gold Co. dredge at Hogatza; dredge reactivated in 1981, but deactivated in 1984, and reactivated again in 1990. Nonfloat mechanized operation on Utopia Creek produced significant amount of placer Au from 1930 to 1962 (fig. D-3).

43 **Iditarod district**—Major placer Au district; produced 1,561,524 oz Au through 1995. Significant reserves of lode Au and lode W at Golden Horn deposit Chicken Mountain, and other known lodes in region associated with shear zones and monzonite intrusive rocks of Late Cretaceous age (fig. D-3).

44 **Innoko–Tolstoi mining district**—Major placer Au district with significant lode Au–Sb–Hg potential; lode sources for placers are Late Cretaceous volcanic-

plutonic complexes and dike swarms that intrude Mesozoic flysch; mining district produced 706,267 oz Au through 1995, almost all from placer deposits (fig. D-3).

45 **Bonanza Creek**—Skarn-type W mineralization along intrusive contact; no published information available (fig. D-2).

46 **Ruby mining district**—Placer Au–Sn district; produced more than 476,751 oz Au from 1931 to 1995; mining district also contains Pb–Ag prospects with grades reportedly as high as 82 oz/ton Ag (fig. D-3).

47 **Hot Springs mining district**—Placer Au–Sn district; produced more than 568,632 oz Au and over 720,000 lb cassiterite through 1995. Includes Eureka and Tofty subdistricts (figs. D-2, D-3).

48 **Livengood–Tolovana mining district**—Placer Au district; produced more than 496,417 oz Au since discovery in 1914 to 1995. Substantial reserves remain mainly on Livengood Bench, a Pliocene ancestral channel (fig. D-3).

49 **Fairbanks mining district**—Nationally ranked Au-producing district; largest producer in Alaska. Produced about 8,022,434 oz Au from placer deposits (1902–1995). Major lode Au and lode Sb producer; produced more than 304,548 oz Au and over 4 million lb Sb from veins and shear zones through 1990. Production of W exceeded 4,000 short ton units since 1915, all derived from skarn near Cretaceous quartz monzonite (fig. D-3).

49a **Fort Knox**—Disseminated Au deposit within granodiorite/quartz monzonite pluton near Fairbanks. Proven and probable reserves as of December 31, 1998, open at depth, are 3,745,000 oz of Au in 156.59 million tons of rock at an average Au grade of 0.024 oz/ton. Possible reserves of 12.66 million tons at an average grade of 0.022 oz/ton Au (277,000 oz of Au) and a resource of 54.44 million tons at an average grade of 0.0225 oz/ton Au (1,216,000 oz of Au). The total gold resource at Fort Knox is 5.24 million oz of Au. Fairbanks Gold Mining Inc. mined 702,295 oz in 1996, 1997, and 1998 at a cash cost of $170/oz to $189/oz (fig. D-3).

49b **Ryan Lode**—Based on a 0.015 oz/ton cutoff, total reserves in the metasediment-hosted Ryan Lode and subparallel igneous-hosted Curlew Shear are 822,200 oz of Au in 14.6 million tons of rock. A geologic resource of about 2.4 million oz occurs within the total shear zone system (fig. D-3).

49c **Grant Mine**—A series of subparallel Au-bearing quartz veins in the schist and quartzite of Ester Dome based on exploration in 1990. Indicated reserves on one vein system, the O'Dea, are 212,000 tons of 0.36 oz/ton Au. Other similar vein systems have been identified within the property (fig. D-3).

49d ***True North***—Au occurs in siderite-quartz veins in carbonaceous quartzite and schist within a terrane containing eclogitic rocks. The mineral inventory is 18.2 million tons grading 0.072 oz/ton Au for a contained 1,314,000 oz Au. Further exploration is expected to increase the reserve base (fig. D-3).

49e **Dolphin**—Recently recognized mineralized intermediate intrusion contains anomalous Au, As, Bi and Sb. Discovery hole in 1995 intercepted 330 ft of 0.049 oz/ton Au (fig. D-3).

49f **Gil Claims**—Gold occurs in two calc-silicate zones within Paleozoic schist units. Gold enrichment occurs along iron-stained shears and within quartz-calcite veinlets. Drilling has identified an in-place Au resource of 433,000 oz at an average grade of 0.04 oz/ton Au (fig. D-3).

50 **Mt. Prindle**—Significant U-rare-earth mineralization in Mesozoic alkaline igneous rocks. Rock geochemical values of up to 0.7% U; up to 15% rare-earth elements reported (fig. D-3).

51 **Twin Mountain**—Significant W mineralization associated with skarn development along contact zone of quartz monzonite stock of Cretaceous age (fig. D-2).

52 **Circle mining district**—Currently one of Alaska's largest producing placer Au districts; produced 1,027,607 oz Au since discovery in 1893 to 1995. Has significant potential for Sn, W, and Au mineralization from variety of lode sources (fig. D-3).

53 **Three Castle Mountain, Pleasant Creek, Casca VABM**—Stratabound Pb–Zn massive sulfide mineralization. Reported grades of up to 17% Zn and 2% Pb (fig. D-1).

54 **Bonnifield district massive sulfide deposits (Anderson Mountain, Dry Creek, Sheep Creek, Virginia Creek, BT, Liberty Belle)**—Significant volcanogenic Cu–Pb–Zn–Ag massive sulfide deposits of Devonian to Mississippian age in Bonnifield mining district. Potential for high-grade deposits reported. Includes Liberty Belle stratabound Au–B deposit and mineralization in Sheep Creek; latter contains Sn as well as base metals (fig. D-1).

55 **Delta massive sulfide belt**—Contains at least 30 known volcanogenic massive sulfide deposits and occurrences. Grades from 0.3 to 1.1% Cu, 1.7 to 5.7% Zn, 0.5 to 2.3% Pb, 0.7 to 2.0 oz/ton Ag, and 0.018 to 0.061 oz/ton Au; estimated potential reserve of 40 million tons for all deposits (fig. D-1).

56 **Mosquito, Peternie**—Porphyry Mo prospects of early Tertiary age; reported grades of up to 0.17% Mo (fig. D-2).

57 **Taurus**—Significant major porphyry Cu–Au prospect of Paleocene age. East Taurus Zone contains inferred reserves of 140 million tons grading about 0.30% Cu and 0.01 oz/ton Au, and 0.03% Mo (fig. D-2).

58 **Big Creek/Ladue**—Stratabound Pb–Zn–Ag massive sulfide prospects in metavolcanic rocks (fig. D-1).

59 **Slate Creek**—At least 55 million tons of 6.3%, high-quality chrysotile asbestos in serpentinized ultramafic rocks of Permian(?) age (fig. D-3).

60 **Fortymile mining district**—Major placer Au district. Produced over 534,974 oz placer and very minor lode Au since discovery in 1883 to 1995, the longest continuous production of Au (113 years) of any Alaskan mining district (fig. D-3).

61 **Kantishna mining district**—Major placer Au and lode Ag–Au–Pb–Zn–Sb–W district. Produced 99,307 oz placer and lode Au, about 307,000 oz lode Ag, and 5 million lb Sb from shear zones and vein deposits hosted in metamorphic units of Yukon-Tanana terrane. Nearly 90 lode deposits have been identified; potential exists for significant Ag–Au–Pb–Zn resources. Metalliferous stratabound base metal deposits occur in schist and quartzite (fig. D-3).

62 **Stampede mine**—Major Sb deposit; produced more than 3.5 million lb Sb from large shear zone in polymetamorphic rocks of Yukon–Tanana terrane (fig. D-3).

63 **Coal Creek**—Greisen-hosted Sn–Cu–W deposit in "McKinley" age pluton (55 million years old). Reported reserves of 5 million tons of ore that grade 0.28% Sn and 0.3% Cu with credits of W, Ag, and Zn (fig. D-2).

64 **Golden Zone mine**—Major Au–Cu–Ag deposits in Late Cretaceous breccia pipe and skarn deposits. Produced more than 1,581 oz Au, 8,617 oz Ag, and 42,000 lb Cu. On the basis of recent (1994) drilling, the Pipe, Bunkhouse, and Copper King deposits contain 13.3 million tons grading 0.095 oz/ton Au (figs. D-1 and D-3).

65 **Nim Prospect**—Porphyry Cu–Ag–Au deposit of Late Cretaceous age. Reported grades of up to 5.0% Cu and 9 oz/ton Ag (fig. D-1).

66 **Valdez Creek district**—About 508,454 oz Au production through 1995. Cambior Alaska Inc., the largest placer mine in Alaska, operated in this district until September 1995 (fig. D-3).

67 **Denali Prospect**—At least six small, stratabound Cu lodes in volcanic sedimentary rocks of Triassic age that may contain 5 million tons ore that grade about 2% Cu with credits of Ag (fig. D-1).

67a **Zackly**—Disseminated Cu and Au in a garnet-pyroxene skarn and marble. Reserves are estimated at 1.4 million tons grading 2.6 percent Cu and 0.175 oz/ton Au (fig. D-1).

68 **Chistochina**—Porphyry Cu prospects of Tertiary age and placer Au district; produced more than 181,261 oz Au and small amount Pt from placer deposits (figs. D-2, D-3).

69 **Nabesna mine**—Classic high-grade Au skarn that envelopes quartz diorite of Jurassic(?) age; produced over 66,500 oz Au from about 88,000 tons of ore from 1930 to 1941 (fig. D-3).

70 **Spirit Mountain**—Massive and disseminated Cu–Ni mineralization in mafic-ultramafic complex (fig. D-3).

71 **Kennecott deposits**—Major stratiform Cu–Ag massive sulfide deposits localized near contact between Chitistone Limestone and Nikolai Greenstone of Triassic age; contained some of highest grade Cu lodes mined in North America. From 1911 to 1938, produced more than 1.2 billion lb Cu and 10 million oz Ag from 4.8 million tons ore. Some reserves remain (fig. D-1).

72 **Binocular and other prospects**—Kennecott-type Cu–Ag massive sulfide deposits (fig. D-1).

73 **Bond Creek–Orange Hill**—Two major porphyry Cu–Mo deposits of Late Cretaceous age; reported inferred reserves of 850 million tons ore that grade 0.3 to 0.5% Cu and 0.03% Mo (fig. D-2).

74 **Carl Creek**—Porphyry Cu prospect in altered intrusive complex; similar to locality 73 (fig. D-2).

75 **Baultoff**—Porphyry Cu prospect in altered intrusive rocks; inferred reserves of 145 million tons of 0.20% Cu; similar to locality 73 (fig. D-2).

76 **Horsfeld**—Porphyry Cu prospect; similar to locality 73 (fig. D-2).

77 **Midas mine**—Significant stratabound Cu (Ag–Au–Pb–Zn) massive sulfide deposit in volcanic sedimentary rocks of Tertiary Orca Group. Produced more than 3.3 million lb Cu from 49,350 tons ore (fig. D-1).

78 **Ellamar**—Stratabound Cu–Zn–Au massive sulfide deposit in sediment of Eocene(?) Orca Group. Produced more than 16 million lb Cu, 51,307 oz Au, and 191,615 oz Ag from about 301,835 tons ore (fig. D-1).

79 **Willow Creek, Independence, Lucky Shot, War Baby**—Major lode Au deposits (Ag–Cu–Pb–Zn–Mo) in veins that cut Mesozoic quartz diorite. Produced more than 606,400 oz Au from lode sources and about 55,600 oz Au from associated placer deposits (fig. D-3).

80 **Latouche, Beatson**—Major stratabound Cu–Zn–Ag massive sulfide deposits in Orca Group sedimentary rocks and mafic volcanic rocks. Produced more than 205 million lb Cu from 6 million tons ore. Inferred reserves of 5 million tons ore that grade 1% Cu, 1.5% Pb+Zn (fig. D-1).

81 **Rua Cove**—Major stratabound Cu–Zn massive sulfide deposit in complex ore shoots enclosed in mafic volcanic rocks of Orca Group. Reported reserves of over 1.1 million tons ore that grade 1.25% Cu (fig. D-1).

82 **Red Mountain and Claim Point**—Significant Cr occurrence associated with layered ultramafic complexes of Tertiary age at Red Mountain near Seldovia. More than 39,951 tons of metallurgical-grade ore shipped through 1976; huge low-grade Cr resource may remain, of which 30 million tons grade 5.1% Cr_2O_3 (fig. D-3).

83 **Red Devil**—Major Hg–Sb deposit; high-grade epithermal Hg–Sb deposit hosted in shear zones in Kuskokwim Group sedimentary rocks. More than 35,000 flasks Hg produced from 75,000 tons ore (fig. D-3).

84 **Aniak district**—Significant placer Au district. Aniak mining district produced 568,601 oz Au from placer deposits, mainly from the Nyac and Donlin Creek areas (fig. D-3).

85 **Goodnews Bay**—Major placer Pt district; estimated to have produced over 555,000 oz refined PGE metals from 1934 to 1976; one of the largest known PGE metal resources in United States. Possible resources of 60 million yd^3 of deep, PGE-bearing gravels remain. Lode source believed to be Alaskan-type zoned ultramafic complex of Jurasssic or Cretaceous age. Possible significant offshore placer potential (fig. D-3).

