"Changes for the better" and "resurgence" are probably the best phrases that apply to Alaska's mining industry in 1997. Without question, Alaska is experiencing a world-class boom in mining that has attracted attention across the globe. In response, Alaska is open and ready for business and working to expedite the permit process. The Knowles-Ulmer administration is committed to working in partnership with the mining industry to do development right, which means protecting Alaska's air, water, and fish and wildlife habitat. Many factors account for the resurgence in Alaska's mineral industry including world-class quantities of minerals in vast unexplored areas strategically located in the global marketplace. These factors, coupled with mining innovations that make developments more cost effective and aggressive marketing of Alaska's enormous reserves, spell a bright future and prominent role for mining in Alaska's economy.

Governor Tony Knowles

1997 was another productive and exciting year for mining in Alaska. For the second consecutive year the total value of Alaska's mineral industry topped $1 billion. Two new hardrock gold mines were commissioned in 1997—at Illinois Creek and at Fort Knox—and hardrock gold production exceeded that from placer mining for the first time in over 50 years. Greens Creek Mine reached full production in 1997, and the giant Red Dog Mine will soon increase production thanks to assistance from the Alaska Industrial Development and Export Authority. The year demonstrated continued optimism about Alaska's potential as a good place to do business. Strong exploration expenditure rates, which have led to permitting mines such as the Kensington, exciting new discoveries like Pogo, and doubling of the resource base at Pebble Copper and Donlin Creek, demonstrate Alaska's bright future for mineral development. (Photo shows Commissioner Debby Sedwick holding one of the first gold bars poured at the Fort Knox Mine near Fairbanks, December 20, 1996. The mine produces about 1,000 ounces per day and employs 250 local workers.)

Deborah B. Sedwick
Commissioner, Department of Commerce & Economic Development

Despite falling metal prices and market scandals, there were a record number of mining locations established in 1997 in Alaska, many by junior companies whose existence depends on the ability to raise money on the stock markets. It is encouraging that the political climate and incentives in Alaska continue to attract the exploration investment necessary for the future well-being of the mining industry.

The administration recognizes that exploration and future production are vital, and that all aspects of the mining industry are important in Alaska, especially in rural areas where mineral development provides well-paid jobs. Much of Alaska is underexplored, but by acting as a partner to industry, providing data and assistance, the State looks forward to a bright future for the industry.

John T. Shively
Commissioner, Department of Natural Resources
EXECUTIVE SUMMARY

In 1997 the total investment in exploration and development in Alaska, together with the value of mineral production, was $1.162 billion, up almost 13 percent from the $1.03 billion the previous year. Exploration investment of $57.8 million was up 30 percent from 1996, production of $936.2 million was up 59 percent; these increases more than offset the 57 percent decline in development expenditure from $394 million in 1996 to $168.4 million in 1997.

Exploration was widespread throughout the state, and highlights include the addition of new reserves at the Red Dog Mine near Kotzebue, doubling of the resource at Pebble Copper near Iliamna and at Donlin Creek near Iditarod, identification of a 4.5-million-ounce high-grade gold resource at Pogo near Delta, and many exciting prospects throughout interior and southeastern Alaska.

Development projects included work on the mine and port at Red Dog, on the pit and leach-pad at Illinois Creek south of Galena, on the tanks and tailings dam at Fort Knox, and permitting at the Kensington Mine near Juneau, which is now fully permitted.

Zinc production from Greens Creek and Red Dog accounted for 53 percent of all commodity value, followed by gold (22 percent), silver (8 percent), sand and gravel (6 percent), lead (5 percent), coal (4 percent), and rock, copper, peat, and jade. For the first time in over 50 years the amount of gold derived from hardrock mines (481,439 ounces) exceeded the 109,077 ounces derived from placer mines.

Alaska's Mineral Industry 1997, Special Report 52, is the 17th annual report produced jointly by the Departments of Natural Resources and Commerce & Economic Development through their Division of Geological & Geophysical Surveys (DGGS) and the Division of Trade & Development (DTD) respectively. To save space, avoid confusion, and to conform to the units (ounces, tons, feet, and miles) that most miners use, metric units have been eliminated in this report. A conversion table can be found inside the back cover.

The report is designed to provide current, accurate, and technically reliable information about Alaska's mineral industry. The publication is made possible by the voluntary cooperation of government agencies, private industry, and individuals that provide information about their activities and operations. Without them this report could not exist, and we are grateful for their help.
DGGS publications may be inspected at the following locations. Address mail orders to the Fairbanks office.

Alaska Division of Geological & Geophysical Surveys
ATTN: Geologic Communications
794 University Avenue, Suite 200
Fairbanks, Alaska 99709-3645

Elmer E. Rasmuson Library
University of Alaska Fairbanks
Fairbanks, Alaska 99775-1005

University of Alaska Anchorage Library
3211 Providence Drive
Anchorage, Alaska 99508

Alaska Resource Library
222 W. 7th Avenue
Anchorage, Alaska 99513-7589

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.
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Alaska's Mineral Industry
1997
R.C. Swainbank, K.H. Clautice, and J.L. Nauman

INTRODUCTION

This report summarizes Alaska's mineral activity during the 1997 calendar year and is made possible by information provided by individuals, companies, and government agencies in response to questionnaires mailed by the Division of Geological & Geophysical Surveys (DGGS) in the Department of Natural Resources (DNR). It is a cooperative venture between DGGS and the Division of Trade and Development (DTD) in the Department of Commerce & Economic Development (DCED), with the assistance of the DNR Division of Mining & Water Management (DMWM).

The cumulative value of mineral production, exploration investment, and development expenditures in 1997 was $1.16 billion (table 1; fig. 1), a slight advance over the $1.03 billion total in 1996. Exploration increased a healthy 30 percent over the 1996 value to $57.8 million, a level not seen since 1990. Although 1997 development expenditures of $168.4 million were only 43 percent of the 1996 value, production from the mines under development or expansion in 1996 resulted in a 1997 value of $936.2 million, an increase of 59 percent over the previous year, more than offsetting the decreased development investment.

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Exploration (expenditure)</th>
<th>Development (expenditure)</th>
<th>Production (value)</th>
<th>Total</th>
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<td>1981</td>
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<td>$26.4</td>
<td>$188.6</td>
<td>$291.0</td>
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<tr>
<td>1982</td>
<td>45.0</td>
<td>41.6</td>
<td>196.4</td>
<td>283.0</td>
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<tr>
<td>1983</td>
<td>34.1</td>
<td>27.8</td>
<td>232.4</td>
<td>294.3</td>
</tr>
<tr>
<td>1984</td>
<td>22.8</td>
<td>53.6</td>
<td>199.4</td>
<td>275.8</td>
</tr>
<tr>
<td>1985</td>
<td>9.2</td>
<td>34.1</td>
<td>226.6</td>
<td>269.9</td>
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<tr>
<td>1986</td>
<td>8.9</td>
<td>24.3</td>
<td>198.5</td>
<td>231.7</td>
</tr>
<tr>
<td>1987</td>
<td>15.7</td>
<td>100.3</td>
<td>202.4</td>
<td>318.4</td>
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<tr>
<td>1988</td>
<td>45.5</td>
<td>275.0</td>
<td>232.2</td>
<td>552.7</td>
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<tr>
<td>1989</td>
<td>47.8</td>
<td>134.3</td>
<td>277.0</td>
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<td>1997</td>
<td>57.8</td>
<td>168.4</td>
<td>936.2</td>
<td>1,162.4</td>
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</tbody>
</table>

TOTAL $636.5 | $1,570.9 | $6,613.8 | $8,821.2

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

Figure 1. Alaska's mineral industry total value, 1981-97.

1Alaska Division of Trade and Development, 751 Old Richardson Hwy., Suite 205, Fairbanks, Alaska 99701-4948.
2Alaska Division of Geological & Geophysical Surveys, 794 University Avenue, Suite 200, Fairbanks, Alaska 99701-3645.
3Alaska Division of Trade & Development, 9th Floor, State Office Bldg., Juneau, Alaska 99811.
Exploration highlights in 1997 include continued success at gold prospects such as True North, Ester Dome, and Golden Summit near Fairbanks, Donlin Creek and Golden Horn near Flat, and Pogo near Delta. Substantial base metal and polymetallic exploration was reported at Red Dog and in the Ambler district near Kotzebue, throughout the eastern interior region, at the Pebble Copper prospect near Iliamna, and at the Niblack Mine on Prince of Wales Island.

Development was reported at Red Dog, Fort Knox, the Kensington gold mine near Juneau, and the Calder Bay limestone deposit on Prince of Wales Island.

Two new hardrock gold mines began production in 1997. Fort Knox, near Fairbanks, began commercial production in March, and the Illinois Creek Mine near Galena poured the first commercial gold in September. During 1997 the Greens Creek polymetallic mine reached full production, the Red Dog zinc-lead mine increased production, and the Nixon Fork gold-copper mine near McGrath maintained production. Placer gold was mined in Nome by Alaska Gold Co., in the Fairbanks area by Cripple Creek joint venture and by Polar Mining, and throughout the state by dozens of smaller operations. Usibelli Coal Mine near Healy was again the only operational coal mine in the state.

Note that there is a vague line between exploration and development, and we rely on the companies to make that distinction. The value of production is calculated using the average spot price of the metal on the London Metal Exchange multiplied by the quantity of the metals produced, as reported by companies. It 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.

**EMPLOYMENT**

Table 2 and figure 2 show the reported employment in the mineral industry in Alaska in 1997.

The total of 3,862 jobs represents a 3 percent increase over the previous year and is considered to be conservative because many of the questionnaires were not returned. The decrease in development jobs was due to the Fort Knox and Illinois Creek mines becoming operational, and this is reflected in the increase in lode gold employment. There was also an increase in employment in all hardrock mines in 1997 due to the increased production at Red Dog and Greens Creek, and the commissioning of the Fort Knox and Illinois Creek mines.

Employment in coal mining and in rock production was essentially the same as in 1996, but due to extensive road building, particularly in the southcentral and southeastern regions of the state, there was a substantial increase in employment in sand and gravel production in 1997.

**EXPLORATION**

Reported exploration expenditures statewide in 1997 were $57.8 million, up 30 percent from the $44.6 million invested in 1996. Over half of the activity was in the

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<td>277</td>
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<tr>
<td>TOTAL</td>
</tr>
<tr>
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<td>3,426</td>
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</tr>
<tr>
<td>3,737</td>
</tr>
<tr>
<td>3,862</td>
</tr>
</tbody>
</table>

*aCalculated on a 260-day work year.

bRevised estimate based on new company data.

N/A = Not available.

- - Not reported.
eastern interior region, followed by the southwestern and southeastern regions. Precious metals were the most sought after targets, closely followed by polymetallic projects. Highlights include: a doubling of the reserves at the Paalaaq deposit at Red Dog; doubling of the resource at Pebble Copper near Iliamna to almost 11 million ounces of gold and 6 billion pounds of copper; increasing the gold resource of Donlin Creek to 6.7 million ounces; and the definition of a 4.5-million-ounce geologic reserve at the Pogo gold deposit near Delta.

DEVELOPMENT

Development investment of $168.4 million in 1997 was less than half of the $394.0 million in 1996, and was predominantly at the Red Dog Mine and port site associated with the production rate increase project due to be phased in beginning in 1998. Smaller development projects were reported at most of the active mines in the state, including Illinois Creek, Nixon Fork, Usibelli Coal, Fort Knox, Greens Creek, Kensington, and dozens of placer gold mines.

![Diagram of 1997 mineral industry employment by category]

Figure 2. 1997 mineral industry employment by category.

PRODUCTION

The reported gross value of Alaska's mineral products in 1997 was $936.2 million, up 59 percent from the $590.4 million reported in 1996. Increased efficiency of metal recovery at Red Dog, and a higher price for the zinc product translated to a $102 million operating profit for Cominco, up from $25 million in 1996. The Greens Creek Mine achieved targeted production levels, as did the Nixon Fork Mine. Although plagued by lack of water, the Illinois Creek gold-silver mine managed to reach commercial production by September, and the new Fort Knox mine added a little over 1,000 ounces of gold per day to the state's production.

GOVERNMENT ACTIONS

Four government-sponsored airborne geophysical surveys were completed in 1997. DGGS contracted for one in the Talkeetna Mountains and one in the Ruby-Poorman area, and the U.S. Bureau of Land Management (BLM) contracted for a survey of the Wiseman area in the Brooks Range, and together with the City of Wrangell surveyed the islands around that community. These detailed surveys are thought to be the first in the nation funded by a federal agency.

In a cooperative venture, the U.S. Geological Survey and the DNR Division of Mining and Water Management began an intensive water-quality baseline study of the whole drainage basin of the Fortymile River. It is hoped that the results will provide factual data for future policy decisions.

Several mines received awards for superlative reclamation, including Cambior Alaska's Valdez Creek Mine, which won the prestigious national "Health of the Land Award" from BLM.

The Mental Health Lands Trust issue was finally settled in 1997 when an appeal by some plaintiffs to the State Supreme Court was denied.

ACKNOWLEDGMENTS

The authors wish to thank all the companies, agencies, and individuals who responded to the questionnaires. Without your voluntary and timely information this report would not be possible.

Joni Robinson of DGGS mailed 1,092 questionnaires in November 1997, and received 194 replies. Dick Swainbank, with the help of Karen Clautice, Jan Nauman, and Mitch Henning, prepared the body of the text and appendices. The cover design is by Ann-Lillian Schell and graphic illustrations are by Alfred Sturmann, Joni Robinson, and Gail Davidson. 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.
EXPLORATION

Figure 3 shows the regions of the state described in this and subsequent sections.

Statewide exploration expenditures reported in 1997 were $57.8 million, up 30 percent from the $44.6 million spent in 1996. Tables 3 and 4 show the regional distribution and the commodities sought, and figure 4 is a graphic 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.

Table 5 is a summary of mining claim activity during the last 8 years. Slightly fewer state mining claims and slightly more federal mining claims were staked in 1997 than in 1996, but the number of active claims, both federal and state, increased in 1997.

Most of the increase in federal mining claims was in the eastern Alaska Range and in the vicinity of the city of Wrangell, where BLM and the City sponsored an airborne geophysical survey in 1997.

Other areas of the state where large numbers of claims were staked include the Ambler–Survey Pass area of the Brooks Range (Kennecott), Pebble Copper near Iliamna and near Ruby (Cominco), Pogo near Delta Junction (WGM), and in the vicinity of Paxson in the central Alaska Range.

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

<table>
<thead>
<tr>
<th></th>
<th>Northern</th>
<th>Western</th>
<th>Eastern interior</th>
<th>South-central</th>
<th>South-western</th>
<th>Alaska Peninsula</th>
<th>South-eastern</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exploration expenditures</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Base metals</td>
<td>$1,700,000</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$</td>
<td>$1,700,000</td>
</tr>
<tr>
<td>Polymetallic</td>
<td>1,525,000</td>
<td>147,000</td>
<td>10,062,000</td>
<td>73,000</td>
<td>2,200,000</td>
<td>--</td>
<td>8,340,000</td>
<td>22,347,000</td>
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<tr>
<td>Precious metals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Placer</td>
<td>210,000</td>
<td>215,000</td>
<td>366,000</td>
<td>37,000</td>
<td>296,000</td>
<td>--</td>
<td>126,000</td>
<td>1,250,000</td>
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<tr>
<td>Lode</td>
<td>--</td>
<td>2,635,000</td>
<td>19,659,500</td>
<td>255,000</td>
<td>8,801,000</td>
<td>--</td>
<td>360,000</td>
<td>31,710,500</td>
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<tr>
<td>Coal and peat</td>
<td>--</td>
<td>--</td>
<td>200,000</td>
<td>520,000</td>
<td>--</td>
<td>--</td>
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<td>720,000</td>
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<tr>
<td>Industrial minerals</td>
<td>15,000</td>
<td>--</td>
<td>10,000</td>
<td>30,000</td>
<td>--</td>
<td>25,000</td>
<td>--</td>
<td>80,000</td>
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<tr>
<td>Othera</td>
<td>--</td>
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<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>$3,450,000</td>
<td>$2,997,000</td>
<td>$30,297,500</td>
<td>$915,000</td>
<td>$11,297,000</td>
<td>$25,000</td>
<td>$8,826,000</td>
<td>$57,807,500</td>
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</tbody>
</table>

**Exploration employment**

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<tr>
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<th>Northern</th>
<th>Western</th>
<th>Eastern interior</th>
<th>South-central</th>
<th>South-western</th>
<th>Alaska Peninsula</th>
<th>South-eastern</th>
<th>Total</th>
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<tr>
<td>Employment</td>
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<td></td>
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<td></td>
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<td></td>
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<tr>
<td>Workdays</td>
<td>7,410</td>
<td>4,227</td>
<td>36,170</td>
<td>1,177</td>
<td>14,768</td>
<td>30</td>
<td>8,268</td>
<td>72,050</td>
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<tr>
<td>Workyearsb</td>
<td>29</td>
<td>16</td>
<td>136</td>
<td>5</td>
<td>57</td>
<td>0</td>
<td>34</td>
<td>277</td>
</tr>
<tr>
<td>Number of companies reportingc</td>
<td>7</td>
<td>18</td>
<td>61</td>
<td>15</td>
<td>10</td>
<td>1</td>
<td>11</td>
<td>123</td>
</tr>
</tbody>
</table>

- Not reported.
aJade, platinum, gemstones.
bBased on 260-day workyear.
Exploration highlights in 1997 were the expansion of reserves at the deep Paalaaq deposit near Red Dog, definition of a 4.5 million ounce gold resource at Pogo, doubling of the resource at Pebble Copper to about 11 million ounces of gold, almost doubling the resource at Donlin Creek to 6.7 million ounces of gold, and the addition of about 450,000 ounces to the gold reserve at Fort Knox.

**NORTHERN REGION**

Exploration expenditures reported in this region in 1997 were $3.45 million, as compared with $1.25 million in 1996.

**METALS**

At the Red Dog Mine near Kotzebue about 29,300 feet of exploration drilling continued on the new Paalaaq massive sulfide deposit discovered in 1996 at depths of 400 to 1,200 feet below surface. The new base-metal orebody is 100 to 200 feet thick, with some thicker sections over an area of 600 by 3,300 feet, and is open in all directions, with the north and west being the most favorable areas for increased reserves. This orebody has been named Paalaaq, after a distinguished Native elder. Table 6 shows the reserves as of December 31, 1997. These new reserves make the Red Dog the largest zinc orebody ever known in the world.

Farther east, NANA and Kennecott drilled about 5,000 feet on the Bornite Mississippi Valley-type copper deposit, and following the airborne surveys of 1996 Kennecott staked a very large group of claims in the Ambler-Survey Pass area. The company also continued exploration in the Ambler copper belt, which contains its Arctic Kuroko-type deposit (see Appendix D, number 9).

---

**Figure 4. 1997 exploration expenditures by commodity.**

**Table 4. Reported exploration expenditures in Alaska by commodity, 1982–97**

<table>
<thead>
<tr>
<th>Year</th>
<th>Base metals</th>
<th>Polymetallic*</th>
<th>Precious metals</th>
<th>Industrial minerals</th>
<th>Coal and peat</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1982</td>
<td>$31,757,900</td>
<td>N/A</td>
<td>$10,944,100</td>
<td>$2,900,000</td>
<td>$15,300</td>
<td>$45,617,300</td>
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<tr>
<td>1983</td>
<td>9,758,760</td>
<td>N/A</td>
<td>20,897,555</td>
<td>1,338,454</td>
<td>70,000</td>
<td>34,133,069</td>
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<tr>
<td>1984</td>
<td>4,720,596</td>
<td>N/A</td>
<td>14,948,554</td>
<td>2,065,000</td>
<td>279,500</td>
<td>22,283,650</td>
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<tr>
<td>1985</td>
<td>2,397,600</td>
<td>N/A</td>
<td>6,482,400</td>
<td>270,000</td>
<td>-</td>
<td>9,150,000</td>
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<tr>
<td>1986</td>
<td>1,847,660</td>
<td>N/A</td>
<td>6,107,084</td>
<td>790,000</td>
<td>-</td>
<td>8,914,744</td>
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<td>1987</td>
<td>2,523,350</td>
<td>N/A</td>
<td>11,743,711</td>
<td>1,150,000</td>
<td>31,000</td>
<td>15,734,061</td>
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<td>1988</td>
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<td>45,468,800</td>
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<td>1989</td>
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<td>5,000</td>
<td>47,762,596</td>
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<td>57,185,394</td>
<td>321,000</td>
<td>97,000</td>
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<td>4,789,500</td>
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<tr>
<td>1993</td>
<td>910,000</td>
<td>5,676,743</td>
<td>23,382,246</td>
<td>125,000</td>
<td>-</td>
<td>30,257,489</td>
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<tr>
<td>1994</td>
<td>600,000</td>
<td>8,099,054</td>
<td>18,815,560</td>
<td>25,544,000</td>
<td>810,000</td>
<td>31,103,614</td>
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<tr>
<td>1995</td>
<td>2,770,000</td>
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<td>20,883,100</td>
<td>100,000</td>
<td>3,000</td>
<td>34,306,100</td>
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<tr>
<td>1996</td>
<td>1,100,000</td>
<td>11,983,364</td>
<td>31,238,600</td>
<td>-</td>
<td>-</td>
<td>44,721,964</td>
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<tr>
<td>1997</td>
<td>1,700,000</td>
<td>22,347,000</td>
<td>32,960,500</td>
<td>720,000</td>
<td>-</td>
<td>57,807,500</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL** | $75,984,566 | $62,216,161 | $399,669,743 | $4,535,000 | $16,790,750 | $1,437,800 | $560,634,020

*Polymetallic deposits considered as a separate category for the first time in 1992.
N/A = Not available.
**I Northern Region**
1. Red Dog Mine—Cominco Alaska Inc.
2. Ambler mineral belt—Kennecott Exploration Co.