86 **Apollo–Sitka mines**—Major lode Au deposits; produced more than 107,600 oz Au from ore that averaged about 0.22 oz/ton Au. Inferred reserves are 748,000 tons grading 0.76 oz/ton Au, 2.16 oz/ton Ag, with base metal credits (fig. D-3).

87 **Pyramid**—Late Tertiary porphyry Cu–Mo deposit; inferred reserves of 125 million tons ore that grade 0.4% Cu and 0.03% Mo reported (fig. D-2).

88 **Ivanof**—Late Tertiary porphyry Cu prospect; grades of up to 0.72% Cu reported. Potential for large tonnages (fig. D-2).

89 **Weasel Mountain, Bee Creek**—Porphyry Cu–Mo prospect of late Tertiary to Quaternary age; grades of up to 0.48% Cu and 0.035% Mo reported. Potential for moderate tonnages of low-grade mineralization (fig. D-2).

90 **Mike deposit**—Porphyry Mo prospect of late Tertiary age; grades of up to 0.21% Mo reported. Potential for large tonnages of low-grade Mo mineralization (fig. D-2).

91 **Rex deposit**—Porphyry Cu prospect similar to locality 90; grades of up to 0.3% Cu reported. Potential for moderate reserves of low-grade mineralization (fig. D-2).

92 **Kasna Creek**—Major stratiform Cu–Pb–Zn and skarn-sulfide deposits of Mesozoic age in mafic, volcanic, and sedimentary rocks; reported reserves of over 10 million tons ore that grade more than 1% Cu (fig. D-1).

93 **Sleitat Mountain**—High-grade east-west-trending, Sn–W–Ag topaz–quartz greisen system hosted in 59-million-year-old binary granite and in hornfels. Zone up to 3,000 ft long and 500 ft wide. One drill-hole showed 85 ft of 1.8% Sn, and 0.4% W. Inferred resources are 128 to 212 million lb Sn in 29 million tons ore (fig. D-2).

94 **Jimmy Lake**—Complex Cu–Ag–Sn mineralization of late Tertiary(?) age; reported grades of up to 105 oz/ton Ag and 3% Cu (fig. D-1).

95 **Haines Barite/Palmer**—Major stratiform Ba–Pb–Zn–Cu–Ag deposit in pillow basalt-dominated section of Paleozoic or Triassic age; consists of 48- to 60-ft-thick zone of 60% barite with upper zone (2 to 8 ft thick) of massive sulfides that contain 2% Pb, 3% Zn, 1% Cu, up to 4 oz/ton Ag, and 0.12 oz/ton Au. Estimated to contain 750,000 tons of 65% barite with Zn and Ag credits (fig. D-1).

96 **Klukwan**—Major Fe–Ti deposits in zoned ultramafic complex of Mesozoic age; reported to contain 3 billion tons of material that contains 16.8% Fe and 1.6 to 3.0% Ti (fig. D-3).

97 **Nunatak**—Porphyry Mo deposit; reported reserves of 8.5 million tons ore that grades 0.125% Mo and 129 million tons of 0.04% Mo (fig. D-2).

98 **Brady Glacier**—Major Ni–Cu deposit in layered gabbro–pyroxenite complex of Tertiary age. Proven reserves of 100 million tons ore that grade 0.5% Ni, 0.3% Cu reported and about 0.03% Co; also contains PGE concentrations (fig. D-3).

99 **Mertie Lode and Funter Bay mining district**—Contains substantial reserves of lode Au mineralization. Past production totaled about 15,000 oz Au. Deposits also contain significant Ni–Cu and Pb–Zn–Ag mineralization. Funter Bay deposit contains reported reserves of 560,000 tons that grade 0.34% Ni, 0.35% Cu, and 0.15% Co in gabbro-pipe system (fig. D-3).

100 **Alaska–Juneau**—Major lode Au deposit that consists of 100- to 300-ft-wide zone that contains en echelon, Au–bearing quartz veins in metamorphic rocks; produced more than 3.52 million oz Au from 88.5 million tons ore from 1893 to 1944. Reserves (all categories) of 105.7 million tons of 0.05 oz/ton Au remain (fig. D-3).

101 **Chichagof and Hirst Chichagof**—Major lode Au deposits in quartz veins that cut Mesozoic graywacke; produced more than 770,000 oz Au, most of which was produced at Chichagof Mine. Inferred leased reserves estimated to be 100,000 oz Au (fig. D-3).

102 **Mirror Harbor**—Ni–Cu mineralization in layered gabbro complex of Mesozoic age; reported proven reserves of 8,000 tons of 1.57% Ni and 0.88% Cu and reported inferred reserves of several million tons ore that grade 0.2% Ni and 0.1% Cu (fig. D-3).

103 **Bohemia Basin**—Major Ni–Cu–Co mineralization in layered mafic complex similar to locality 102; reported reserves of 22 million tons ore that grade 0.33 to 0.51% Ni, 0.21 to 0.27% Cu, and 0.02% Co, all of which are recoverable with standard flotation technology (fig. D-3).

104 **Apex–El Nido**—Significant lode Au–W deposits that occur as crosscutting veins in graywacke; produced more than 50,000 oz Au (fig. D-3).

105 **Greens Creek**—Major sediment-hosted Pb–Zn–Cu–Ag–Au volcanogenic massive sulfide deposit of Devonian or Triassic age; most recent reserve estimate of the original orebody is 11.0 million tons grading 0.12 oz/ton Au, 13.3 oz/ton Ag, 12.8% Zn, and 4.0% Pb. Additional reserves in the southwest orebody are 2.0 million tons grading 13.5% Zn, 5.5% Pb, 0.27 oz/ton Au, and 33 oz/ton Ag. Total combined reserves and resources of the mine are estimated to be 18 million tons (fig. D-1).

106 **Sumdum**—Volcanogenic Cu–Pb–Zn massive sulfide deposit in Mesozoic metamorphic complex with potential strike length of over 10,000 ft. Inferred reserves of 26.7 million tons ore that grade 0.57% Cu, 0.37% Zn, and 0.3 oz/ton Ag reported (fig. D-1).

107 **Snettisham**—Fe–Ti deposit in mafic zoned intrusive complex; reported grades of about 18.9% Fe and 2.6% Ti (fig. D-3).

108 **Tracy Arm**—Stratabound Cu–Zn–Pb massive sulfide prospect in Mesozoic schist; over 1,100 ft long and up to 12 ft thick. Reported grades of 1.5% Cu, 3.9% Zn, 0.76 oz/ton Ag, and 0.013 oz/ton Au (fig. D-1).

109 **Red Bluff Bay**—Significant chrome mineralization in Mesozoic ultramafic complex (probably ophiolite); reported reserves of 570 tons of material that grade 40% Cr and 29,000 tons that grade 18 to 35% Cr (fig. D-3).

110 **Cornwallis Peninsula**—Volcanogenic Cu–Pb–Zn–Ag–Ba massive sulfide deposit of Triassic(?) age; reported grades of up to 20% Pb–Zn and 23 oz/ton Ag (fig. D-1).

111 **Castle Island**—Stratiform barite deposit of Triassic age hosted in carbonate and pillow basalt; about 856,000 tons of raw and refined barite produced from 1963 to 1980; also contains Zn, Pb, and Cu sulfides. Reported to be mined out (fig. D-1).

112 **Groundhog Basin**—Area contains several massive sulfide prospects in Mesozoic schist and gneiss whose origins are now thought to be plutonic associated. Reported grades of up to 8% Pb, 29 oz/ton Ag, and 0.5 oz/ton Au. Sn has also been recently identified. Area also contains potential for porphyry Mo deposits (fig. D-1).

113 **Snipe Bay**—Ni–Cu deposit in zoned mafic-ultramafic complex; inferred reserves of 430,000 tons of 0.3% Ni, 0.3% Cu, and 0.13 oz/ton Ag reported (fig. D-3).

114 **Kasaan Peninsula**—Major skarn-type Cu–Fe-Au massive sulfide deposit of Jurassic age; area has produced over 28 million lb Cu, and 55,000 oz Ag. Reported reserves of 4 million tons ore that grade 50% Fe and less than 2% Cu (fig. D-1).

115 **Salt Chuck**—Cu–PGM–Ag–Au deposit in contact zone between pyroxenite and gabbro within Alaskan-type zoned mafic-ultramafic pluton. From 1900 to 1941, 5 million lb Cu, over 20,000 oz PGM, and Au and Ag credits were produced from 325,000 tons ore (fig. D-3).

116 **Union Bay**—Significant Fe–Ti mineralization in ultramafic complex; area also contains Pt and V concentrations (fig. D-3).

117 **Hyder mining district**—Area produced more than 25,000 tons high-grade W–Cu–Pb–Zn–Ag ore from 1925 to 1951 from crosscutting ore shoots in Texas Creek granodiorite of Tertiary age. Area also contains potential for porphyry Mo–W mineralization and massive sulfide–skarn Pb–Ag–Au–W deposits (figs. D-1, D-2).

118 **Jumbo**—Cu–Fe–Mo–Ag skarn deposit; produced more than 10 million lb Cu, 280,000 oz Ag, and 7,000 oz Au from 125,000 tons ore. Zoned magnetite–Cu skarns are associated with epizonal granodiorite pluton of Cretaceous age. Reported reserves of 650,000 tons ore that grade 45.2% Fe, 0.75% Cu, 0.01 oz/ton Au, and 0.08 oz/ton Ag (fig. D–1).

119 **Copper City**—Stratiform Cu–Zn–Ag–Au massive sulfide deposit hosted in late Precambrian or earliest Paleozoic Wales Group. Reported grades of up to 12.7% Cu, 2.7% Zn, 2.5 oz/ton Ag, and 0.2 oz/ton Au (fig. D–1).

120 **Quartz Hill**—A porphyry Mo deposit hosted in a 25-million-year-old composite felsic pluton. Probable reserves are 232 million tons with a grade of 0.22% MoS_2, and possible reserves are 1.2 billion tons with 0.12% MoS_2 (fig. D-2).

121 **Niblack**—Volcanogenic Cu–Pb–Au–Ag massive sulfide deposit hosted in Precambrian(?) Wales Group or Ordovician to Silurian Descon Formation; produced more than 1.4 million lb Cu, 11,000 oz Au, and 15,000 oz Ag. Current resource is 2.78 million tons at 3.3% Zn, 1.7% Cu, 1.14 oz/ton Ag and 0.087 oz/ton Au. The deposit is open to expansion (fig. D-1).

122 **Bokan Mountain**—Numerous U–Th prospects associated with Jurassic peralkaline intrusive complex; from 1955 to 1971, produced more than 120,000 tons ore that graded about 1% U_3O_8. Contains inferred reserves of about 40 million tons of 0.126% Nb and up to 1% REE metals (fig. D-3).

123 **Kemuk Mountain**—Magmatic Fe–Ti deposit hosted in Cretaceous(?) pyroxenite. Inferred reserves of 2.4 billion tons that average 15 to 17% Fe, 2 to 3% TiO_2, and 0.16% P_2O_5 (fig. D-3).

124 **McLeod**—Porphyry Mo deposit that contains quartz-molybdenite fissure veins in quartz-feldspar porphyry. Chip samples contain up to 0.09% Mo (fig. D-2).

125 **Johnson River**—Epigenetic(?) quartz-sulfide stockwork or massive sulfide deposit hosted in volcaniclastic, pyroclastic, and volcanic rocks of Jurassic Talkeetna Formation. Deposit has drilled-out reserves at a $45/ton cutoff with no cut of high Au assays, 1,099,580 tons grading 0.32 oz/ton Au, 0.24 oz/ton Ag, 0.76% Cu, 1.17% Pb, and 8.37% Zn (fig. D-3).

126 **Nimiuktuk River**—Small hill of massive, high-grade barite estimated to contain at least 1.5 million tons barite. Widespread stream-sediment Ba anomalies in area indicate further barite potential (fig. D-1).

127 **Kensington**—Stockwork quartz veins in sheared and chloritized quartz diorite produced 10,900 tons grading 0.18 oz/ton Au prior to 1930. Recent reserve estimates indicate at least 11.5 million tons grading 0.143 oz/ton Au. Subparallel Horrible vein system contains 3.93 million tons grading 0.11 oz/ton Au (fig. D-3).

128 **Jualin**—Five quartz-fissure veins in Cretaceous quartz diorite, more than 15,000 ft of underground workings; produced 48,387 oz Au, mainly prior to 1930. Reserves estimated at 1.07 million tons of 0.349 oz/ton Au (fig. D-3).

129 **Pebble Copper**—Cu–Au porphyry with identified resource of 1 billion tons grading 0.30% Cu and 0.010 oz/ton Au with Mo in the 0.03 to 0.04% range (fig. D-1).