**II Western Region**
5. Illinois Creek—Dakota Mining Corp.

**III Eastern Interior Region**
8. Sawtooth Mountain—ASA Inc./Montague J-V
9. Fairbanks district
   a. True North—Newmont Exploration Ltd.
   b. Fort Knox—Fairbanks Gold Mining Inc.
   c. Ester Dome—Silverado Gold Mines Ltd.
10. Circle district—LaTeko Resources
11. Pogo—Teck Corp./Sumitomo Metal Mining Canada Ltd.
14. Tok area—American Copper & Nickel Co. Inc. (ACNC)
15. Nikolai—ACNC/Fort Knox Gold Resources Inc. (FNGRI)
16. Taurus—Cross Canada International Resources

**IV Southcentral Region**

**V Southwestern Region**
19. Stuyahok—Calista Corp.
20. Goodnews Bay—Corral Creek Corp.
21. Pebble Copper—Cominco Alaska Inc.

**VI Alaska Peninsula Region**
22. Greens Creek—Kennecott Greens Creek Mining Co.
23. Dolomiti—Sealaska Corp.
24. Calder Bay—Sealaska Corp.

**INDUSTRIAL MINERALS**
The NANA Corp. explored for sand and gravel resources near some of the villages in the region, but there was no exploration for coal in the northern region in 1997.

**WESTERN REGION**
Exploration expenditures reported in this region in 1997 were $3.0 million, down from $3.8 million the previous year, primarily due to reduced exploration on lands north of Nome.

**Metals**
Cominco continued exploration in the Aurora trend north-west of Nome both on land owned by the Bering Straits Native Corp. and on
claims leased from Altar Resources or owned by Cominco. The company had a modest geophysics and drilling program in the area in 1997.

Much of the land covered by the 1993 state airborne geophysical survey is now under claim, and there was a lot of activity east of Nome, where Intercontinental Mining drilled 6,000 feet of core on the Big Hurrah Mine. Visible gold was evident in several holes, and hole 3 cut 30 feet with a gold grade of 0.134 ounces per ton and 15 feet of 0.108 ounces per ton. Hole 5 cut 17.5 feet of 0.212 ounces per ton.

Numerous individuals are actively exploring the Seward Peninsula for placer gold, including Buckley Mining on Slate Creek, Don Harris on Moore Creek, High Bench Mining at Nekula Gulch, Lost River Mining at Tripple Creek, Dennis Nottingham in the Kougarok, Scotti Mining in Council and the Kougarok, Edwin Sears west of Nome, and Thurman Oil & Mining on Bering Straits Native Corporation land in Dahl Creek.

Late in the year La Teko Resources Ltd. announced that it had acquired the Mt. Distin prospect north of Nome from Kennecott Exploration, but the option was allowed to lapse. Kennecott had a modest exploration program of its own at Mt. Distin.

USMX of Alaska Inc. reported minor geochemistry, geologic mapping and drilling for gold and silver near its Illinois Creek mine south of Galena. Reserves at year end, at a gold price of $330 per ounce, stood at 1.9 million tons of 0.076 ounces of gold and 1.16 ounces of silver per ton.

<table>
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<td>New claims</td>
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<td>695</td>
<td>601</td>
<td>341</td>
<td>376</td>
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<td>4,690</td>
<td>3,301</td>
<td>2,643</td>
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<td>5,265</td>
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<td>11,874</td>
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<td>State</td>
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<td>25,684</td>
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<td>7,766</td>
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<td>52,976</td>
<td>46,869</td>
<td>34,982</td>
<td>31,096</td>
<td>27,983</td>
<td>34,932</td>
<td>38,922</td>
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<td>29,221</td>
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<td>25,966</td>
<td>25,106</td>
<td>36,302</td>
<td>37,604</td>
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<tr>
<td>Total federal</td>
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<td>9,899</td>
<td>8,836</td>
<td>8,142</td>
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<td>TOTAL</td>
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<td>57,666</td>
<td>50,170</td>
<td>37,625</td>
<td>34,802</td>
<td>33,248</td>
<td>47,219</td>
<td>50,796</td>
</tr>
</tbody>
</table>

*aIn 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.

Information provided by Ronna Graham (Division of Mining & Water Management) and Don Baggs (U.S. Bureau of Land Management).

Consolidated Nevada Goldfields had a substantial exploration program on its own claims and on land leased from Doyon Ltd. near the Nixon Fork Mine.

Exploration by Cominco and Placer Dome in the Central Kuskokwim Mountains and near Ruby resulted in the staking of mining claims by both companies, and Placer Dome drilling at Colorado and Ganes creeks. Corral Creek Resources Inc. also staked claims in the Ruby area. Little Creek Mine reported some exploration on 10-Pup off Little Creek.

There was exploration activity in the Melotzitna area west of Tanana by Footwall Exploration, and Ventures Resource had a trenching program west of Tanana on a coincident geochemical and geophysical anomaly.

DGGS contracted with WGM-Dighem to fly an airborne geophysical survey of the Ruby–Poorman area in 1997, with the results released in February 1998.
No exploration for coal or industrial minerals was reported in 1997 in this region.

EASTERN INTERIOR REGION

Reported exploration in the eastern interior region was $30.3 million in 1997, up 65 percent from 1996. Several junior mining companies were very active, acquiring land positions by staking claims and by leasing or purchasing existing prospects and properties.

METALS

Fairbanks Gold Mining Inc., operator of the Fort Knox gold mine, had a 12-hole, 5,000-foot exploratory reverse-circulation drilling program on the Gil East claims about 8 miles east of the Fort Knox Mine, where the best of six mineralized holes returned 170 feet of 0.048 ounces per ton gold.

Newmont Exploration Ltd. continued an aggressive exploration and acquisition program with La Teko Resources on the True North property about 8 miles west of the Fort Knox mine. Newmont can earn 65 percent ownership by spending $21 million and producing a feasibility study. Mineralization at True North is associated with quartz-carbonate veins in a high-grade metamorphic package containing calcareous eclogites, particularly where carbonaceous schists and quartzite are prevalent. Northwest-trending fractures along the northeast-trending Eldorado Creek Fault seem to have offset and possibly control the higher-grade zones. Prior to this year's 55,000-foot reverse-circulation and core drill programs, and the discovery of the Merlyn and Dome Creek mineralized zones, geologic resources were calculated to be 1.3 million ounces of gold.

Placer Dome North America also had a drill program to the southwest of True North in the same type of rocks. La Teko contracted for a closely-spaced airborne geophysics program for its large Juniper Creek prospect about 15 miles northeast of the True North property, and for the adjacent Twin Buttes block that it leased from the University of Alaska. Several interesting anomalies were found in 1997 in the Twin Buttes block, and more claims were acquired.

La Teko Resources also had encouraging results, including gold-in-soil anomalies up to 0.07 ounces per ton at the Discovery Gulch prospect in the Circle district. The company also agreed to sell its Ryan Lode Mine on Ester Dome (6 miles west of Fairbanks) to Silverado Gold Mines for $12 million. Ryan Lode has proven/probable reserves in the schist-hosted Ryan Shear and igneous-hosted Curlew deposits to 300-foot depth of 820,000 ounces of gold. The shear extends at least to the 1,100 foot depth.

Silverado drilled a total of 8,800 feet of reverse circulation holes on the Ryan Lode as part of its due-diligence review of the mineral potential in 1997, but has since relinquished its option.

Silverado also controls most of the land around La Teko's Ester Dome property, including the former producer, Grant Mine, about 2 miles northeast of Ryan Lode. Mineralization at Grant Mine in the Irishman and O'Dea veins extends to at least 1,200 feet in depth and may represent an offset continuation of the Ryan Shear deposit. Elsewhere on Ester Dome, Silverado drilled and trenched the St. Paul zone (about a mile north of, and subparallel to, the Ryan Lode), and has outlined igneous-hosted gold mineralization at the Rhyolite prospect on the northwestern side of the dome. Silverado also holds claims immediately northeast of True North at the Whiskey Gulch and Marshall Dome blocks.

Cripple Creek Joint Venture found mineralized intrusive rock in the floor of its placer operation at Ester, west of Fairbanks, and collected samples for assay.

International Freegold Mineral Development had a robust exploration program managed by Avalon Development Corp., including 10,000 feet of reverse-circulation drilling and 3,600 feet of core drilling at various prospects within its 22,560-acre landholdings of the Golden Summit project. Barrick Gold has the right to buy up to 70 percent of the project by purchase of $10 million in Freegold stock over the next 4 years. The Golden Summit property contains several old mines (Cleary Hill, Newsboy, Tolovana, Christina, Hi-Yu) with gold grades from 0.29 ounces per ton to more than one ounce per ton. Recent drilling shows that the Cleary Hill Mine, in addition to a 100,000-ounce resource grading 0.81 ounces per ton, has potential for bulk tonnage, lower-grade material in the footwall of the high-grade veins.

The Golden Summit property also contains the Dolphin igneous-hosted gold-bearing system west of the Cleary Hill Mine which has drill-indicated reserves of 30.6 million tons at a grade of 0.02 ounces per ton, but is still open to the east, west, and at depth. Elsewhere on the property there are numerous early- to mid-stage prospects (Charles, Northern Extension, Wolf Creek, Goose Creek, Too Much Gold, and Iowa) that are being systematically explored. Several are strategically situated relative to the eastern extension of the Eldorado Creek Fault that bounds the True North property.

Placer Dome transferred ownership of its 20,000-acre holdings northeast and southwest of True North to International Freegold on November 5, 1997.

There was no activity reported at Can-Ex Resources' Eagle Creek project west of True North, but newly-staked claims to the west of Eagle Creek, including the mineralized Our Creek igneous stock, were being explored in 1997. Cyprus–Amax explored on the nearby Old Dog prospect, and drilled 2,700 feet of reverse-circulation hole, in addition to reconnaissance
work in the Fairbanks area. Grateful Dog Mining Company reported exploration in the same general area, and also on Wilber Creek near Livengood.

At the Pogo prospect 40 miles northeast of Delta Junction, Teck Corp. started its buy-in to Sumitomo’s project in June by funding the $5.5 million, 46-hole, 47,200-foot 1997 drilling program, which was supported by five drills and a 45-person crew. Teck announced that Pogo contains a geologic reserve of almost 4.5 million ounces of gold in 10.9 million tons of rock in two 24-foot-thick, flat-lying veins, with a possible third layer below. The gold occurs as veins in almost horizontal quartzite about 400 feet below a steep-sided valley, so advanced exploration will be from underground.

To date over 42 line-miles of induced polarization (IP) survey, 35 line-miles of constant source audio magneto telluric (CSAMT) survey, 10 miles of magnetic survey, 385 miles of airborne electromagnetic (AEM) survey and 83,903 feet of drilling have been completed. An ice road was constructed to transport fuel and equipment to the site of the access tunnel portal.

Tri-Valley Corp. had a 5,000-foot core and reverse-circulation drill program on its large block of claims in the Richardson district about 40 miles west of Pogo, and Ventures Resource Alaska Inc. confirmed high-grade silver-lead-zinc mineralization on its Eva prospect about 50 miles to the east of Pogo.

Ventures Resource also drilled 3,000 feet of core on the north and west sides of a 3,000 by 4,000 foot geochemical anomaly at the Champion II prospect. At Lead Creek, 30 miles southeast of Eagle, Ventures drilled 3,800 feet on a coincident soil silver-lead-zinc and electromagnetic anomaly. Several holes cut 3.5-foot-thick massive sulfide mineralization in silicified and brecciated limestones with up to 8.8 ounces of silver per ton, 14.2 percent lead and some zinc. Thicker mineralized horizons were also encountered. At the Eva prospect a vein with at least 1,800 feet of strike length assayed 28.7 percent lead, 9.4 percent zinc, 0.28 percent copper, 0.003 ounces per ton gold and 19.4 ounces of silver per ton across an 18-foot trench sample. All of these prospects are on land controlled by Doyon Ltd. In late November, Teck Corp. agreed to invest $4.1 million in Ventures to explore the Veta block, with an option to invest $3.5 million more to acquire 60 percent of a target of their choice within the area.

American Copper & Nickel Company (ACNC) had a 16,000-foot diamond drill program on its Delta project southwest of Tok, and managed its Nikolai joint venture for which Fort Knox Gold Resources Inc. provided the funds. A 7,500-foot core-drill program in the 3.5-mile strike length of the Ice prospect near Canwell Glacier cut mafic and ultramafic rocks with 17 feet of 0.78 percent nickel, 0.55 percent copper, 0.023 ounces per ton platinum, 0.026 ounces per ton palladium and 0.006 ounces per ton gold. Elsewhere in the Nikolai project a 6,566-foot six-hole drill program at the Fish Lake prospect cut 278 feet with up to 10 percent disseminated pyrrhotite, with assays ranging from 0.03 to 0.26 percent copper, 0.16 to 0.36 percent nickel, 35 to 220 ppb platinum and 60 to 222 ppb palladium. An 80-foot intercept and a 190-foot intercept in two other holes cut disseminated sulfides with similar grades.

At year end Grayd Resource Corp. acquired an interest in the Delta Project in addition to several other polymetallic properties through agreements with Pacific Northwest Resources Company and Pacific Alaska Resources Corp.

Several other companies were active in the Nikolai area, including Falconbridge Ltd., Tullaree Alaska Inc., and Golden Phoenix Minerals Company. The mineralization at Nikolai is hosted in Triassic(?!) mafic and ultramafic plutonic and volcanic rocks cut off to the north by a strand of the Denali Fault system. The offset portion of the mafic rocks would be expected to occur near Kluane Lake.

North of Tok, Cross-Canada International had a modest program on the Taurus copper-gold porphyry.

In the Bonnifield district east of Healy, Liberty Bell Mining had a 5,000-foot core-drill program on the epithermal-type gold prospect, and Grayd Resource Corp., with the backing of Atna Resources, had a 12,900-foot core-drill program on the Red Mountain zone of the Dry Creek massive sulfide project. One hole in this 6,000-foot conductive zone cut 18 feet of 25.9 percent zinc, 11.7 percent lead, 0.88 percent copper, 10.1 ounces per ton silver, and 0.1 ounces per ton gold. Sulfides were also found 2,400 feet along strike. The WTF zone of the project may be on the north limb of a synclinal structure, with the Red Mountain zone on the south limb. Grayd also investigated a 4,000-foot electromagnetic conductor at Anderson Mountain 16 miles west of Red Mountain, and is preparing a second drill rig for the 1998 season (fig. 6).

In the Rampart-Manley area, numerous large claim groups have been staked and at least one airborne geophysical survey was conducted. ASA continued its evaluation of Doyon land in the area east of Manley, with a 1,000-foot core-drill program. Placer Dome had a core-drill program on holdings leased from Alaska Placer Development at Livengood.

There was a little activity in the Sourdough Creek area midway between Fairbanks and Circle following a major staking program in 1996.

Placer exploration was reported in the Rampart-Manley area by Red Rock Enterprises (Killarney Creek and Roughtop Mountain); BIFS Mining and Eleven Pup Mining (Eureka Creek), and Slate Creek Mining on Slate Creek. Alaska Placer Development drilled almost
18,000 feet of reverse-circulation exploration holes on Livengood Bench in the Livengood district. In the Circle district placer exploration was reported by Eugene Clyne on Crooked Creek; Colledge Enterprises on Bottom Dollar Creek; Fred Cook and Points North on Portage Creek; Dan Fair on Ptarmigan Creek; Paul & Company on Bonanza Creek; and Underwood Mining on Bonanza and Porcupine Creeks. In the Fairbanks district A.M. Mining Ltd. explored on Dome Creek, Lucky Seven Mining Co. tested the placers on Gilmore Creek, and Tillicum Resources Inc. tested at Fox. The only placer exploration reported in the Bonnfield district was drilling on 50-foot centers by D’Log Industries Inc. at an undisclosed location. The Fortymile River drainage saw a lot of placer exploration in 1997, with Adam Argo on the South Fork, Harvey Bickell on the Walker Fork, Scott Reed on the North Fork, Geoquest on Chicken Creek, and Guy Fichtelman worked both east and west of Chicken. Paystreak Mining explored near Jack Wade, EBP mapped and sampled the Smith Bench, Chickaman Mining worked on Uhler Creek, Leo Regner explored Lilliwig and Ingle creeks, 40-Mile Mining Co. drilled on Dry Gulch near Chicken, and Camp Creek Mining explored at an undisclosed location in the Fortymile district.

**COAL**

Usibelli Coal Mine Inc. reported a 4,000-foot reverse-circulation exploration drill program around its leases at Poker Flats, Two Bull Ridge and Gold Run Pass.

**INDUSTRIAL MINERALS**

Globe Creek Mining Inc. had a mapping and geochemical sampling program at its limestone operation at Globe Creek midway between Fairbanks and Livengood.

**SOUTHCENTRAL REGION**

Investment in exploration in the southcentral region in 1997 was only $915,000, compared to $2 million in 1996.

**METALS**

There was substantial exploration activity in the area, particularly along the south flank of the Alaska Range in the Petersville–Collinsville area and in the Upper Chulitna area south of Cantwell.

In the Valdez Creek area, La Teko Resources had a trenching and sampling program at its Lucky Gulch
prospect, and discovered several anomalous areas for future follow-up. International CanAlaska Resources continued its exploration of the Rainbow Hill prospect nearby. Intercontinental Mining announced its intention to explore the Denali (Pass Creek) copper deposit, which has reserves of about 5 million tons of fine-grained sulfides running about 2 percent copper.

Staking occurred in 1997 in the vicinity of the Golden Zone Mine, following the release of the results of the 1996 airborne geophysical survey. Kenneecott drilled one of the more striking conductive zones, and Addwest Minerals International Inc. continued evaluation of the area around the Golden Zone Mine. DGGS began mapping the district to provide ground truth for the geophysical survey.

Numerous prospect sites were located in the Petersville-Collinsville geophysical survey area where unexpected northwest-trending features were evident in this area of predominantly northeasterly-trending geology. Diamond Gold Corporation reported exploration in the Yenlo Hills for disseminated and massive sulfides, H & H Exploration and Mining reported placer exploration near Collinsville, and Northern Mining explored for placer near Petersville.

Placer exploration was also reported near Nelchina (4S Services), at Willow Creek (Mrak Placer Mine), at Eureka Creek and Hatcher Pass (Jagade Perkins Jr.), and at Canyon Creek ( Outsider Mining). Placer exploration was also reported on the Kenai Peninsula by Tom Sternberg (Quartz Creek), Sunrise Exploration Services, and Gerald Willard (Bear Creek near Hope). At the old Gilpatrick Mine northwest of Seward, Eric Treider reported hardrock exploration that will continue in 1998.

DGGS contracted for an airborne geophysics survey in the Iron Creek area of the Talkeetna Mountains during the summer of 1997. 

**COAL**

Usibelli Coal Mine Inc. purchased the rights to the Wishbone Hill Mine east of Palmer from North Pacific Mining Corp., a subsidiary of the Cook Inlet Region Inc. Native corporation. Surface mineable coal reserves at Wishbone Hill are about 14 million tons, but the geologic structure is complex. When washed, the coal has a heat content of about 12,200 BTU, as compared with 7,800 BTU for the coal at Usibelli’s mine at Healy.

Slightly farther east at the Jonesville coal lease, Nerox Power Systems Inc., a subsidiary of Nerox Energy Corp., working with Sumitomo Coal Mining Co. Inc., drilled two core holes for a total of 4,541 feet into the axis of the syncline at the Evan Jones Mine, finding 44 feet of high-rank coal in two seams over a 225-acre area, suggesting an 18- to 30-million-ton resource.

**SOUTHWESTERN REGION**

Exploration expenditures in the southwestern region in 1997 were $11.3 million, about the same as in 1996.

**METALS**

Placer Dome’s activity at Donlin Creek near Flat continued to excite interest in the Kuskokwim Mountains as a whole, and there was renewed interest in the Pebble Copper deposit near Lake Iliamna.

At Donlin Creek, about midway between Bethel and McGrath, Placer Dome had a 52,546-foot core-drill and a 26,892-foot reverse-circulation program continuing evaluation of several areas of gold-sulfide mineralization associated with 65-million-year-old granitic plutons intruded into Jurassic-Cretaceous flysch. The purpose of the program was to identify areas where oxidation of the sulfide-rich ore was deeper, thus increasing the oxide ore inventory. At year-end reserves in all categories were 6.7 million ounces of gold in 67 million tons of ore.

Ventures Resource Alaska drilled 17,128 feet of core in the Flat area; at the Golden Horn Mine another vein was discovered parallel to the former producer, and the potential for bulk-tonnage mineralization was identified. One of the first drill holes cut 27 feet with 0.3 ounces of gold per ton. A separate program at the chicken Mountain area 5 miles to the south showed 70 feet of 0.416 ounces of gold per ton in one hole, and 6,655 feet of trenching revealed a 90-foot zone that assays 0.193 ounces per ton. The gold-in-soil anomaly associated with these results extends over an area 12,000 by 2,000 feet. Ventures also increased the size of its holdings along the Donlin Creek trend to the northeast of Placer Dome’s holdings, Western Mining Corp. (USA) had a modest exploration program in the same area.