130 **Pogo**—Au hosted in a series (3 discovered to date) of sub-parallel and tabular, gently dipping, quartz vein zones hosted by Paleozoic gneisses intruded by Cretaceous felsic plutonic rocks. Au in the 3 ft to 60 ft thick quartz bodies has a strong correlation with Bi. A 1998 conservative kriged geological resource for the Liese L1 and L2 zones is 9.98 million tons at an average grade of 0.52 oz/ton, for a total of 5,208,000 contained

oz at a 0.1 oz/ton cut-off grade. Other high-grade Au targets have been identified along an 8-mi-long trend southeast of the Liese zones (fig. D-3).

131 **Shotgun Hills**—Quartz stockwork and breccia Au–Cu–As mineralization in a Late Cretaceous rhyolite (granite porphyry) stock. A preliminary, inferred Au resource of 980,000 oz (36.11 million tons at an average grade of 0.027 oz/ton Au) at a 0.016 oz/ton Au cut-off grade, with initial metallurgical tests indicating >90% Au recovery by cyanide leaching (fig. D-3).

132 **Illinois Creek**—Au–Ag–Cu–Pb–Zn–Bi–As-bearing, Fe–Mn oxide (gossan) shear zone crosscutting dolomitic quartzite localized near Cretaceous granitic pluton. Shear zone averages 148 ft wide, has a drill-defined east-west strike length of 11,600 ft, and is open along strike and depth. Produced approximately 50,000 oz Au and 160,000 oz Ag from 1997 to 1998. Proven and probable reserves as of December 31, 1997, calculated using a $330 Au price, totalled 144,200 oz of Au represented by 1.9 million tons of ore at a grade of 0.076 oz of Au and 1.6 oz of Ag/ton (figs. D-1, D-3).

133 **Calder Mine**—Seven recrystallized carbonate units exposed at the apex of a large regional antiform. Drilling has identified 13 million tons of chemically homogenous, high-brightness, high-whiteness marble with a purity of 98 to 99% calcium carbonate. Potential resource of 80 million tons of high-value calcium carbonate (fig. D-2).

134 **Vinasale Mountain**—Intrusive-hosted Au deposit. Au mineralization is associated with arsenopyrite and pyrite in quartz-dolomite hydrothermal breccias, magmatic breccias, and zones of phyllic and silicic alteration hosted within a 69 Ma quartz monzonite stock. Both disseminated and veinlet mineralization exist. An inferred resources of 14.35 million tons grading 0.67 oz/ton, with an 0.03 oz/ton cut-off grade has been identified by drilling in the Central zone (fig. D-3).

135 **Nixon Fork**—Au–Cu skarn deposits; Nixon Fork mine produced 59,500 oz Au from Late Cretaceous skarns associated with quartz monzonite-Devonian limestone contact zones. Underground mining resumed in October 1995, with 124,000 oz of Au, 1,100 tons of Cu, and significant Ag produced through 1998 (fig. D-3).

136 **Von Frank Mountain**—Au and very weak Cu mineralization are associated with chalcopyrite, pyrite, and rare molybdenite within a zone of quartz stockwork veining hosted in a 69 Ma quartz-diorite stock. The stock is a cupola of the larger Von Frank Pluton. Drill intercepts include thicknesses up to 429 ft with an average grade of 0.013 oz/ton Au. Higher grade intercepts include 0.035 oz/ton Au up to 135 ft. (fig. D-3).

137 **Donlin Creek**—Au-mineralization associated with disseminated pyrite and arsenopyrite, sulfide veinlets, and quartz-carbonate-sulfide veinlets in sericite-altered Late Cretaceous to early Tertiary rhyodacitic porphyry dikes and sills. Au mineralization is structurally controlled and refractory. The 1998 core drilling program increased the overall gold resource to 11.5 million oz of Au, with a measured and indicated resource of 5.4 million oz of Au contained in 62.8 million tons of ore grading 0.0876 oz/ton Au (fig. D-3).

APPENDIX E

State and federal agencies and private interest groups involved in mineral development activities, 1998

(Note: The *1999 Alaska Miners Association Handbook and Service Directory* lists technical and professional consultants and companies available for work in Alaska. The report is available for $15 from the Association's Anchorage office.)

STATE OF ALASKA AGENCIES

DEPARTMENT OF COMMUNITY AND ECONOMIC DEVELOPMENT
State Office Building, 9th Fl.
P.O. Box 110800 (mailing)
Juneau, AK 99811-0800
(907) 465-2500
(907) 465-3767 (fax)

Function: Promotes economic development in Alaska.

Division of Trade and Development
550 W. 7th Ave., Suite 1770
Anchorage, AK 99501
(907) 269-8110
(907) 269-8125 (fax)

State Office Building, 9th Fl.
P.O. Box 110804 (mailing)
Juneau, AK 99811-0804
(907) 465-2017

Unit 7, 3677 College Rd.
Fairbanks, AK 99709
(907) 451-3050
(907) 451-3053 (fax)

Function: Primary state government advocacy agency for economic growth. Researches and publishes economic data on Alaska's mining industry. Attracts capital investment by advertising Alaska's resource potential. Provides research staff aid for the Alaska Minerals Commission. The Division also encourages the development of new markets for Alaska resources, increases the visibility of Alaska and its products in the international marketplace, and makes referrals and provides technical assistance to those interested in developing export markets for Alaska-produced or value-added goods and services.

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
410 Willoughby Ave., Ste. 105
Juneau, AK 99801-1795
(907) 465-5010
(907) 465-5065 Commissioner's Office
(907) 465-5060 Public Information
(907) 465-5040 TTY
(907) 465-5097 (fax)

Function: Issues permits for activities (including mining) that affect air or water quality or involve land disposal of wastes. Sets air- and water-quality standards. Inspects, monitors, and enforces environmental quality statutes, regulations, and permits. Reviews all federal permits.

Alaska Department of Environmental Conservation
Anchorage Office
555 Cordova St.
Anchorage, AK 99501-2617
(907) 269-7500
(907) 269-7511 TYY
Permits/Compliance Assistance
1-800-510-2332 (inside Alaska only)
1-800-269-7586 (outside Alaska)
(907) 269-7652(fax)
email: compass@envircon.state.ak.us

Alaska Department of Environmental Conservation
Fairbanks Office
610 University Ave.
Fairbanks, AK 99709-3643
(907) 451-2360
(907) 451-2184 TTY
(907) 451-2188 (fax)

DEPARTMENT OF FISH AND GAME
1255 W. 8th St.
P.O. Box 25526 (mailing)
Juneau, AK 99802-5526
(907) 465-4100
http://www.state.ak.us/local/akpages/FISH.GAME/habitat/hab_home.htm

Habitat and Restoration Division
(907) 465-4105

Function: Protects habitat in fish-bearing fresh waters and manages refuges, sanctuaries, and critical habitats. Requires permits for any work involving: the blockage of fish passage; equipment crossings or operation in fresh waters used by anadromous fish; use, diversion, or pollution of streams containing anadromous fish; construction, exploration, or development work in state game refuges, game sanctuaries, and critical habitat areas.

Northern Regional Office
Habitat and Restoration
1300 College Rd.
Fairbanks, AK 99701-1599
(907) 459-7289

Southcentral Regional Office
Habitat and Restoration
333 Raspberry Rd.
Anchorage, AK 99518-1599
(907) 267-2285

Southeastern Regional Office
Habitat and Restoration Division
802 3rd St., 2nd Fl.
P.O. Box 240020 (mailing)
Douglas, AK 99824-0020
(907) 465-4290

OFFICE OF MANAGEMENT AND BUDGET
Division of Governmental Coordination
240 Main St., Ste. 500
P.O. Box 110030 (mailing)
Juneau, AK 99811-0030
(907) 465-3562

Function: Conducts coordinated State review of permits for mining projects within Alaska's Coastal Management Zone. Provides project design information to applicants for consistency with the policies and standards of the Alaska Coastal Management Program. Coordinates State response to direct federal actions, including proposed regulations, that affect Alaska's mining industry.

Southcentral Regional Office
Frontier Bldg.
3601 C St., Ste. 370
Anchorage, AK 99503-5930
(907) 561-6131
(907) 561-6134 (fax)

DEPARTMENT OF NATURAL RESOURCES
400 Willoughby Ave., 5th Fl.
Juneau, AK 99801-1724
(907) 465-2400
http://www.dnr.state.ak.us

Division of Forestry
550 W. 7th Ave., Suite 1450
Anchorage, AK 99501
(907) 269-8463

Function: Establishes guidelines to manage mining in state forests.

Interior Regional Office
3700 Airport Way
Fairbanks, AK 99709-4699
(907) 451-2660

Coastal Regional Office
400 Willoughby Ave., 3rd Fl.
Juneau, AK 99801-1724
(907) 465-2491

Division of Geological & Geophysical Surveys
794 University Ave., Ste. 200
Fairbanks, AK 99709-3645
(907) 451-5000
(907) 451-5050 (fax)
email: dggs@dnr.state.ak.us
http://wwwdggs.dnr.state.ak.us

Function: Conducts geological and geophysical surveys to determine: the potential of Alaska land for production of metals, minerals, fuels, and geothermal resources; locations and supplies of construction materials; potential geologic hazards to buildings, roads, bridges, and other installations and structures; and other surveys and investigations as will advance knowledge of the geology of Alaska and general geologic inventories. Publishes a variety of reports that contain the results of these investigations. Advises the public and government agencies on geologic issues. Maintains a library of geologic bulletins, reports, and periodicals. Maintains a geologic materials storage facility at Eagle River.

Geologic Materials Center
P.O. Box 772805
Eagle River, AK 99577-2805
(907) 696-0079
(907) 696-0078 (fax)

Division of Mining, Land & Water
550 W. 7th Ave.
Anchorage, AK 99501
(907) 269-8600
(907) 563-1853 (fax)

A. Mining

Function: Principal agency for management of mining and reclamation on state land in Alaska. Maintains a mining office in Fairbanks. Issues property rights to leasable minerals; manages locatable mineral filings. Issues permits for hard-rock and placer-mining activity. Maintains records of mineral locations, permits, and leases. Provides technical, legal, and land-status information. Administers the Alaska Surface Mining Control and Reclamation Act (ASMCRA), which includes permitting and inspection of coal mining activity and reclamation of abandoned mines.

B. Land

Function: Manages surface estate and resources, including materials (gravel, sand, and rock). Handles statewide and regional land-use planning. Issues leases, material-sale contracts, mill-site leases, land-use permits, and easements for temporary use of State land and access roads.

C. Water Management

Function: Manages water resources of the state; issues water-appropriation permits and certificates; responsible for safety of all dams in Alaska; conducts surveys to determine the locations, quantity, and quality of ground and surface water.

Northern Regional Office
3700 Airport Way
Fairbanks, AK 99709-4699
(907) 451-2700
(907) 451-2751 (fax)

Southcentral Regional Office
550 W. 7th Ave.
Anchorage, AK 99501
(907) 269-8552
(907) 269-8913 (fax)

Southeastern Regional Office
400 Willoughby Ave., 4th Fl.
Juneau, AK 99801-1724
(907) 465-3400
(907) 586-2954 (fax)

Division of Parks and Outdoor Recreation
550 W. 7th Ave.
Anchorage, AK 99501
(907) 269-8700

Function: Manages approximately 3,000,000 acres of state park lands primarily for recreational uses, preservation of scenic values, and watershed. Responsible for overseeing mining access, recreational mining activity, and valid mining-claim holdings within state park lands. The Office of History and Archaeology reviews mining permit applications on all lands within the state for impacts to historic resources.

Northern Regional Office
3700 Airport Way
Fairbanks, AK 99709-4699
(907) 451-2695

Southeastern Regional Office
400 Willoughby Ave., 4th Fl.
Juneau, AK 99801-1724
(907) 465-4563

Office of History and Archaeology
550 W. 7th Ave.
Anchorage, AK 99501
(907) 269-8721
email: michelej@dnr.state.ak.us

DEPARTMENT OF PUBLIC SAFETY
450 Whittier St.
P.O. Box 111200 (mailing)
Juneau, AK 99811-1200
(907) 465-4322

Division of Fish and Wildlife Protection
5700 East Tudor Rd.
Anchorage, AK 99507-1225
(907) 269-5509

Function: Enforces state laws, in particular AS Title 16. Protects Alaska's fish and wildlife resources through enforcement of laws and regulations governing use of natural resources within Alaska. These laws are in Alaska Statutes 8, 16, 46, and Alaska Administrative Codes 5, 12, and 20.

DEPARTMENT OF REVENUE
State Office Bldg.
11th Fl., Entrance A
P.O. Box 110400 (mailing)
Juneau, AK 99811-0400
(907) 465-2300
http://www.revenue.state.ak.us

Income and Excise Audit Division
State Office Bldg., 11th Fl., Entrance B
P.O. Box 110420 (mailing)
Juneau, AK 99811-0420
(907) 465-2320
(907) 465-2375 (fax)
email: fish_excise@revenue.state.ak.us
http://www.revenue.state.ak.us/iea/

Function: Issues licenses for mining, production, and sale of minerals. Administers mining-license tax based on net income, including royalties. New mining operations—except sand and gravel mining—can apply for and receive certificates of tax exemption for the first 3 years of operation. (Tax returns must be filed annually.)

UNIVERSITY OF ALASKA

College of Science, Engineering, and Mathematics
Department of Geology & Geophysics
308 Natural Sciences Bldg.
University of Alaska Fairbanks
Fairbanks, AK 99775-5780
(907) 474-7565
(907) 474-5163 (fax)
email: geology@zorba.uafadm.alaska.edu
http://www.uaf.edu/geology

Function: Provides undergraduate and graduate education in geology and geophysics and conducts basic and applied research in geologic sciences. Offers B.S., M.S., and Ph.D. program options in general geology, economic geology, petroleum geology, geophysics, and ice-snow-permafrost geophysics.

School of Mineral Engineering
PO Box 755960
Brooks Building - Rm. 209
University of Alaska Fairbanks
Fairbanks, AK 99775-5960
(907) 474-7366
(907) 474-6994 (fax)
email: FYSME@uaf.edu
http://www.uaf.edu

Function: Provides undergraduate and graduate education programs in geological engineering, mining engineering, mineral preparation engineering, and petroleum engineering. Through research programs conducts laboratory and field studies to promote mineral and energy development.

Mineral Industry Research Laboratory (MIRL)
School of Mineral Engineering
O'Neill Resources Bldg., Rm. 209B
University of Alaska Fairbanks
Fairbanks, AK 99775-7240
(907) 474-7135
(907) 474-5400 (fax)

Function: Conducts applied and basic research in exploration, development, and utilization of Alaska's mineral and coal resources with emphasis on coal characterization, coal utilization, coal upgrading, coal preparation, mineral beneficiation, fine gold recovery, hydrometallurgy, and environmental concerns. Publishes reports on research results and provides general information and assistance to the mineral industry.

Mining Extension Program
Duckering Bldg., Rm. 401
University of Alaska Fairbanks
Fairbanks, AK 99775-5800
(907) 474-7702

Function: Offers prospecting and introductory mineral and mining courses under an open admissions policy.

Mining and Petroleum Training Service
155 Smiths Way, Ste. 101
University of Alaska Anchorage
Soldotna, AK 99669
(907) 262-2788

Function: Provides direct training and assistance to mine operators, service and support companies, and governmental agencies in mine safety and health, mining extension, vocational mine training, and technical transfer. Specialized training services in hazardous materials, first aid and CPR, industrial hygiene, and professional safety education and consulting are available on demand.

FEDERAL AGENCIES

U.S. DEPARTMENT OF THE INTERIOR
Office of the Secretary
1689 C St., Ste. 100
Anchorage, AK 99501-5151
(907) 271-5485
(907) 271-4102

Function: Coordinates the Department of the Interior's policy and stewardship with DOI bureaus for the management of over 200 million acres of public land in Alaska.

Bureau of Land Management
Alaska State Office
Division of Lands, Minerals, and Resources
222 West 7th Ave., #13
Anchorage, AK 99513-7599
(907) 271-5477

Lands & Minerals Group	(907) 271-5049
Public Land Information Center	(907) 271-5960
Anchorage Mineral Resources Team	(907) 271-2454

http://www.ak.blm.gov/

Function: Surface manager of federal public lands (except national parks, wildlife refuges, national monuments, national forests, and military withdrawals). Performs a variety of land administration functions for federal lands. Responsible for many minerals functions on federal lands, including issuing leases for all federal leasable minerals including oil and gas, coal, phosphates, and oil shale. Arranges for sale of minerals other than leasable or materials, such as sand, gravel, or stone. Issues rights-of-way and special use permits. Monitors mining operations to ensure protection of surface resources. Maintains land status plats and issues patents. Records federal mining claims and annual assessment affidavits, and collects annual claim holding fees.

The Anchorage and Juneau Mineral Resources Teams conduct studies that aid environmentally sound development of a viable mineral industry in Alaska. Emphasis is on field programs that identify the type, amount, and distribution of mineral deposits in Alaska. The field information is augmented by studies of beneficiation technologies, economic feasibility, and economic and environmental effects of mineral development. Information is provided to government agencies to aid land-planning and land-use decisions, and to the private sector to identify targets of opportunity for further exploration and/or development.

Anchorage Field Office
6881 Abbott Loop Rd.
Anchorage, AK 99507-2599
(907) 267-1246
(907) 267-1267 (fax)

Glennallen Field Office
PO Box 147
Glennallen, AK 99588
(907) 822-3217
(907) 822-3120 (fax)

Juneau Mineral Information Center
Juneau Mineral Resources Team
100 Savikko Rd.
Mayflower Island
Douglas, AK 99824
(907) 364-1553
(907) 364-1574 (fax)
email: jalbrech@ak.blm.gov
http://juneau.ak.blm.gov

Function: Built around the former U.S. Bureau of Mines library, the Center contains more than 20,000 geologic and minerals publications, provides a variety of on-line land status and mineral information services, and distributes many federal and state publications.

Kotzebue Field Station
PO Box 1049
Kotzebue, AK 99752-1049
(907) 442-3430
(907) 442-2720 (fax)

Nome Field Office
PO Box 925
Nome, AK 99762-0925
(907) 443-2177
(907) 443-3611 (fax)

Northern Field Office
1150 University Ave.
Fairbanks, AK 99709-3899
(907) 474-2300
(907) 474-2251 Public Room

U.S. Fish and Wildlife Service
Region 7 Office
1011 East Tudor Rd.
Anchorage, AK 99503
(907) 786-3542
http://www.r7.fws.gov/

Function: Administers the federal public lands in national wildlife refuges, issues special-use permits for activities on refuges, reviews permits and applications for various mining activities on all private and public lands and waters, and provides information to regulatory agencies on fish and wildlife and their habitat. Makes recommendations to regulatory agencies to mitigate adverse environmental impacts.

U.S. Fish and Wildlife Service
Fairbanks Ecological Services
101 12th Ave., Rm. 110
Box No. 19
Fairbanks, AK 99701
(907) 456-0327
(907) 456-0208 (fax)

U.S. Fish and Wildlife Service
Juneau Fish and Wildlife Service Office
3000 Vintage Blvd., Ste. 201
Juneau, AK 99801-7100
(907) 586-7240
(907) 586- 7154 (fax)

U.S. Fish and Wildlife Service
Anchorage Field Office
605 West 4th Ave., Rm. G-62
Anchorage, AK 99501
(907) 271-2888
(907) 271-2786 (fax)

U.S. Geological Survey
Geological Division
4200 University Dr.
Anchorage, AK 99508-4663
(907) 561-1181

Function: Investigates and reports on the occurrence, quality, quantity, and environmental characteristics of mineral resources, the processes that create and modify them, models for assessing mineral endowment, and the potential impacts of mineral development. A major aspect of this research involves 1:250,000-scale geologic mapping.

Water Resources Division
4230 University Dr., Ste. 201
Anchorage, AK 99508-4664
(907) 786-7100

U.S. Geological Survey Earth Science Information Center
National Mapping Division
4230 University Dr., Ste. 101
Anchorage, AK 99508-4664
(907) 786-7011

Function: Publishes and distributes all available topographic maps of Alaska, digital products, and aerial photography.

National Park Service
Alaska Regional Office
2525 Gambell St.
Anchorage, AK 99503-2892
(907) 257-2626

Function: Administers lands within the national park system in Alaska. Manages oil and gas operations and pre-existing valid mining claims in parklands through plans of operation under Mining in Parks Act, National Park Service regulations, and other applicable federal and state laws and regulations.

U.S. DEPARTMENT OF LABOR
Mine Safety and Health Administration
205 N. 4th St.
Coeur d'Alene, ID 83814-2877
(208) 667-6680
(208) 765-3099 (fax)

Mine Safety and Health Administration
Anchorage Federal Building
US Courthouse - Room 126
222 West 7th Avenue - Box 30
Anchorage, AK 99513
(907) 271-1250
(907) 271-1252 (fax)

Function: Administers health and safety standards to protect the health and safety of metal, nonmetal, and coal miners. Cooperates with the State to develop health and safety programs and develops training programs to help prevent mine accidents and occupationally caused diseases. Under agreement with the Coal Mine Safety and Health Office, the MSHA metal/nonmetal section has assumed responsibility for enforcement and training activities at coal mines in Alaska.

Mine Safety and Health Administration
Coal Mine Safety and Health, District 9
P.O. Box 25367
Denver, CO 80225
(303) 231-5458
(303) 231-5553 (fax)

Function: Administers health and safety standards according to the Code of Federal Regulations to protect the health and safety of coal miners; requires that each operator of a coal mine comply with these standards. Cooperates with the State to develop health and safety programs and develops training programs to help prevent coal or other mine accidents and occupationally caused diseases in the industry.

U.S. DEPARTMENT OF AGRICULTURE
Forest Service
Regional Office, Federal Bldg.
P.O. Box 21628
Juneau, AK 99802-1628

(907) 586-7869
(907) 586-7843 (fax)
email: jkat/r10@fs.fed.us
http://www.fs.fed.us/
http://www.fs.fed.us/r10/

Function: With the Bureau of Land Management, provides joint administration of general mining laws on national forest system lands. Cooperates with Department of Interior agencies in the review and issuance of mineral leases. Issues permits for disposal of sand, gravel, and stone.

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 10 Regional Office
1200 6th Ave., MS OW-130
Seattle, WA 98101
(206) 553-1746

Function: Issues National Pollutant Discharge Elimination System (NPDES) permits under the Clean Water Act to regulate effluent discharges. Implements a compliance enforcement program. Maintains regulatory and review authority over wetland and NEPA/EIS-related issues.

Alaska Operations Office
222 West 7th Ave., Ste. 19
Anchorage, AK 99513-7588
(907) 271-5083

Alaska Operations Office
410 Willoughby Ave., Ste. 100
Juneau, AK 99801
(907) 586-7619

U.S. DEPARTMENT OF THE ARMY
Corps of Engineers
Regulatory Branch
Attention: CEPOA-CO-R
P.O. Box 898
Anchorage, AK 99506-0898
(907) 753-2712 or
(800) 478-2712 (in Alaska only)
(907) 753-2716 (fax)

Function: Regulates structures or work in navigable waters of the U.S. and discharge of dredged or fill material into U.S. waters, including wetlands. Examples of regulated mining activities include construction of berms, dikes, diversions, ponds, overburden stripping, stockpiling, and reclamation activities.

COOPERATIVE STATE-FEDERAL AGENCIES

Alaska Public Lands Information Center
250 Cushman St., Ste. 1A
Fairbanks, AK 99701
(907) 456-0527
(907) 456-0514 (fax)
(907) 456-0532 (TDD for hearing impaired)

Function: Clearinghouse for general information on outdoor recreation in Alaska. Information sources include U.S. Forest Service, U.S. Fish and Wildlife Service, U.S. Bureau of Land Management, U.S. Geological Survey, National Park Service, Alaska Departments of Natural Resources and Fish and Game, and Alaska Division of Tourism.

BOARDS AND COMMISSIONS

Alaska Minerals Commission
Irene Anderson, Chair
c/o Sitnasuak Native Corp.
PO Box 905
Nome, AK 99762
(907) 443-2632
(907) 443-3063 (fax)
email: Ianderson@snc.org

Function: The Minerals Commission was created by the Alaska State Legislature in 1986 to make recommendations to the Governor and the Legislature on ways to mitigate constraints on the development of minerals in Alaska. The Commission has published annual reports since 1987.

Alaska Science & Technology Foundation
Suite 515
4500 Diplomacy Dr.
Anchorage, AK 99508
(907) 272-4333
email: bchaney@astf.org
http://www.astf.org

Function: The Foundation was created to make public funds available for long-term investment in economic development and technological innovation within the state and to improve the health status of its residents. Through the awarding of grants for basic and applied research and development, the Foundation will enhance the state's economy and help build its science and engineering capabilities.

CHAMBERS OF COMMERCE

Alaska State Chamber of Commerce
Suite 201
217 Second St.
Juneau, AK 99801
(907) 586-2323
(907) 463-5515 (fax)
email: asccjuno@ptialaska.net
http://www.alaskachamber.com

Function: The State Chamber of Commerce researches and formulates positions on Alaskan resource development. Recommendations for consideration are submitted to the State Chamber of Commerce board of directors.