Corral Creek Resources continued exploration for platinum at Red Mountain near Goodnews Bay on Calista Corp. lands and the Calista Corp. explored for gold and platinum in the Marshall, Stuyahok, Nyac, Kuskokwim Mountains, and Goodnews Bay areas. The Wylie Operation trenched on the Mt. Top mercury prospect.

Cominco has reportedly discovered higher grades of gold in a portion of its Pebble Copper porphyry deposit north of Lake Iliamna, and several hundred claims were staked in late 1996. Activity in 1997 included 14,600 feet of core drilling which doubled the size of the resource to more than a billion tons containing almost 11 million ounces of gold and 6 billion pounds of copper.

Placer exploration was reported at a number of placer mines. Flat Creek Mining Co. prospected on Flat Creek; Julian Creek Mine was active on the George River; Chicken Creek Mining explored in the Flat-Iditarod area, and H & H Exploration and Mining dug
some test pits at Meadow Lake near Iliamna.

No exploration was reported for coal or industrial minerals in the southwestern region in 1997.

**ALASKA PENINSULA REGION**

The only exploration in the region was for sand and gravel resources by the Bristol Bay Native Corp.

**SOUTHEASTERN REGION**

Reported exploration expenditures in this region were $8.83 million, a slight increase over the $7.2 million invested in 1996.

**METALS**

At the Niblack Mine on the southeastern end of Prince of Wales Island, Abacus acquired the Trio and Broadgauge claims east of its main target at the Lookout Zone, and had a 39,000-foot diamond-drill program. They recently announced an inferred mineral resource for the Lookout Zone of 2.78 million tons grading 0.087 ounces per ton gold, 1.14 ounces per ton silver, 1.70 percent copper and 3.30 percent zinc. Abacus and Teck plan a 2,000-foot exploration adit heading west from the Trio Zone into the Lookout for 1998.

The City of Wrangell provided matching funds to the federal Bureau of Land Management to contract an airborne geophysical survey of part of Etolin Island, Zarembo Island, and part of Kupreanof Island near Wrangell, with the expectation that the results might spur exploration investment. This area contains several known mineral deposits and is prospective for Greens Creek-type deposits. Barite was formerly mined on Castle Island within the survey area. The contract was awarded to WGM–Dighem, and DGGS managed the contract to conform to the State-sponsored surveys elsewhere. Results of the survey were released in Wrangell and Fairbanks on September 22, 1997.

At the Greens Creek Mine, Kennecott completed 90,000 feet of exploratory drilling in 1997 at the mine site, and Kennecott Exploration also had a regional program for polymetallic deposits in southeastern Alaska, including the area around Wrangell.

Coeur Alaska Inc. continued to map and sample the Kensington deposit north of Juneau concomitant with ongoing permitting. Regional exploration was also reported by Rio Algom Exploration Inc., Sealaska Corp., and Hyak Mining Co.

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 continued exploration at their placer operations on Porcupine Creek near Haines. There was renewed interest in the rare-earth veins on Bokan Mountain near the old Ross-Adams uranium mine (fig. 7).

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**Figure 7.** Jules Tileston and Bruce Campbell at the 300-foot level of the Ross-Adams uranium mine, Bokan Mountain, southeastern Alaska. Photo by Jan Nauman.
DEVELOPMENT

Table 7 shows reported development expenditures by region in 1997, and table 8 shows cumulative development expenditures since 1982. Figure 8 shows the locations of selected development projects. The $168.4 million expended in 1997 is down considerably from the $394.0 million spent in 1996 because the Illinois Creek gold mine near Galena and the Fort Knox gold mine near Fairbanks became operational, and the Greens Creek Mine near Juneau had reached full productivity.

NORTHERN REGION

The $133.9 million development expenditure reported at the Red Dog Mine and port site are part of the production rate increase (PRI) project that began in 1996. The project is designed to allow a 35 percent increase in production which will be phased in beginning in early summer of 1998. Cominco Alaska Inc. funded the developments at the mine site, and the State of Alaska funded the upgrade of the port facilities through the Alaska Industrial Development and Export Authority (AIDEA).

At the port site, the original 1.2 million gallon fuel storage tank was moved to the mine, and a new 2.4 million gallon tank constructed. The accommodations and ancillary facilities were expanded, and the concentrate storage and load-out facilities increased (fig. 9).

At the mine site an additional drill, Caterpillar tractor, loader, and truck were added to the fleet and at the mill a new 42-inch gyratory crusher was added, the ore storage facility modified, and the grinding and recovery systems upgraded. A fifth wing with 80 additional rooms was added to the accommodations complex.

About 800 people were on site in 1997, including the regular workforce of about 479.

Cominco also completed 25,000 feet of development drilling in the area of the main pit and 205,000 feet of blast-hole drilling.

WESTERN REGION

Expenditures in this region in 1997 were $12.6 million, only about 38 percent of the $32.6 million in 1996. Alaska Gold Co. continued its open-pit operation at Nome, and the 1997 program included a 17,000-foot churn-drill program to develop reserves. Several of the smaller placer mines on the Seward Peninsula also reported some development work including stripping the overburden from the pay gravel, constructing roads and ponds, and reclamation.

Table 7. Reported mineral development expenditures and employment in Alaska by commodity and region, 1997

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<thead>
<tr>
<th></th>
<th>Northern</th>
<th>Western</th>
<th>Eastern interior</th>
<th>South-central</th>
<th>South-eastern</th>
<th>Total</th>
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<tr>
<td>Development expenditures</td>
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<td>$12,640,000</td>
<td>$6,512,000</td>
<td>$149,000</td>
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<td>Workdays</td>
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<td>52</td>
<td>21</td>
<td>2</td>
<td>56</td>
<td>409</td>
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<tr>
<td>Number of companies b reporting</td>
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<td>5</td>
<td>14</td>
<td>4</td>
<td>5</td>
<td>30</td>
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</tbody>
</table>

- No expenditures reported.
- Based on 260-day workyear.
- Some companies active in more than one area.
### Table 8. Reported mineral development expenditures in Alaska by commodity, 1982–97

<table>
<thead>
<tr>
<th>Year</th>
<th>Base metals</th>
<th>Polymetallics</th>
<th>Precious metals</th>
<th>Industrial minerals</th>
<th>Coal and peat</th>
<th>Total</th>
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<td>$19,320,000</td>
<td>$4,251,000</td>
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<td>$7,112,500</td>
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<td>$250,000</td>
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<td>1997</td>
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<td>7,500,000</td>
<td>$26,299,000</td>
<td>$500,000</td>
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<td>$168,389,000</td>
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**Total** $593,681,300 $234,533,136 $645,635,330 $17,527,500 $52,475,000 $1,543,852,266

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

### Figures

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**Figure 8. Selected mineral development projects in Alaska, 1997.**

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At Dakota Mining Co.'s Illinois Creek gold-silver mine south of Galena, construction continued; by mid year the project had evolved into a production facility. Consolidated Nevada Goldfields continued development of its Nixon Fork gold-copper mine near McGrath, driving almost 3,500 feet of 10 foot by 14 foot decline to access the deeper orebodies.

**EASTERN INTERIOR REGION**

The only major metal development in this region was at the Fort Knox gold mine where work continued on the tailings dam and some modifications were made to the leach tanks. An in-pit drilling program of 38,000 feet was completed, resulting in an addition of approximately 450,000 ounces to the reserve base in 1997.

Many of the small placer mines reported development of their properties, generally consisting of stripping and thawing ground in preparation for mining, and construction of settling ponds, roads and other facilities. Mines reporting development in the Rampart-Manley area include Bed Rock Enterprises (Killarney Creek); Kelley Mining Co. (Manley area); and Slate Creek Mining Co. on Slate Creek. In the Circle area KMM (Faith Creek), Paul & Co. (Bonanza Creek) and Underwood Mining Co. (Bonanza and Porcupine creeks) all reported stripping overburden. A.M. Mining Ltd. (Dome Creek) and Tillicum Resources Inc. (Fox) both reported development in the Fairbanks district. In the Fortymile area Harvey Bickell (Walker Fork), Scott Reed (North Fork), Hayden Exploration & Mining (KAL Creek near Eagle), EBP
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(Smith Bench), and 45-Pup Mining all reported overburden removal.

**COAL**

Usibelli Coal Mine Inc. drilled 2,658 feet of reverse-circulation drill holes to develop its Poker Flats lease, and 2,800 feet at the Two Bull Run lease.

**INDUSTRIAL MINERALS**

Globe Creek Mining Inc. prepared its Globe Creek limestone operation for mining and constructed road access to the haul road.

**SOUTHCENTRAL REGION**

Lake Creek Placers reported ground preparation at its Lake Creek gold placer mine, and Middle Fork Mine stripped overburden at its Ruby Gulch property.

Nerox Power Systems Inc. began preparation of the portal at the Jonesville coal mine east of Palmer with the intent of mining about 550,000 tons per year in the next few years.

**SOUTHEASTERN REGION**

About $15.2 million was invested in this region in 1997 on development projects at the Kensington, Alaska-Juneau (A-J) and Greens Creek mines, and at the Calder Island limestone quarry.

Coeur Alaska continued its permitting process for the Kensington Mine. In August the U.S. Forest Service approved the Final Supplemental Environmental Impact Statement, and signed the Record of Decision. The City & Borough of Juneau approved the Large Mine Permit in early November, leaving only the Corps of Engineers 404, the EPA discharge, and the State DEC Solid Waste permits to be approved.

At the Greens Creek mine, Kennecott reported 30,000 feet of development drilling concomitant with the ongoing exploration project.

Kvaerner Environmental began the reclamation of the A-J Mine in preparation for the ultimate closure.

Sealaska Corp. began preparation of its Calder Island chemical-grade limestone quarry, and started the design for the terminal facility.

**PRODUCTION**

The total 1997 value of production in Alaska, $936.2 million, was up 59 percent from the $590.4 million in 1996. With the commissioning of the Fort Knox and Illinois Creek gold mines, and full production at the Greens Creek polymetallic mine, there was an increase in the amount of gold and silver production in 1997, and production of lead and zinc increased slightly at the Red Dog Mine. These factors, coupled with higher average prices for zinc than in 1996, led to a much higher value of base and precious metals for 1997.

Table 9 shows the quantity and value for the metals and materials produced from 1995 to 1997. Figures 10, 11, and 12 show the historic production of sand and gravel, gold, and coal.

Table 10 shows the metal mines reporting production or identified by the Division of Mining & Water Management as producers by region, mining district, and by type. In a departure from past reports, only selected mines in the districts will be discussed in text.

Zinc, with a value of $495 million, is by far the most important commodity produced, representing 53 percent of the total, followed a distant second by gold, with a value of $207 million, representing 22 percent of the total. These are followed by silver ($71 million, 8 percent), sand and gravel ($52 million, 6 percent), lead ($50 million, 5 percent), coal ($38 million, 4 percent), and rock ($20 million, 2 percent).

Zinc and lead production was from the Red Dog Mine near Kotzebue and the Greens Creek Mine near Juneau; copper was from the Greens Creek Mine near Juneau and the Nixon Fork Mine near McGrath; silver was produced at Red Dog, Greens Creek, and Illinois Creek; and gold production was from Greens Creek, Nixon Fork, Illinois Creek, Fort Knox, and 114 placer gold mines. Figure 13 shows the location of selected mines.

These production estimates for 1997 were compiled from 194 DGGS questionnaires returned from Native corporations, mine operators, agencies, and municipalities, supplemented by about 60 phone surveys. The Alaska Placer Mining Applications (APMAs) were used to cross-check for missing information, but the authors were unable to contact some operators, so the placer mine production is of necessity a conservative value. The authors particularly wish to thank the State Department of Transportation & Public Facilities and the Department of Natural Resources Divisions of Mining & Water Management and of Land for their assistance in securing as much information as possible.

About half of the respondents provided costs and unit values for their commodities, but the metal values were computed from the weekly averages on the London Exchange, and the values reported in table 9 do not take into account mining, shipping, smelting, or other costs incurred by the reporting company.

It is of interest that in 1997, for the first time in over 50 years, hardrock gold production (481,439 ounces) exceeded placer gold production (109,077 ounces) and
### Table 9. Estimated mineral production in Alaska, 1995–97<sup>a</sup>

<table>
<thead>
<tr>
<th>Metals</th>
<th>Quantity</th>
<th>1995</th>
<th>1996</th>
<th>1997</th>
<th>Estimated values&lt;sup&gt;b&lt;/sup&gt;</th>
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</thead>
<tbody>
<tr>
<td>Gold (ounces)</td>
<td>141,882</td>
<td>161,565</td>
<td>590,516</td>
<td>$56,043,390</td>
<td>$62,622,594</td>
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<tr>
<td>Silver (ounces)</td>
<td>1,225,730</td>
<td>3,676,000</td>
<td>14,401,165</td>
<td>$6,655,714</td>
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<tr>
<td>Copper (tons)</td>
<td>NR</td>
<td>390</td>
<td>1,720</td>
<td>NR</td>
<td>803,400</td>
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<tr>
<td>Lead (tons)</td>
<td>58,530</td>
<td>70,086</td>
<td>88,560</td>
<td>34,428,600</td>
<td>52,284,000</td>
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<tr>
<td>Zinc (tons)</td>
<td>359,950</td>
<td>366,780</td>
<td>419,097</td>
<td>345,552,000</td>
<td>361,646,000</td>
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**Subtotal** $442,679,704 $496,434,434 $826,021,000

### Industrial minerals

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<tr>
<th></th>
<th>Quantity</th>
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<th>1996</th>
<th>1997</th>
<th>Estimated values&lt;sup&gt;b&lt;/sup&gt;</th>
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<tr>
<td>Jade and soapstone (tons)</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
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<tr>
<td>Sand and gravel (million tons)</td>
<td>9.8</td>
<td>9.9</td>
<td>13.8</td>
<td>30,886,821</td>
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<td>Rock (million tons)</td>
<td>2.8</td>
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<td>3.2</td>
<td>22,163,703</td>
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**Subtotal** $53,075,524 $55,785,897 $71,938,000

### Energy minerals

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<th>Estimated values&lt;sup&gt;b&lt;/sup&gt;</th>
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<tr>
<td>Coal (tons)</td>
<td>1,670,000</td>
<td>1,481,000</td>
<td>1,446,000</td>
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<tr>
<td>Peat (cubic yards)</td>
<td>35,000</td>
<td>38,000</td>
<td>38,500</td>
<td>157,500</td>
<td>175,000</td>
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**Subtotal** $41,457,500 $38,175,000 $38,240,000

**TOTAL** $537,212,728 $590,395,331 $936,199,000

<sup>a</sup>Production data from DGGS questionnaires, phone interviews with mine and quarry operators, Alaska Department of Transportation and Public Facilities, and federal land management agencies.

<sup>b</sup>Values for selected metal production based on average prices for each year; for 1997—gold ($330.76/ounce) unless other value provided by operator; silver ($4.91/ounce); copper ($1.03/lb); zinc ($0.59/lb); lead ($0.28/lb). All other values provided by mine operators. Value rounded to nearest $1,000.

NR = None reported.

### Table 10. Companies and individuals reported to be producing metal in Alaska in 1997

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<th>Operator</th>
<th>Creek/Mine</th>
<th>Type</th>
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<td>Red Dog Mine</td>
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<td>Gold Dust Mines Inc.</td>
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<td>Birch</td>
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<td>Illinois Creek Mine</td>
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<td>O/P Placer</td>
</tr>
<tr>
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<td>Steve Olson</td>
<td>Eagle</td>
<td>O/P Placer</td>
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<tr>
<td>Circle</td>
<td>Paul and Company</td>
<td>Bonanza</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Circle</td>
<td>Douglas Miller</td>
<td>Bonanza</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Circle</td>
<td>Aurora Mining</td>
<td>North Fork Harrison</td>
<td>O/P Placer</td>
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Table 10. Companies and individuals reported to be producing metal in Alaska in 1997—continued

<table>
<thead>
<tr>
<th>District</th>
<th>Operator</th>
<th>Creek/Mine</th>
<th>Type</th>
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<tr>
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<td>Richard Loud</td>
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<tr>
<td>Circle</td>
<td>Lapp and Sons</td>
<td>Ketchum</td>
<td>O/P Placer</td>
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<tr>
<td>Circle</td>
<td>Arctic Mining</td>
<td>Crooked</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Circle</td>
<td>Dan Mandrones</td>
<td>Crooked</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Circle</td>
<td>Rock Laundry Mining</td>
<td>Crooked</td>
<td>O/P Placer</td>
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<tr>
<td>Circle</td>
<td>Willis Mine Services</td>
<td>Crooked</td>
<td>O/P Placer</td>
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<td>Circle</td>
<td>Stan Gelvin</td>
<td>Gold King</td>
<td>O/P Placer</td>
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<td>Bonnifield</td>
<td>Tim Kiehl</td>
<td>Sheep</td>
<td>O/P Placer</td>
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<tr>
<td>Bonnifield</td>
<td>TruDeck Mining</td>
<td>Totatlanika</td>
<td>O/P Placer</td>
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<td>Bonnifield</td>
<td>Robert Keller</td>
<td>Surprise</td>
<td>O/P Placer</td>
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<td>Bonnifield</td>
<td>Roy Traxler</td>
<td>Rex</td>
<td>O/P Placer</td>
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<tr>
<td>Bonnifield</td>
<td>Ralph Simonson</td>
<td>Moose</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Bonnifield</td>
<td>David Jacobs</td>
<td>Moose</td>
<td>O/P Placer</td>
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<td>Bonnifield</td>
<td>Wayne Tachick</td>
<td>Little Moose</td>
<td>O/P Placer</td>
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<td>Bonnifield</td>
<td>Tom Fau</td>
<td>Walker Fork Fortymile</td>
<td>O/P Placer</td>
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<td>Fortymile</td>
<td>Harvey Bickell</td>
<td>Walker Fork Fortymile</td>
<td>O/P Placer</td>
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<tr>
<td>Fortymile</td>
<td>Fred Helfinger</td>
<td>Napoleon</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Fortymile</td>
<td>Double J Mining</td>
<td>South Fork Fortymile</td>
<td>O/P Placer</td>
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<tr>
<td>Fortymile</td>
<td>Brad Carr</td>
<td>South Fork Fortymile</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Fortymile</td>
<td>Walter Schofield</td>
<td>South Fork Fortymile</td>
<td>O/P Placer</td>
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<td>Fortymile</td>
<td>Roger Tallini</td>
<td>Fortymile</td>
<td>O/P Placer</td>
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<tr>
<td>Fortymile</td>
<td>Taylor’s Mining</td>
<td>Fortymile</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Fortymile</td>
<td>James Treesh</td>
<td>McCumber</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Fortymile</td>
<td>Jensen Mining &amp; Construction</td>
<td>45 Pup</td>
<td>O/P Placer</td>
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<td>Fortymile</td>
<td>Scott Reed</td>
<td>North Fork Fortymile</td>
<td>O/P Placer</td>
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<td>Fortymile</td>
<td>Guy Fichtelman</td>
<td>Mosquito Fork</td>
<td>O/P Placer</td>
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<td>Leo Regner</td>
<td>Liliwig</td>
<td>O/P Placer</td>
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<td>Fortymile</td>
<td>Hayden Exploration &amp; Mining</td>
<td>Squaw (KAL)</td>
<td>O/P Placer</td>
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<td>Fortymile</td>
<td>Geo Quest</td>
<td>Chicken</td>
<td>O/P Placer</td>
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<td>Yentna</td>
<td>Lake Creek Placers</td>
<td>Lake Creek</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Willow Creek</td>
<td>Mkr Placer Mine</td>
<td>Willow</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Tok</td>
<td>Middle Fork Mine</td>
<td>Middle Fork Chistochina</td>
<td>O/P Placer</td>
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<td>Outsider Mining</td>
<td>Canyon</td>
<td>O/P Placer</td>
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<tr>
<td>Hope</td>
<td>Gerald Willard</td>
<td>Bear</td>
<td>O/P Placer</td>
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<tr>
<td>Anchorage</td>
<td>Girdwood Mining Co.</td>
<td>Crow</td>
<td>O/P Placer</td>
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<tr>
<td>Marshall</td>
<td>Chase Brothers Mining</td>
<td>Flat/Stuyahok</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Innoko</td>
<td>Clarke-Witz Partnership</td>
<td>Podesie/Ganes</td>
<td>O/P Placer</td>
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<td>Innoko</td>
<td>Anderson Mining</td>
<td>Yankee</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Innoko</td>
<td>Little Creek Mine</td>
<td>10 Pup/Little</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Innoko</td>
<td>Ed Plano</td>
<td>Anvil Gulch</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Innoko</td>
<td>Manzie Magnuson</td>
<td>Madison</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Iditarod</td>
<td>Chicken Creek Mining</td>
<td>Chicken</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Iditarod</td>
<td>Flat Creek Mining Co.</td>
<td>Flat</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Aniak</td>
<td>Mark Matter</td>
<td>Marvel</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Aniak</td>
<td>Nyac Mining Inc.</td>
<td>Bear</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Juneau</td>
<td>Big Nugget Mining</td>
<td>Porcupine</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Juneau</td>
<td>Snow Lion Mining</td>
<td>Porcupine</td>
<td>O/P Placer</td>
</tr>
<tr>
<td>Admiralty</td>
<td>Kenneccott/Hecla</td>
<td>Greens Creek Mine</td>
<td>U/G H/R Zinc–Lead–Gold–Silver</td>
</tr>
</tbody>
</table>

**SOURCE:** Questionnaires and mine visits by Division of Mining & Water Management.  
O/P = open pit; U/G = underground; H/R = hard rock.
this situation is expected to continue for the foreseeable future. Table 11 shows the relative importance of the six regions of Alaska where gold production was reported, and table 12 shows the production costs for small (less than 650 ounces production), medium (650 to 2,500 ounces), and large (over 2,500 ounces) gold operations. It should be noted that reported production costs vary widely within the groups, and that companies reporting costs are too few to be statistically meaningful.