Anchorage Chamber of Commerce
441 West 5th Ave., Ste. 300
Anchorage, AK 99501
(907) 272-2401
email: info@anchoragechamber.org
http://www.anchoragechamber.org

Greater Fairbanks Chamber of Commerce
250 Cushman St., Ste. 2D
Fairbanks, AK 99701-4665
(907) 452-1105
(907) 456-6968
email: cocstaff@mosquitonet.com
http://www.fairbankschamber.org

Juneau Chamber of Commerce
3100 Channel Dr., Suite 300
Juneau, AK 99801
(907) 463-3488
(907) 463-3489 (fax)
email: jchcomm@ptialaska.net
http://www.ptialaska.net/~juneaucc

PUBLIC INTEREST GROUPS AND ASSOCIATIONS

Alaska Clean Water Alliance
P.O. Box 1441
Haines, AK 99827
(907) 766-2296
(907) 766-2290 (fax)

Alaska Miners Association Inc.
Statewide Office
3305 Arctic Blvd., Suite 202
Anchorage, AK 99503
(907) 563-9229
(907) 563-9225 (fax)
email: ama@alaskaminers.org
http://www.alaskaminers.org

Denali Branch of AMA
P.O. Box 1000
Healy, AK 99743
(907) 683-2226, ext. 719

Fairbanks Branch of AMA
P.O. Box 81906
Fairbanks, AK 99708-1906
(907) 458-8951

Juneau Branch of AMA
3100 Channel Dr., #2
Juneau, AK 99801
(907) 463-4489

Kenai Branch of AMA
P.O. Box 3503
Soldotna, AK 99669-3503
(907) 262-4472

Nome Branch of AMA
P.O. Box 1107
Nome, AK 99762-1107
(907) 443-5168

Alaska Women in Mining
Juneau Branch
P.O. Box 34044
Juneau, AK 99804
(907)586-4161

Anchorage Branch
P.O. Box 240334
Anchorage, AK 99524
(907) 276-6762

Alaskans for Juneau
P.O. Box 22428
Juneau, AK 99802-2428
(907) 463-5065

American Institute of Professional Geologists
8703 Yates Dr., Suite 200
Westminster, CO 80030
(303) 412-6205
(303) 412-6219 (fax)
email: aipg@aipg.org
http://www.aipg.org

Alaska Section
2250 Woodworth Circle
Anchorage, AK 99517
(907) 258-9059

Earthjustice Legal Defense Fund
325 Fourth St.
Juneau, AK 99801
(907) 586-2751
(907) 463-5891 (fax)
email: eajusak@earthjustice.org
http://www.earthjustice.org

Earthjustice Legal Defense Fund
11 East Main St., Ste. C
Bozeman, MT 59715
(406) 586-9699
(406) 586-9695 (fax)
email: eajusmt@earthjustice.org
http://www.earthjustice.org

National Wildlife Federation
750 W. Second Ave., Ste. 200
Anchorage, AK 99501
(907) 258-4800
(907) 258-4811 (fax)

Northern Alaska Environmental Center
218 Driveway St.
Fairbanks, AK 99701-2806
(907) 452-5021
(907) 452-3100
email: naec@mosquitonet.com
http://www.mosquitonet.com/~naec

Northwest Mining Association
10 North Post St., Ste. 414
Spokane, WA 99201
(509) 624-1158
(509) 623-1241 (fax)
email: nwma@nwma.org
http://www.nwma.org

Resource Development Council for Alaska, Inc.
121 W. Fireweed Ln., Ste. 250
Anchorage, AK 99503
(907) 276-0700
(907) 276-3887 (fax)
email: Resources@akrdc.org

Society for Mining, Metallurgy, and Exploration Inc.
P.O. Box 625002
Littleton, CO 80162-5002
(303) 973-9550
(303) 973-3845 (fax)

Secretary Treasurer-John Rishel
1505 Atkinson Dr.
Anchorage, AK 99504
(907) 337-0511

Southeast Alaska Conservation Council (SEACC)
419 6th St., Ste. 328
Juneau, AK 99801
(907) 586-6942
(907) 463-3312 (fax)
email: info@seacc.org
http://www.seacc.org

Trustees for Alaska
725 Christensen Dr., Ste. 4
Anchorage, AK 99501
(907) 276-4244
email: ecolaw@trustees.org

ORGANIZED MINING DISTRICTS

Circle Mining District
P.O. Box 80674
Fairbanks, AK 99708
(907) 488-6058

Fairbanks Mining District
105 Dunbar
Fairbanks, AK 99701
(907) 456-7642

Fortymile Miners Association
P.O. Box 3885
Palmer, AK 99645
(907) 746-4404

Haines Mining District
P.O. Box 149
Haines, AK 99827
(907) 766-2228

Iditarod Mining District
John A. Miscovich
General Delivery
Flat, AK 99584

Kantishna Mining District
Valerie Mundt
P.O. Box 84608
Fairbanks, AK 99708
vmundt@hotmail.com

Livengood-Tolovana Mining District
P.O. Box 55698
North Pole, AK 99705
(907) 488-6453

Valdez Creek Mining District
P.O. Box 875534
Wasilla, AK 99687-5534

Yentna Mining District
13004 NE 9th Ave.
Vancouver, WA 98685

MINERAL EDUCATION PROGRAMS

ALASKA MINERAL AND ENERGY RESOURCE EDUCATION FUND (AMEREF)
c/o RDC
121 W. Fireweed Ln., Ste. 250
Anchorage, AK 99503

(907) 276-0070
(907) 276-3887 (fax)

Function: A nonprofit corporation formed to help prepare students in grades K-12 to make informed decisions about Alaska's mineral and energy resources.

Alaska Department of Education
801 W. 10th St., Ste. 200
Juneau, AK 99801-1894
(907) 465-2826

NATIVE REGIONAL CORPORATIONS

AHTNA INC.
Main Office
P.O. Box 649
Glennallen, AK 99588-0649
(907) 822-3476
(907) 822-3495 (fax)
http://www.ahtna-inc.com/

Anchorage Office
406 Fireweed Ln., Ste. 204
Anchorage, AK 99503-2649
(907) 274-7662
(907) 274-6614 (fax)

THE ALEUT CORP.
4000 Old Seward Hwy., Ste. 300
Anchorage, AK 99503-6087
(907) 561-4300
(907) 563-4328 (fax)
email:aleut@alaska.net
http://www.aleutcorp.com

ARCTIC SLOPE REGIONAL CORP.
P.O. Box 129
Barrow, AK 99723-0129
(907) 852-8633
(907) 852-5733 (fax)
http://www.asrc.com/

Anchorage Office
301 Arctic Slope Ave., Ste. 300
Anchorage, AK 99518-3035
(907) 349-2369
(907) 349-5476 (fax)

BERING STRAITS NATIVE CORP.
P.O. Box 1008
Nome, AK 99762-1008
(907) 443-5252
(907) 443-2985 (fax)
email: land@beringstraits.com
http://www.beringstraits.com/

BRISTOL BAY NATIVE CORP.
800 Cordova St.
P.O. Box 100220 (mailing)
Anchorage, AK 99510-0220
(907) 278-3602
(907) 276-3924 (fax)
http://touchngo.com/BBNC/

CALISTA CORP.
301 Calista Court, Suite A
Anchorage, AK 99518-3028
(907) 279-5516
(907) 272-5060 (fax)
http://www.calistacorp.com/

CHUGACH ALASKA CORP.
560 E. 34th Ave., Ste. 200
Anchorage, AK 99503-4196
(907) 563-8866
(907) 561-6961 (fax)
email: rrogers@chugach-ak.com
http://www.chugach-ak.com/

COOK INLET REGION INC.
and its subsidary North Pacific Mining Corporation
P.O. Box 93330
Anchorage, AK 99509-3330
(907) 274-8638
(907) 263-5190 (fax)
http://www.ciri.com/

DOYON LTD.
201 1st Ave., Ste. 300
Fairbanks, AK 99701
(907) 459-2000
(907) 459-2060 (fax)
http://www.doyon.com/

KONIAG INC.
4300 B St., Ste. 407
Anchorage, AK 99503
(907) 561-2668
(907) 562-5258 (fax)
http://www.koniag.com/

NANA REGIONAL CORP.
P.O. Box 49
Kotzebue, AK 99752
(907) 442-3301
(907) 442-2866 (fax)
http://www.nana-online.com/

Anchorage Office
1001 E. Benson Blvd.
Anchorage, AK 99508
(907) 265-4100
(907) 265-4123 (fax)

SEALASKA CORP.
One Sealaska Plaza, Ste. 400
Juneau, AK 99801
(907) 586-1512
(907) 586-2304 (fax)
http://www.sealaska.com/

APPENDIX F
Alaska Mining Websites

Mining Companies

Abacus Minerals Corp.	http://www.abacusminerals.com/
Almaden Resources Corp.	http://www.almadenresources.com/
Atna Resources Ltd.	http://www.atna.com/
Avalon Development Corp.	http://www.alaska.net/~avalon/
Barrick Gold Co.	http://www.barrick.com/
Blue Desert Mining Inc.	http://www.bluedesert.com/
Boliden Limited	http://www.boliden.ca/
Camnor Resources Ltd.	http://www.northair.com/camnor/
Coeur d'Alene Mines Corp. (Coeur Alaska Inc.)	http://www.coeur.com/
Cominco Ltd. (Cominco Alaska Inc.)	http://www.cominco.com/
Engineer Mining Corp.	http://www.emcorp.yk.ca/
Exploration Orbite VSPA Inc. (Yellow Eagle Mining Co.)	http://www.explorationorbite.com/Index.html
Golden Phoenix Minerals Inc.	http://www.golden-phoenix.com/
Grayd Resource Corp.	http://www.grayd.com/
Hecla Mining Co.	http://www.hecla-mining.com/
Hyder Gold Inc.	http://www.bmts.bc.ca/hgi/
Inco Ltd.	http://www.incoltd.com/
Intercontinental Mining Corp.	http://www.usmining.com/
International Freegold Mineral Development Inc.	http://www.augoldgroup.com/itf.html
Kennecott Exploration Co.	http://www.kennecottexploration.com/
Kennecott Minerals Co.	http://www.kennecottminerals.com/
Kinross Gold Corp.	http://www.kinross.com/
Newmont Mining Corp.	http://www.newmont.com/
North Star Exploration Inc.	http://www.northstarexploration.com/
NovaGold Resources Inc.	http://www.nrigold.com/
Pacific Bay Minerals Ltd.	http://www.pacific-bay.com/
Placer Dome Inc.	http://www.placerdome.com/
Rimfire Minerals Corp.	http://rimfire.bc.ca/
Rubicon Minerals Corp.	http://www.rubiconminerals.com/home.htm
Silverado Gold Mines Ltd.	http://www.silverado.com/
Teck Corp.	http://www.teckcorp.ca/
Tri-Valley Corp.	http://www.tri-valleycorp.com/
Troymin Resources Ltd.	http://www.troymin.com/
Usibelli Coal Mine Inc.	http://www.usibelli.com/
Ventures Resource Corp.	http://www.venturesresource.com/
Viceroy Exploration Corp.	http://www.viceroyresource.com/
Western Keltic Mines Inc.	http://www.keltic.com/

Alaska Native Corporations

Ahtna Inc.	http://www.ahtna-inc.com/
Aleut Corp.	http://www.aleutcorp.com/
Arctic Slope Regional Corp.	http://www.asrc.com/
Bering Straits Native Corp.	http://www.beringstraits.com/
Bristol Bay Native Corp.	http://touchngo.com/BBNC/
Calista Corp.	http://www.calistacorp.com/
Chugach Alaska Corp.	http://www.chugach-ak.com/
Cook Inlet Region Inc.	http://www.ciri.com/
Doyon Ltd.	http://www.doyon.com/
Koniag Inc.	http://www.koniag.com/
NANA Regional Corp.	http://www.nana-online.com/
Sealaska Corp.	http://www.sealaska.com/

APPENDIX G
U.S. Customary Units/Metric Units Conversion Chart

To convert from:	To:	Multiply by:
	Weight/Mass	
ounces (avoirdupois)	grams	28.350
ounces (troy)	grams	31.1035
pounds	kilograms	0.4536
short tons	metric tons	0.9072
grams	ounces (avoirdupois)	0.03527
	ounces (troy)	0.03215
kilograms	pounds	2.2046
metric tons	short tons	1.1023
	Length	
miles	kilometers	1.6093
yards	meters	0.9144
feet	meters	0.3048
	centimeters	30.48
	millimeters	304.80
inches	centimeters	2.54
	millimeters	25.4
kilometers	miles	0.6214
meters	yards	1.0936
	feet	3.2808
millimeters	feet	0.00328
	inches	0.03937
centimeters	inches	0.3937
	Area	
square miles	square kilometers	2.590
acres	square meters	4,046.873
	hectares	0.4047
square yards	square meters	0.8361
square feet	square meters	0.0929
square inches	square centimeters	6.4516
	square millimeters	645.16
square kilometers	square miles	0.3861
square meters	acres	0.000247
	square feet	10.764
	square yards	1.196
hectares	acres	2.471
	square meters	10,000.00
square centimeters	square inches	0.155
square millimeters	square inches	0.00155
	Volume	
cubic yards	cubic meters	0.7646
cubic feet	cubic meters	0.02832
cubic inches	cubic centimeter	16.3871
cubic meters	cubic yards	1.3079
	cubic feet	35.3145
cubic centimeters	cubic inches	0.06102
gallons (U.S.)	liters	3.7854
liters	gallons (U.S.)	0.2642
milliliters	ounces (fluid)	0.03381
ounces (fluid)	milliliters	29.5735

Temperature conversions:
From degrees Fahrenheit to degrees Celsius, subtract 32 and multiply by 5/9.
From degrees Celsius to degrees Fahrenheit, multiply by 9/5 and add 32.