Tables 13 and 14 show the amount and value of gold production in Alaska, 1880-1997. The total value of sand and gravel in 1997 was $51.9 million for 13.8 million tons. The majority of sand and gravel used was in the southcentral region of the state on reconstruction projects on the Parks, Glenn, and Seward highways, but completion of the Geist Road overpass and other roadwork in the Eastern interior region, and oilfield and road construction in the northern region contributed to the higher-than-normal use of these materials.

Virtually all of the 3.2 million tons of rock used in the state was for construction material in southeastern Alaska, mainly for road maintenance in the Tongass National Forest and some of the municipalities, and as fill material for the ferry terminal site near Juneau. The total value is estimated to be $20 million, based on the values per ton reported by several private vendors.

Coal production in 1997 was slightly less than in 1996, with 650,000 tons shipped to Korea and the remainder sold to interior Alaska power plants. A new 50-megawatt mine-mouth clean coal power plant is scheduled to burn about 300,000 tons of coal when it is running at full production in 1999. Production of peat was up slightly in 1997, mostly for use in local horticulture.
I Northern Region
1. Red Dog Mine, Noatak district—zinc—lead—silver (germanium)
2. Little Squaw Gold Mining Co. placer properties, Chandalar district—gold—silver
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. Illinois Creek Mine—gold—silver

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. Fairbanks Gold Mining Inc. (Fort Knox), Fairbanks district—gold—silver
11. Usibelli Coal Mine Inc., Bonnifield district—coal

IV Southcentral Region
12. Landscape Supply Corp., Hatcher Pass district—topsoil—peat

V Southwestern Region
13. Hermon Brothers Construction Co., Anchorage district—sand and gravel
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
17. Kennecott Greens Creek Mining Co., Juneau—Admiralty district—silver—zinc—gold—lead—copper
18. Sealaska Corp., Ketchikan district—limestone

---

Figure 13. Selected production projects, 1997.

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Table 11. Reported refined gold production, number of operators, and industry employment in Alaska, 1995–97

<table>
<thead>
<tr>
<th>Region</th>
<th>Number of operators</th>
<th>Production in ounces of gold</th>
<th>Number of employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern</td>
<td>6</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Western</td>
<td>25</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>Eastern Interior</td>
<td>89</td>
<td>92</td>
<td>75</td>
</tr>
<tr>
<td>Southerncentral</td>
<td>10</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Southwestern</td>
<td>13</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>Southeastern</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>TOTAL</td>
<td>145</td>
<td>145</td>
<td>123</td>
</tr>
</tbody>
</table>

*1997 production includes 481,439 ounces gold from Nixon Fork, Illinois Creek, Fort Knox, and Greens Creek hardrock projects, and 109,077 ounces of placer gold.
Table 12. Production costs for selected Alaska placer gold mines, 1991–97

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of mines</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Small</td>
<td>21</td>
<td>23</td>
<td>19</td>
<td>24</td>
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<td>9</td>
<td>25</td>
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<tr>
<td>Medium</td>
<td>8</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Large</td>
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<td>4</td>
<td>4</td>
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<tr>
<td>TOTAL</td>
<td>34</td>
<td>34</td>
<td>25</td>
<td>34</td>
<td>20</td>
<td>18</td>
<td>35</td>
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<tr>
<td>Production in ounces</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Small</td>
<td>$3,582</td>
<td>3,842</td>
<td>3,919</td>
<td>2,789</td>
<td>1,459</td>
<td>1,433</td>
<td>5,077</td>
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<tr>
<td>Medium</td>
<td>8,431</td>
<td>5,759</td>
<td>5,825</td>
<td>7,471</td>
<td>5,890</td>
<td>5,058</td>
<td>9,373</td>
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<tr>
<td>Large</td>
<td>84,539</td>
<td>128,992</td>
<td>25,335</td>
<td>48,864</td>
<td>43,390</td>
<td>49,240</td>
<td>65,682</td>
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<tr>
<td>TOTAL</td>
<td>$96,552</td>
<td>138,593</td>
<td>35,079</td>
<td>59,124</td>
<td>50,739</td>
<td>55,731</td>
<td>80,132</td>
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<td>Total reported mine costs</td>
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<tr>
<td>Small</td>
<td>$1,018,606</td>
<td>$940,000</td>
<td>$1,031,500</td>
<td>$989,076</td>
<td>$336,300</td>
<td>$389,754</td>
<td>$1,243,865</td>
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<tr>
<td>Medium</td>
<td>2,518,239</td>
<td>1,460,000</td>
<td>1,905,125</td>
<td>2,597,782</td>
<td>1,440,000</td>
<td>1,222,700</td>
<td>1,696,513</td>
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<tr>
<td>Large</td>
<td>31,857,228</td>
<td>41,650,000</td>
<td>7,605,000</td>
<td>16,706,600</td>
<td>14,795,000</td>
<td>17,159,024</td>
<td>21,018,240</td>
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<tr>
<td>TOTAL</td>
<td>$35,394,073</td>
<td>$44,050,000</td>
<td>$10,541,625</td>
<td>$20,293,458</td>
<td>$16,571,300</td>
<td>$18,771,478</td>
<td>$23,958,618</td>
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<td>Unit cost per ounce</td>
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<tr>
<td>Small</td>
<td>$284</td>
<td>$245</td>
<td>$263</td>
<td>$354</td>
<td>$231</td>
<td>$271</td>
<td>$245</td>
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<tr>
<td>Medium</td>
<td>298</td>
<td>255</td>
<td>327</td>
<td>347</td>
<td>245</td>
<td>242</td>
<td>181</td>
</tr>
<tr>
<td>Large</td>
<td>376</td>
<td>322</td>
<td>300</td>
<td>341</td>
<td>341</td>
<td>348</td>
<td>320</td>
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<tr>
<td>TOTAL</td>
<td>$367</td>
<td>$318</td>
<td>$300</td>
<td>$343</td>
<td>$327</td>
<td>$337</td>
<td>$299</td>
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</table>

\*10-65 oz gold/yr.
\*b650-2,500 oz gold/yr.
\*c>2,500 oz gold/yr.
\*d46% of total Alaska placer gold production.
\*e61% of total Alaska placer gold production.
\*f19% of total Alaska placer gold production.
\*g32% of total Alaska placer gold production.
\*h37% of total Alaska placer gold production.
\*_56% of total Alaska placer gold production.
\*j73% of total Alaska placer gold production.

Table 13. Reported sand and gravel production and industry employment in Alaska by region, 1997

<table>
<thead>
<tr>
<th>Region</th>
<th>Companies and agencies reporting*</th>
<th>Tons</th>
<th>Estimated unit value ($/ton)*b</th>
<th>Total value</th>
<th>Estimated number of employees</th>
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<tr>
<td>Northern</td>
<td>4</td>
<td>1,573,045</td>
<td>$4.50</td>
<td>$7,078,703</td>
<td>70</td>
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<tr>
<td>Western</td>
<td>2</td>
<td>242,000</td>
<td>4.50</td>
<td>1,089,000</td>
<td>30</td>
</tr>
<tr>
<td>Eastern Interior</td>
<td>9</td>
<td>2,399,900</td>
<td>4.00</td>
<td>9,599,600</td>
<td>195</td>
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<tr>
<td>Southcentral</td>
<td>12</td>
<td>8,370,440</td>
<td>3.50</td>
<td>29,296,540</td>
<td>310</td>
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<tr>
<td>Southwestern</td>
<td>2</td>
<td>368,000</td>
<td>2.26</td>
<td>831,680</td>
<td>30</td>
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<tr>
<td>Alaska Peninsula</td>
<td>3</td>
<td>72,000</td>
<td>2.66</td>
<td>191,520</td>
<td>20</td>
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<td>Southeastern</td>
<td>7</td>
<td>728,706</td>
<td>5.25</td>
<td>3,825,706</td>
<td>45</td>
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<tr>
<td>TOTAL</td>
<td>39</td>
<td>13,754,091</td>
<td>3.77</td>
<td>$51,912,749</td>
<td>700</td>
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</table>

\*From 31 returned questionnaires and 8 phone canvass responses.
\*bValues are based on price and cost estimates from 17 producers.
NORTHERN REGION

Metals

One hardrock open-pit mine and four conventional placer mines reported production in 1997 in this region. Placer production is shown in table 11.

The Red Dog zinc-lead-silver mine, owned by NANA Corp. and operated by Cominco Alaska Inc., produced 675,900 short dry tons of 55.2 percent zinc concentrate and 123,500 short dry tons of 56.1 percent lead concentrate from 2,127,000 tons of ore milled. Average grades of the mill-feed were 20.3 percent zinc, 5.2 percent lead and 2.9 ounces per ton silver. Operating profit for 1997 was $102 million compared with $25 million in 1996. Table 15 and figure 14 show production statistics for the past 8 years.

Industrial Minerals

Tables 12 and 13 show the use of sand, gravel, and rock in the various regions of the state in 1997.

Sand and gravel production in the northern region, 1.57 million tons, was similar to the 1.51 million tons produced in 1996.

A substantial quantity of sand and gravel was used by the North Slope Borough for roadwork and facilities, by British Petroleum and Arco for their oilfield facilities, and lesser amounts at the Red Dog Mine. About 30,000 tons of shot rock was also used at the mine. Most of the material, as well as that used by the Department of Transportation & Public Facilities for airport upgrades, was derived from sales by DNR's Division of Land.

---

Table 14. Reported stone production and industry employment in Alaska by region, 1997a

<table>
<thead>
<tr>
<th>Region</th>
<th>Companies and agencies reportingb</th>
<th>Tons</th>
<th>Estimated unit value ($/ton)c</th>
<th>Total value</th>
<th>Estimated number of employees</th>
</tr>
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<tr>
<td>Northern</td>
<td>2</td>
<td>20,000</td>
<td>$10.00</td>
<td>$200,000</td>
<td>5</td>
</tr>
<tr>
<td>Western</td>
<td>2</td>
<td>32,000</td>
<td>10.00</td>
<td>320,000</td>
<td>10</td>
</tr>
<tr>
<td>Eastern Interior</td>
<td>3</td>
<td>60,220</td>
<td>10.00</td>
<td>602,200</td>
<td>15</td>
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<tr>
<td>Southcentral</td>
<td>3</td>
<td>94,400</td>
<td>7.50</td>
<td>708,000</td>
<td>15</td>
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<td>Southwestern</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
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<td>13,500</td>
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<td>2,956,338</td>
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<td>3,176,458</td>
<td>6.30</td>
<td>$19,998,861</td>
<td>123</td>
</tr>
</tbody>
</table>

aIncludes shot rock, crushed stone, D-1, riprap, and modest quantities of ornamental stone.
bDerived from 9 questionnaires, 6 phone canvass responses.
cUnit value based on data supplied by 10 operations. Unit values for different stone products vary widely.
- - Not reported.

Table 15. Cominco Alaska's Red Dog Mine, production statistics, 1990-97

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ore grade</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zinc (percent)</td>
<td>26.5%</td>
<td>22.5%</td>
<td>19.9%</td>
<td>18.4%</td>
<td>18.8%</td>
<td>19.0%</td>
<td>18.7%</td>
<td>20.3%</td>
</tr>
<tr>
<td>Lead (percent)</td>
<td>8.5%</td>
<td>6.6%</td>
<td>6.0%</td>
<td>5.7%</td>
<td>5.7%</td>
<td>5.8%</td>
<td>5.0%</td>
<td>5.2%</td>
</tr>
<tr>
<td>Silver (oz/ton)</td>
<td>3.6a</td>
<td>2.8</td>
<td>2.9</td>
<td>2.8</td>
<td>2.8</td>
<td>2.8</td>
<td>2.8</td>
<td>2.8</td>
</tr>
<tr>
<td>Concentrate Zinc</td>
<td>337,400</td>
<td>410,700</td>
<td>405,900</td>
<td>465,600</td>
<td>588,100</td>
<td>645,100</td>
<td>646,800</td>
<td>675,900</td>
</tr>
<tr>
<td>Lead (ton)</td>
<td>56,900a</td>
<td>57.1%</td>
<td>57.0%</td>
<td>54.8%</td>
<td>55.8%</td>
<td>55.6%</td>
<td>55.3%</td>
<td>55.2%</td>
</tr>
<tr>
<td>Concentrate Lead</td>
<td>56,600a</td>
<td>76,600a</td>
<td>28,000</td>
<td>48,700</td>
<td>59,700</td>
<td>101,300</td>
<td>118,500</td>
<td>123,500</td>
</tr>
<tr>
<td>Silver Mill Recovery</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
<td>- -</td>
<td>53%</td>
<td>66.9%</td>
<td>70%</td>
<td>70%</td>
</tr>
<tr>
<td>Total concentrate (tons)b</td>
<td>443,600</td>
<td>521,400</td>
<td>474,900</td>
<td>539,800</td>
<td>658,000</td>
<td>753,600</td>
<td>765,300</td>
<td>799,400</td>
</tr>
<tr>
<td>Employees</td>
<td>350</td>
<td>331</td>
<td>349</td>
<td>376a</td>
<td>311</td>
<td>397</td>
<td>417</td>
<td>478</td>
</tr>
</tbody>
</table>

aRevised slightly from Bundtzen and others (1996) based on new company data.
- - No data.
bTotals for years 1990 through 1995 include bulk concentrate.
SOURCE: Gary Coulter and Jim Kulas, Cominco Alaska Inc.
WESTERN REGION

Metals

Two hardrock gold mines and 22 placer gold mines in the western region produced a total of 104,297 fine ounces of gold in 1997; 44,986 ounces of that total were placer gold.

Alaska Gold Co. continued open-pit placer gold mining of the submarine beach west of Nome (fig. 15), producing 28,200 ounces from 870,000 cubic yards of pay gravel. The mine employs 70 people, and is a typical open-pit operation. Some of the Alaska Gold Co. properties were leased to other operators.

About 40 miles south of Galena the Illinois Creek lode gold–silver mine poured its first gold in June. This mine is operated by Dakota Mining Corp., with a 5 percent net smelter interest held by Cook Inlet Region Inc., a Native corporation formed during land title settlements in 1971. Although most of the concerns voiced during permitting regarded whether the valley-fill leach would overflow, a near drought throughout the summer (and fires bigger than those in Indonesia) prevented Dakota Mining Corp. from sufficiently watering the heap. By September, the flow to the heap was at 90 percent of the predicted rate, and by year end 1.35 million tons of rock averaging 0.072 ounces of gold per ton was on the pad. Dakota produced about 20,111 ounces in 1997, expects to produce about 80,000 ounces in 1998, and expects to average about 65,000 ounces per year for the next 5 years.

At the Nixon Fork gold–copper skarn mine near McGrath, Consolidated Nevada Goldfields produced 39,666 ounces of gold and 420 tons of copper in concentrates. The concentrates are flown out from the mine to Palmer for shipment to the Dallo Inc. smelter in Kosaka, Japan.

INDUSTRIAL MINERALS

Cape Nome Products, a new joint venture between Sound Quarry Inc. and Knik Construction, mined 30,000 tons of rock from the granitic orthogneiss quarry at Cape Nome east of the town of Nome.

EASTERN INTERIOR REGION

Metals

In addition to gold produced at the Fort Knox gold mine, 73 placer mines reported recovery of 57,453 fine ounces of gold in 1997 (fig. 16). Some of these, such as 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 operations in the state. It is interesting to note that the only underground placer operations in the state are those of AU Mining in the Chatanika Valley near Cleary, north of Fairbanks, and the Little Eldorado Group’s operation on the creek of the same name nearby.

With the commissioning of the Fort Knox open-pit hardrock gold mine about 15 miles northeast of Fairbanks, this region became the second most valuable region of the state in 1997. Operated by Fairbanks Gold Mining Inc., a wholly-owned subsidiary of Amax Gold Inc., the first official gold pour at the Fort Knox mine was on December 20, 1996, and the first commercial gold was produced in March 1997. Production through the end of December 1997, including 45,701 ounces of pre-commercial production prior to March 1, was 366,223 ounces, from 11,689,000 tons grading 0.0343 ounces per ton. The cash cost per ounce was $170, the total production cost was $342, and the average selling price for all operations worldwide was $360 per ounce. The 174-million-ton deposit is hosted by a 93-million-year-old multi-phase granitic stock. Gold occurs within northwest-trending quartz vein stockwork associated with minor bismuth and tungsten, and trace sulfides.

**COAL AND PEAT**

Usibelli Coal Mine Inc. produced 1.446 million tons from its mine near Healy, and exported 650,000 tons to Korea, with the remainder firing five interior Alaska power plants. One million tons was recovered from its Poker Flats lease, and the remainder from the Gold Run Pass lease. A new 50-megawatt clean coal power plant at the mine mouth has already added power to the Fairbanks–Anchorage intertie. The plant will be in a demonstration mode in 1998, in full production in 1999, and will use up to 300,000 tons of poorer quality coal that is presently discarded.

Peat was produced from pits on College Road in Fairbanks by Great Northwest Inc., and by Exclusive Landscaping & Paving, Inc. from a pit in the Goldstream Valley near Fairbanks.

**INDUSTRIAL MINERALS**

Production of sand and gravel in the eastern interior region in 1997, 2.4 million tons, was down slightly from the 2.9 million tons used in 1996, as the number of road construction projects continue to decline.

Most of the gravel used in the construction of the Geist Road overpass west of Fairbanks was taken from nearby gravel pits, but some was derived from the washed and screened tailings from local placer mines, particularly Yellow Eagle’s Cripple Creek operation.

Yutan Construction Co. produced basalt from its Browns Hill Quarry east of Fairbanks for various purposes, including road sanding by the Department of Transportation during the winter. A small amount of decorative stone was collected from the roadside bluffs at Shaw Creek, about 70 miles southeast of Fairbanks.

Figure 16. Roger Tallini’s 8” suction dredge operation, 1997, South Fork Fortymile River. Photo by Roger Tallini.
SOUTHCENTRAL REGION

METALS

The only metal production from this region in 1997 was from six small conventional placer operations, with a total yield of 971 fine ounces, valued at $321,168.

COAL AND PEAT

Peat production for local horticultural use was reported by several operators in the Matanuska-Susitna Valley, including The Dirt Co. and Landscape Supply Co.

INDUSTRIAL MINERALS

Road construction projects on the Parks Highway near Houston, on the Glenn Highway east of Palmer, and on the Seward Highway along Turnagain Arm and at Moose Pass created a strong demand for both sand and gravel and rock products in 1997. Much of the material used was derived from the rights of way as cut-and-fill, but the 8.4 million tons of sand and gravel used in 1997 was more than double the 3.5 million tons used in 1996. This reflects a shift in recent years in road construction projects to the most populated region of the state.

Private contractors providing sand and gravel in this region include Hermon Brothers Construction Co. from its pit at 1.5 mile on the Palmer–Wasilla Highway; Harris Sand & Gravel Inc. provided material in the Valdez area; Chugach Alaska Corp. mined substantial quantities for Cordova, and also in the Mat-Su Borough; Jackson Construction Co. reported production on the Kenai; and Pate Construction Inc. provided sand and gravel for the Yakutat area.

SOUTHWESTERN REGION

METALS

Metal production in this region in 1997 was an estimated 5,070 fine ounces of gold valued at $1.68 million derived from 10 placer mines as shown in table 10.

INDUSTRIAL MINERALS

A small amount of gravel and processed gravel was used by the State Department of Transportation & Public Facilities for airport maintenance in this region in 1997.

ALASKA PENINSULA REGION

INDUSTRIAL MINERALS

Closure of the military facilities at King Salmon required most of the sand and gravel used in this region, as well as 120,000 cubic yards of silt for capping material. A small amount of sand and gravel was also used to complete reconstruction of the South Naknek airport. Hopkins Brothers Construction Co. provided shot rock at Seldovia for local use.

SOUTHEASTERN REGION

METALS

Virtually all of the metal production in this region in 1997 was from the Greens Creek hardrock operation near Hawk Inlet on the west side of Admiralty Island west of Juneau (fig. 17).

The Greens Creek Mine (Kennecott 70.3 percent, Hecla Mining 29.7 percent) produced concentrates
containing payable 46,000 tons of zinc, 19,000 tons of lead, 56,000 ounces of gold, 9.7 million ounces of silver, and 1,300 tons of copper. Approximately 1,350 tons of ore are mined daily in two shifts using rubber-tired, diesel-powered, 3- and 6-yard scoops to load 20- and 40-ton trucks from a dozen active headings in the mine. The ore is trucked from the 920 level portal to the mill where, in a continuous-feed, electronically-monitored process, it is crushed, ground, separated, and floated. The concentrate is segregated into a lead and zinc concentrate, and the gold is separated before the concentrate is dewatered. Tailings are either mixed with cement and recycled to the mine as backfill, or are stored in the dry tailings facility. Water is recycled to the water treatment facility.

**DRILLING**

Table 16 is a listing of companies with significant drill programs in 1997. Table 17 summarizes 1997 drilling activity by region of the state. Table 18 shows the historical trends of drilling since 1982. The total amount of drilling, 757,488 feet, compares well with the 729,137 feet drilled in the previous year. Placer exploration (fig. 18) continues to decline, although there is a renewed interest in coal, particularly in the high-rank fields of southeast Alaska at Wishbone Hill. Core drilling continues to dominate hardrock exploration, though there is a regional preference, with reverse-circulation drilling favored in western and interior Alaska, while core drilling is used exclusively in southeastern Alaska where most of the 1997 drilling was underground.

**INDUSTRIAL MINERALS**

The southeastern region was the major user of rock in the state in 1997 (3 million tons), with the majority being used for construction of the ferry terminal parking area near Juneau, and maintenance of logging roads throughout the Tongass National Forest. The City of Thorne Bay also reported using a small amount of shot-rock for road work near the city.

Hildre Sand & Gravel Co. produced sand and gravel from its Lemon Creek and Montana Creek Pits for local construction in the Juneau area.

Production was reported at two placer gold mines in Porcupine Creek near Haines.

**Table 16. Companies reporting significant drilling programs in Alaska in 1997**

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abacus Minerals Corp.</td>
<td></td>
</tr>
<tr>
<td>Alaska Gold Co.</td>
<td></td>
</tr>
<tr>
<td>Alaska Placer Development</td>
<td></td>
</tr>
<tr>
<td>American Copper &amp; Nickel Co.</td>
<td></td>
</tr>
<tr>
<td>ASA Inc.</td>
<td></td>
</tr>
<tr>
<td>Cominco Alaska Inc.</td>
<td></td>
</tr>
<tr>
<td>Consolidated Nevada Goldfields Inc.</td>
<td></td>
</tr>
<tr>
<td>Cross Canada International Inc.</td>
<td></td>
</tr>
<tr>
<td>Grayd Resources Corp.</td>
<td></td>
</tr>
<tr>
<td>Intercontinental Mining Corp.</td>
<td></td>
</tr>
<tr>
<td>International Freegold Mineral Development Inc.</td>
<td></td>
</tr>
<tr>
<td>Liberty Bell Mining Inc.</td>
<td></td>
</tr>
<tr>
<td>Kennecott Exploration Inc.</td>
<td></td>
</tr>
<tr>
<td>Kennecott Greens Creek Mining Co.</td>
<td></td>
</tr>
<tr>
<td>Newmont Exploration Ltd.</td>
<td></td>
</tr>
<tr>
<td>Placer Dome Exploration Inc.</td>
<td></td>
</tr>
</tbody>
</table>

**Table 17. Drilling footage by region in Alaska, 1997**

<table>
<thead>
<tr>
<th>Type of drilling</th>
<th>Northern</th>
<th>Western</th>
<th>Eastern interior</th>
<th>South-central</th>
<th>South-western</th>
<th>Alaska Peninsula</th>
<th>South-eastern</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placer exploration</td>
<td>1,500</td>
<td>18,680</td>
<td>18,800</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>38,980</td>
</tr>
<tr>
<td>Placer basin</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Placer total</td>
<td>1,500</td>
<td>18,680</td>
<td>18,800</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>38,980</td>
</tr>
<tr>
<td>Coal total</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>9,458</td>
<td>4,540</td>
<td>-</td>
<td>-</td>
<td>13,998</td>
</tr>
<tr>
<td>Hardrock core</td>
<td>59,036</td>
<td>68,353</td>
<td>143,743</td>
<td>83,544</td>
<td>-</td>
<td>-</td>
<td>169,000</td>
<td>523,676</td>
</tr>
<tr>
<td>Hardrock rotary</td>
<td>-</td>
<td>7,380</td>
<td>146,886</td>
<td>-</td>
<td>26,568</td>
<td>-</td>
<td>-</td>
<td>180,834</td>
</tr>
<tr>
<td>Hardrock total</td>
<td>59,036</td>
<td>75,733</td>
<td>290,629</td>
<td>110,112</td>
<td>110,112</td>
<td>-</td>
<td>-</td>
<td>704,510</td>
</tr>
<tr>
<td>TOTAL (feet)</td>
<td>60,536</td>
<td>94,413</td>
<td>318,887</td>
<td>4,540</td>
<td>110,112</td>
<td>-</td>
<td>-</td>
<td>757,488</td>
</tr>
</tbody>
</table>

*Not reported.*

Note: Blasthole drilling not reported. Approximately 600,000 feet in 1997.
Table 18. Drilling footage reported in Alaska, 1982–97

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

<sup>a</sup>Core and rotary drilling not differentiated prior to 1987.<br>
<sup>b</sup>130,000 feet of core drilling was underground.<br>
- - - Not reported.<br>
Note: Blasthole drilling not reported. Approximately 600,000 feet in 1997.
GOVERNMENT ACTIONS

During 1997 the Division of Geological & Geophysical Surveys (DGGS) released new geophysical surveys in the historic mining regions of Rampart, Chulitna, and Petersville–Collinsville. New surveys were contracted and flown during 1997 near Iron Creek in the Talkeetna Mountains north of Anchorage, and south of Ruby on the Yukon River. The Iron Creek survey results were released in January 1998 and the Ruby survey in February 1998. The Division also worked with the U.S. Bureau of Land Management (BLM) to contract for airborne surveys near Wiseman in the Brooks Range. In an unusual arrangement BLM and the City of Wrangell sponsored a survey of several islands near the city in southeastern Alaska. The Wrangell surveys were released late in 1997 and the Wiseman survey was released early in 1998.

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

There was continued progress in clarification of water quality standards for the state in 1997, and the U.S. Geological Survey, working with the Division of Mining & Water Management, started long-term baseline studies of water quality in the Fortymile River drainage. The study includes differentiation of the total versus dissolved metals, metal speciation by valency, and lithgeochemical controls. It is hoped that these data will allow for more flexible permit conditions in the future.

Access to mineralized areas, especially across conservation systems units such as national parks or refuges, continues to be a State priority, and assertions of rights-of-way continue.

The appeal by some of the Mental Health Land Trust plaintiffs was denied by the State Supreme Court in 1997, leading to a final settlement of this contentious legal battle. The result is that the lands can now be offered for mineral leasing.

The Governor’s 1997 award for mined land reclamation was given to Ed Salter of Manley for his

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</thead>
<tbody>
<tr>
<td>State claim rentals</td>
<td>$537,355</td>
<td>$523,661</td>
<td>$709,568</td>
<td>$712,559</td>
<td>$929,744</td>
<td>$1,115,591</td>
</tr>
<tr>
<td>Production royalties</td>
<td>7,815</td>
<td>7,917</td>
<td>12,015</td>
<td>6,762</td>
<td>6,208</td>
<td>8,358</td>
</tr>
<tr>
<td>Mining license</td>
<td>465,153</td>
<td>425,607</td>
<td>481,907</td>
<td>484,035</td>
<td>481,000</td>
<td>1,900,000</td>
</tr>
<tr>
<td>Annual labor</td>
<td>- - - -</td>
<td>- - - -</td>
<td>- - - -</td>
<td>- - - -</td>
<td>- - - -</td>
<td>- - - -</td>
</tr>
<tr>
<td>Subtotal</td>
<td>1,010,323</td>
<td>957,185</td>
<td>1,203,490</td>
<td>1,203,356</td>
<td>1,479,852</td>
<td>3,113,449</td>
</tr>
</tbody>
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<tr>
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*a*Does not include state corporate income taxes, which were not released for this study.
N/A = not available.
- - = not reported.
work on Doric Creek, a tributary of Pioneer Creek near Eureka in the Manley Hot Springs district. Awards were also presented to Marc Poage for work on Crooked Creek at Central, to Morris Wolters of Cathlamet, Washington, for his work on Crooked Creek, and to Ryan Lode Mines of Fairbanks. The prestigious "Health of the Land Award" was presented to Cambior USA Inc. by Patrick Shea, director of the U.S. Bureau of Land Management, for the exemplary reclamation of the Valdez Creek placer mine.

Two long-term authors of these reports resigned in 1997. Thomas K. (Tom) Bundtzen received an award for 25 years of service to DGGS in July, and retired in August, to consult to the industry as Pacific Rim Geological Consulting (fig. 19). Albert H. (Al) Clough resigned from the Division of Trade & Development in August and joined Kvaerner Environmental in August 1997 to help in the closure of the Alaska-Juneau Mine (fig. 20).
### APPENDIX A

#### New claims staked in Alaska 1993-1997

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**TOTALS:** 601 341 376 681 1,871 2,042 3,365 4,889 6,544 9,292

**SOURCE:** State of Alaska Division of Mining & Water Management Kardex file.
## APPENDIX B

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### APPENDIX B

**Prospecting sites in Alaska 1993-1997**

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**TOTALS** | 1,222 | 233 | 1,455 | 710 | 698 | 1,408 | 943 | 447 | 1,390 | 2,157 | 852 | 3,009 | 2,699 | 993 | 3,692 |

**SOURCE:** State of Alaska Division of Mining & Water Management Kardex file.
## APPENDIX C

Mining licenses issued by and received from the Alaska Department of Revenue, 1997

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).

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<td>Applebee, Robert (WR)</td>
<td>Nome, AK 99762</td>
<td>PO Box 640</td>
<td>Gold-Silver</td>
<td>Gold-Silver</td>
<td>ML 9912</td>
<td>PO Box 640</td>
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<td>Arctic Mining (EIR)</td>
<td>Nome, AK 99762</td>
<td>PO Box 640</td>
<td>Gold-Silver</td>
<td>Gold-Silver</td>
<td>ML 9912</td>
<td>PO Box 640</td>
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<td>Arctic Whitney Inc. (WR)</td>
<td>Nome, AK 99762</td>
<td>PO Box 640</td>
<td>Gold-Silver</td>
<td>Gold-Silver</td>
<td>ML 9912</td>
<td>PO Box 640</td>
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<td>AU Mining Co. (WR)</td>
<td>Nome, AK 99762</td>
<td>PO Box 640</td>
<td>Gold-Silver</td>
<td>Gold-Silver</td>
<td>ML 9912</td>
<td>PO Box 640</td>
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<td>AU Mining Co. (WR)</td>
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<td>Gold-Silver</td>
<td>Gold-Silver</td>
<td>ML 9912</td>
<td>PO Box 640</td>
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<td>Barron, Dennis (WR)</td>
<td>Nome, AK 99762</td>
<td>PO Box 640</td>
<td>Gold-Silver</td>
<td>Gold-Silver</td>
<td>ML 9912</td>
<td>PO Box 640</td>
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<td>Bauer, Tod (WR)</td>
<td>Nome, AK 99762</td>
<td>PO Box 640</td>
<td>Gold-Silver</td>
<td>Gold-Silver</td>
<td>ML 9912</td>
<td>PO Box 640</td>
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<td>Bayless, Bill (EIR)</td>
<td>Nome, AK 99762</td>
<td>PO Box 640</td>
<td>Gold-Silver</td>
<td>Gold-Silver</td>
<td>ML 9912</td>
<td>PO Box 640</td>
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<td>Berry Enterprises (EIR)</td>
<td>Nome, AK 99762</td>
<td>PO Box 640</td>
<td>Gold-Silver</td>
<td>Gold-Silver</td>
<td>ML 9912</td>
<td>PO Box 640</td>
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</table>
Gold–Silver
Ketchum Creek
Circle district
ML 99084

Bickell, D. Harvey (EIR)
PO Box 1026
Dawson City, YT Y0B 1G0
Gold–Silver
Near Walker Fork
Fortymile district
ML 9356

Blue Ribbon Inc. (SCR)
PO Box 871906
Wasilla, AK 99688
Gold
Tributary of Cottonwood Creek
Yentna–Cache Creek district
ML 99082

Boehne, Roland L.
205 E. Dimond Blvd. #451
Anchorage, AK 99515
Gold–Silver
Red Creek
Unknown district
ML 5657

Botnan, Ted R. (EIR)
9950 Stephen Richards Dr.
Juneau, AK 99801
Gold
Treasure Creek
Fairbanks district
ML 5951

Bracale, Carl A. Jr. (NG)
PO Box 858
Gig Harbor, WA 98335
Gold–Silver
Camp Creek
Unknown district
ML 7302

Bradley, Joe
529 Lynwood
Anchorage, AK 99518
Gold–Silver
Skookum
Unknown district
ML 99116

Bras, Cy (EIR)
703 Swires Rd.
Kenai, AK 99611
Gold–Silver
Canyon Creek
Fortymile district
ML 9004

Burns, John R. (EIR)
PO Box 5
Chicken, AK 99732-0005
Gold–Silver
Davis Creek
Fortymile district
ML 4419

Byrd, Paul (EIR)
11192 Highway 37
Hibbing, MN 55746
Gold–Silver
Fortymile River
Fortymile district
ML 9452

Caro & Sons Mining Co. (EIR)
2113 Southern Ave.
Fairbanks, AK 99709
Gold–Silver
Hunter Creek
Rampart district
ML 7122

Carr, Brad (EIR)
PO Box 25
Anchorage, AK 99732-0025
Gold–Silver
Fortymile River
Fortymile district
ML 99119

Cassiterite Placers Inc. (EIR)
413 Cowles St.
Fairbanks, AK 99701
Gold–Silver
Cache, Sullivan, Quartz, and Tofty creeks
Hot Springs district
ML 7399

Caswell, James W. (SCR)
PO Box 196
Cantwell, AK 99729
Limestone
Valdez Creek district
ML 7437

Catt, Bruce D. & Barbara (EIR)
PO Box 45
Central, AK 99730
Gold–Silver
Crooked Creek
Circle district
ML 9310

Chase, Ernest M. (SWR)
PO Box 141
Aniak, AK 99588
Gold–Silver
Flat Creek
Marshall–Anvik district
ML 5611

Christensen, Robert & Kathleen (NG)
PO Box 871075
Wasilla, AK 99687-1075
Gold, Heavy metals
Unknown district
ML 5722

Chukchi Contracting Inc./Chukchi Miners (NR)

CIRI (SCR)
PO Box 93330
Anchorage, AK 99509
Unknown commodity
Anchorage district
ML 70023

CIRI (SCR)
PO Box 93330
Anchorage, AK 99509
Chromium
Seldovia area
Anchorage district
ML 90024, 99025

Clara Bea Inc. (WR)
PO Box 527
Seward, AK 99732
Gold–Silver
Candle Creek
Fairhaven district
ML 7489

Clark–Wiltz Co. Inc. (SWR)
PO Box 327
McGrath, AK 99627
Gold–Silver
Ganek Creek
Innoko district
ML 5696

Cominco Alaska Exploration (NG)
PO Box 3087
Spokane, WA 99210
Base metals
Tributary to Talarik
Unknown district
ML 6118

Cominco American Inc. (WR)
15124 E. Euclid Ave.
Spokane, WA 99216
Base metals
Divide and Quartz creeks
Cape Nome district
ML 5499

Conway, James P. (SCR)
HC 2 Box 7660
Palmer, AK 99645-7660
Gold–Silver
Palmer, AK 99645-7660

Cook, Fred A. (EIR)
PO Box 311
Delta Junction, AK 99737-0311
Gold–Silver
Portage Creek
Bonnifield district
ML 9248

Cook’s Mining (EIR)
PO Box 70456
Fairbanks, AK 99707-0456
Gold–Silver
Fairbanks district
ML 5955, 6973

Cope, Roger C. (NG)
PO Box 75404
Fairbanks, AK 99707-5404
Gold–Silver
Lewis Creek
Unknown district
ML 9411

Cyprus Gold Exploration Corp. (EIR)
PO Box 3299
Englewood, CO 80112
Gold
Not given
Unknown district
ML 99107

DaGagne, Joseph III (SCR)
PO Box 877226
Wasilla, AK 99687
Gold–Silver
Cache Creek
Yentna district
ML 5741

Daglow Exploration (NR)
PO Box 80930
Fairbanks, AK 99708
Gold–Silver
Big Creek
Chandalar district
ML 9364

Delaney, Arley
HC 31 Box 5066
Wasilla, AK 99654
Gold–Silver
Purches Creek
Unknown district
ML 5737

Delima, Don P. (EIR)
PO Box 56106
Manley Hot Springs, AK 99756
Gold–Silver
Boulder Creek
Hot Springs district
ML 7194

Eagle Creek
Fairbanks, AK 99709
PO Box 75404
Fairbanks, AK 99707-0456
Gold–Silver
Fairbanks district
ML 5955, 6973

Eagle Creek
Fairbanks, AK 99709
PO Box 75404
Fairbanks, AK 99707-0456
Gold–Silver
Fairbanks district
ML 5955, 6973
DeVore, Wesley (EIR)
665 3rd Ave.
Redwood City, CA 94063
Gold-Silver
Mosquito Fork, Fortymile River
Fortymile district
ML 9448, 99121

DeWitt, Estill (SCR)
2260 Belmont Dr.
Anchorage, AK 99517
Gold-Silver
Caribou and Alfred creeks
Nelchina district
ML 90075

Dooley, Christopher (NG)
15411 Husky St.
Eagle River, AK 99577
Not given
Not given
Not given
ML 9470

Double J Mining (EIR)
Judd Edgerton
PO Box 34
Chicken, AK 99732
Gold-Silver
Napoleon Creek
Fortymile district
ML 7485

Ellet Management Co., Inc. (EIR)
3535 Lansing Rd.
Charlotte, MI 49813
Gold-Silver
Olive Creek
Tolovana district
ML 9433

Ellingson, Harold & Alice (EIR)
1890 Steese Hwy.
Fairbanks, AK 99712
Gold-Silver
First Chance Creek
Fairbanks district
ML 9495

Ellis, Ed (SCR)
PO Box 13443
Trapper Creek, AK 99683
Gold-Platinum
Lake Creek
Yentna district
ML 5607

Ellis, Ed (SCR)
PO Box 13443
Trapper Creek, AK 99683
Gold-Platinum
Kahiltna River
Yentna district
ML 5735

Emerson, Robert C. (EIR)
1811 Phillips Field Rd.
Fairbanks, AK 99701
Gold-Silver
St. Patrick, Happy, and Eva creeks
Fairbanks district
ML 5913

Engstrom Dredging Co. (WR)
PO Box 536
Nome, AK 99762
Gold-Silver
Basin Creek
Cape Nome district
ML 7116

Fau, Thomas (EIR)
PO Box 10906
Fairbanks, AK 99710
Gold-Silver
Eva Creek
Buntnfield district
ML 6801

Fair, Dan W. (NG)
3457 Old Richardson Hwy.
North Pole, AK 99705
Unknown commodity
Unknown district
ML 9144

Fairbanks Gold Mining Inc. (EIR)
PO Box 73726
Fairbanks, AK 99707
Gold
Melba Creek
Fairbanks district
ML 9156

Faulkner, Harry Sr. (SWR)
PO Box 1307
Bethel, AK 99559-1307
Gold-Silver
Ophir Creek
Aniak-Tulukak district
ML 6157

Ferren, Danny W. (SCR)
PO Box 2248
Homer, AK 99603
Gold-Silver
Six Mile and Cub creeks
Hope district
ML 2705

Fichtelman, Guy/Don Collier (EIR)
PO Box 70
Chicken, AK 99732-0070
Gold-Silver
Fortymile River
Fortymile district
ML 9177

Fisher, Paul S. (EIR)
PO Box 71041
Fairbanks, AK 99707-1041
Gold-Silver

Doric Creek
Hot Springs district
ML 9317

Flat Creek Mining Co. Inc. (SWR)
PO Box 81464
Fairbanks, AK 99708
Gold-Silver
Flat Creek
Marshall district
ML 5824

Flat Creek Placers (SWR)
General Delivery
Flat, AK 99584
Gold-Silver
Flat Creek
Iditarod district
ML 5503

Flat Pick Mining (EIR)
PO Box 115
Central, AK 99730-0115
Gold-Silver
Switch Creek
Circle district
ML 6892

Fogarty, James & Sharon (EIR)
3498 Laurence Rd.
North Pole, AK 99705
Gold-Silver
Flume Creek
Fairbanks district
ML 9373

Franko, Chris (EIR)
Escondido, CA 92029
Gold-Silver
Sourdough Creek
Fairbanks district
ML 9442

G.A. Hanks & Sons (EIR)
18909 Old River Rd.
W. Sacramento, CA 95691
Gold-Silver
Lost Chicken Creek
Fortymile district
ML 5828

Gelvin, Stanley M. (EIR)
PO Box 30149
Central, AK 99730
Gold-Silver
Greenhorn Creek
Circle district
ML 9437

Geo Quest (EIR)
Michael Bushy
PO Box 71
Chicken, AK 99732
Gold-Silver
Chicken Creek
Fortymile district
ML 6794

Gibson, Wayne (WR)
1610 Southern
Fairbanks, AK 99709
Gold-Silver
Golden Creek
Gold Hill-Melozita district
ML 9032

Girdwood Mining Co. (SCR)
PO Box 1089
Anchorage, AK 99587-1089
Gold-Silver
Crow Creek
Anchorage district
ML 5590

Glacier Six Enterprises (EIR)
Vic Justis
Route 2 Box 735
Seldovia, AK 99669
Gold-Platinum
Broxson Creek
Delta River district
ML 7311

Glassburn, Don E. (EIR)
PO Box 107
Central, AK 99730
Gold-Silver
Gold Dust Creek
Circle district
ML 7010