SOURCE: *Minerals Today,* February 1993, U.S. Bureau of Mines.

APPENDIX H
Primary metals production in Alaska, 1880-1998[a]

Year	Gold		Silver		Mercury		Antimony		Tin		Lead		Zinc		Platinum		Copper		Chromium	
	(oz)	(m$)	(oz)	(t$)	(flask[b])	(t$)	(lb)	(t$)	(lb)	(t$)	(tons)	(t$)	(tons)	(t$)	(oz)	(t$)	(lb)	(m$)	(tons)	(t$)
1880-1899	1,153,889	23.85	496,101	329.0	--	--	--	--	--	--	250	17.0	--	--	--	--	--	--	--	--
1900	395,030	8.17	73,300	45.5	--	--	--	--	--	--	40	3.4	--	--	--	--	--	--	--	--
1901	335,369	6.93	47,900	28.6	--	--	--	--	--	--	40	3.4	--	--	--	--	250,000	0.04	--	--
1902	400,709	8.28	92,000	48.5	--	--	--	--	30,000	8.0	30	2.5	--	--	--	--	360,000	0.04	--	--
1903	420,069	8.68	143,600	77.8	--	--	--	--	50,000	14.0	30	2.5	--	--	--	--	1,200,000	0.16	--	--
1904	443,115	9.16	198,700	114.9	--	--	--	--	28,000	8.0	30	2.5	--	--	--	--	2,043,586	0.28	--	--
1905	756,101	15.63	132,174	80.2	--	--	--	--	12,000	4.0	30	2.6	--	--	--	--	4,805,236	0.75	--	--
1906	1,066,030	22.04	203,500	136.4	--	--	--	--	68,000	38.6	30	3.4	--	--	--	--	5,871,811	1.13	--	--
1907	936,043	19.35	149,784	98.8	--	--	--	--	44,000	16.8	30	3.2	--	--	--	--	6,308,786	1.26	--	--
1908	933,290	19.29	135,672	71.9	--	--	--	--	50,000	15.2	40	3.4	--	--	--	--	4,585,362	0.61	--	--
1909	987,417	20.41	147,950	76.9	--	--	--	--	22,000	7.6	69	5.9	--	--	--	--	4,124,705	0.54	--	--
1910	780,131	16.13	157,850	85.2	--	--	--	--	20,000	8.3	75	6.6	--	--	--	--	4,241,689	0.54	--	--
1911	815,276	16.85	460,231	243.9	--	--	--	--	122,000	52.8	51	4.5	--	--	--	--	27,267,778	3.40	--	--
1912	829,436	17.14	515,186	316.8	--	--	--	--	260,000	119.6	45	4.1	--	--	--	--	29,230,491	4.82	--	--
1913	755,947	15.63	362,563	218.9	--	--	--	--	100,000[c]	44.1[c]	6	0.6	--	--	--	--	21,659,958	3.35	--	--
1914	762,596	15.76	394,805	218.3	--	--	--	--	208,000	66.6	28	1.3	--	--	--	--	21,450,628	2.85	--	--
1915	807,966	16.70	1,071,782	543.3	--	--	520,000	W	204,000	78.8	437	41.1	--	--	--	--	86,509,312	15.14	--	--
1916	834,068	17.24	1,379,171	907.4	--	--	1,200,000	W	278,000	121.0	820	113.2	--	--	8	0.7	119,654,839	29.50	--	--
1917	709,049	14.66	1,239,150	1,020.6	--	--	500,000	W	200,000	123.3	852	146.6	--	--	53	5.5	88,793,400	24.40	1,100	W
1918	458,641	9.48	847,789	847.8	--	--	540,000	W	136,000	118.0	564	80.1	--	--	284	36.6	69,224,951	17.10	1,100	W
1919	455,984	9.42	629,708	705.3	--	--	--	--	112,000	73.4	687	72.1	--	--	569	73.7	47,220,771	8.80	--	--
1920	404,683	8.37	953,546	1,039.7	--	--	--	--	32,000	16.1	875	140.0	--	--	1,478	160.1	70,435,363	13.00	--	--
1921	390,558	8.07	761,085	761.1	45	1.5	--	--	8,000	2.4	759	68.3	--	--	40	2.7	57,011,597	7.40	--	--
1922	359,057	7.42	729,945	729.9	--	--	--	--	2,800	0.9	377	41.5	--	--	29	2.8	77,967,819	10.50	--	--
1923	289,539	5.98	814,649	668.1	--	--	--	--	3,800	1.6	410	57.4	--	--	--	--	85,920,645	12.60	--	--
1924	304,072	6.29	669,641	448.6	2	0.3	--	--	14,000	7.1	631	100.9	--	--	28	2.6	74,074,207	9.70	--	--
1925	307,679	6.36	698,259	482.4	44	3.6	W	W	28,600	15.4	789	140.6	--	--	10	1.2	73,055,298	10.30	--	--
1926	324,450	6.70	605,190	377.0	22	1.7	W	W	16,000	10.4	778	124.4	--	--	3,570	274.5	67,778,000	9.49	--	--
1927	286,720	5.97	350,430	215.0	--	--	--	--	53,400	34.0	1,008	127.0	--	--	--	--	55,343,000	7.25	--	--
1928	331,140	6.85	351,730	187.0	--	--	--	--	82,000	41.0	1,019	118.0	--	--	120	9.0	41,421,000	5.96	--	--
1929	375,438	7.76	472,900	252.0	4	0.5	--	--	77,200	35.0	1,315	166.0	--	--	475	32.0	40,570,000	7.13	--	--
1930	408,983	8.47	408,570	157.3	--	--	--	--	29,400	9.3	1,365	136.5	--	--	--	--	32,651,000	4.24	--	--
1931	459,000	9.51	352,000	102.0	15	1.2	--	--	8,200	2.0	1,660	126.0	--	--	393	14.0	22,614,000	1.88	--	--
1932	493,860	10.20	234,050	66.0	8	0.5	--	--	--	--	1,260	75.6	--	--	--	--	8,738,500	0.55	--	--
1933	469,286	9.70	154,700	55.0	--	--	--	--	5,800	2.3	1,157	85.6	--	--	605	18.6	29,000	0.02	--	--
1934	537,281	8.78	154,700	100.0	--	--	--	--	8,200[c]	4.3	839	62.1	--	--	2,555	85.6	121,000	0.06	--	--
1935	469,495	16.43	286,600	206.0	--	--	--	--	98,800	49.8	815	65.2	--	--	8,685	259.6	15,056,000	1.25	--	--
1936	540,580	18.92	484,306	375.0	--	--	--	--	226,000	105.0	941	86.6	--	--	5,654	241.9	39,267,000	3.72	--	--
1937	627,940	21.98	494,340	382.0	--	--	962,000	147.6	372,000[c]	202.3[c]	823	97.1	--	--	9,823	313.4	36,007,000	4.74	--	--
1938	662,000	23.17	479,853	310.0	8	0.6	444,000	54.8	210,000	89.1	994	91.5	--	--	41,000	2,460.0	29,760,000	2.98	--	--
1939	676,780	23.68	201,054	136.5	--	--	210,000	25.9	66,000	38.0	937	88.1	--	--	33,900	2,034.0	278,500	0.04	--	--
1940	755,900	26.45	191,679	136.3	156[c]	130.9	306,000	42.8	92,000	52.0	840	72.0	--	--	28,886	1,093.0	110,000	0.02	--	--
1941	692,314	24.23	199,700	142.0	W	W	774,000	87.3	93,600[c]	61.0[c]	742	58.0	--	--	22,630	813.0	144,000	0.02	--	--
1942	487,657	17.07	135,200	96.0	W	W	316,000	41.0	5,600	2.5	523	44.0	--	--	22,000	779.0	48,000	0.01	--	--
1943	99,583	3.49	31,700	22.0	786	153.4	368,000	33.3	2,000[c]	1.0[c]	200	22.0	--	--	27,900	1,020.0	54,000	0.01	5,564	186.3
1944	49,296	1.73	15,240	10.8	841	165.0	70,080	30.0	--	--	44	5.8	--	--	33,616	2,017.0	4,000	0.01	1,845	64.6
1945	68,117	2.38	9,983	6.2	275	180.0	W	W	--	--	11	1.8	--	--	22,949	1,377.0	10,000	0.01	--	--
1946	226,781	7.93	41,793	26.3	699	68.7	W	W	--	--	115	25.0	--	--	22,882	1,418.7	4,000	0.01	--	--
1947	279,988	9.79	66,150	46.3	127	10.6	52,000	16.1	2,000	2.2	255	76.5	226	0.15	13,512	1,351.2	24,000	0.06	--	--
1948	248,395	8.69	67,341	58.7	108	7.8	88,000	29.3	10,000	10.8	317	88.9	226	0.15	13,741	1,209.2	28,000	0.07	--	--
1949	229,416	8.03	36,056	32.4	102	7.9	88,000	31.3	114,000	100.8	49	11.2	226	0.15	17,169	1,545.2	7,700	0.02	--	--

APPENDIX H
continued

Year	Gold (oz)	Gold (m$)	Silver (oz)	Silver (t$)	Mercury (flask[b])	Mercury (t$)	Antimony (lb)	Antimony (t$)	Tin (lb)	Tin (t$)	Lead (tons)	Lead (t$)	Zinc (tons)	Zinc (t$)	Platinum (oz)	Platinum (t$)	Copper (lb)	Copper (m$)	Chromium (tons)	Chromium (t$)
1950	289,285	10.13	52,638	48.0	W	W	W	W	158,000	170.3	144	27.5	--	--	W	W	12,000	0.03	--	--
1951	239,628	8.38	32,870	29.8	28	W	1,718,000	2,061.6	138,000	198.0	21	7.2	--	--	W	W	2,000	0.01	--	--
1952	240,571	8.42	31,825	28.7	40	W	740,000	1,406.0	180,000	243.9	1	0.3	--	--	W	W	--	--	W	W
1953	253,771	8.88	35,387	32.1	1,023	270.0	W	W	98,000	105.9	--	--	--	--	17,489	1,696.4	--	--	W	W
1954	248,511	8.70	33,694	31.8	1,046	276.0	--	--	398,000	409.9	--	--	--	--	18,790	1,615.9	8,000	0.02	2.953	208.0
1955	249,294	8.73	33,693	30.4	43	12.0	--	--	172,000	182.5	1	0.3	--	--	17,253	1,466.5	2,000	0.01	7,082	625.3
1956	204,300	7.33	26,700	24.1	3,414	837.0	134,400	150.0	--	--	1	0.3	--	--	17,934	1,829.3	--	--	7,200	711.5
1957	215,467	7.54	28,862	26.0	5,461	1,349.0	71,120	80.0	--	--	9	3.0	--	--	15,479	1,377.6	--	--	4,207	431.0
1958	186,000	6.53	24,000	22.0	3,380	774.0	--	--	--	--	--	--	--	--	10,284	647.9	10,000	0.03	--	--
1959	171,000	5.99	22,000	20.0	3,750	852.0	--	--	--	--	--	--	--	--	10,698	770.3	72,000	0.04	--	--
1960	180,000	6.30	23,000	21.0	4,450	938.0	W	W	--	--	--	--	--	--	13,352	1,054.8	82,000	0.04	--	--
1961	114,228	3.99	--	--	4,080	816.0	--	--	--	--	--	--	--	--	16,133	1,274.5	184,000	0.06	--	--
1962	165,142	5.78	--	--	3,843	711.0	--	--	--	--	--	--	--	--	12,520	951.5	--	--	--	--
1963	99,000	3.48	6,100	9.0	400	76.0	W	W	--	--	5	1.1	--	--	12,322	961.1	--	--	--	--
1964	58,000	2.05	7,200	6.0	303	95.0	46,400	60.3	--	--	--	--	--	--	13,010	1,522.2	22,000	0.01	--	--
1965	43,000	1.51	5,000	6.0	180	104.0	46,400	60.3	--	--	14	4.0	--	--	10,365	1,368.2	64,000	0.03	--	--
1966	27,325	0.96	7,000	9.0	185	101.0	16,000	19.2	--	--	19	4.3	--	--	9,033	1,273.7	--	--	--	--
1967	22,948	0.80	6,000	9.0	161	79.0	20,000	22.0	--	--	--	--	--	--	7,888	1,238.4	W	W	--	--
1968	21,000	0.81	3,000	6.5	156	78.0	6,000	6.0	--	--	--	--	--	--	8,433	1,652.9	--	--	--	--
1969	21,227	0.88	2,000	4.2	238	100.0	94,000	100.0	--	--	2	0.5	--	--	8,500	2,321.2	--	--	--	--
1970	38,400	1.38	4,000	7.0	3,100	1,260.0	365,000	410.0	--	--	--	--	--	--	6,015	925.1	W	W	--	--
1971	34,000	1.36	2,000	4.0	675	285.0	68,000	74.0	34,000	47.0	--	--	--	--	5,407	625.6	--	--	--	--
1972	8,639	0.56	1,000	2.0	125	44.0	160,000	185.0	W	W	--	--	--	--	6,478	985.5	--	--	--	--
1973	15,000	1.86	13,200	22.0	70	52.5	420,000	515.0	10,000	12.0	6	2.0	--	--	5,524	964.5	--	--	--	--
1974	16,000	2.56	1,500	3.5	70	52.5	80,000	95.0	W	W	--	--	--	--	4,351	1,067.0	--	--	--	--
1975	14,980	3.35	6,000	25.0	--	--	120,000	145.0	22,000	60.0	--	--	--	--	3,726	623.3	--	--	--	--
1976	22,887	6.90	6,500	24.0	--	--	160,000	165.0	W	W	14	6.0	--	--	3,212	515.2	--	--	8,000[c]	1,200.0[c]
1977	50,000	7.80	8,000	20.0	--	--	W	W	W	W	--	--	--	--	6,891	1,119.8	--	--	--	--
1978	60,000	12.00	6,000	50.0	--	--	W	W	W	W	--	--	--	--	--	--	--	--	--	--
1979	65,000	18.00	6,500	93.0	--	--	100,000	125.0	100,000	830.0	--	--	--	--	--	--	--	--	--	--
1980	75,000	32.00	7,500	111.0	--	--	--	--	120,000	984.0	31	29.0	--	--	--	--	--	--	--	--
1981	134,200	55.20	13,420	111.3	W	W	--	--	106,000	700.0	--	--	--	--	900	200.0	--	--	--	--
1982	175,000	69.90	22,000	198.0	--	--	--	--	198,000	1,365.0	--	--	--	--	W	W	--	--	--	--
1983	169,000	67.60	33,200	332.0	--	--	22,400	45.0	215,000	1,100.0	--	--	--	--	W	W	--	--	--	--
1984	175,000	62.13	20,000	159.0	5	1.5	135,000	225.8	225,000	400.0	--	--	--	--	W	W	--	--	--	--
1985	190,000	61.18	28,500	171.0	27	10.0	65,000	98.0	300,000	650.0	--	--	--	--	--	--	--	--	--	--
1986	160,000	60.80	24,000	134.4	12	2.8	45,000	67.5	340,000	890.0	--	--	--	--	W	W	--	--	--	--
1987	229,707	104.51	54,300	391.0	--	--	--	--	288,000	460.0	--	--	--	--	W	W	--	--	--	--
1988	265,500	112.84	47,790	282.0	W	W	--	--	300,000	950.0	--	--	--	--	25	13.8	--	--	--	--
1989	284,617	108.70	5,211,591	27,300.0	--	--	--	NR	194,000	672.0	9,585	7,700.0	19,843	29,400.0	--	--	--	--	--	--
1990	231,700	89.20	10,135,000	50,675.0	--	--	--	--	57,000	200.0	44,220	30,954.0	181,200	253,680.0	--	--	--	--	--	--
1991	243,900	88.29	9,076,854	39,110.0					6,800	22.1	69,591	33,403.7	278,221	278,221.0	15	5.3	--	--	--	--
1992	262,530	88.46	9,115,755	34,913.0	--	--	--	--	1,500	5.9	68,664	31,585.0	274,507	301,957.7	--	--	--	--	--	--
1993	191,265	68.64	5,658,958	24,333.0	--	--	--	--	21,000	50.6	38,221	13,759.6	268,769	236,516.7	3	1.2	--	--	--	--
1994	182,100	70.29	1,968,000	10,391.0	--	--	--	--	--	--	36,447	25,512.9	329,003	296,102.7	5	2.1	--	--	--	--
1995	141,882	56.04	1,225,730	6,655.0	--	--	--	--	--	--	58,098	34,428.6	359,950	345,552.0	1	0.4	--	--	--	--
1996	161,565	62.62	3,676,000	19,078.0	--	--	--	--	--	--	70,086	52,284.0	366,780	361,646.0	2	0.8	780,000	0.80	--	--
1997	590,516	207.29	14,401,165	70,710.0	--	--	--	--	--	--	88,560	49,593.0	419,097	494,888.0	--	--	3,440,000	3.54	--	--
1998	594,191	174.62	14,856,000	82.2	--	--	--	--	--	--	102,887	49.4	549,348	505.4	--	--	3,800,000	2.85	--	--
Other[c]	--	--	--	--	1,438	--	--	--	--	--	--	--	--	--	71,946	17,091.9	--	--	--	--
TOTAL	**34,724,420**	**2,444.47**	**95,342,918**	**299,594.6**	**40,945**	**9,910.5**	**11,070,800**	**6,655.1**	**7,287,700**	**12,523.5**	**612,659**	**282,279.3**	**3,047,396**	**2,598,470.0**	**668,548[d]**	**65,815.7**	**1,381,813,932**	**235.23**	**39,051**	**3,426.7**

[a] From published and unpublished state and federal documents.
[b] 76-lb flask.
[c] Not traceable by year.
[d] Crude platinum; total production of refined metal is about 575,000 oz.

W = Withheld.
-- = Not reported.
t$ = Thousand dollars.
m$ = Million dollars.

APPENDIX I

Production of industrial minerals, coal, and other commodities in Alaska, 1880-1997

Year	Coal		Sand and gravel		Rock[a]		Barite		Other[b]
	s. tons	m$	s. tons	m$	s. tons	m$	s. tons	t$	$
1880-1899[c]	19,429	0.14	--	--	7,510	0.04	--	--	--
1900	1,200[d]	0.02[d]	--	--	510	0.01	--	--	--
1901	1,300[d]	0.02[d]	--	--	700	0.01	--	--	500
1902	2,212[d]	0.02[d]	--	--	800	0.01	--	--	255
1903	1,447	0.01	--	--	920	0.01	--	--	389
1904	1,694	0.01	--	--	1,080	0.02	--	--	2,710
1905	3,774	0.02	--	--	970	0.02	--	--	740
1906	5,541	0.02	--	--	2,863	0.03	--	--	19,965
1907	10,139	0.05		--	3,899	0.03	--	--	54,512
1908	3,107[d]	0.01[d]	--	--	2,176	0.03	--	--	81,305
1909	2,800	0.02	--	--	1,400	0.01	--	--	86,027
1910	1,000[d]	0.01[d]	--	--	W	W	--	--	96,408
1911	900[d]	0.01[d]	--	--	W	W	--	--	145,739
1912	355[d]	0.01[d]	--	--	W	W	--	--	165,342
1913	2,300	0.01	--	--	W	W	--	--	286,277
1914	1,190	0.01	--	--	W	W	--	--	199,767
1915	1,400	0.03	--	--	W	W	--	--	205,061
1916	12,676	0.05	--	--	W	W	--	--	326,731
1917	54,275	0.27	--	--	W	W	--	--	203,971
1918	75,816	0.41	--	--	W	W	--	--	171,452
1919	60,894	0.35	--	--	50,014	0.29	--	--	214,040
1920	61,111	0.36	--	--	37,044	0.27	--	--	372,599
1921	76,817	0.49	--	--	59,229	0.31	--	--	235,438
1922	79,275	0.43	--	--	54,251	0.30	--	--	266,296
1923	119,826	0.76	--	--	83,586	0.41	--	--	229,486
1924	99,663	0.56	--	--	35,294	0.26	--	--	348,728
1925	82,868	0.40	--	--	32,193	0.19	--	--	454,207
1926	87,300	0.46	--	--	33,283	0.20	--	--	423,000
1927	104,300	0.55	--	--	41,424	0.22	--	--	--
1928	126,100	0.66	--	--	63,347	0.31	--	--	--
1929	100,600	0.53	--	--	54,766	0.26	--	--	194,000
1930	120,100	0.63	--	--	66,234	0.33	--	--	157,300
1931	105,900	0.56	--	--	59,175	0.29	--	--	108,000
1932	102,700	0.53	--	--	54,167	0.27	--	--	223,400
1933	96,200	0.48	--	--	56,291	0.28	--	--	--
1934	107,500	0.45	--	--	64,234	0.36	--	--	46,155
1935	119,425	0.50	--	--	74,049	0.38	--	--	46,755
1936	136,593	0.57	--	--	76,379	0.38	--	--	45,807
1937	131,600	0.55	--	--	50,057	0.25	--	--	147,048
1938	159,230	0.62	--	--	189,090	0.21	--	--	125,302
1939	143,549	0.60	42,332	0.02	--	--	--	--	--
1940	170,174	0.88	515,011	0.10	--	--	--	--	--
1941	241,250	0.97	530,997	0.09	--	--	--	--	1,367,000
1942	246,600	0.99	W	W	--	--	--	--	1,124,000
1943	289,232	1.84	W	W	--	--	--	--	--
1944	352,000	2.37	712,496	0.50	--	--	--	--	2,350,309
1945	297,644	1.87	W	W	--	--	--	--	5,910,704
1946	368,000	2.36	W	W	--	--	--	--	2,005,241
1947	361,220	2.55	W	W	219,000	1.00	--	--	5,927,319
1948	407,906	2.79	W	W	67,341	0.33	--	--	1,257,699
1949	455,000	3.60	W	W	W	W	--	--	7,181,886
1950	421,455	3.03	3,050,020	2.38	W	W	--	--	2,100,000
1951	494,333	3.77	6,818,000	3.54	W	W	--	--	3,600,000
1952	648,000	5.77	6,817,800	3.54	W	W	--	--	9,052,000
1953	861,471	8.45	7,689,014	5.08	47,086	0.17	--	--	1,231,350
1954	666,618	6.44	6,639,638	6.30	283,734	0.47	--	--	1,572,150
1955	639,696	5.76	9,739,214	8.24	265,740	0.29	--	--	1,552,427
1956	697,730	6.37	9,100,000	8.30	50,000	0.02	--	--	1,551,500
1957	842,338	7.30	6,096,000	8.79	528,000	1.95	--	--	2,751,000
1958	759,000	6.93	4,255,000	3.87	615,000	2.07	--	--	695,000
1959	602,000[d]	5.88[d]	5,600,000	5.10	54,000	0.20	--	--	1,338,000

Year	Coal		Sand and gravel		Rock[a]		Barite		Other[b]
	s. tons	m$	s. tons	m$	s. tons	m$	s. tons	t$	$
1960	669,000[d]	5.95[d]	5,892,000	5.35	80,000	0.30	- -	- -	975,000
1961	650,000[d]	5.87[d]	5,241,000	4.19	- -	- -	- -	- -	- -
1962	675,000[d]	6.41[d]	5,731,000	5.36	- -	- -	- -	- -	- -
1963	853,000	5.91	16,926,000	22.01	W	W	W	W	2,589,000
1964	745,000	5.01	26,089,000	18.49	W	W	W	W	4,912,000
1965	860,000[d]	5.88[d]	29,959,000	33.93	W	W	W	W	5,296,000
1966	927,000	6.95	17,457,000	21.79	W	W	44,000	350.0	6,167,000
1967	930,000	7.18	22,300,000	26.25	W	W	W	W	4,924,000
1968	812,000[d]	5.03[d]	17,515,000	20.73	W	W	91,000	W	4,117,000
1969	728,000[d]	4.65[d]	16,205,000	18.62	1,954,000	3.90	90,000	850.0	5,163,000
1970	786,000[d]	5.28[d]	20,375,000[d]	26.07[d]	6,470,000	10.01	134,000[d]	1,875.0	7,994,000
1971	748,000[d]	5.05[d]	26,391,000	41.99	2,658,000	5.07	102,000[d]	1,075.0	- -
1972	720,000[d]	6.26[d]	14,187,000	15.21	652,000	3.01	W	W	- -
1973	700,000[d]	6.23[d]	19,350,000	19.01	5,967,000	12.00	112,000	1,792.0	12,846,000
1974	700,000	7.34	118,740,000[d]	240.94[d]	5,484,000	12.95	110,000	1,895.0	14,495,000
1975	766,000	7.81	48,145,000	95.78	8,877,000	26.65	2,000[d]	30.0	12,731,000
1976	705,000	8.00	74,208,000[d]	204.73[d]	6,727,000	20.09	W	W	14,019,000
1977	780,000[d]	12.00[d]	66,126,000	134.25	4,008,000	17.47	- -	- -	14,486,000
1978	750,000	15.00	51,100,000	122.00	3,437,000	14.65	22,000	750.0	- -
1979	750,000	16.00	50,900,000	104.90	3,650,000	15.45	20,000	800.0	930,000
1980	800,000	16.00	40,000,000	86.00	3,700,000	15.40	50,000	2,000.0	97,500
1981	800,000	17.60	46,000,000	88.20	4,200,000	19.30	- -	- -	256,000
1982	830,000	18.00	45,000,000	91.00	3,400,000	15.60	- -	- -	150,000
1983	830,000	18.00	50,000,000	105.00	5,270,000	25.00	- -	- -	242,000
1984	849,161	23.75	27,000,000	95.00	2,700,000	16.00	- -	- -	875,875
1985	1,370,000	39.73	28,184,080	112.06	2,500,000	12.00	- -	- -	559,000
1986	1,492,707	40.10	20,873,110	75.76	4,200,000	20.32	- -	- -	384,800
1987	1,508,927	42.35	16,696,374	42.66	1,805,000	11.62	- -	- -	388,400
1988	1,551,162	44.30	17,264,500	48.75	3,600,000	24.65	- -	- -	389,000
1989	1,452,353	41.46	14,418,000	39.88	2,914,000	20.34	- -	- -	1,492,000
1990	1,576,000	44.99	15,013,500	40.82	3,200,000	22.10	- -	- -	400,000
1991	1,540,000	39.00	14,160,011	45.45	3,000,000	22.50	- -	- -	462,000
1992	1,531,800	38.30	14,599,746	42.20	2,900,000	22.97	- -	- -	430,000
1993	1,586,545	38.10	13,162,402	40.64	3,561,324	26.21	- -	- -	465,000
1994	1,490,000	36.75	13,518,321	40.95	3,843,953	27.04	- -	- -	459,500
1995	1,640,000	41.30	9,847,550	30.89	2,811,152	22.13	- -	- -	182,500
1996	1,481,000	38.00	9,890,463	32.20	3,000,045	23.56	- -	- -	200,000
1997	1,446,000	38.05	13,800,000	51.91	3,200,000	20.00	- -	- -	217,000
1998	1,339,000	35.23	12,363,450	57.28	1,636,200	14.04	- -	- -	215,000
Other[d]	- -	- -	- -	- -	2,300,000[e]	W	79,000	W	- -
TOTAL	**52,614,428**	**890.93**	**1,142,234,029**	**2,404.1**	**117,092,510**	**534.82**	**856,000**	**11,417.00**	**177,761,872**