Global Resources Inc. (EIR)
43445 Business Park Dr.
Temecula, CA 92590
Gold-Silver
Cripple Creek
Fairbanks district
ML 9132

Gold Hill Mining Co. (EIR)
30033 Redwood Hwy.
Cave Junction, OR 97523
Gold-Silver
Harrison Creek
Circle district
ML 7289

Gold Star Mining (EIR)
Ross Novak
PO Box 83200
Fairbanks, AK 99708-3200
Gold-Silver
Eureka Creek
Hot Springs district
ML 7060

Golden Glacier Inc. (WR)
PO Box 1008
Nome, AK 99762
Gold-Silver
Cooper Gulch
Cape Nome district
ML 99127
Goodson, Richard (EIR)  
2605 E. 50th, #8  
Anchorage, AK 99507  
Gold-Silver  
North Fork Fortymile River  
Fortymile district  
ML 9052

Granath, Gene A. (SCR)  
PO Box 574  
Kenai, AK 99611-0574  
Gold-Silver  
Falls Creek  
Hope-Sunrise district  
ML 6533

Granite Creek Mining (SWR)  
PO Box 261  
McGrath, AK 99627-0261  
Gold-Silver  
Granite Creek  
McKinley-Iditarod district  
ML 6223

Green Mining & Exploration (EIR)  
PO Box 61455  
Fairbanks, AK 99706-1455  
Gold-Silver  
Hunt Creek  
Rampart district  
ML 9306

Green Mining & Exploration (EIR)  
PO Box 10657  
Fairbanks, AK 99710  
Gold-Silver  
Faith Creek  
Fairbanks district  
ML 9035

Green Mining & Exploration (WR)  
PO Box 49  
Ester, AK 99725-0049  
Gold-Silver  
Ready Bullion Creek  
Fairbanks district  
ML 7201

Hansen, Kenneth C. (EIR)  
PO Box 11117  
Fairbanks, AK 99706-1117  
Gold-Silver  
Hassel, Gerald (EIR)  
PO Box 110930  
Anchorage, AK 99511  
Gold-Silver  
Hassell Creek  
Fairbanks district  
ML 7047

Hayden, Forest A. (EIR)  
PO Box 74246  
Fairbanks, AK 99707  
Gold-Silver  
Whitehorse Creek  
Fairbanks district  
ML 90039

Heflinger, Fred (EIR)  
PO Box 82390  
Fairbanks, AK 99708  
Gold-Silver  
Walker Fork  
Fortymile district  
ML 9124

Heflinger Mining Co. (EIR)  
665 10th Ave., #307  
Fairbanks, AK 99701  
Gold-Silver  
Livengood Creek  
Livengood-Tolovana district  
ML 7235

Hepen, Alf M. (EIR)  
PO Box 74246  
Fairbanks, AK 99707  
Gold-Silver  
Cleary Creek  
Fairbanks district  
ML 90039

House, Conrad H. (NG)  
3911 Tilleson Way  
North Pole, AK 99705  
Gold-Silver  
Swift Creek  
Unknown district  
ML 5823

Hron, Thomas (SCR)  
4125 Aircraft Dr.  
Anchorage, AK 99502  
Gold-Silver  
Lake Creek  
Yentna district  
ML 5740

Jackson Mining Co. (EIR)  
936 Copper St.  
Fairbanks, AK 99709  
Gold-Silver  
Totatlanika River  
Bonnifield district  
ML 7469

Jacobs, David (EIR)  
HCl Box 3090  
Healy, AK 99743  
Gold-Silver  
Rex Creek  
Bonnifield district  
ML 9329

Jensen, Daniel D. (EIR)  
PO Box 12  
Delta Junction, AK 99737-0012  
Gold-Silver  
McComber Creek  
Delta River district  
ML 7249

Jiles, Overton J. (NG)  
5250 Auburn Folsom Rd.  
Loomis, CA 95650  
Gold  
Gold Bottom Gulch  
Unknown district  
ML 7249

Johnson, Ernest (NG)  
222 Kern St.  
Taft, CA 93268  
Not given  
Not given  
Unknown district  
ML 9478

Johnson, Gregory (SCR)  
12141 Curtic Circle  
Eagle River, AK 99577  
Gold-Silver  
Bird Creek  
Anchorage district  
ML 5742

Keller, Robert W. (EIR)  
PO Box 385  
Huntington, OR 97909-0385  
Gold-Silver  
Totatlanika River  
Bonnifield district  
ML 5889
Munsella, Vincent C. (EIR)
2920 Munsella Ln.
Fairbanks, AK 99712
Gold—Tungsten
Victoria Creek
Fairbanks district
ML 625

Moore, Roger (EIR)
288 Rambling Rd.
Fairbanks, AK 99712
Gold—Silver
Ester Creek
Fairbanks district
ML 9331

Morgan, Tom (EIR)
842 Poirier St.
Coq, BC V3J 6C2
Canada
Gold
McCord Creek
Fairbanks district
ML 5893

Morris, Claude (NG)
PO Box 547
Girdwood, AK 99587
Not given
Not given
Unknown district
ML 6089

Morris Mining (NG)
General Delivery
Willow, AK 99688
Gold—Silver
Grubstake Gulch
Unknown district
ML 99120

Mrak, William (SCR)
PO Box 1963
Palmer, AK 99645-1963
Gold
Willow and Grubstake creeks
Hatcher Pass district
ML 6220

Mullikin, Christopher L. (WR)
PO Box 790
Homer, AK 99603-0790
Gold—Silver
Boulder and Turner creeks
Kougarok district
ML 9061

Mullikin, Dan (WR)
PO Box 790
Homer, AK 99603-0790
Gold—Silver
Noxapaga and Boulder creeks
Kougarok district
ML 7271

Munsell, James L. (EIR)
PO Box 81155

Fairbanks, AK 99708-1155
Gold—Silver
Little Minook Jr. Rampart district
ML 5862

NB Tweet & Sons (WR)
PO Box 1107
Nome, AK 99762-1107
Gold—Silver
Kougarok River
Kougarok district
ML 5845

Ness, Ken (NG)
1137 Tower Rd.
Castle Rock, WA 98611
Not given
Not given
Unknown district
ML 99109

Nevers, Harold A. (EIR)
8148 Pinewood Dr.
Juneau, AK 99801
Gold—Silver
American Creek
Hot Springs district
ML 7284

Newmont Exploration Ltd. (EIR)
1818 Steese Hwy.
Fairbanks, AK 99712
Gold—Silver
Dome and Little Eldorado creeks
Fairbanks district
ML 7522

Nicholson, Doug & Peter Frantz (NR)
3865 Ulbrich
Fairbanks, AK 99709
Gold—Silver
Linda Creek
Koyukuk district
ML 9080

Nordeen, William H. (NR)
PO Box 9013
Fairbanks, AK 99701-9013
Gold—Silver
Emma Creek
Koyukuk—Nolan district
ML 7372

Nova Natural Resources Corp. (WR)
PO Box 481388
Denver, CO 80248-1388
Gold—Silver
Cape Nome district
ML 9092

Nyac Mining Co. (SWR)
Tulukskak Dredging Ltd.
415 8th Ave.

Anchorage, AK 99501
Gold—Silver
Bear Creek
Aniak—Tulukskak district
ML 5641

O’Donnell, Franklin L. Jr. (EIR)
7110 Canaday Rd.
Salcha, AK 99714
Gold—Silver
Moose Creek
Bonnifield district
ML 8978

Old Yeller Mine (SCR)
Ralph Simonson
27282 Palmer Jct. Rd.
Elgin, OR 97827
Gold—Silver
Surprise Creek
Valdez Creek district
ML 6736

Olson, Alan G. (WR)
PO Box 165
Palmer, AK 99645-0165
Gold—Silver
Candle Creek
Candle Creek district
ML 6219

Olson, Dave (WR)
PO Box 1835
Nome, AK 99762
Gold—Silver
Canyon Creek
Cape Nome district
9434

Olson, Gordon E. (EIR)
7100 N. Milford Rd.
Holly, MI 48442
Gold—Silver
Jack Wade Creek
Fortymile district
ML 5923

Olson, Stephen G. (EIR)
PO Box 106
Tok, AK 99780-0106
Gold—Silver
Liberty Creek
Fortymile district
ML 5883

Olson, Steven L. (EIR)
PO Box 10655
Fairbanks, AK 99710-0655
Gold—Silver
Eagle Creek
Fortymile district
ML 6925

Omega Mining Co. (EIR)
Richard Ott

PO Box 72748
Fairbanks, AK 99707
Gold—Silver
Omega Creek
Fortymile district
ML 9062

Owen, Jeff (EIR)
Box BYA
Tok, AK 99780
Gold—Silver
Younger Creek
Fortymile district
ML 5807

Owen, Ted (EIR)
12307 E. Stillwater
Redding, CA 96003
Gold—Silver
Walker Fork
Fortymile district
ML 9039

Pacific Alaska Resources (EIR)
PO Box 4879
Vancouver, WA 98662
Gold—Base metals
Stonehouse Creek area
Bonnifield district
ML 9463

Pacific Mining (NG)
PO Box 110842
Anchorage, AK 99511
Gold—Silver
Porcupine Creek
Unknown district
ML 9129

Paradise Valley Inc. (NR)
Battles, AK 99726
Gold—Silver
Birch, Oregon, and Anges creeks
Koyukuk—Nolan district
ML 6921

Parr, Glen C. (EIR)
624 Maple
Shelton, WA 98584
Gold—Silver
Little Moose Creek
Bonnifield district
ML 6936

Paul & Co. (EIR)
PO Box 83102
Fairbanks, AK 99708
Gold—Silver
Frying Pan Creek
Circle district
ML 9407

Penz, Dave (SWR)
PO Box 29
Russian Mission, AK 99657
Gold
Buster Creek
Marshall district
ML 6216

Perkins Mining Tech (SCR)
PO Box 671475
Chugiak, AK 99567
Gold-Silver
Willow Creek
Willow Creek district
ML 5746, 5749

Peterson, Donald E. (SER)
PO Box 172
Haines, AK 99877
Gold-Silver
Porcupine Creek
Juneau district
ML 5700

Pharis, Michael & Jim
Olmstead (NR)
3410 Tillesson Way
North Pole, AK 99705
Gold-Silver
Gold Creek
Koyukuk-Nolan district
ML 9403

Philpott, Roy (EIR)
PO Box 72198
Fairbanks, AK 99707-2198
Gold-Silver
Smith Creek
Koyukuk-Nolan district
ML 9830

Placer Dome US Inc. (NG)
200 W Int'l Airport Rd. C-1
Anchorage, AK 99502
Not given
Not given
Unknown district
ML 9456

Placer Dome US Inc. (NG)
240 S. Rock #117
Reno, NV 89502
Not given
Not given
Unknown district
ML 9432, 9439

Plano, Dan and Cindy (SWR)
PO Box 878275
Wasilla, AK 99687-8275
Gold-Silver
Anvil Creek/Innoko River
Innoko district
ML 5570

Point Lena Investments LLC
(SER)
PO Box 32159
Juneau, AK 99803
Not given
Formerly Red Samm Creek
Juneau district
ML 99111

Pomrenke, Steve (WR)
PO Box 308
Nome, AK 99762
Gold-Silver
Triple Creek
Cape Nome district
ML 9055

Pushcar, Jerry (WR)
PO Box 1604
Nome, AK 99762
Gold-Silver
Iron and Benson creeks
Unknown district
ML 9462

Quartz Creek Exploration
(SCR)
Milo Floh
PO Box 242
Sterling, AK 99672
Gold-Silver
Quartz Creek
Hope district
ML 6208

Read, Donald M. (EIR)
PO Box 71638
Fairbanks, AK 99707-1638
Gold-Silver
Vault Creek Bench
Fairbanks district
ML 7293

Redmond, Richard J. (NG)
PO Box 8700
Indian, AK 99740-8700
Unknown commodity
Unknown district
ML 6366

Reed, Scott C. (EIR)
PO Box 453
Council, AZ 86333
Gold-Silver
North Fork Fortymile River
Fortymile district
ML 9387

Regner, Leo A. (EIR)
PO Box 72733
Fairbanks, AK 99707-2733
Gold-Silver
Lilliwig and Ingle creeks
Fortymile district
ML 6037

Renk, Russell (WR)
641 W. 91st Ave.
Anchorage, AK 99515
Gold-Silver
Willow Creek
Solomon district
ML 5718

Roberts, Robert W. (EIR)
PO Box 225
Tok, AK 99780
Gold

Lucky Gulch
Valdez Creek district
ML 2701, 9096

Sather, Norman M. (EIR)
1213 Copper St.
Fairbanks, AK 99709
Gold-Silver
Fairbanks Creek
Fairbanks district
ML 7112

Sayer, Paul (SWR)
PO Box 10
Homer, AK 99603-0010
Gold-Silver
Little Creek
Innoko district
ML 6223

Schafer, Beatrice/Terry Russell
(NG)
PO Box 66
Chicken, AK 99732-0066
Gold-Silver
Uhler Creek
Fortymile district
ML 6937

Schnebly, John J. (SER)
PO Box 149
Haines, AK 99827
Gold-Silver
Porcupine Creek
Porcupine district
ML 7401

Schwartz, John (EIR)
PO Box 19
Chicken, AK 99732
Gold-Silver
Our Creek
Fortymile district
ML 9322

Schofield, Walter P. (EIR)
PO Box 945
Tok, AK 99780-0945
Gold-Silver
South Fork Fortymile River
Fortymile district
ML 7451

SDC Mining (NG)
1095 Violet Dr.
Fairbanks, AK 99712
Not given
Not given
Unknown district
ML 9446
Sebons, Mark (SCR)  
PO Box 1107  
Haines, AK 99827  
Gold-Silver  
Porcupine Creek  
Juneau district  
ML 2700

Secon Inc. (SER)  
10505 NE 38th Pl.  
Kirkland, WA 98033  
Sand and Gravel  
Lena Point  
Juneau district  
ML 6054

Soule, Harold L. (SCR)  
2840 E. 142nd Ave.  
Anchorage, AK 99516  
Gold-Silver  
Windy Creek  
Valdez Creek district  
ML 5560

Sound Quarry Inc. (WR)  
PO Box 1008  
Nome, AK 99762  
Rock  
Cape Nome  
Cape Nome district  
ML 99126

Stebsin Native Corp. (WR)  
PO Box 70110  
Anchorage, AK 99571  
Gravel, sand, and stone  
Unidentified  
Candle district  
ML 99011

Stee, Russell E./Larry Fine (WR)  
PO Box 904316  
Houston, AK 99690-0316  
Gold-Silver  
East Fork Iron Creek  
Solomon district  
ML 6491

Stein, Robert D. (EIR)  
105 Dunbar Ave.  
Fairbanks, AK 99701  
Gold-Silver  
Gilmore Creek  
Fairbanks district  
ML 5909

Sternberg, Tom (NG)  
3154 E. 19th Ct.  
Anchorage, AK 99508  
Unknown commodity  
Unknown district  
ML 5725

Stough, Richard B. (EIR)  
PO Box 711  
Wrangell, AK 99929-0711  
Gold-Silver  
Dome Creek  
Fairbanks district  
ML 4277

Stultz, Donald D. (EIR)  
PO Box 700  
Nome, AK 99762  
Gold-Silver  
Oregon Creek  
Cape Nome district  
ML 5983

Surf Food Products, Inc. (AP)  
7716 97th Ave. SW  
Tacoma, WA 98498  
Gravel-Rock  
Kodiak district  
ML 5731, 9404

Surprise Mining Co. (SCR)  
Aubrey, Larson, Staggs  
PO Box 11700  
Chickaloon, AK 99674-1170  
Gold-Silver  
Glass Creek  
Hatcher Pass district  
ML 5727

Swarthout, Ralph  
PO Box 141801  
Anchorage, AK 99514-1801  
Not given  
Not given  
Unknown district  
ML 5649

Swenson, Lloyd D. (EIR)  
1843 Bridgewater Dr.  
Fairbanks, AK 99709  
Gold-Silver  
Slate Creek  
Rampart district  
ML 7343

Swenson, Richard A. (EIR)  
PO Box 16205  
Two Rivers, AK 99716-6205  
Gold-Silver  
Doric Creek  
Hot Springs district  
ML 6872

Swenson, Richard (EIR)  
PO Box 16205  
Two Rivers, AK 99716-6205  
Gold-Silver  
Eureka Creek  
Hot Springs district  
ML 9473

Tachik, Wayne H. (EIR)  
PO Box 3503  
Soldotna, AK 99669-3503  
Gold-Silver  
Moose Creek  
Bonnifield district  
ML 6719

Taiga Mining Co. Inc. (WR)  
4740 E. 115th Ave.  
Anchorage, AK 99516  
Gold-Silver  
Clear Creek  
Koyukuk–Hughes district  
ML 9017

Taiga Mining Co. Inc. (WR)  
4740 E. 115th Ave.  
Anchorage, AK 99516  
Gold-Silver  
Bear and Ida creeks  
Koyukuk–Hughes district  
ML 9139

Taiga Mining Co. Inc. (WR)  
4740 E. 115th Ave.  
Anchorage, AK 99516  
Gold-Silver  
Dry Creek  
Koyukuk–Hughes district  
ML 9388

Tallini, Roger P. (EIR)  
PO Box 3474  
Flagstaff, AZ 86003-3474  
Gold-Silver  
South Fork Fortymile River  
Fortymile district  
ML 9028

Tatlow Carl D. & Janice L. (SCR)  
PO Box 1621  
Palmer, AK 99645  
Gold-Silver  
Peters Creek  
Yentna district  
ML 5736

Taylor, Larry R. (EIR)  
PO Box 101  
Eagle, AK 99788-0101  
Gold-Silver  
Fortymile River  
Fortymile district  
ML 9179

Teslin Mining Co. (NG)  
PO Box 1989  
Nome, AK 99762  
Not given  
Not given  
Unknown district  
ML 9436

The Gravel Station (SCR)  
PO Box 3489  
Palmer, AK 99645-3489  
Sand and Gravel  
Hornung Property  
Hatcher Pass district  
ML 99013

Thompson, Kevin (SCR)  
PO Box 87534  
Wasilla, AK 99687-5344  
Gold-Silver  
Gold Hill above White Creek  
Valdez Creek district  
ML 5729

Thurman Oil & Mining Inc. (EIR)  
925 Aurora Dr.  
Fairbanks, AK 99709  
Gold-Silver  
Rhode Island Creek  
Hot Springs district  
ML 9125
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<td>Thurman Oil &amp; Mining Inc. (WR)</td>
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<td>Fairbanks, AK</td>
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<td>PO Box 5823</td>
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<td>PO Box 113</td>
<td>Girdwood, AK</td>
<td>99587</td>
<td>99587-0113</td>
<td>Gold-Silver</td>
<td>ML 5564</td>
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<td>Treesh, James W. (SCR)</td>
<td>18550 Man O'War Rd.</td>
<td>Eagle River, AK</td>
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<td>Gold-Silver</td>
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<td>Treider, Eric (NG)</td>
<td>PO Box 8138</td>
<td>Nikiski, AK</td>
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<td>Cheryl Jong</td>
<td>Nome</td>
<td>99705</td>
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<td>ML 7358</td>
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<td>TruDeck Mining (EIR)</td>
<td>PO Box 135</td>
<td>Healy, AK</td>
<td>99743-0135</td>
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<td>Polymetallic</td>
<td>ML 9369</td>
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<td>Ventures Resources Alaska Corp. (NG)</td>
<td>PO Box 100059</td>
<td>Anchorage, AK</td>
<td>99510</td>
<td>99510-0059</td>
<td>Base-Precious metals</td>
<td>Unknown district</td>
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<td>Wiggers, Dan A. (NR)</td>
<td>HC 30 Box 5283</td>
<td>Fairbanks, AK</td>
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<td>Gold-Silver</td>
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<td>PO Box 30063</td>
<td>Central, AK</td>
<td>99730</td>
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<td>Wolff, Ray (EIR)</td>
<td>30033 Redwood Highway</td>
<td>Cave Junction, OR</td>
<td>97523</td>
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<td>Gold-Silver</td>
<td>ML 9363</td>
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<td>Wolff, Flint, L. (EIR)</td>
<td>Box BYA</td>
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<td>Wood, James (WR)</td>
<td>PO Box 58597</td>
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<td>99711</td>
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<td>Wright, Robert P. (EIR)</td>
<td>PO Box 60783</td>
<td>Fairbanks, AK</td>
<td>99706</td>
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<td>Gold-Silver</td>
<td>ML 99108</td>
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**Notes:**
- Various districts are not specified.
- ML numbers are not consistent across entries.
- Some entries list multiple districts or commodities.
- Contact information includes names, addresses, and phone numbers.
- Special report details include mineral and metal industries.
Last Chance Creek  
Fairbanks district  
ML 9155

Wyka, Wayne (EIR)  
PO Box 74051  
Fairbanks, AK 99707  
Gold-Silver  
Fortymile Creek  
Fortymile district  
ML 9477

Yellow Eagle Mining Inc. (EIR)  
PO Box 80566  
Fairbanks, AK 99708  
Gold-Silver  
Ester and Cripple creeks  
Fairbanks district  
ML 9127

Yutan Construction Co. (EIR)  
PO Box 71775  
Fairbanks, AK 99707

Rock  
Browns Hill  
Fairbanks district  
ML 99026

Zimmer, George W. (WR)  
PO Box 140174  
Anchorage, AK 99514-0174  
Gold-Silver  
Quartz Creek  
Koyukuk district  
ML 5555