[a]Building-stone production figures for 1880-1937 are for the southcentral and interior regions of Alaska only.
[b]Includes 2.4 million lb U_3O_8 (1955-71); 505,000 tons gypsum (1905-26); 286,000 lb WO_3 (intermittently 1916-80); 94,000 lb asbestos (1942-44); 540,000 lb graphite (1917-18 and 1942-50); and undistributed amounts of zinc, jade, peat, clay, soapstone, miscellaneous gemstones, and other commodities (1880-1993).
[c]Production not traceable by year.
[d]When state (territorial) and federal figures differ significantly, state figures are used. Figures for sand and gravel production in 1974 show state estimates (118,740,000 s. tons; 240.94 m$) and federal (42,614,000 s. tons; 88.96 m$). The federal estimate was not added to total production.
[e]Marble quarried on Prince of Wales Island, southeastern Alaska (1900-41).
m$ = Million dollars.
t$ = Thousand dollars.
- - = Not reported.
W = Withheld.

Unsurveyed Candidate Areas (not in order of priority)

1. Arctic (Ambler schist belt)
2. Candle
3. Nome - east
4. Bonnifield
5. Farewell
6. Boulder Creek
7. Iditarod (Flat Donlin)
8. Sleetmute
9. Yentna
10. 60-Mile Butte
11. Wiseman
12. Chandalar
13. DeLong Mountains
14. Haines/Klukwan
15. Chichagof
16. Gold Hill
17. Steese/Upper Chena
18. Skwentna
19. Sheep Mountain
20. King Mountain
21. Mentasta/Slana
22. Cantwell/Windy Pass
23. Paxson/McLaren
24. Tonsina/Tiekel
25. Goodpaster
26. Tanana/Melozi
27. Willow Creek
28. Yenlo Hills
29. Upper Kobuk River
30. Baird Mountains
31. Marshall
32. Delta
33. Pebble
24. Jurassic Arc
35. Ladue
36. Shotgun Hills
37. Shaw Creek

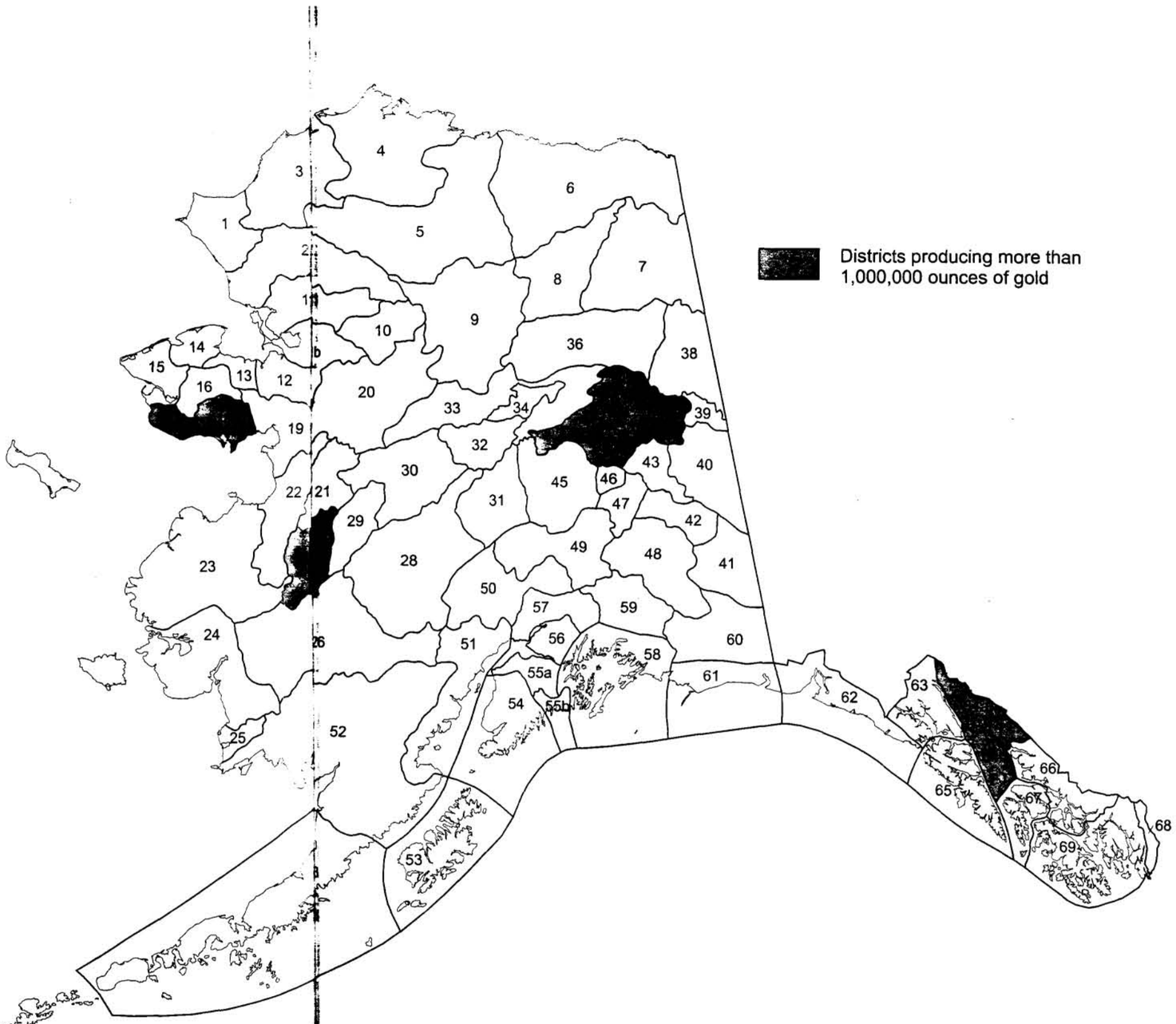
Geophysical Data Areas and Release Dates

A. Circle, 1994
B. Fairbanks, 1998
C. Nome - west, 1994
D. Nyac, 1994
E. Valdez Creek, 1994
F. Richardson, 1995
G. Rampart/Manley, 1996, 1997
H. Chulitna, 1997
I. Petersville, 1997
J. Stikine, 1997
K. Ruby, 1998
L. Iron Creek, 1998
M. Koyukuk, 1998
N. Livengood, 1999
O. Fortymile, 1999
P. Ketchikan, 1999

Geophysical Data to be Released Early 2000

R. Salcha, North Pogo area

	Mining districts[a]	Total production	Placer	Lode
1.	Lisburne district	0	0	0
2.	Noatak district	7,800	7,800	0
3.	Wainwright district	0	0	0
4.	Barrow district	0	0	0
5.	Colville district	0	0	0
6.	Canning district	0	0	0
7.	Sheenjek district	0	0	0
8.	Chandalar district	65,860	48,460	17,400
9.	Koyukuk–Nolan district	342,489	342,489	0
10.	Shungnak district	15,000	15,000	0
11.	Squirrel River district	40,600	40,600	0
12.	Fairhaven–Inmachuk district	348,079	348,079	0
13.	Candle district	253,720	253,720	0
14.	Serpentine district	4,220	4,220	0
15.	Port Clarence district	41,931	41,931	0
16.	Kougarok district	175,775	175,775	0
17.	Cape Nome district	4,978,487	4,978,487	0
18.	Council–Solomon district	1,046,513	1,019,513	27,000
19.	Koyuk district	84,132	84,132	0
20.	Koyukuk–Hughes district	45,188	245,188	0
21.	Kaiyuh district	62,109	5,400	56,709
22.	Anvik district[b]	0	0	0
23.	Marshall district	124,506	124,506	0
24.	Bethel district	42,945	42,945	0
25.	Goodnews Bay district	29,700	29,700	0
26.	Aniak–Tuluksak district[c]	578,708	578,708	0
27.	Iditarod district	1,562,674	1,559,744	2,930
28.	McGrath–McKinley district	329,199	132,300	196,899
29.	Innoko–Tolstoi district	723,290	723,134	156
30.	Ruby-Poorman district	477,171	477,171	0
31.	Kantishna district	99,307	91,401	7,906
32.	Hot Springs district	576,082	576,082	0
33.	Gold Hill–Melozitna district[d]	11,920	11,920	0
34.	Rampart district	196,699	196,699	0
35.	Tolovana–Livengood district	527,978	527,978	0
36.	Yukon Flats district	0	0	0
37.	Circle district	1,049,157	1,049,157	0
38.	Black district	0	0	0
39.	Eagle district	52,000	52,000	0
40.	Fortymile district	542,396	542,192	204
41.	Chisana–Nabesna district	144,500	78,000	66,500
42.	Tok district	280	280	0
43.	Goodpaster district	2,350	2,050	300
44.	Fairbanks district	9,548,846	8,145,550	1,403,296
45.	Bonnifield district	82,650	75,950	6,700
46.	Richardson district	120,940	118,640	2,300
47.	Delta River district	6,740	6,740	0
48.	Chistochina district	181,461	181,461	0
49.	Valdez Creek district	508,554	506,973	1,581
50.	Yentna–Cache Creek district	197,357	197,357	0
51.	Redoubt district	105	105	0
52.	Iliamna–Bristol Bay district	1,570	1,570	0
53.	Kodiak–Unga Island district	112,400	4,800	107,600
54.	Homer district	16	16	0
55.	Hope–Sunrise and Seward districts	132,319	67,319	65,000
56.	Anchorage district[e]	0	0	0
57.	Willow Creek–Hatcher Pass district	666,024	57,024	609,000
58.	Prince William Sound district	137,715	15	137,300
59.	Nelchina district	14,115	14,115	0
60.	Nizina district	148,500	148,500	0
61.	Yakataga district	18,040	18,040	0
62.	Yakutat district[f]	13,200	2,200	11,000
63.	Porcupine district	80,969	80,969	0
64.	Juneau and Admiralty districts	7,464,360	80,000	7,384,360
65.	Chichagof district	770,000	0	770,000
66.	Petersburg–Sumdum district	15,000	15,000	0
67.	Kupreanof district	0	0	0
68.	Hyder district	219	219	0
69.	Ketchikan district	62,000	4,000	58,000
	SUBTOTAL	35,065,865	24,133,324	10,932,541
	Undistributed[g]	154,142		
	Total Production (troy ounces)	**35,220,007**		



[a]Mining district names and boundaries revised slightly from those defined by Ransome and Kerns (1954) and Cobb (1973). Sources of data: U.S. Geological Survey, U.S. Bureau of Mines, and Territorial Department of Mines records 1880–1930; U.S. Mint records 1930–1969; State of Alaska production records 1970–1999. Entries of "0" generally mean no specific records are available.
[b]Included in Marshall district.
[c]Includes Georgetown and Donlin districts.
[d]Includes Tanana area.
[e]Placer gold included in Willow Creek–Hatcher Pass district.
[f]Includes lode production from Glacier Bay and placer production from Lituya Bay district.
[g]Production that cannot be credited to individual districts due to lack of specific records or for reasons of confidentiality.