Zimmerman, Charles J. (EIR)  
PO Box 41  
Manley Hot Springs, AK 99756  
Gold-Silver  
Killarney Creek  
Hot Springs district  
ML 9392
APPENDIX D

Selected significant mineral deposits and mineral districts in Alaska*

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).
Apex-El Nido, 104, (fig. D-3).
Apollo-Sitka mines, 86, (fig. D-3).
Arctic, 9, (fig. D-1).
Avon Hills, 12, (fig. D-3).
Bautoff, 75, (fig. D-2).
Bear Mountain, 21, (fig. D-2).
Big Creek/Ladue, 58, (fig. D-1).
Big Hurrath, 32, (fig. D-3).
Binocular and other prospects, 72, (fig. D-1).
Bohemia Basin, 103, (fig. D-3).
Bonanza Creek, 122, (fig. D-3).
Bond Creek, 73, (fig. D-2).
Bonifield district massive sulfide deposits, 54, (fig. D-1).
Bonneville, 8, (fig. D-1).
Bramble, 79, (fig. D-3).
Brady Glacier, 98, (fig. D-3).
BT, 54, (fig. D-1).
Buck Creek, 23, (fig. D-2).
Cape Creek, 22, (fig. D-2).
Carl Creek, 74, (fig. D-2).
Casa VARM, 53, (fig. D-1).
Castle Island, 111, (fig. D-1).
Chicahog, 101, (fig. D-3).
Chiocchioina, 68, (fig. D-3).
Circle mining district, 52, (fig. D-3).
Clair Point, 82, (fig. D-3).
Coal Creek, 43, (fig. D-2).
Copper City, 119, (fig. D-1).
Corralilis 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).
Doolin Creek-Aniak district, 84, (fig. D-3).
Drenchwater, 3, (fig. D-3).
Dry Creek, 54, (fig. D-1).
Ear Mountain, 25, (fig. D-2).
Elmam, 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/Innachuk district, 39, (fig. D-3).
Fort Knox, 69a, (fig. D-3).
Forty mile mining district, 60, (fig. D-3).
Frost, 7a, (fig. D-1).
Funter Bay mining district, 90, (fig. D-3).
Galena Creek, 21a, (fig. D-1).
Girny Creek, 4, (fig. D-1).
Golden Zone mine, 64, (figs. D-1-3).
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, 95, (fig. D-1).
Hannum, 27, (fig. D-1).
Herts Chichagof, 101, (fig. D-3).
Horsfeld, 76, (fig. D-2).
Hot Springs mining district, 47, (fig. D-3).
Hudson mining district, 117, (figs. D-1-2).
Iditarod district, 43a, (fig. D-3).
Illinois Creek, 44a, (fig. D-1).
Independence, 79, (fig. D-3).
Independence Creek, 28, (fig. D-1).
Innachuk River, 39, (fig. D-3).
Innoko-Tolstoi mining district, 43b, (fig. D-3).
Ivanof, 1, (fig. D-2).
Jimmy Lake, 94, (fig. D-1).
Johnson River, 125, (fig. D-3).
Juelin, 128, (fig. D-3).
Jumbo, 118, (fig. D-1).
Kachalik, 34, (fig. D-3).
Kantishna mining district, 61, (fig. D-3).
Kasaan mining district, 114, (fig. D-1).
Kasna Creek, 92, (fig. D-1).
Kenuk Mountain, 123, (fig. D-3).
Kennecott deposits, 71, (fig. D-1).
Kensington, 127, (fig. D-3).
Kiviklort Mountain, 5a, (fig. D-1).
Klery Creek, 14, (fig. D-3).
Klukwan, 96, (fig. D-1).
Kougarok Mountain, 26, (fig. D-2).
Koyukuk-Hughes mining district, 42, (fig. D-3).
Koyukuk-Nolan mining district, 16, (fig. D-3).
Latech Point, 80, (fig. D-1).
Liberty Belle, 54, (fig. D-1).
Lik, 11, (fig. D-1).
Livengood-Tolovana mining district, 48, (fig. D-3).
Lost River, 24, (fig. D-2).
Lucky Shot, 79, (fig. D-3).
Malcolm, 124, (fig. D-2).
Mertner Lode, 59, (fig. D-3).
Midas mine, 77, (fig. D-1).
Mike deposit, 90, (fig. D-2).
Mirror Harbor, 102, (fig. D-3).
Misheguk Mountain, 20, (fig. D-2).
Mishnek Mountain, 13, (fig. D-3).
Mount Pirenie, 56, (fig. D-2).
Mt. Prindle, 50, (fig. D-3).
Nabesna mine, 69, (fig. D-3).
Nohawack, 12, (fig. D-1).
Nom prospect, 65, (fig. D-1).
Nimikluk River, 126, (fig. D-1).
Nixon Fork, 44, (fig. D-3).
Nome mining district, 30, (fig. D-3).
Nunataks, 97, (fig. D-2).
Omalik, 35, (fig. D-1).
Omar, 7, (fig. D-1).
Orange Hill, 73, (fig. D-2).
Pebble Creek, 129, (fig. D-1).
Placer River, 38, (fig. D-2).
Pleasant Creek, 53, (fig. D-1).
Pogo, 130, (fig. D-3).
Pooovook Mountain, 40, (fig. D-2).
Porcupine Lake, 18, (fig. D-2).
Purcell Mountain, 41, (fig. D-2).
Quartz Creek, 37, (fig. D-1).
Quartz Hill, 120, (fig. D-3).
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).
Rou Covic, 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-3).
Simuk River region, 29, (fig. D-1).
Slate Creek, 59, (fig. D-3).
Sleet Mountain, 93, (fig. D-2).
Smucker, 11, (fig. D-1).
Sneddon, 107, (fig. D-3).
Snipe Bay, 113, (fig. D-3).
Solomon mining district, 33, (fig. D-3).
Spiral 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, 46, (fig. D-3).
Vinasale Mountain, 44b, (fig. D-3).
Virginia Creek, 54, (fig. D-1).
Von Franz Mountain, 44c, (fig. D-3).
War Baby, 79, (fig. D-3).
Weasel Mountain, 20, (fig. D-3).
Whoopin Creek, 6, (fig. D-1).
Willow Creek, 79, (fig. D-3).
Wind River, 19, (fig. D-1).
Wind Creek, 36, (fig. D-2).
Zackly, 67a, (fig. D-1).

*This generalized summary does not describe all of the known 6,400 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, 1997.

Map no.

1 Lik—Major strata-bound massive sulfide (Zn–Pb–Ag–Ba) deposit in black shale and chert. Proven reserve (Lik) estimate of 21.77 million tonnes (24 million tons) of 9% Zn, 3.1% Pb, and 48 g/tone (1.4 oz/ton) Ag (fig. D-1).

2 Red Dog—At least three major strata-bound massive sulfide deposits hosted in Pennsylvanian or Mississippian shale; similar to locality 1. (a) The Main Deposit at Red Dog contains 55.8 million tons of measured and indicated ore grading 19.0% Zn, 5.2% Pb, with 2.9 oz/ton Ag. (b) The Aqqaluk Deposit contains 80.4 million tons grading 13.6% Zn, 3.7% Pb, and 1.9 oz/ton Ag. (c) The Hilltop Deposit with an inferred reserve is 10.6 million tons grading 17.8% Zn, 5.5% Pb, and 3.42 oz/ton Ag. Resource in the Paalaaq deposit is 15.5 million tons of 14.3% Zn, 3.9% Pb, and 2.42 oz/ton Ag. (fig. D-1).

3 Drenchwater—Mississippian and Pennsylvanian shales and cherts contain three strata-bound base metal occurrences spatially related to acid volcanics. The lowest unit, a siliceous mudstone, contains a 0.6 m (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 1,982 m (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, 1.4 g/t (0.04 oz/ton) Au, and 1,028 g/t (30 oz/ton) Ag (fig. D-1).

5a Kivliktort Mountain—Mineralized float is widespread on the north flanks of the mountain, apparently spatially 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 Whoopie 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, 4.8 g/t (0.14 oz/ton) Au, and 207 g/t (6 oz/ton) Ag (fig. D-1).

7a Frost—Possible 8.2 million tonnes (9 million tons) 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 1.6 km (1 mi). Selected samples contain up to 13.2% Zn (fig. D-1).

8 Bornite—Major strata-bound Cu-Zn deposit in brecciated carbonate rock of Devonian age; 4.56 million tonnes (5.0 million tons) orebody contains 4.0% Cu and accessory Zn and Co. Larger reserve estimate of 36.2 million tonnes (40 million tons) of about 2% Cu and undisclosed amount of Zn and Co. At grade of 1.2% Cu, reserves are 91 million tonnes (100 million tons) (fig. D-1).

9 Arctic—Major volcanicogenic (Cu-Zn) massive sulfide deposit hosted in sequence of metarhyolite, metatuff, and graphitic schist of Devonian age; indicated reserves of 36.3 million...
Figure D-3. Significant gold, silver, platinum, and strategic mineral deposits in Alaska, 1997.

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, 103 to 377 g/tonne (3 to 11 oz/ton) Ag (fig. D-1).

11 Smucker-Middle Paleozoic volcanogenic massive sulfide deposit; 915 m (3,000 ft) long and up to 58 m (190 ft) wide; contains significant tonnage of Cu-Pb-Zn ore that grades 1.5% Pb, 5 to 10% Zn, 103 to 343 g/tonne (3 to 10 oz/ton) Ag, with minor Au (fig. D-1).

12 Avan Hills—Disseminated chromite in layered ultramafic rocks; grab samples contain up to 4.3% Cr with 0.51 g/tonne (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 974 kg (31,320 oz) Au (fig. D-3).

15 Ernie Lake (Ann Creek)—Strata-bound 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 10,580 kg (340,152 oz) Au. Significant deep placer reserves remain (fig. D-3).

17 Chandalar mining district—Major Au producing district; substantial production in excess of 2,000 kg (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 40,800 tonnes.
(45,000 tons) with grade of 69 g/tonne (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 (CaF₂) reported, with grab samples of 4.8% Cu (fig. D-2).

19 Wind River—Strata-bound 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 occurrence in intrusive breccia. Rock samples containing up to 0.8% Mo and 0.6% W occur within a 14 ha (35 acre) area where soil samples average more than 0.2% Mo, and an adjacent 10 ha (25 acre) area where rubble contains wolframite has soils averaging greater than 0.12% W. 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 189 g/tonne (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 454 tonnes (500 tons) Sn produced from 1935 to 1941; from 1979 to 1990, produced 940 tonnes (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 998 tonnes (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 317 tonnes (350 tons) Sn produced from skarn and greisen lode sources. Measured reserves amount to 22.3 million tonnes (24.6 million tons) that grade 0.15% Sn, 16.3% CaF₂, and 0.03% WO₃, based on 13,720 m (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 Kougak 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 136,050 tonnes (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 9 to 46 m (30 to 150 ft) thick. Mineralized zone reported to assay up to 10% Pb, 2.2% Zn, 1.4 g/tonne (0.04 oz/ton) Au, and 60.3 g/tonne (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 5,141 g/tonne (150 oz/ton) Ag. Mineralization restricted to shear zone in carbonates (fig. D-1).

29 Simuk 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 2,440 m (8,000 ft) along strike (fig. D-1).

30 Nome mining district—Major placer Au producer. Production from 1897-1995 in excess of 151,600 kg (4,874,499 oz) Au all from placers. Sproradic Sb and W production in past (fig. D-3).

31 Rock Creek—About 10.0 million tons grading 2.5 g/tonne (0.072 oz/ton) Au in vein swarms and stringers in an area 457 m (1,500 ft) long, 152 m (500 ft) maximum width and 91 m (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 840 kg (27,000 oz) Au from nearly 45,350 tonnes (50,000 tons) mill tailings. Proven, inferred, and indicated reserves total 94,328 tonnes (104,000 tons) that grade 21 g/tonne (0.61 oz/ton) Au, 19 g/tonne (0.55 oz/ton) Ag, and credits of WO₃ (fig. D-3).

33 Solomon and Council mining districts—Major placer Au districts; produced over 32,550 kg (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 5.9 million tonnes (6.5 million tons) grading 3.4 g/tonne (0.1 oz/ton) Au (fig. D-3).

34 Kachaulik—U prospect in Cretaceous alkalic intrusive rocks. Highly anomalous geochemical values and U concentrations of 1,000 ppm reported (fig. D-3).

35 Onalak—Vein-type Pb-Zn-Ag massive sulfide prospect in Paleozoic carbonate rocks; from 1881 to 1900, produced 363 tonnes (400 tons) of Pb-Zn ore that averaged about 10% Pb and 1.371 g/tonne (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 343 g/tonne (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/Innachuk district—Placer deposits with 10,812 kg (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 Poonoopuk 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).


43a Iliatard district—Major placer Au district; produced 48,560 kg (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).

43b Innoko-Tolstoi mining district—Major placer Au district with significant lode Au-Sb-Hg potential; lode sources for placers are volcanic-plutonic complexes of Late Cretaceous and dike swarms that intrude Mesozoic felsite; mining district produced
in 1990. Indicated reserves on one vein system, the O'Dea, are 192,285 tonnes (212,000 tons) of 12.0 g/tone (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 carbon-accue quartzite and schist within a terrane containing eclogite rocks. The mineral inventory is 16.5 million tonnes (18.2 million tons) grading 2.47 g/tone (0.072 oz/ton) Au for a contained 40,869 kg (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 100 m of 1.68 g/tone (330 ft of 0.049 oz/ton) gold (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 31,960 kg (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—Strata-bound Pb-Zn massive sulfide mineralization. Reported grades of up to 7.0% 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 volcanicogenic Cu-Pb-Zn-Ag massive sulfide deposits of Devonian to Mississippian age in Bonnifield mining district. Potential for high-grade deposits reported. Includes Liberty Bell strata-bound 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 11.1% Cu, 1.7 to 5.7% Zn, 0.3 to 2.3% Pb, 24 to 69 g/tone (0.7 to 2.0 oz/ton) Ag, and 0.61 to 2.1 g/tone (0.018 to 0.061 oz/ton) Au; estimated potential reserve of 34.6 million tonnes (40 million tons) for all deposits (fig. D-1).

56 Mosquito, Petergie—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 126 million tonnes (140 million tons) grading about 0.30% Cu and 0.34 g/tone (0.01 oz/ton) Au; estimated potential reserve of 34.6 million tonnes (40 million tons) for all deposits (fig. D-1).

58 Big Creek/Ladue—Strata-bound Pb-Zn–Ag massive sulfide prospects in metavolcanic rocks (fig. D-1).

59 Slate Creek—At least 30 million tonnes (55 million tons) of 6.3%, high-quality chrysotile asbestos in serpentinitized ultramafic rocks of Permian(? ) age (fig. D-3).

60 Fortymile mining district—Major placer Au district. Produced over 16,640 kg (33,974 oz) placer and very minor lode Au since discovery in 1883 to 1995, the longest continuous production of gold (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 3,089 kg (99,307 oz) placer and lode Au, about 9,549 kg (307,000 oz) lode Ag, and
2.3 million kg (5.5 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 strata-bound base metal deposits occur in schist and quartzite (fig. D-3).

**62 Stampede mine**—Major Sb deposit; produced more than 1.42 million kg (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-year-old). Reported reserves of 4.54 million tonnes (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 49 kg (1.581 oz) Au, 268 kg (8,617 oz) Ag, and 19,051 kg (42,000 lb) Cu. On the basis of recent (1994) drilling, the Pipe, Bunkhouse, and Copper King deposits contain 12.1 million tonnes (13.3 million tons) grading 3.25 g/tonne (0.095 oz/ton) gold (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 309 g/tonne (9 oz/ton) Ag (fig. D-1).

**66 Valdez Creek district**—About 15.813 kg (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, strata-bound Cu lodes in volcanic sedimentary rocks of Triassic age that may contain 4.54 million tonnes (5 million tons) ore that grade about 2% Cu with credits of Ag (fig. D-1).

**67a Zackly**—Disseminated copper and gold in a garnet-pyroxene skarn and marble. Reserves are estimated at 1.27 million tonnes (1.4 million tons) grading 2.6 percent Cu and 6.0 g/tonne (0.175 oz/ton) Au (fig. D-1).

**68 Chistochina**—Porphyry Cu prospects of Tertiary age and placer Au district; produced more than 5,637 kg (181,261 oz) Au and small amount Pt from placer deposits (fig. D-3).

**69 Nicasio mine**—Classic high-grade Au skarn that envelopes quartz diorite of Jurassic(? ) age; produced over 2,055 kg (6,060 oz) Au from about 79,816 tonnes (88,000 tons) of ore from 1930 to 1941 (fig. D-1).

**70 Spirit Mountain**—Massive and disseminated Cu-Ni mineralization in mafic-ultramafic complex (fig. D-3).

**71 Kenecott deposits**—Major stratiform Cu-Ag massive sulfide deposits localized near contact between Chishtone 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 544 million kg (1.2 billion lb) Cu and 311,028 kg (10 million oz) Ag from 4.35 million tonnes (4.8 million tons) ore. Some reserves remain (fig. D-1).

**72 Binocular and other prospects**—Kenecott-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 770 million tonnes (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 132 million tonnes (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 Mildas mine**—Significant strata-bound Cu (Ag-Au-Pb-Zn) massive sulfide deposit in volcanic sedimentary rocks of Tertiary Orca Group. Produced more than 1.5 million kg (3.3 million lb) Cu from 44,760 tonnes (49,350 tons) ore (fig. D-1).

**78 Ellamar—Strata-bound Cu-Zn—Au massive sulfide deposit in sediment of Eocene(? ) Orca Group. Produced more than 7.3 million kg (16 million lb) Cu, 1,596 kg (5,107 oz) Au, and 5,960 kg (191,615 oz) Ag from about 273,764 tonnes (301,835 tons) ore (fig. D-1).

**79 Willow Creek, Independence, Lucky Shot, War Baby**—Major lode Au (Ag-Cu-Pb-Zn-Mo) in veins that cut Mesozoic quartz diorite. Produced more than 18,860 kg (606,400 oz) Au from lode sources and about 1,729 kg (55,600 oz) Au from associated placer deposits (fig. D-3).

**80 Lataouche, Beatson**—Major strata-bound Cu-Zn—Ag massive sulfide deposits in Orca Group sedimentary rocks and mafic volcanic rocks. Produced more than 93 million kg (205 million lb) Cu from 5.4 million tonnes (6 million tons) ore. Inferred reserves of 4.53 million tonnes (5 million tons) ore that grade 1% Cu, 1.5% Pb, and Zn (fig. D-1).

**81 Rua Cove**—Major strata-bound Cu-Zn massive sulfide deposit in complex ore shoots enclosed in mafic volcanic rocks of Orca Group. Reported reserves of over 1 million tonnes (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 35,419 tonnes (39,951 tons) metallurgical-grade ore shipped through 1976; huge low-grade Cr resource may remain, of which 27 million tonnes (30 million tons) grade 5.1% Cr2O3 (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 1.24 million kg (35,000 flasks) Hg produced from 68,025 tonnes (75,000 tons) ore (fig. D-3).

**84 Donlin Creek—Aniak district**—Significant placer Au district. Aniak mining district produced 17,680 kg (568,601 oz) Au from placer deposits, mainly from the Nyac and Donlin Creek areas. Gold-polymetallic deposits hosted in granitic porphyry dikes and sills of Donlin Creek area recently estimated to contain 61 million tonnes (67 million tons) grading 3.4 g/tonne (0.099 oz/ton) gold (fig. D-3).

**85 Goodnews Bay**—Major placer Pt district; estimated to have produced over 17,261 kg (555,000 oz) refined PGE metals from 1934 to 1976; one of the largest known PGE metal resources in United States. Possible resources of 45 million m3 (60 million yd³) of deep, PGE-bearing gravels remain. Lode source believed to be Alaskan-type layered ultramafic complex of Jurassic or Cretaceous age. Possible significant offshore placer potential (fig. D-3).

**86 Apollo—Sita mines**—Major lode Au deposits; produced more than 3,347 kg (107,600 oz) Au from ore that averaged about 7.5 g/tonne (0.22 oz/ton) Au. Inferred reserves are 678,440 tonnes (748,000 tons) grading 26 g/tonne (0.76 oz/ton) Au, 74 g/tonne (2.16 oz/ton) Ag, with base metal credits (fig. D-3).

**87 Pyramid**—Late Tertiary porphyry Cu—Mo deposit; inferred reserves of 113 million tonnes (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 9,070,000 tonnes (10 million tons) ore that grade more than 1% Cu (fig. D-1).

93 Slettat Mountain—High-grade east-west-trending, Sn-W-Ag topaz-quartz greisen system hosted in 59-million-year-old old binary granite and in hornfels. Zone up to 1.915 m (3,000 ft) long and 152 m (500 ft) wide. One drill-hole showed 26 m (85 ft) of 1.8% Sn, and 0.4% W. Inferred resources are 58 to 96 million kg (128 to 212 million lb) Sn in 26.3 million tonnes (29 million tons) ore (fig. D-2).

94 Jimmy Lake—Complex Cu-Ag-Sn mineralization of late Tertiary (?) age; reported grades of up to 3,599 g/tone (105 oz/ton) Ag and 3% Cu (fig. D-1).

95 Haines Barite—Major stratiform Ba-Pb-Zn-Cu-Ag deposit in pillow basalt-dominated section of Paleozoic or Triassic age; consists of 15- to 18-m (48- to 60-ft) thick zone of 60% barite with upper zone [0.6 to 2.4 m (2 to 8 ft) thick] of massive sulfides that contain 2% Pb, 3% Zn, 1% Cu, up to 137 g/tone (4 oz/ton) Ag, and 4 g/tone (0.12 oz/ton) Au. Estimated to contain 680,250 tonnes (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 2.7 billion tonnes (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 7.7 million tonnes (8.5 million tons) ore that grades 0.125% Mo and 117 million tonnes (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 91 million tonnes (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 466 kg (15,000 oz) Au. Deposits also contain significant Ni-Cu and Pb-Zn-Ag mineralization. Funter Bay deposit contains reported reserves of 507,920 tonnes (560,000 tonnes) 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 30- to 90-m (100- to 300-ft) wide zone that contains an enchelon, Au-bearing quartz veins in metamorphic rocks; produced more than 109,482 kg (3.52 million oz) Au from 80 million tonnes (88.5 million tons) ore from 1893 to 1944. Reserves (all categories) of 96 million tonnes (105.7 million tons) of 1.7 g/tone (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 23,949 kg (770,000 oz) Au, most of which was produced at Chichagof Mine. Inferred leased reserves estimated to be 5,110 kg (100,000 oz) Au (fig. D-3).

102 Mirror Harbor—Ni-Cu mineralization in layered gabbro complex of Mesozoic age; reported proven reserves of 7,256 tonnes (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 20 million tonnes (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-Au deposits that occur as crosscutting veins in graywacke; produced more than 1,555 kg (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 10 million tonnes (11 million tons) grading 4.1 g/tone (0.12 oz/ton) Au, 456 g/tone (13.3 oz/ton) Ag, 12.8% Zn, and 4.0% Pb. Additional reserves in the southwest orebody are 1.81 million tonnes (2.0 million tons) grading 13.5% Zn, 5.5% Pb, 9.25 g/tone (0.27 oz/ton) Au, and 1,131 g/tone (33 oz/ton) Ag. Total combined reserves and resources of the mine are estimated to be 16.34 million tonnes (18 million tons) ore (fig. D-1).

106 Sumdum—Volcanogenic Cu-Pb-Zn massive sulfide deposit in Mesozoic metamorphic complex with potential strike length of over 3,048 m (10,000 ft). Inferred reserves of 24 million tonnes (26.7 million tons) ore that grade 0.57% Cu, 0.37% Zn, and 10 g/tone (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—Strata-bound Cu-Zn-Pb massive sulfide prospect in Mesozoic schist; over 335 m (1,100 ft) long and up to 3.7 m (12 ft) thick. Reported grades of 1.5% Cu, 3.9% Zn, 26 g/tone (0.76 oz/ton) Ag, and 0.44 g/tone (0.013 oz/ton) Au (fig. D-1).

109 Red Bluff Bay—Significant chrome mineralization in Mesozoic ultramafic complex (probably ophiolite); reported reserves of 517 tonnes (570 tons) of material that grade 40% Cr and 26,303 tonnes (29,000 tons) that grade 18 to 35% Cr (fig. D-3).

110 Cornwallis Peninsula—Volcanogenic Cu-Pb-Zn-Ag-Au massive sulfide deposit of Triassic (?) age; reported grades of up to 20% Pb-Zn and 788 g/tone (23 oz/ton) Ag (fig. D-1).

111 Castle Island—Stratiform barite deposit of Triassic age hosted in carbonate and pillow basalt; about 776,390 tonnes (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, 994 g/tone (29 oz/ton) Ag, and 17 g/tone (0.5 oz/ton) Au. Sn has also recently been 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 390,000 tonnes (430,000 tons) of 0.3% Ni, 0.3% Cu, and 4.4 g/tone (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 12.7 million kg (28 million lb) Cu, and 1,711 kg (55,000 oz) Ag. Reported reserves of 3.6 million tonnes (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, 2.3 million kg (5 million lb) Cu, over 622 kg (20,000 oz) PGM, and Au and Ag credits were produced from 294,775 tonnes (325,000 tons) ore (fig. D-3).

116 Union Bay—Significant Fe–Ti mineralization in ultra-mafic complex; area also contains Pt and V concentrations (fig. D-3).

117 Hyder mining district—Area produced more than 22,675 tonnes (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 deposits (figs. D-1 and D-2).

118 Jumbdu—Fe–Mo–Ag skarn deposit; produced more than 4.5 million kg (10 million lb) Cu, 8,708 kg (280,000 oz) Ag, and 218 kg (7,000 oz) Au from 113,375 tonnes (125,000 tons) ore. Zoned magnetite–Cu skarns are associated with epizonal granodiorite pluton of Cretaceous age. Reported reserves of 589,550 tonnes (650,000 tons) ore that grade 45.2% Fe, 0.75% Cu, 0.3 g/tonne (0.01 oz/ton) Au, and 2.74 g/tonne (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 Welsh Group. Reported grades of up to 12.7% Cu, 2.7% Zn, 86 g/tonne (2.5 oz/ton) Ag, and 6.9 g/tonne (0.2 oz/ton) Au (fig. D-1).

120 Quartz Hill—A porphyry molybdenum deposit hosted in a 25-million-year-old composite felsic pluton. Probable reserves, according to Cominco, are 210 million tonnes (232 million tons) with a grade of 0.22% MoS₂, and possible reserves are 1.1 billion tonnes (1.2 billion tons) with 0.12% MoS₂ (fig. D-2).

121 Niblack—Volcanogenic Cu–Pb–Au massive sulfide deposit hosted in Precambrian (?) Welsh Group or Ordovician to Silurian Descon Formation; produced more than 635,000 kg (1.4 million lb) Cu, 342 kg (11,000 oz) Au, and 467 kg (15,000 oz) Ag. Current resource is 2.78 million tonnes (3.3 million tons) grading 4.5% Cu, 2.7% Zn, 86 g/tonne (2.5 oz/ton) Ag, and 6.9 g/tonne (0.2 oz/ton) Au (fig. D-1).

122 Bokan Mountain—Numerous U–Th prospects associated with Jurassic peralkaline intrusive complex; from 1955 to 1971, produced more than 108,840 tonnes (120,000 tons) ore that graded about 1% U₃O₈. Contains inferred reserves of about 36.2 million tonnes (40 million tons) of 0.126% Nb and up to 1% REE metals (fig. D-3).

123 Kemuk Mountain—Magnetic Fe–Ti deposit hosted in Cretaceous (?) pyroxenite. Inferred reserves of 2.17 billion tonnes (2.4 billion tons) that average 15 to 17% Fe, 2 to 3% TiO₂, and 0.16% P₂O₅ (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 Talcottna Formation. Deposit has drilled-out reserves at a $50/tonne cutoff with no cut of high Au assays, 997,542 tonnes (1.099,580 tons) grading 10.35 g/tonne (0.32 oz/ton) Au, 7.84 g/tonne (0.24 oz/ton) Ag, 0.76% Cu, 1.17 Pb, and 8.37% Zn (fig. D-3).

126 Nimintuk River—Small hill of massive, high-grade barite estimated to contain at least 1.36 million tonnes (1.5 million tons) barite. Widespread stream-sediment Ba anomalies in area indicate further barite potential (fig. D-1).

127 Kensington—Stockworks of quartz veins in sheared and chloritized quartz diorite produced 9,886 tonnes (10,900 tons) grading 6 g/tonne (0.18 oz/ton) Au prior to 1930. Recent reserve estimates indicate at least 10.4 million tonnes (11.5 million tons) grading 4.9 g/tonne (0.14 oz/ton) Au. Subparallel Horrible vein system contains 3.56 million tonnes (3.93 million tons) grading 3.7 g/tonne (0.11 oz/ton) Au (fig. D-3).

128 Jualin—Five quartz-fissure veins in Cretaceous quartz diorite, more than 4,573 m (15,000 ft) of underground workings; produced 1,505 kg (48,387 oz) Au, mainly prior to 1930. Reserves estimated at 0.97 million tonnes (1.07 million tons) of 12 g/tonne (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 0.35 g/tonne (0.010 oz/ton) Au with Mo in the 0.03 to 0.04% range (fig. D-1).

130 Pogo—Gold is in veins in two flat-lying 24-ft-thick quartzites, discordant to the prevailing foliation in biotite gneiss near a felsic intrusive. Current resources are 4.5 million oz of gold in 11 million tons of rock, grading 0.41 oz/ton (fig. D-3).
APPENDIX E  
State and federal agencies and private interest groups involved  
in mineral development activities, 1997

(Note: The 1997 Service Directory of the Alaska Miners Association 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 COMMERCE 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  
3601 C St., Ste. 700  
Anchorage, AK 99503-5934  
(907) 269-8110  
(907) 269-8125 (fax)  

State Office Building, 9th Fl.  
P.O. Box 110804 (mailing)  
Juneau, AK 99811-0804  
(907) 465-2017  

751 Old Richardson Hwy., Ste. 205  
Fairbanks, AK 99701  
(907) 451-3020  
(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) 465-5140 TY  
(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 Dept. of Environmental  
Conservation  
Anchorage Office  
555 Cordova St.  
Anchorage, AK 99501-2617  
(907) 269-7570  
(907) 269-7511 TY  
Permits/Compliance Assistance  
1-800-510-2332 (inside Alaska only)  
1-800-269-7586 (outside Alaska)  
(907) 269-7652 (fax)  
e-mail: compass@envirocon.state.ak.us  

Alaska Dept. of Environmental  
Conservation  
Fairbanks Office  
610 University Ave.  
Fairbanks, AK 99709-3643  
(907) 451-2360  
(907) 451-2184 TY  
(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  

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 Division  
1300 College Rd.  
Fairbanks, AK 99701-1599  
(907) 459-7289  

Southeast Regional Office  
Habitat and Restoration Division  
333 Raspberry Rd.  
Anchorage, AK 99518-1599  
(907) 267-2285  

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  
Frontier Bldg.  
3601 C St., Ste. 1034  
Anchorage, AK 99503-5937  
(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)
e-mail: dgggs@dnr.state.ak.us
http://www.dggs.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 drill-core storage facility at Eagle River.

Geologic Materials Center
P.O. Box 772805
Eagle River, AK 99577-2805
(907) 696-0078 (fax)

Division of Land
3601 C St., Ste. 1122, Frontier Bldg.
Anchorage, AK 99503-5947
(907) 269-8503
(907) 269-8904 (fax)

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.

Division of Mining & Water Management
Frontier Bldg.
3601 C St., Ste. 800
Anchorage, AK 99503-5935
(907) 269-8600
http://www.dnr.state.ak.us/mine_wat/

A. Mining
Function: Principal agency for management of mineral resources in Alaska; conducts surveys to determine the location, 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)

Southeastern Regional Office
400 Willoughby Ave., 4th Fl.
Juneau, AK 99801-1724
(907) 586-2954 (fax)

B. 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)

Southeastern Regional Office
400 Willoughby Ave., 4th Fl.
Juneau, AK 99801-1724
(907) 586-2954 (fax)

Division of Parks and Outdoor Recreation
3601 C St., Ste. 1200
Frontier Bldg.
Anchorage, AK 99503-5921
(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.

DEPARTMENT OF PUBLIC SAFETY
450 Whittier St.
P.O. Box 111200 (mailing)
Juneau, AK 99811-1225
(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)
e-mail: fish_excise@revenue.state.ak.us
http://www.revenue.state.ak.us/tea/

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 3½ years of operation. (Tax returns must be filed annually.)
Alaska's Mineral Industry

UNIVERSITY OF ALASKA

College of Science, Engineering, and Mathematics
Department of Geology & Geophysics
308 Natural Sciences Bldg.
900 Yukon Dr.
University of Alaska Fairbanks
Fairbanks, AK 99775-5780
(907) 474-7565
(907) 474-5163 (fax)
e-mail: 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)
e-mail: 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.

FEDERAL AGENCIES

U.S. DEPARTMENT OF THE INTERIOR
Office of the Secretary
1609 C St., Ste. 100
Anchorage, AK 99501-3151
(907) 271-4102

Function: Coordinates the Department of the Interior's policy and stewardship functions on federal lands, including minerals including oil and gas, coal, precious and semiprecious minerals, such as sand, gravel, or stone. Issues rights-of-way and special use permits. Monitors and enforces federal mining claims and mineral leasing regulations. Ensures protection of groundwater resources. Conducts and supports national forest and range management activities. Manages national wildlife refuges and national parks, wilderness areas, and other protected areas. Manages national historic sites, cultural resources, and natural resources. Manages national forests and range lands, including the development of federal grazing 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) 267-1267 (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
Juneau, AK 99824
(907) 364-1553
(907) 364-1574 (fax)

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 Office
PO Box 149
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
U.S. Geological Survey

**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 geologic maps of Alaska, and aerial photography.

**Water Resources Division**
4230 University Dr., Ste. 201
Anchorage, AK 99508-4664
(907) 786-7100

U.S. Fish and Wildlife Service

**U.S. Fish and Wildlife Service Region 7 Office**
1011 East Tudor Rd., Anchorage, AK 99503
(907) 786-3542

**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 public and private 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.

**Northern Alaska Ecological Services**
101 12th Ave., Rm. 110
Fairbanks, AK 99701
(907) 456-0208 (fax)

**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 applicable state law and regulations.

**Western Alaska Ecological Services**
3000 Vintage Blvd., Ste. 201
Juneau, AK 99803-7100
(907) 586-7240
(907) 586-7154 (fax)

**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 applicable state law and regulations.

**U.S. Fish and Wildlife Service**

**U.S. Fish and Wildlife Service Northern Alaska Ecological Services**
101 12th Ave., Rm. 110
Box No. 19
Fairbanks, AK 99701
(907) 456-0327
(907) 456-0208 (fax)

**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.

**Juneau Field Station**
NOTE: THIS OFFICE WILL BE MOVING TO ANCHORAGE. PLEASE CALL THE COEUR D'ALÈNE OFFICE FOR INFORMATION
205 N. 4th St.
Coeur d'Alène, ID 83814-2877
(208) 667-6680
(208) 765-3099 (fax)

**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 applicable state law and regulations.

**U.S. Department of Agriculture**

**U.S. Forest Service**

**Forest Service Regional Office, Federal Bldg.**
P.O. Box 21628
Juneau, AK 99802-1628
(907) 753-2712 or (907) 753-2716 (fax)
(907) 586-7869

**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.

**Geological Survey**

**U.S. Geological Survey**

**U.S. Geological Survey Western Alaska Ecological Services**
605 West 4th Ave., Rm. G-62
Anchorage, AK 99501
(907) 271-2888
(907) 271-2786 (fax)

**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 applicable state law and regulations.

**U.S. Geological Survey**

**U.S. Geological Survey 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.

**Mine Safety and Health Administration**

**Mine Safety and Health Administration**
205 N. 4th St.
Coeur d'Alène, ID 83814-2877
(208) 667-6680
(208) 765-3099 (fax)

**Function:** Administers health and safety standards to protect the health and safety of coal miners. 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.

**National Park Service**

**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 applicable state law and regulations.

**Juneau Field Station**
NOTE: THIS OFFICE WILL BE MOVING TO ANCHORAGE. PLEASE CALL THE COEUR D'ALÈNE OFFICE FOR INFORMATION
205 N. 4th St.
Coeur d'Alène, ID 83814-2877
(208) 667-6680
(208) 765-3099 (fax)

**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 applicable state law and regulations.

**U.S. Environmental Protection Agency**

**Environmental Protection Agency**

**Regional 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

**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.

**U.S. Department of Labor**

**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 the Army**

**Corps of Engineers**

**Alaska Operations Office**
222 West 7th Ave., Ste. 19
Anchorage, AK 99513-7588
(907) 271-5083

**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)


**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)
e-mail: 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.

Citizens’ Advisory Commission on Federal Areas
3700 Airport Way
Fairbanks, AK 99709
(907) 451-2775

Function: The Citizens’ Advisory Commission on Federal Areas was established in 1981 by the Alaska Legislature to protect the rights of Alaskans to continue their traditional uses of federal lands throughout the state. This was done in response to Congressional enactment in December 1980 of the Alaska National Interest Lands Conservation Act (ANILCA), which placed millions of acres of federally owned lands into conservation system units with restrictive land use and management requirements.

**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)

Denali Branch of AMA
P.O. Box 1000
Healy, AK 99743
(907) 683-2226, ext. 719

Fairbanks Branch of AMA
P.O. Box 73069
Fairbanks, AK 99707
(907) 474-2081

Juneau Branch of AMA
P.O. Box 21684
Juneau, AK 99802-1684
(907) 586-4704
(907) 463-5712

Kenai Branch of AMA
P.O. Box 242
Sterling, AK 99672
(907) 262-6383

Nome Branch of AMA
P.O. Box 1974
Nome, AK 99762
(907) 443-2632

Alaska Women in Mining

Fairbanks Branch
P.O. Box 83542
Fairbanks, AK 99708
(907) 451-2775

Juneau Branch
P.O. Box 34044
Juneau, AK 99804
(907) 586-4161

Anchorage Branch
P.O. Box 240334
Anchorage, AK 99524
(907) 276-6161

Alaskans for Juneau
P.O. Box 2242
Juneau, AK 99802-2428
(907) 463-5065

American Institute of Professional Geologists
7828 Vance Dr., Ste. 103
### Anchorage, AK 99510-0220
(907) 278-3602
(907) 276-3924 (fax)

**CALISTA CORP.**
601 W. 5th Ave., Ste. 200
Anchorage, AK 99501-2226
(907) 279-5516
(907) 272-5060 (fax)

**CHUGACH ALASKA CORP.**
560 E. 34th Ave., Ste. 200
Anchorage, AK 99503-4196
(907) 563-8866
(907) 563-8402 (fax)

**COOK INLET REGION INC.**
and its subsidiary North Pacific Mining Corporation
P.O. Box 93330
Anchorage, AK 99509-3330
(907) 274-8638
(907) 263-5183 (fax)

**DOYON LTD.**
201 1st Ave., Ste. 300
Fairbanks, AK 99701
(907) 459-2000
(907) 459-2060 (fax)

**KONIAG INC.**
4300 B St., Ste. 407
Anchorage, AK 99503
(907) 561-2668
(907) 562-5258 (fax)

### Anchorage Office
1001 E. Benson Blvd.
Anchorage, AK 99508
(907) 265-4100
(907) 265-4123 (fax)

**NANA REGIONAL CORP.**
P.O. Box 49
Kotzebue, AK 99752
(907) 442-3301
(907) 442-2866 (fax)

**SEALASKA CORP.**
One Sealaska Plaza, Ste. 400
Juneau, AK 99801
(907) 586-1512
(907) 586-2304 (fax)
### APPENDIX F

**Primary metals production in Alaska, 1880-1997**

<table>
<thead>
<tr>
<th>Year</th>
<th>Gold (oz)</th>
<th>Silver (oz)</th>
<th>Mercury (flask lb)</th>
<th>Antimony (lb)</th>
<th>Tin (lb)</th>
<th>Lead (tons)</th>
<th>Zinc (tons)</th>
<th>Platinum (oz)</th>
<th>Copper (lb)</th>
<th>Chromium (tons)</th>
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<tbody>
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<td>1880-1899</td>
<td></td>
<td></td>
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<tr>
<td>1900</td>
<td>395.030</td>
<td>73.300</td>
<td>39.585</td>
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<tr>
<td>1901</td>
<td>335.369</td>
<td>47.990</td>
<td>37.986</td>
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<tr>
<td>1902</td>
<td>406.709</td>
<td>92.000</td>
<td>45.800</td>
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**TOTAL:** 34,130,229  2,269,855  80,486,738  299,512  40,945  9,015  11,070,800  6,655,1  7,287,700  12,532,5  509,772  282,229  2,498,048  2,597,964  6,68,549  65,851,7  1,378,013,932  232,38  39,051  3,426,7

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*a*From published and unpublished state and federal documents.  
*b*Not traceable by year.  
*c*Crude platinum; total production of refined metal is about 575,000 oz.  
*m$= Million dollars.  
$W$ = Withheld.  
--- = Not reported.
### APPENDIX G

Production of industrial minerals, coal, and other commodities in Alaska, 1880-1997

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Footnote:

- a: Rock includes sand, gravel, and other hard rock products.
- b: Other includes miscellaneous commodities and services.
- s: s. tons = short tons.
- m$: m$ = millions of dollars.

Note: The table represents data from 1880 to 1997 with specific figures for each year.
### Table: Building-stone Production Figures

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<td>1994</td>
<td>1,490,000</td>
<td>13,518,321</td>
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<td>1,640,000</td>
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<td>9,890,463</td>
<td>3,000,045</td>
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<td>1997</td>
<td>1,446,000</td>
<td>13,800,000</td>
<td>3,200,000</td>
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<tr>
<td>Other</td>
<td>2,300,000</td>
<td>W</td>
<td>W</td>
<td>W</td>
<td>W</td>
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</tbody>
</table>

TOTAL: 51,275,428 861,09 1,129,870,579 2,346,82 115,456,310 520,78 856,000 11,417,0 177,354,872

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*a* Building-stone production figures for 1880-1937 are for the southcentral and interior regions of Alaska only.

*b* Includes 2.4 million lb U₃O₈ (1955-71); 505,000 tons gypsum (1905-26); 286,000 lb WO₃ (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.

*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.

*Marble quarried on Prince of Wales Island, southeastern Alaska (1900-41).*

$m$ = Million dollars.

$t$ = Thousand dollars.

- - = Not reported.

W = Withheld.